ADEQ
ARKANSAS
Department of Environmental Quality

July 15, 2015

Mr. Guy Donaldson, Chief
Air Planning Section (6PD-L)
Environmental Protection Agency, Region 6
1445 Ross Ave, Suite 1200
Dallas, Texas 75202-2733

Re: Promulgation of Air Quality Implementation Plans; State of Arkansas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan; Docket No. EPA-R06-OAR-2015-0189

Dear Mr. Donaldson:

Arkansas prides itself on being the Natural State and its ongoing efforts to maintain excellent air quality. The Environmental Protection Agency ("EPA") published on April 8, 2015, a proposed Federal Implementation Plan covering Regional Haze and Interstate Visibility Transport for the State of Arkansas ("Proposed FIP"). The Arkansas Department of Environmental Quality ("ADEQ") has reviewed the Proposed FIP and has determined that it contains significant flaws and does not accurately reflect the real progress the State has made to fulfill the requirements of the Clean Air Act pertaining to Regional Haze and Visibility. EPA failed to use the proper methodology used in portions of the Proposed FIP. Moreover, the Proposed FIP is lacking in its legal precedence and its analysis appears to be incomplete or lacking in clarity. Furthermore, EPA acted arbitrarily in developing a proposal which is inconsistent with the approach taken in other states.

As a primary example of the Proposed FIP's infirmity, the Entergy Independence Plant is not currently identified as being subject to Best Available Retrofit Technology ("BART"). Despite this fact, EPA improperly performed its own reasonable progress analysis. EPA indicated this was performed by applying the reasonable progress factors set forth in the Regional Haze Rule to require specific emissions controls for Entergy Independence Units One and Two. This type of improper and unlawful analysis has no basis in the Regional Haze Rule or other relevant law. Moreover, EPA's proposed additional control measures for the Entergy Independence Plant are both unnecessary and arbitrary. The State of Arkansas has demonstrated that it is on track to meet the uniform rate of progress in its Five-Year Regional Haze Progress Report for the first planning period, which ends in 2018. EPA singled out the Entergy Independence Plant through a cursory evaluation of the National Emissions Inventory data, not a reasoned evaluation utilizing the established framework that takes into account, among other factors, the costs of compliance and progress made to date.

Under the Proposed FIP, certain entities that are already complying with portions of the Clean Air Act aimed at reducing interstate transport of air pollution under the Cross-State Air Pollution Rule ("CSAPR") would also have to install additional emissions controls to achieve the same goal. This is the case despite EPA's own assertions that CSAPR is more effective in reducing particular emissions during ozone season. Based on EPA's statements that CSAPR provides for greater reasonable progress than source-specific nitrogen oxides ("NO_x") controls, EPA should determine that facilities

included in the Proposed FIP which are already subject to requirements under the CSAPR FIP satisfy BART for NO_x and therefore should not be required to install additional controls.

Additionally, ADEQ finds that EPA's Proposed FIP is inconsistent with the approaches proposed in other states. For example, in developing the Proposed FIP, EPA used a simpler modeling method ignoring crucial factors that would provide a more representative accounting of the emissions in Arkansas. In support of this simpler method, EPA cites to its use in developing reasonable progress goals ("RPGs") for Hawaii and Arizona. EPA's decision to utilize this simpler method is not supported in the Proposed FIP. EPA used the CAMx photochemical model in its analysis to develop RPGs for the Texas-Oklahoma FIP. For Arkansas, EPA chose a method of determining RPGs that is admittedly inferior and less sophisticated than the CAMx approach. EPA's inconsistency in methodology is not fully explained and represents arbitrary decision-making that leads to unjustified disparities in treatment among the states.

Furthermore, EPA's metrics used throughout the Proposed FIP are misleading and not supported on a legal or technical basis. For instance, the cumulative visibility effects metric lacks a sound scientific basis and is not supported in the Regional Haze Rule or EPA guidelines. The metric combines slight incremental increases from different locations that do not reflect actual visibility improvement in any single location differently. Ultimately, the metric provides no meaningful information on progress toward meeting visibility goals.

Perhaps most troubling, EPA failed to appropriately assess the costs of the overall impact of the Proposed FIP. Recent concerns have been raised by the United States Supreme Court in the case of *Michigan v. EPA* regarding the rationality of imposing billions of dollars in economic costs in return for a few dollars in health or environmental benefits. Accordingly, EPA should have performed an analysis to properly determine the extent of the impacts of the Proposed FIP in the State of Arkansas.

Finally, it is arbitrary and capricious for EPA to force an emissions source to invest millions, much less billions, of dollars for new technology that will have no appreciable effect on the haze in any Class I Federal area ("Class I area"). In a recent decision that is further discussed in the attached comments, the United States Court of Appeals for the Ninth Circuit recently issued a decision that called into question the use and reliability of the CALPUFF visibility model as a means of identifying affected facilities when those facilities are more than 200 kilometers from a Class I area and the simulated visibility improvements are both within the margin of error of the model and imperceptible. The Clean Air Act does not require an improvement that cannot be reasonably anticipated.

Because of the issues addressed in this letter, ADEQ strongly urges EPA to withdraw the Proposed FIP. In support of this request, ADEQ submits the following comments and asks that EPA pay them the utmost consideration.

Sincerely,

Becky Keogh
Director, ADEQ

Table of Contents

Introduction

In 1977, Congress amended the Clean Air Act ("CAA") to include the national goal of preventing any future and remedying any existing impairment of visibility at mandatory Class I Federal areas ("Class I areas"). EPA promulgated the Regional Haze Rule in July 1999 to further this national goal and established regulations to eliminate man-made visibility impairment in those areas by 2064. Nationally, there are 156 Class I areas. There are two Class I areas in Arkansas: Upper Buffalo and Caney Creek Wilderness areas.

The Regional Haze Rule and related regulations contain provisions that encourage state, local, and tribal agencies to work cooperatively within regional planning organizations to address visibility impairment. In accordance with the regional haze program requirements outlined in 40 C.F.R. § 51.308, the Arkansas Department of Environmental Quality ("ADEQ") submitted the Arkansas Regional Haze State Implementation Plan ("Regional Haze SIP") to EPA on September 23, 2008. On March 12, 2012, EPA partially approved and partially disapproved the Regional Haze SIP ("the Arkansas Regional Haze Approval/Disapproval").[1]

ADEQ submitted on June 2, 2015, the Five-year Regional Haze Progress Report, which is intended to fulfill the requirement in 40 C.F.R. § 51.308(g) that Arkansas provide periodic reports to EPA evaluating progress towards the Reasonable Progress Goals ("RPGs").

On April 8, 2015, EPA promulgated the Proposed FIP for Arkansas.[2] On May 1, 2015, EPA extended the public comment period for the Proposed FIP until July 15, 2015.[3] ADEQ

[1] Approval and Promulgation of Implementation Plans; Arkansas; Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze, 77 FR 14604.
[2] Promulgation of Air Quality Implementation Plans; State of Arkansas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan, 80 FR 18944.
[3] Approval and Promulgation of Implementation Plans; Arkansas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan; Extension of Comment Period and Notice of Availability, 80 FR 24872.

comments on that Proposed FIP. Comments are generally presented in the same sequence as the relevant content appears in the Proposed FIP.

The cumulative visibility metrics used throughout the Proposed FIP are misleading and without legal basis in the Regional Haze Rule.

The cumulative visibility effects metric used in many tables and discussions in the Proposed FIP is not scientifically sound, has no legal basis in the Regional Haze Rule, and is grossly misleading. On page 18951 of the Proposed FIP, EPA first uses the term "cumulative visibility benefits" and indicates that this was a factor in its deliberations.[4] In Tables 8, 10, 11, 13, 18, 20, 21, 23, 27, 29, 37, 38, 42, 47, 49, 51, and 53, EPA adds visibility improvement values at one Class I area to the visibility improvement values at other Class I areas to arrive at a "cumulative visibility improvement."[5] This "improvement" referenced in the tables refers to the "cumulative visibility benefits." EPA does not discuss any purpose for calculating the "cumulative visibility benefits" in the Proposed FIP. Similarly, EPA adds the visibility impacts at individual Class I areas to arrive at a "total visibility impact" in Tables 34, 35, 62, 63, 64, and 66.[6] EPA also provides no discussion of the origin or purpose of a "total visibility impact" metric. In fact, EPA does not provide a sound scientific explanation for either the "total visibility impact" metric or the "cumulative visibility improvement" metric anywhere in the Proposed FIP.

There is no basis in the Regional Haze Rule or EPA guidelines for either a cumulative visibility metric or a total visibility impact metric. In the "Guidelines for BART ("Best Available Retrofit Technology") Determinations under the Regional Haze Rule," EPA only requires an evaluation of the change at each receptor located "at the *nearest* Class I area with sufficient

[4] 80 FR 18944 at 18951.
[5] *Id.*
[6] *Id.*

density to identify the likely visibility effects of the source."[7] (*emphasis added*). This requirement is clearly intended to help "identify the likely visibility effects" of the specific visibility improvement of a particular source. Using data from these receptors to create a global visibility increase metric is improper.

Given that the purpose of the Regional Haze Rule is to provide improved visibility in individual and unique Class I areas, adding together slight improvements in visibility from separate areas is not a useful method for measuring overall increased visibility improvement. EPA's chosen measurement of visibility impairment is a "deciview," which is defined in part as "uniform incremental changes in perception."[8] Many small separate incremental changes in perception in various locations do not create one large uniform incremental change in perception when added together. These metrics simply do not convey any meaningful information related to progress toward reaching the ultimate goal of restoring background visibility conditions at Class I areas.

It is grossly misleading to provide cumulative numbers as a measurement of overall improvement when the incremental changes may only be slight, barely perceptible, and separated by large distances. The methodology behind these metrics lacks any scientific basis. Due to the misleading nature of the cumulative visibility metric and the total visibility impact metric, EPA should withdraw the Proposed FIP and remove all references to either of these metrics in any subsequently proposed plan.

[7] 40 C.F.R. § Pt. 51, App. Y, § IV, D.5, Step 5
[8] 40 C.F.R. § 51.301

ADEQ concurs with EPA's determination that the Georgia Pacific Crossett Mill 6A and 9A Power Boilers are not subject-to-BART.

Chapter III.A.1 of the Proposed FIP contains an analysis of whether BART controls will be required at the Georgia Pacific Crossett Mill 6A and 9A Power Boilers.[9] In the Arkansas Regional Haze Approval/Disapproval, EPA disagreed with ADEQ's assertion that the 6A Power Boiler was not BART-eligible and proposed to find that it is BART-eligible.[10]

In the Proposed FIP, EPA conducts a further analysis of these boilers and determines that, whether BART-eligible or not, neither boiler has visibility impacts sufficient to be considered subject-to-BART.[11] ADEQ concurs that neither of these boilers should be subject-to-BART.

EPA is acting arbitrarily and inconsistently with its own past positions in requiring sources that are subject to the Cross-State Air Pollution Rule (CSAPR) to also control nitrogen oxides (NO_x) emissions as BART.

Presently, Arkansas is subject to a Cross-State Air Pollution Rule Federal Implementation Plan ("CSAPR FIP") for ozone-season NO_x. Despite EPA's own guidance stating that CSAPR makes greater reasonable progress than BART for ozone-season NO_x,[12] EPA makes no mention of CSAPR emissions controls in the Proposed FIP and requires BART for Electricity Generating Units ("EGUs") that are subject to CSAPR. EPA should not require sources that are subject to the CSAPR FIP to also install BART or additional emissions controls based on a reasonable progress analysis, such as is the case with the Entergy Independence Plant.

On May 12, 2005, EPA published the Clean Air Interstate Rule ("CAIR"), which was intended to address interstate transport of air pollution as required by §110(a)(2)(D) of the

[9] 80 FR 18944 at 18947.
[10] 77 FR 14604 at 14605.
[11] 80 FR 18944 at 18948.
[12] *See* Regional Haze: Revisions to Provisions Governing Alternatives to Source-Specific Best Available Retrofit Technology (BART) Determinations, Limited SIP Disapprovals, and Federal Implementation Plans, 77 FR 33642 at 3365-33651.

CAA.[13] The rule affected 28 states and the District of Columbia and included a cap-and-trade program targeting sulfur dioxide ("SO_2") and NO_x.[14] The rule required 25 states, including Arkansas, to reduce their state-wide emissions of NO_x for the purposes of the 8-hour ozone National Ambient Air Quality Standard ("NAAQS") by specifying ozone-season NO_x emissions budgets.[15] The emission limitations were intended to reduce or eliminate each state's contributions to ozone air quality in other states, which would thereby help downwind states meet the 1997 ozone NAAQS. EPA approved Arkansas's CAIR SIP submission on August 04, 2009.[16] CAIR was heavily litigated and eventually remanded to EPA. However, CAIR remained in effect until EPA could promulgate a replacement, the result of which was CSAPR.

EPA published CSAPR as a replacement to CAIR on August 8, 2011.[17] Similar to CAIR, CSAPR requires certain states to reduce annual SO_2 emissions, annual NO_x emissions and ozone season NO_x emissions to assist with other states' attainment of the 1997 ozone NAAQS, the 1997 fine particulate matter with an aerodynamic diameter less than or equal to a nominal two and one-half (2.5) micrometers ($PM_{2.5}$) NAAQS, and the 2006 fine particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers $PM_{2.5}$ NAAQS. Initially, CSAPR addressed emissions from Electric Generating Units ("EGUs") beginning in the year 2012. However, CSAPR was also subject to litigation, which prompted a stay of the rule until litigation was concluded. The Supreme Court upheld CSAPR,[18] and EPA published an

[13] *See* Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call, 70 FR 25162.
[14] *Id.*
[15] *Id.*
[16] 74 FR 38536.
[17] *See* Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 FR 48208.
[18] *See E.P.A. v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1587, 188 L. Ed. 2d 775 (2014).

interim final rule on December 3, 2014 revising the CSAPR compliance deadlines.[19] CSAPR became effective on January 1, 2015.[20]

The Regional Haze Rule allows states to implement an alternative program in lieu of BART so long as the alternative program has been demonstrated to achieve greater reasonable progress toward the national visibility goal than would BART.[21] EPA proposed that a state in the CAIR trading program would be allowed to rely on EPA's determination that CAIR makes greater reasonable progress than source-specific NO_x controls.[22] In the final Transport rule, EPA demonstrated that CSAPR, which replaced CAIR, would make greater reasonable progress toward national visibility goals than would BART.[23]

Consistent with the requirements of the Regional Haze Rule, EPA found that the CSAPR trading program did not cause degradation in any affected Class I area.[24] In addition, EPA found that CSAPR implementation combined with implementation of BART elsewhere achieved greater visibility improvement on both the 20% best and 20% worst days.[25] As a result, EPA found that CSAPR met all requirements under 40 C.F.R. § 51.308(e)(4) to qualify as a substitute for BART.

EPA concluded in the final rule that a state in the CSAPR region whose EGUs are subject to the requirements of the CSAPR trading program for ozone season NO_x may rely on its determination that CSAPR makes greater reasonable progress than source-specific BART. EPA specifically noted that "[t]he states to which this aspect of our final rule applies are *Arkansas*,

[19] Rulemaking To Amend Dates in Federal Implementation Plans Addressing Interstate Transport of Ozone and Fine Particulate Matter, 79 FR 71663.
[20] 79 FR 71663.
[21] 40 C.F.R. § 51.308(e); 77 FR 33642.
[22] Regional Haze: Revisions to Provisions Governing Alternatives to Source-Specific Best Available Retrofit Technology (BART) Determinations, Limited SIP Disapprovals, and Federal Implementation Plans" proposed rule, 76 FR 82219.
[23] *See* 77 FR 33642.
[24] *Id.* at 33652.
[25] 77 FR 33642 at 33648.

Florida, Louisiana, Mississippi and Oklahoma."(emphasis added).[26] Despite EPA's demonstration that CSAPR makes greater reasonable progress than source-specific BART, EPA has nevertheless proposed NO_x BART for certain units covered by CSAPR in the Proposed FIP.

The approach that EPA has proposed for Arkansas is inconsistent with that taken for other States. EPA promulgated FIPs to replace reliance on CAIR with reliance on CSAPR for the following states: Georgia, Indiana, Iowa, Kentucky, Michigan, Missouri, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia and West Virginia.[27] Similarly, Virginia is revising the Virginia Regional Haze SIP to rely on the Virginia CSAPR FIP to meet BART and reasonable progress requirements for SO_2 and NO_x.[28]

Perhaps most noteworthy, EPA has proposed reliance on CSAPR in states that border Arkansas. The Texas-Oklahoma Regional Haze Plan does not require BART for sources that are subject to CSAPR.[29] In that plan, EPA reiterates its position that "CSAPR, like CAIR, provides for greater reasonable progress towards the national goal than would BART."[30] EPA proposes replacing reliance on CAIR with reliance on the trading programs of CSAPR as an alternative to BART for SO_2 and NO_x emissions from EGUs.[31]

Not only is EPA requiring sources subject to CSAPR to control emissions as BART in the Proposed FIP, but EPA has not even considered CSAPR as an option for making reasonable progress. Even if EPA ultimately rejected CSAPR as a means to meet the reasonable progress requirements under the Regional Haze Rule, EPA is required to "cogently explain why it has

[26] 77 FR 33642.
[27] *Id.*
[28] Virginia Dep't of Env. Quality, Commonwealth of Virginia State Implementation Plan, *available at* http://www.deq.state.va.us/Portals/0/DEQ/Air/PublicNotices/Drafts/mspro.pdf
[29] Approval and Promulgation of Implementation Plans; Texas and Oklahoma; Regional Haze State Implementation Plans; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze; Federal Implementation Plan for Regional Haze and Interstate Transport of Pollution Affecting Visibility, 79 FR 74818.
[30] 79 FR 74818 at 74851.
[31] 79 FR 74853 at 74818 (the proposed [Texas-Oklahoma] FIP … substitutes Texas' reliance on the Clean Air Interstate Rule (CAIR) to satisfy BART requirements at its EGUs with reliance on CAIR's successor, the Cross-State Air Pollution Rule (CSAPR))"

exercised its discretion in a given manner."[32] EPA's failure to consider CSAPR is arbitrary and capricious in light of its treatment of other states.

As a result of EPA's position that CSAPR provides for greater reasonable progress than source-specific NO_x, facilities subject to the CSAPR FIP should not also be required to install, operate, or maintain BART for NO_x. In Arkansas, the following units should not be required to install the NO_x BART proposed by EPA in the Proposed FIP because they are also subject to CSAPR for ozone-season NO_x: (1) AEP Flint Creek Unit One; (2) Entergy White Bluff Unit One; (3) Entergy White Bluff Unit Two; and (4) Entergy Lake Catherine Unit Four.[33] Accordingly, EPA should withdraw the Proposed FIP and remove the requirements that the aforementioned units be subject to BART in addition to CSAPR emissions controls for ozone season NO_x in any subsequently proposed plan.

EPA failed to perform the analysis required to establish Reasonable Progress Goals and instead arbitrarily required emissions controls for Entergy Independence Units One and Two.

EPA improperly performed its own reasonable progress analysis by applying the reasonable progress factors set forth in the Regional Haze Rule to require specific emissions controls for Entergy Independence Units One and Two. Despite Entergy's Independence Plant not being identified as subject-to-BART, EPA requires specific emissions controls for the plant in the Proposed FIP under an analysis using four factors intended to aid in establishing unenforceable numerical goals for reducing Regional Haze called "reasonable progress goals."

[32] *Nat'l Parks Conservation Ass'n v. E.P.A.*, No. 12-73710, 2015 WL 3559149, at *3 (9th Cir. June 9, 2015); (citing *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co*., 463 U.S. 29, 48, (1983)); *Greater Yellowstone Coalition, Inc. v. Servheen*, 665 F.3d 1015, 1030 (9th Cir.2011) (requiring "a rational connection between the data before [the agency] and its conclusion"); *Nw. Envtl. Def. Ctr. v. Bonneville Power Admin.*, 477 F.3d 668, 691 (9th Cir.2007)

[33] EPA has included Independence as a "Reasonable Progress Source" in the Proposed FIP rather than a source that is subject-to-BART. This distinction is important as there is no definitive process that EPA has described for determining the degree of control it might require for a specific "Reasonable Progress Source." Independence, being already subject to CSAPR should not be included in any discussion of BART controls.

This type of analysis has no basis in the Regional Haze Rule or other relevant law. The additional control measures for the Entergy Independence Plant are especially unnecessary in light of Arkansas being on track to meet the Uniform Rate of Progress ("URP") for the first planning period, which ends in 2018.[34]

EPA is required to engage in "reasoned decision-making."[35] Not only must an agency's decreed result be within the scope of its lawful authority, "but the process by which it reaches that result must be logical and rational."[36] *In Michigan v. E.P.A.*, the Supreme Court of the United States explained that "agency action is lawful only if it rests 'on a consideration of the relevant factors."[37] In the Proposed FIP, EPA has disregarded the framework in the Regional Haze Rule and failed to consider the factors required for establishing Arkansas's Reasonable Progress Goals ("RPGs").

EPA's Regional Haze Rule primarily addresses visibility impairment from point sources by requiring BART for certain existing stationary sources.[38] In contrast to the BART requirements, which are specific to point sources, EPA also requires states to develop broad RPGs to be expressed in deciviews that each state must set based on the URP and the following four factors ("reasonable progress factors"): (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources.[39]

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[34] *See* State of AR, ADEQ, State Implementation Plan Review for the Five-Year Regional Haze Progress Report (April 2014) attached as Exhibit 1, at 56.
[35] *Michigan v. E.P.A.*, No. 14-46, 2015 WL 2473453, at *6 (U.S. June 29, 2015)(citing *Allentown Mack Sales & Service, Inc. v. NLRB*, 522 U.S. 359, 374, 118 S.Ct. 818, 139 L.Ed.2d 797 (1998) (internal quotation marks omitted).
[36] *Id.*
[37] *Id*. (citing *Motor Vehicle Mfrs. Assn. of United States, Inc. v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 29, 43, 103 S.Ct. 2856, 77 L.Ed.2d 443 (1983) (internal quotation marks omitted)).
[38] 40 C.F.R. § 51.308
[39] 40 C.F.R. § 51.308(d)(1)(i)

Notably, the Regional Haze Rule uses the imperative "must" in reference to consideration of both the URP and the reasonable progress factors.[40] Based on these considerations, either the state, or EPA in the case of a FIP, must set specific numerical goals in deciviews - the RPGs- which are intended to ensure that a state is making progress toward achieving natural visibility conditions.[41]

The Regional Haze Rule requires a state, or EPA, to consider both the reasonable progress factors and the URP in setting the RPGs.[42] However, EPA completely disregards its own framework in the Proposed FIP. Instead of utilizing the four reasonable progress factors in conjunction with the URP to set numerical goals measured in deciviews, EPA applies the reasonable progress factors in order to require emissions controls for Independence Plant Units One and Two, which it refers to as a "reasonable progress source." Effectively, EPA has applied the reasonable progress factors to the Independence Plant as if it were a BART analysis. Rather than considering the URP in conjunction with the reasonable progress factors, EPA completely dismisses the URP, which Arkansas is on track to meet in the first planning period, by stating that "the URP does not establish a 'safe harbor' for the state in setting its progress goals."[43]

Furthermore, EPA fails to explain how factors required to be considered in setting specific numerical targets, which are themselves not enforceable, could somehow be used to require specific enforceable limits for a single plant. In 40 C.F.R. § 51.308(d)(1)(v), the Regional Haze Rule states that "[t]he reasonable progress goals established by the State are not directly enforceable." There is simply no legal justification for the analysis EPA has performed using the

[40] 40 C.F.R. § 51.308 (d)(1)(i)(A)(" the State *must*: … (A) consider the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources" (emphasis added)); 40 C.F.R. § 51.308 (d)(1)(i)(A) ("In establishing the reasonable progress goal, the State *must* consider the uniform rate of improvement in visibility and the emission reduction measures needed to achieve it for the period covered by the implementation plant" (emphasis added))
[41] 40 C.F.R. § 51.308(d)(1)
[42] 40 C.F.R. § 51.308(d)(1)(i)
[43] *See* Exhibit 1.

reasonable progress factors set out in 40 C.F.R. § 51.308(d)(1)(A). EPA cites no legal authority for identifying and requiring emissions controls for "reasonable progress sources." The term "reasonable progress source" does not itself appear in the Regional Haze Rule or related guidance documents.

The state, or EPA in the case of a FIP, is required to "include a demonstration showing how these [reasonable progress] factors were taken into consideration in selecting the goal."[44] EPA has not performed this task in the Proposed FIP. EPA meticulously presents its analysis under headings with each reasonable progress factor clearly marked, but this analysis does not explain how those factors were taken into consideration in selecting numerical goals in deciviews as required by the Regional Haze Rule. In fact, EPA makes no mention of the factors required for consideration under 40 C.F.R. § 51.308(d)(1)(A) except in relation to the analysis of "Entergy Independence Plant Units 1 and 2." [45]

EPA's arbitrary use of the reasonable progress factors to evaluate the Entergy Independence Plant resulted in EPA foregoing a proper analysis of the reasonable progress factors in relation to the RPGs. Critically, EPA has failed to consider the "costs of compliance" with the RPGs in the Proposed FIP. Although all of the reasonable progress factors are required to be considered in setting the RPGs, the Supreme Court of the United States recently reiterated the importance of considering cost in relation to electric generating units such as the two units at the Entergy Independence Plant. In *Michigan v. E.P.A.*, the Supreme Court held that it was unreasonable for EPA to interpret the phrase "appropriate and necessary" as not including an analysis of costs in implementing the Mercury and Air Toxics Standards for power plants.[46] In doing so, the Supreme Court stated that "[o]ne would not say that it is even rational, never mind

[44] 40 C.F.R. § 51.308(d)(1)(i)(A).
[45] 80 FR 18944 at 18992-18998
[46] *Michigan v. E.P.A.*, No. 14-46, 2015 WL 2473453, at *7 (U.S. June 29, 2015)

'appropriate,' to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits."[47] EPA's decision to forego any type of analysis involving the reasonable progress factors in relation to setting the RPGs is particularly troublesome in light of the Supreme Court's concerns about costs in *Michigan v E.P.A.*

EPA asserts that it is appropriate to evaluate Entergy's Independence Plant "because it is a significant source of SO_2 and NO_x … even though Arkansas's Class I areas and those outside of Arkansas most significantly impacted by Arkansas sources are projected to meet URP for the first planning period."[48] In fact, Arkansas is projected to meet the URP despite none of the controls specified in the SIP or the Proposed FIP having been installed to date.

EPA singled out Entergy's Independence Plant through a cursory evaluation of the National Emissions Inventory data that ADEQ provides to EPA annually, which EPA then used in modeling for potential visibility impacts.[49] In doing so, EPA has ignored its own framework for establishing reasonable progress goals and requiring specific emissions controls for a point source. EPA should have considered the four factors in 40 C.F.R. § 51.308(d)(1)(A) along with the URP as set forth in 40 C.F.R. § 51.308(d)(1)(B) in setting numerical RPGs.

In the Arkansas Regional Haze Approval/Disapproval, EPA rejected Arkansas's RPGs because the state relied on the URP rather than both the URP and the reasonable progress factors to propose its RPGs. EPA stated that "[u]ntil the State conducts a proper evaluation of the four statutory factors … we will not know whether different RPGs are appropriate for Arkansas's Class I areas."[50] Just as EPA was unable to determine whether Arkansas's RPGs were appropriate, ADEQ cannot determine whether the RPGs presented by EPA are appropriate

[47] *Id*.
[48] 80 FR 18944 at 18992.
[49] *Id. at* 18991-18992.
[50] 77 FR 14604 at 14621.

because EPA has failed to perform an analysis of its RPGs using the factors in 40 C.F.R. § 51.308(d)(1) and instead applied those factors to an assessment of controls for Entergy's Independence Plant. Therefore, EPA should withdraw the Proposed FIP, and ensure a proper analysis is included in any subsequently plan.

The Reasonable Progress Goals chosen by EPA are based on admittedly flawed methods that reject the refined modeling approach used by EPA in states such as Texas.

Not only did EPA improperly perform the reasonable progress analysis necessary to establish RPGs, but EPA also used an admittedly inferior method to model Arkansas's RPGs. In supporting the RPGs in the Proposed FIP, EPA substituted a method that relies on "a scaling of visibility extinction components in proportion to emission changes."[51] In support of this method, EPA cites to its use in developing RPGs for Hawaii and Arizona.[52] EPA offers little in the way of positive support for its choice in the Proposed FIP. Rather, EPA chose a method of determining RPGs that is admittedly inferior and less sophisticated than the alternative approach, which EPA rejected in Arkansas but used in Texas: CAMx photochemical modeling.

EPA admits that it has not performed its own modeling in a manner adequate to develop "refined numerical RPGs."[53] EPA seems to acknowledge the infirmity in its modeling by explaining its methodology as follows: "Development of refined numerical RPGs for Arkansas's Class I areas would require photochemical grid modeling of a multistate area, involving thousands of emission sources, unlike the comparatively simple single-source CALPUFF modeling used for individual BART assessments."[54] EPA further explains that "[d]eveloping all of the necessary input files, running the photochemical model, and post-processing the model

[51] 80 FR 18944 at 18997.
[52] *Id.*
[53] *Id.*
[54] *Id.*

outputs would take several months at a minimum."[55] EPA cites additional reasons for rejecting the approach using photochemical grid modeling such as the part that it is requiring an "update of the emission inventory for Arkansas and surrounding states," which would include the effects of all EPA and state regulatory actions on point, area, and mobile sources.[56] EPA states this approach would require "specialized and extensive computing hardware and expertise."[57]

Despite the additional complexity and time needed, EPA chose to use the more refined CAMx photochemical model in the Texas-Oklahoma FIP.[58] As evidenced by EPA's actions in the Texas-Oklahoma FIP, EPA certainly possesses the "specialized and extensive computing hardware and expertise" needed to perform modeling using the CAMx photochemical model. EPA fails to justify this disparate treatment in Arkansas's Proposed FIP. Instead, EPA arbitrarily used an alternative algorithm to develop RPGs that resulted in admittedly inferior numerical goals.

In fact, the only modelling EPA performed for the Proposed FIP was "comparatively simple single-source CALPUFF modeling used for individual BART assessments."[59] EPA used this modeling only to justify additional emissions controls on Entergy's Independence Plant outlined in the reasonable progress analysis and not in support of the proposed state-wide RPGs.

Given the substantial impact on Arkansas businesses and rate-payers that the potential differences in RPGs would make, ADEQ is troubled by EPA's decision to forego methods that would ensure the same degree of accuracy for RPGs in Arkansas's Proposed FIP as in the Texas-

[55] *Id.*
[56] 80 FR 18944 at 18997.
[57] *Id.*
[58] Approval and Promulgation of Implementation Plans; Texas and Oklahoma; Regional Haze State Implementation Plans; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze; Federal Implementation Plan for Regional Haze and Interstate Transport of Pollution Affecting Visibility, 79 FR 74818.
[59] 80 FR 18944 at 18997.

Oklahoma FIP. EPA should withdraw the Proposed FIP, and any subsequent plan should include a method of analysis sufficient to establish "refined numerical RPGs."

EPA's revisions to Arkansas's proposed Reasonable Progress Goals are unnecessary and outside of EPA's statutory authority to regulate impairment of visibility.

EPA's revisions to Arkansas's proposed RPGs are unnecessary and beyond the authority granted by Congress. EPA's own estimates of the effects of the Proposed FIP are reductions for the 20% worst days of -0.21 deciviews for Caney Creek and -.19 deciviews for the Upper Buffalo.[60] These reductions would not be visible to the naked eye and are beyond the scope of regulatory regime specifically designed to address "the impairment of visibility."

The CAA only provides EPA with the authority to regulate the "impairment of visibility."[61] Visibility extends only to things that humans can see with their naked eyes.[62] By extension, EPA only has authority to regulate the impairments of visibility that are perceptible to the human eye. A "deciview" is a haze index derived from calculated light extinction, such that uniform changes in haziness correspond to uniform incremental changes in perception across the entire range of conditions, from pristine to highly impaired."[63] The human eye can only detect a change in haziness of 1.0 or more deciviews.[64] Measurements of 0.21 and 0.19 deciviews are both well below amount of haze discernable to the naked eye. Under both the plain language and dictionary definitions of "visibility," the statute does not provide EPA with the authority to regulate haze below a single deciview, which would be invisible to the naked eye.

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[60] 80 FR 18944 at 18998.
[61] 42 U.S.C.A. § 7491 ("Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, *impairment of visibility* in mandatory class I Federal areas which impairment results from manmade air pollution.)(emphasis added).
[62] *E.g.* Webster's Third New International Dictionary 2557 (1981)("visible" means "capable of being seen"; "visibility" means "the degree or extent to which something is visible … [by] the observer's eye unaided by special optical devices").
[63] 40 C.F.R. § 51.301.
[64] *e.g.*79 FR 58302 at 58,303.

EPA's proposed RPGs are more stringent than Arkansas's proposed RPGs in its 2008 Regional Haze State Implementation Plan, which would have ensured that Arkansas is on track to achieve natural visibility conditions by 2064. Arkansas is reducing regional haze in its Class I areas at a higher rate than both the URP, which was approved by EPA, and Arkansas's initial proposed RPGs.[65] EPA's RPGs in the Proposed FIP are only about 0.2 deciviews lower than those developed by Arkansas.[66] Even if EPA's RPGs were the result of proper analysis and modeling, the difference between the State-established and EPA-proposed RPGs is insignificant and below the range of human perceptibility. As indicated by the URP, Arkansas is well on track to reaching natural visibility conditions by 2064 and more stringent RPGs than those in Arkansas's 2008 Regional Haze State Implementation Plan are not necessary. EPA should withdraw the Proposed FIP and ensure that revised RPGs in any subsequent plan are within the scope of EPA's authority to address impairment of visibility.

It would be premature for EPA to finalize its proposed Reasonable Progress Goals when the Agency intends to significantly revise the manner in progress is determined under the Regional Haze Rule.

For some time now, EPA has been considering changes to the Regional Haze program's metrics for tracking progress as well as a possible three-year extension of the schedule for submitting updated SIPs currently due in 2018. Just this month, the Air Quality Policy Division of the EPA Office of Air Quality Planning and Standards announced a series of conference calls with representatives of the U.S. Department of Agriculture, the Department of the Interior, and regional, state, local and tribal governments with the following items on the agenda:

- Rulemaking activities including the proposal to delay of the State Implementation Plan ("SIP") submission deadline to 2021 from 2018, options for the process and schedule for

[65] *See* Exhibit 1.
[66] 77 FR 14604 at 18998, Table 67.

submitting progress reports, and options for revising Reasonably Attributable Visibility Impairment rule provisions;

- Guidance to refocus the visibility tracking metric and framework on the controllable fraction of visibility impairment;
- Guidance to determine what constitutes a long-term strategy providing for reasonable progress

As indicated by the items on this agenda, it is apparent that EPA intends to reconsider the manner in which rates of progress toward the visibility goals of the Regional Haze Rule are determined and calculated. These changes would likely be made through a combination of guidance documents and rulemaking. Due to the EPA's intent to significantly revise the manner in which these metrics are considered, it is premature and unnecessary to revise the RPGs that Arkansas has determined to be appropriate. Accordingly, EPA should withdraw the proposed FIP.

EPA's proposed Reasonable Progress Goals reflect an arbitrary and disparate treatment of Arkansas in comparison to surrounding states.

As pointed out in the Five-Year Progress Report State SIP revision, Arkansas is making substantial progress in addressing regional haze in its Class I areas and is on schedule to meet its own proposed RPGs and the URP for the first planning period.[67] This means that Arkansas is well on track to reaching background visibility conditions by 2064. Despite this progress, EPA proposed RPGs that are more aggressive than that necessary to achieve the program's goal, which is inconsistent with surrounding states that have wide-ranging RPGs placing them on a path to achieve background visibility conditions well beyond 2064.

[67] Exhibit 1, at 56.

Arkansas is making considerable progress in reducing regional haze based on its own RPGs. The most recent data from 2011 and the current five-year rolling average shows that visibility impairment is decreasing more rapidly than the URP and Arkansas's proposed 2018 RPGs.[68] In fact, CENRAP modelling indicates that Arkansas may reach its own 2018 RPGs without additional control measures beyond those described in Arkansas's now-disapproved SIP.[69] The Upper Buffalo Wilderness area is expected to achieve its 2018 RPG of an improvement of 3.75 deciviews for the 20% worst days without any additional controls on sources.[70] Similarly, the Caney Creek Wilderness area is on track to achieve its 2018 RPG of 3.88 deciviews of visibility improvement for the 20% worst days.[71] Based on Arkansas's proposed RPGs, Arkansas may reach background conditions in Caney Creek by 2062 and in the Upper Buffalo by 2063.[72] Any further controls or more stringent RPGs are simply unnecessary to achieve the goal of reaching background visibility conditions by 2064.

[68] Exhibit 1, at 56.
[69] *Id.*
[70] *Id.* at 55.
[71] *Id.*
[72] *Id.*

Figure 1 Reasonable Progress Assessment Upper Buffalo Wilderness Area, Arkansas 20% Worst Days

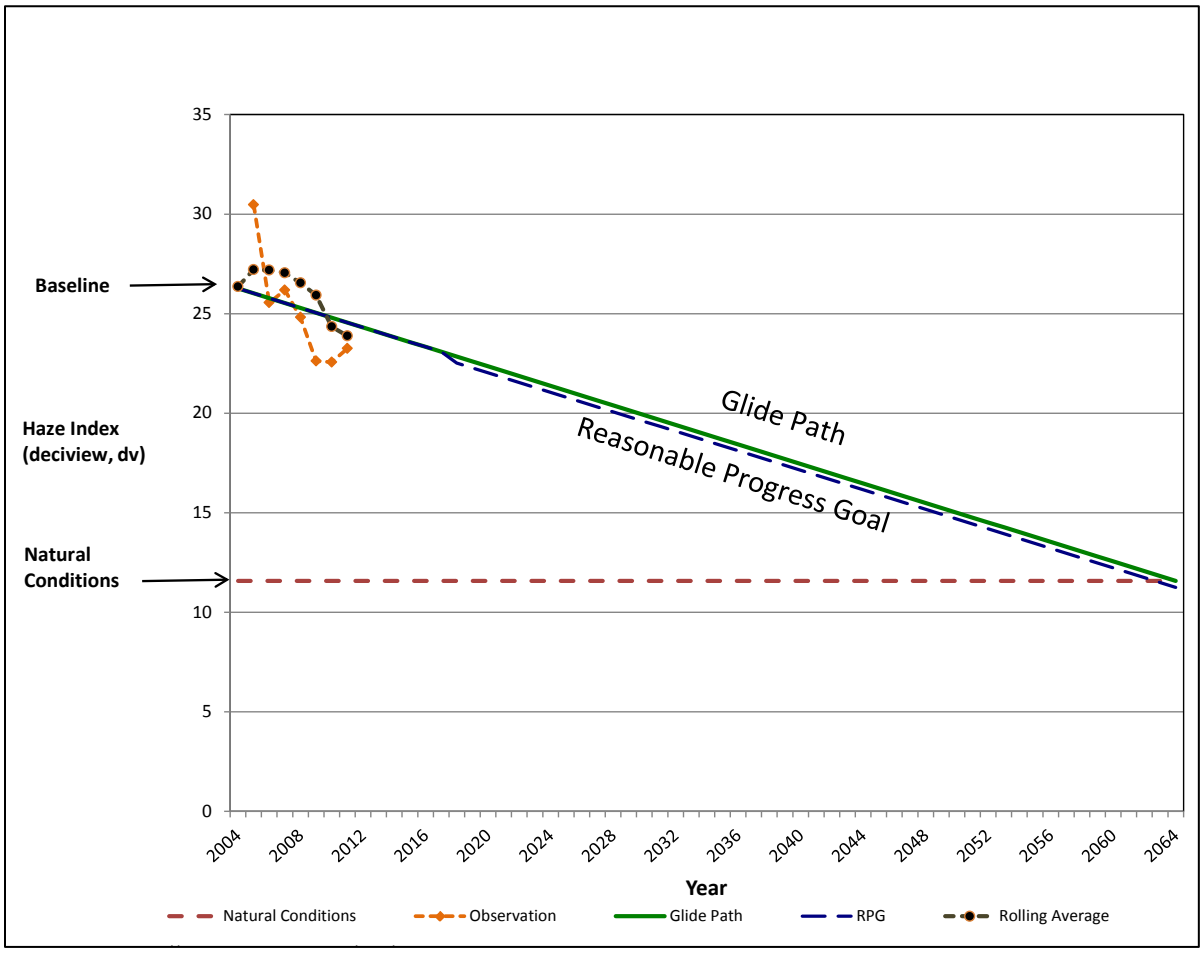
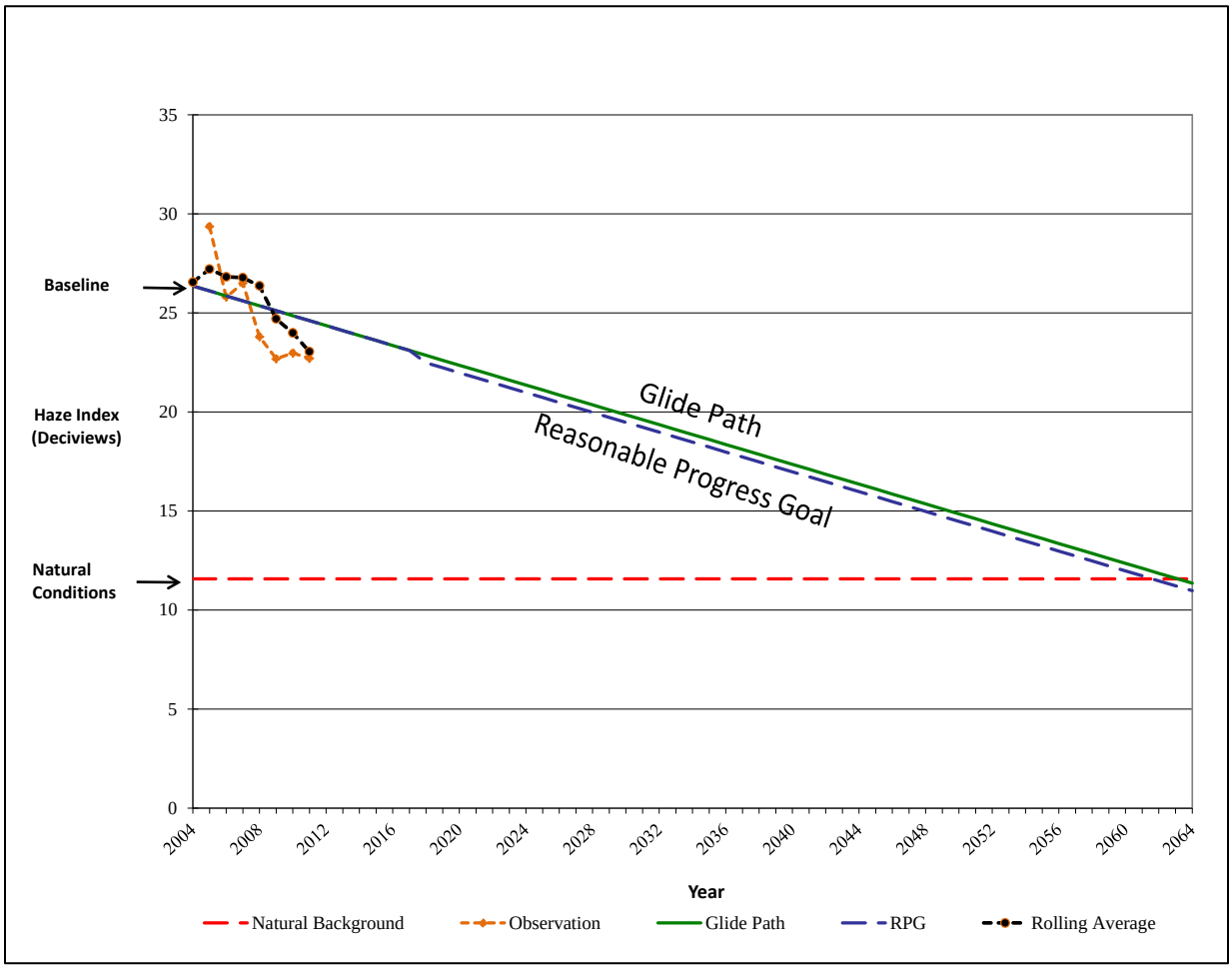


Figure 2 Reasonable Progress Assessment Caney Creek Wilderness Area, Arkansas: 20% Worst Days



Despite Arkansas being on schedule to meet or beat the trajectory needed to achieve background visibility conditions by 2064, EPA is proposing more stringent RPGs that would require unnecessary additional controls. Specifically, EPA is requiring additional controls on Entergy Independence Units 1 and 2.[73] EPA's proposed RPGs are more aggressive, which is inconsistent with EPA's approach in certain other states that allow RPGs that would improve visibility over a much longer timeframe.[74]

[73] 80 FR 18944 at 18992.
[74] 80 FR 18944 at 18997. ("These RPG's reflect rates of progress that are faster than the rates projected by Arkansas.")

EPA has proposed or accepted RPGs for other states that would allow those states to meet background visibility conditions well into the next century. In Texas, EPA proposed RPGs that would allow that state to achieve natural visibility conditions for the 20% worst days in Big Bend Wilderness Area in 194 years and in the Guadalupe Mountains in 159 years.[75] In Oklahoma, EPA proposed a 2018 RPG for the 20% worst days that put that state on track to attain natural visibility in the Wichita Mountains in 92 years.[76] For Arkansas, EPA has required RPGs that would be even more stringent than those needed to reach background visibility conditions in 49 years, which is the program's target.

In states farther geographically removed from Arkansas, EPA's treatment disparity becomes even more profound. In California, EPA approved that state's RPGs even though many of its Class I areas would not reach natural background conditions until well into the 2100's and beyond. For example, California's RPGs will not achieve background conditions in Desolation Wilderness Area until 2307, in Yosemite National Park until 2160, and in Ansel Adams Wilderness Area until 2200.[77]

There is no justification for EPA arbitrarily setting RPGs that are stricter than those proposed by Arkansas and include controls on Entergy's Independence Plant. EPA's dramatically disparate approach to Arkansas's RPGs in comparison to other states is unreasonable and unnecessary to achieve "reasonable progress" towards reaching background conditions. EPA should withdraw the Proposed FIP and any subsequent plan should contain goals that are reasonable in light of EPA's treatment of other states.

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[75] 79 FR 74853 at 74887.
[76] *Id.*
[77] Approval and Promulgation of Air Quality Implementation Plans; State of California; Regional Haze State Implementation Plan and Interstate Transport Plan; Interference With Visibility Requirement, 76 FR 13944, at 13951.

EPA arbitrarily chose the options for emissions control for Entergy Independence Units One and Two.

EPA arbitrarily chose the two options it presented for emissions controls at Entergy Independence Units One and Two as evidenced by EPA's failure to discuss a third option, which EPA presented to ADEQ for consideration prior to the promulgation of the Proposed FIP.[78] ADEQ received a technical support document dated February 11, 2015 within which EPA Region 6 presented three options for Entergy Independence: "Option 1: Propose No Additional Controls under Reasonable Progress"; "Option 2: Propose Only SO_2 Controls under Reasonable Progress"; and "Option 3: propose Both SO_2 and NO_x Controls Under Reasonable Progress."[79]

Although ADEQ received this document on February 12, 2015, EPA never included it in the Rulemaking Docket.[80] When EPA published the Proposed FIP on April 8, 2015, the option to "Propose No Additional Controls under Reasonable Progress" had been inexplicably removed as an option from the proposed Regional Haze FIP. EPA completely excluded this option from consideration and no mention of it was made in the Proposed FIP.

While EPA has considerable discretion interpreting its own regulations, the law requires EPA to "cogently explain why it has exercised its discretion in a given manner."[81] Whether or not EPA ultimately chose to reject the option, it is legally obligated to consider and explain its decision to or not to include it. The decision to provide ADEQ with a certain set of options prior to promulgation of the Proposed FIP and simply excise one of those options from the Proposed FIP without due consideration is arbitrary and capricious. EPA should withdraw the Proposed

[78] E.P.A., Arkansas Regional Haze FIP Update, (February 11, 2015) attached as Exhibit 2.
[79] *Id.*
[80] E.P.A. Docket Number EPA-R06-OAR-2015-0189
[81] *Nat'l Parks Conservation Ass'n v. E.P.A.*, No. 12-73710, 2015 WL 3559149, at *3 (9th Cir. June 9, 2015); (citing *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co*., 463 U.S. 29, 48, (1983)); *Greater Yellowstone Coalition, Inc. v. Servheen*, 665 F.3d 1015, 1030 (9th Cir.2011) (requiring "a rational connection between the data before [the agency] and its conclusion"); *Nw. Envtl. Def. Ctr. v. Bonneville Power Admin.*, 477 F.3d 668, 691 (9th Cir.2007).

FIP and any subsequent plan that might include emissions controls for Entergy Independence Units One and Two should include a proper consideration of the available options.

EPA failed to include the substantial contributions of Federal Land Managers to regional haze in the State's Class I Areas from within the Class II Areas themselves.

As set forth in 40 C.F.R. § 51.308(i), the Regional Haze Rule requires states such as Arkansas to coordinate in various ways with Federal Land Managers. For example, states are required to provide Federal Land Managers with notice of the identified visibility impairment and an opportunity for consultation.[82] However, despite EPA requiring this coordination, the actions of the Land Managers themselves are responsible for a disproportionate and unmeasured impact on the visibility of Arkansas's Class I areas. States such as Arkansas are required to identify the impairment and elements for inclusion in the visibility monitoring strategy.

In 2007, the Arkansas Forestry Commission approved a Smoke Management Program that was developed, among other reasons, as a means of assuring that land managers throughout the State use specific techniques designed to ensure that burns conducted for the purpose of forest management (prescribed burns) do not interfere with air quality management goals. Prescribed burning is widely recognized as a wildfire prevention technique and is also used to revitalize forest ecosystems. When properly conducted, prescribed burning is a useful technique for various forest management purposes.

A Federal Land Manager is "the Secretary of the department with authority over the Class I areas."[83] While several state agencies and private-sector entities practice prescribed burning, the United States Forest Service ("USFS") is the largest practitioner. The USFS uses prescribed burns from within the very Class I areas that are meant to be protected by the

[82] 40 C.F.R. § 51.308 (i).
[83] 40 C.F.R. § 51.301

Regional Haze Rule. For example, in 2006 the USFS was responsible for as much as 60% of the 30,000 acres of prescribed burns that were reported in the State.[84] In 2011, federal agencies were responsible for most of the burns that were conducted in violation of the procedures described in the State's Smoke Management Plan in which voluntary participants including the USFS agree to meet certain air-quality related criteria before initiating prescribes burns .[85] Most of burns conducted by federal agencies such as the USFS in Arkansas were conducted within the boundaries of designated National Forests.[86]

There is currently no accepted regulatory procedure for isolating the visibility impacts of prescribed burning from other anthropogenic sources of haze. However, prescribed burns continue to be a significant source of the haze in the Class I areas that are meant to be protected by the Regional Haze program. As a result, the actions of Federal Land Managers practicing prescribed burning should be given due consideration. Therefore, EPA should withdraw the Proposed FIP, and any subsequent plan should include consideration of the substantial impacts of Federal Land Managers to haze conditions.

EPA has failed to comply with additional requirements under Executive Order 12866 and Executive Order 13211, and EPA should withdraw the proposed FIP until such time as it complies with those orders.

EPA asserts that its Proposed FIP is not a "significant regulatory action" within the meaning of Executive Order 12866 ("E.O. 12866").[87] However, the proposed FIP would result in substantial and material costs being transferred onto Arkansas communities through increased electricity rates due to the installation of costly control equipment at affected EGUs. This is a

[84] Dr. Lynne C. Thompson, Presentation to the Arkansas Prescribed Fire Council (May 18, 2015) attached as Exhibit 3.
[85] Exhibit 3.
[86] *Id.*
[87] 80 FR 18944 at 19000.

material adverse effect, which renders the Proposed FIP subject to the requirements of E.O. 12866. EPA has not complied with the requirements of E.O. 12866, and the Proposed FIP should be withdrawn until such time as requirements of this executive order have been met.

Under E.O. 12866, a "significant regulatory action" is subject to certain review requirements by the Office of Information and Regulatory Affairs ("OIRA"), which is a subdivision the Office of Management & Budget ("OMB").[88] For each significant regulatory action under E.O. 12866, OIRA must be provided with a copy of the draft regulation, together with a reasonably detailed description of the need for the regulatory action, and an explanation of how that action will meet that need.[89] In addition, the relevant agency must provide OIRA with an assessment of the costs and benefits of the regulatory action as well as the costs and benefits of reasonably feasible alternatives for each significant regulatory action.[90] By issuance of E.O. 13563 on January 18, 2011, the sitting President reaffirmed "the principles, structures, and definitions governing contemporary regulatory review that were established in Executive Order 12866 of September 30, 1993, were re-affirmed."[91]

In this instance, EPA's Proposed FIP falls within the definition of significant regulatory action as set out in E.O. 12866 and reaffirmed in E.O. 13563. A "Significant regulatory action" means any regulatory action that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations

[88] Exec. Order No. 12866, 58 FR 51735, (Sept. 30, 1993).
[89] *Id.* at Sec. 6(a)(1)(B)
[90] Exec. Order No. 12866, 58 FR 51735, Sec. 6(c), (Sept. 30, 1993).
[91] Exec. Order No. 13563, 76 FR 3821, (Jan. 18, 2011)

of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.[92]

The Proposed FIP would adversely affect in a material way Arkansas communities by causing increased electricity rates that would be passed on to Arkansas consumers. Specifically, the following facilities owned by electric utilities engaged in interstate commerce were determined to be subject-to-BART or otherwise required to install emissions controls: the Arkansas Electric Cooperative ("AECC") Carl E. Bailey Generating Station; the AECC John L. McClellan Generating Station; the American Electric Power ("AEP") Flint Creek Power Plant; the Entergy White Bluff Plant; the Entergy Lake Catherine Plant; and the Entergy Independence Plant.

These facilities are operated by public utilities with the ability to shift the costs of these controls from the utilities to the consumers of the electricity generated by these plants and generators. Under Arkansas law, a public utility such as those operating the aforementioned plants, may petition to the Arkansas Public Service Commission to recover costs for emissions control costs through a surcharge for those expenses so long as specific statutory elements have been met.[93] This statute specifically provides for the recovery of costs that "[r]elate to the protection of the public health, safety of the environment" so long as other elements have been met.[94] That surcharge would allow the affected utilities to transfer costs of compliance with the Proposed FIP onto Arkansas ratepayers. These costs would place a substantial burden on Arkansas communities. This burden constitutes a material adverse impact that renders this action subject to requirements of E.O. 12866.

[92] *Id.* at Sec.3(f).
[93] Ark. Code Ann. § 23-4-501.
[94] Ark. Code Ann. § 23-4-501(a)(1)(E).

In addition, a significant regulatory action under E.O. 12866 is considered a "significant energy action" and subject to yet further review by OIRA under E.O. 13211 if that action is also 'likely to have a significant adverse impact on the supply, distribution, or use of energy."[95] The Proposed FIP will likely have a significant adverse impact on use of energy through decreased use by electricity consumers responding to increased rates as a result of the emissions controls required. As a result of this adverse impact, the Proposed FIP is a "significant energy action." In order to comply with E.O. 13211, EPA is required to submit to OIRA a "Statement of Energy Effects," which describes the effects of certain regulatory actions on energy supply, distribution, or use.[96]

ADEQ disagrees with EPA that the Proposed FIP is not subject to E.O. 13211 and E.O. 12866. The impacts of the Proposed FIP render it subject to both executive orders, and ADEQ is troubled that the EPA has not provided OIRA with the statements and other information required to comply with those orders. ADEQ is greatly concerned that EPA has not provided OIRA with the cost-benefit analysis required by E.O. 12866. This is a particular concern because EPA failed to perform a proper analysis of the costs of meeting EPA's proposed RPGs.

As a result of EPA's failure to analyze the "cost of compliance" factor in relation to the RPGs,[97] EPA has not performed any analysis of the costs of the overall impact of the Proposed FIP. Without EPA complying with the required additional review by OIRA, there would be no oversight of the costs of the Proposed FIP at all. Given the recent concerns by the Supreme Court in *Michigan v. EPA* about the rationality of imposing billions of dollars in economic costs in return for a few dollars in health or environmental benefits,[98] EPA should strictly comply with

[95] Exec. Order No. 13211, 66 FR 28355, (May 18, 2001).
[96] *Id*.
[97] *See Supra* pp. 14-15.
[98] *Michigan v. E.P.A.*, No. 14-46, 2015 WL 2473453, at *7 (U.S. June 29, 2015) ("[o]ne would not say that it is even rational, never mind 'appropriate,' to impose billions of dollars in economic costs in return for a few dollars in health or environmental benefits.").

E.O. 12866 and 13211 in order to properly determine the extent of the impacts of the Proposed FIP on the state of Arkansas. Since EPA has failed to do so, ADEQ requests that EPA withdraw the Proposed FIP.[99]

ADEQ reserves its right to comment on whether EPA properly made a BART determination for Arkansas facilities, including the Domtar-Ashdown Mill, in light of the Ninth Circuit's recent opinion in *Nat'l Parks Conservation Ass'n v. E.P.A.*

In determining what specific controls are BART, EPA is required to take into consideration a number of factors including "the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology."[100] *In Nat'l Parks Conservation Ass'n v. E.P.A.*, PPL Montana, a part-owner of a coal-fired power plant, objected to EPA's use of the CALPUFF visibility model in determining BART for two units at one of its coal-fired power plants.[101]

The basis of PPL Montana's objection was that the maximum potential incremental visibility benefit of emissions control technology chosen by EPA fell within the model's margin of error, meaning such improvement cannot be "reasonably ... anticipated" as required by the Act.[102] The Ninth Circuit Court of Appeals recently held that EPA had not "considered the relevant factors and articulated a rational connection between the facts found and the choice made."[103] As a result, EPA acted in an arbitrary and capricious manner by failing to provide an adequate explanation as to how the degree of visibility improvement could be reasonably anticipated.[104]

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[99] Ark. Code Ann. § 23-2-304.
[100] 42 U.S.C.A. § 7491.
[101] *See generally, Nat'l Parks Conservation Ass'n v. E.P.A.*, No. 12-73710, 2015 WL 3559149, at *13 (9th Cir. June 9, 2015).
[102] *See* 42 U.S.C. § 7491(g)(2); *Nat'l Parks Conservation Ass'n v. E.P.A.*, No. 12-73710, 2015 WL 3559149, at *8 (9th Cir. June 9, 2015).
[103] *Nat'l Parks Conservation Ass'n v. E.P.A.*, No. 12-73710, 2015 WL 3559149, at *13 (9th Cir. June 9, 2015).
[104] *Id.*

At least one facility affected by the Proposed FIP has conducted an analysis to determine whether or not the maximum potential incremental visibility benefit of emissions control technology chosen by EPA fell within the margin of error. Specifically, ADEQ is aware that Domtar is currently performing modeling to determine whether or not predicted visibility improvements fell within the margin of error at its Ashdown Mill.[105] Other facilities are likely performing modeling to make similar determinations. Accordingly, ADEQ reserves the right to comment on this issue until such time as Arkansas's facilities have had adequate time to make those determinations.

As the D.C. Circuit explained in vacating a portion of the Regional Haze Rule itself, it is arbitrary and capricious for EPA to force an emissions source "to spend millions of dollars for new technology that will have no appreciable effect on the haze in any Class I area."[106] In its Proposed Rule, EPA dictates the imposition of control equipment for emissions reduction under BART in instances where CALPUFF predicted minor visibility improvements. EPA did so without first undertaking any site specific analytical analysis to determine if the visibility improvements were in fact within the CALPUFF margin of error.

Specifically, it appears from the Proposed FIP that the highest modeled visibility improvement after EPA's BART determinations for any of the three Arkansas EGUs at any Class I area is 0.813 deciviews attributed to SO_2 controls at the Entergy White Bluff Unit I at Caney Creek, which is below the 1 deciview threshold of visibility perception. Furthermore, EPA required the installation of low-NOx burners and over fire air at SWEPCO's Flint Creek Unit, even though the highest modeled visibility improvement was 0.081 deciviews for NOx. Given the acknowledged over-prediction of the CALPUFF model and its inaccuracy at these low

[105] Letter from Annabeth Reitter, Corporate Manager, Domtar, to Guy Donaldson, Chair of the Air Planning Section, E.P.A., (July 6, 2015) attached as Exhibit 4.
[106] *Nat'l Parks Conservation Ass'n v. E.P.A., No. 12-73710, 2015 WL 3559149, at *10 (9th Cir. June 9, 2015)(citing Am. Corn Growers Ass'n v. EPA, 291 F.3d 1, 7 (D.C.Cir.2002)*

levels, the actual visibility impact for the State's EGUs (and most likely the other subject-to-BART sources as well) would be much lower.

The CAA does not require visibility improvements that cannot be reasonably anticipated. Conversely, visibility improvements that are less than the margin of error were expressly found to be invalid. Until such time as EPA can provide assurance that the CALPUFF model is a reliable indicator of visibility projections, many of the numerical projections contained in the Proposed FIP are themselves, unreliable. For this reason, the Proposed FIP is flawed and is overly expansive and should be withdrawn.

Conclusion

Consideration of the comments above should make it apparent that the Proposed FIP is not a viable option for implementation of the Regional Haze program in Arkansas. The Proposed FIP contains misleading cumulative visibility metrics. EPA arbitrarily requires sources that are subject to the CSAPR Rule to also control NO_x emissions as BART. EPA improperly performed the reasonable progress analysis required by the Regional Haze Rule, which resulted in requiring unneeded emissions controls for the Entergy Independence Plant. EPA also chose to forego CAMx photochemical modelling such as that used in Texas in favor of a less accurate algorithm that resulted in inferior RPGs. In addition, EPA has not complied with E.O 12866 and E.O. 13211.

EPA should withdraw the Proposed FIP, and any subsequent plan should address the issues presented in this letter. While ADEQ will continue to work to develop an acceptable SIP for approval by EPA, the harsh deadline of December 15, 2015 proposed in a recently proposed consent decree between EPA and Sierra Club may stifle those efforts. Nonetheless, ADEQ will diligently continue to work towards the resolution of all of the issues raised during the public comment period.

STATE OF ARKANSAS

State Implementation Plan Review for the Five-Year Regional Haze Progress Report

Prepared by the
Arkansas Department of Environmental Quality
Air Division
Planning Branch

Revised May 2015

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

Contents

STATE OF ARKANSAS
ASA HUTCHINSON
GOVERNOR

June 2, 2015

Mr. Ron Curry
Regional Administrator
U.S. Environmental Protection Agency, Region VI
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Dear Regional Administrator Curry:

In accordance with the provisions of 40 C.F.R. § 51.308, this letter and enclosures constitute the submittal of the Arkansas State Implementation Plan (SIP) for the Regional Haze five-year review. The enclosed documents are intended to address the requirements of 40 C.F.R. § 51.308(g) requiring periodic reports evaluating progress towards the Reasonable Progress Goals established for mandatory Class I areas where visibility may be impacted by Arkansas sources.

The Arkansas Regional Haze SIP was submitted on July 29, 2008. The enclosed SIP submittal addresses actions the Arkansas Department of Environmental Quality (ADEQ) has taken to fulfill the requirements under 40 C.F.R. § 51.308(g) for periodic progress reports. In accordance with 40 C.F.R. § 51.308(h)(1), the State is submitting a "Negative Declaration" that further revision of the existing implementation plan is not needed at this time. However, ADEQ is cognizant of its obligation and the associated timeframe to address the disapproved components of the 2008 Arkansas Regional Haze SIP submittal.

The Regional Haze five-year review SIP was provided to Federal Land Managers on April 21, 2014. The notice of public hearing and comment period was published in a statewide newspaper on January 2, 2015 and a link to the SIP submittal was posted on the ADEQ website with details regarding the public comment period on January 2,

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2015. A public hearing was held on February 2, 2015, at the ADEQ headquarters in North Little Rock, Arkansas. The public comment period ended on February 17, 2015. Responses to public comments are contained in Appendix F: Compilation of Public Comments and Response to Comments within the enclosed SIP submittal.

Arkansas respectfully requests timely review and approval of the enclosed documents as an element of the official Regional Haze program for the State. If you have any questions regarding information contained herein, please contact Stuart Spencer, Legal Policy Advisor, ADEQ, by electronic mail at spencer@adeq.state.ar.us, or by phone at 501-682-6347.

Sincerely,

Asa Hutchinson

Enclosure: Arkansas State Implementation Plan for the Regional Haze Five-Year Review

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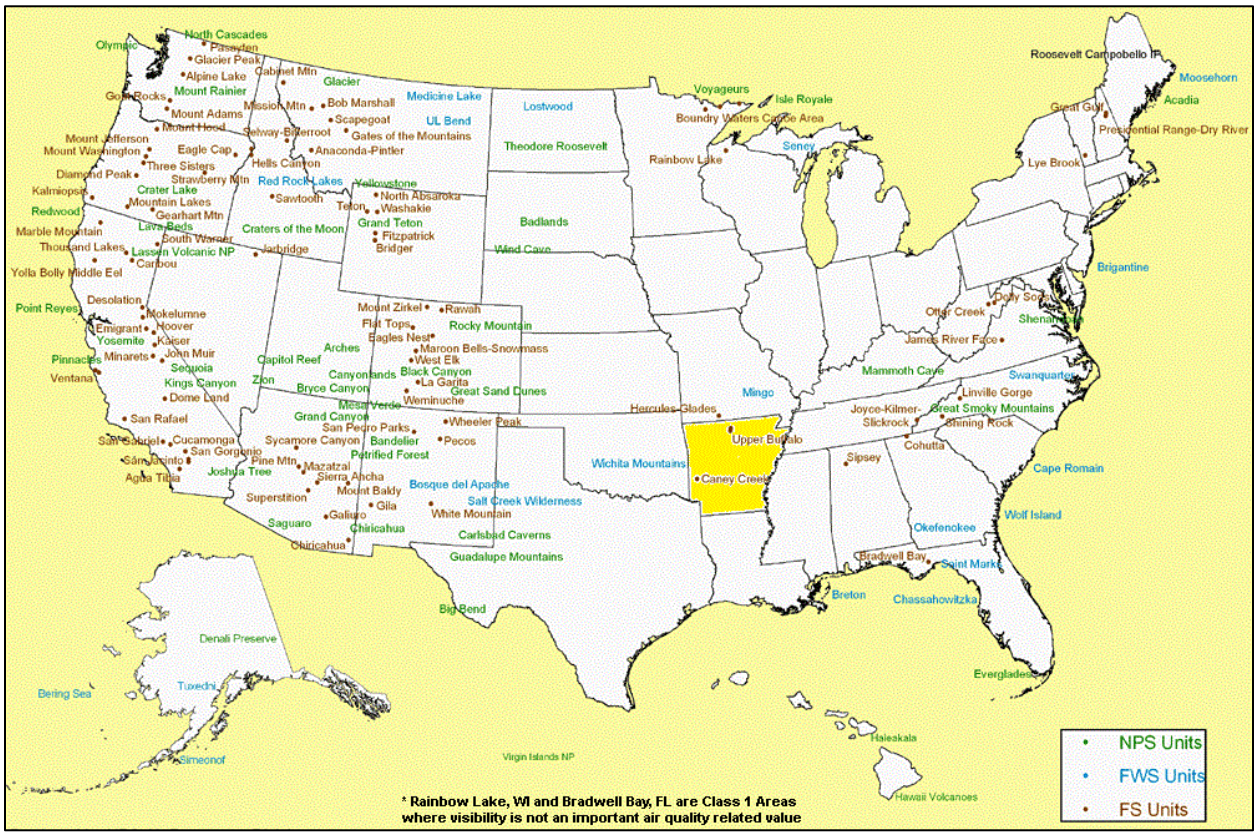
Executive Summary

Congress added the national goal of preventing any future and remedying any existing impairment of visibility at mandatory Class I Federal areas in the 1977 Clean Air Act (C.A.A.) Amendments. The Regional Haze Rule (RHR) was promulgated in July 1999 (64 Fed. Reg. 35714, July 1, 1999) to further Congress's national goal, and established regulations to eliminate man-made visibility impairment in Class I areas by 2064. Nationally, there are 156 mandatory Class I Federal areas (Class I areas). There are two Class I areas in Arkansas: Upper Buffalo and Caney Creek Wilderness areas. See Figure 1.

Figure 1. Mandatory Class I Areas



Regional haze is a form of visibility impairment not directly attributable to a single source but occurs as a result of emissions of air pollutants from numerous sources located over a wide geographic area. The RHR and related regulations (40 C.F.R. § 51.308 and Appendix Y to Part 51) contain provisions that encouraged state, local, and tribal agencies to work cooperatively within regional planning organizations (RPOs) to address visibility impairment. Five RPOs were created for this purpose. Arkansas was part of the Central Regional Air Planning Association (CENRAP), originally comprised of nine states in the central U.S.

In accordance with the requirements of 40 C.F.R. § 51.308, the State of Arkansas submitted its Regional Haze SIP to EPA on September 23, 2008. On March 12, 2012, EPA took action and partially approved and partially disapproved the Arkansas Regional Haze SIP (2008 Arkansas Regional Haze SIP), as published in the Final Rule "*Approval and Promulgation of Implementation Plans; Arkansas; Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze*" (77 Fed. Reg. 14604). The following is a brief summary of EPA's decision:

Approved: Certain core elements

- Identification of affected Class I areas;
- Determination of baseline and natural visibility conditions;
- Determination of Uniform Rate of Progress (URP);
- Reasonable progress goal (RPG) consultation and long-term strategy (LTS) consultation;
- Coordination of Regional Haze and reasonably attributable visibility impairment (RAVI);
- Regional haze monitoring strategy and other SIP requirements under 40 C.F.R. § 51.308(d)(4);
- Commitment to submit periodic regional haze SIP revisions and periodic progress reports describing progress towards RPGs;
- Commitment to make a determination of the adequacy of the existing SIP at the time a progress report is submitted; and
- Consultation and coordination with Federal Land Managers (FLMs).

Partially approved and partially disapproved:

- Approved Arkansas's identification of sources found in the Arkansas Pollution Control and Ecology Commission (APC&EC), Regulation of the Arkansas Plan of Implementation for Air Pollution Control, Regulation No. 19, Chapter 15 that are best available retrofit technology (BART) eligible, with the exception of 6A Boiler at the Georgia-Pacific Crossett Mill, which EPA found to be BART-eligible.
- Approved Arkansas's identification of subject-to-BART sources, with the exception of the 6A and 9A Boilers at Georgia-Pacific Crossett Mill, which EPA found to be subject-to-BART.
- Approved portions of the BART compliance provision that require each Arkansas subject-to-BART source to install and operate BART as expeditiously as practicable, but within five years of approval of Arkansas Regional Haze SIP by EPA. Arkansas's inclusion of the compliance provision that would require Arkansas subject-to-BART sources to install and operate BART no later than six years after the effective date of the State's regulation (if such date takes place before five years from EPA approval of the Arkansas Regional Haze SIP) is not a required element of the Regional Haze SIP, pursuant to Section 169 of the C.A.A., and therefore was disapproved.

- Partially disapproved Arkansas's submitted LTS because it relies on portions of the Arkansas Regional Haze SIP that EPA disapproved, including some of Arkansas's BART emission limits. In addition, Arkansas did not show that the strategy will adequately achieve the RPGs set by Arkansas and by other nearby states.

Disapproved:

- Arkansas's RPGs required under 40 C.F.R. § 51.308(d)(1);
- Arkansas's sulfur dioxide (SO_2), nitrogen oxides (NO_x) and particulate matter (PM) BART determinations; and
- Portion of the BART compliance provision found in APC&EC Reg. 19.1504(B), which requires each source subject-to-BART to install and operate BART no later than six years after the effective date of the Arkansas RHR (found in APC&EC Regulation No. 19) for the Regional Haze SIP.

The Regional Haze Program has been the subject of litigation, making it difficult to determine what control measures could be included in SIPs and, consequently, to complete the SIPs in a timely manner. The litigation includes the following.

On May 24, 2002, the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit issued a ruling vacating the RHR in part and sustaining it in part, based on a finding that EPA's prescribed methods for determining BART were inconsistent with the C.A.A. (*American Corn Growers Assn. v. EPA*, 291 F.3d 1 (D.C. Cir. 2002)).

On February 18, 2005, the D.C. Circuit decided another case dealing with BART and a BART alternative program, *Center for Energy and Economic Development v. EPA*, No. 03–1222, (D.C. Cir. Feb. 18, 2005) (''*CEED*''). *CEED* affirmed EPA's interpretation of C.A.A. 169A(b)(2) as allowing for non-BART alternatives where those alternatives make greater progress than BART. EPA promulgated a rule on July 6, 2005, entitled ''Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations" (''the BART Rule'') (70 Fed. Reg. 39104) to assist states in identifying which of their BART-eligible sources should undergo a BART analysis (i.e., which are ''sources subject-to-BART'') and selecting appropriate controls (''the BART determination'').

Around the same time, EPA issued the Clean Air Interstate Rule (CAIR) on May 12, 2005, (70 Fed. Reg. 25162), which states could implement in lieu of BART. The rule affected 28 states and the District of Columbia and included a cap and trade program targeting SO_2 and NO_x. In July 2008, the Court found CAIR and EPA's CAIR Federal Implementation Plans (FIPs) unlawful (*North Carolina v. EPA,* 531 F.3d 896 (D.C. Cir. 2008)), modified on rehearing (*North Carolina v. EPA,* 550 F.3d 1176, 1178 (D.C. Cir. 2008)). The ruling remanded CAIR to the EPA, leaving existing CAIR programs in place while directing EPA to replace them as rapidly as possible with a new rule consistent with the C.A.A.

EPA proposed a new rule, the Cross-State Air Pollution Rule (CSAPR), on July 6, 2010. The Program applied to 31 states and the District of Columbia to improve air quality significantly by reducing power plant emissions that contribute to ozone and fine particle emissions in other states, particularly SO_2 and NO_x emissions. Some states were included for ozone season (via NO_x reductions) or $PM_{2.5}$ (via SO_2 and NO_x reductions) or both ozone and $PM_{2.5}$. EPA quantified in this rule the ozone season NO_x emission reductions that are necessary—but may not be sufficient—to eliminate all significant contribution to nonattainment and interference with maintenance in other states. Arkansas is included as one of the states that significantly contribute to nonattainment or interfere with maintenance of (the 1997 Ozone) National Ambient Air Quality Standard (NAAQS) downwind in the final CSAPR.

The final rule on CSAPR was published on August 8, 2011 (76 Fed. Reg. 48208). To make technical adjustments to the CSAPR based on new information, EPA proposed a rule revision on October 6, 2011. The CSAPR was scheduled to replace CAIR starting January 1, 2012. However, on December 30, 2011, the U.S. Court of Appeals for the D.C. Circuit issued a ruling that vacated the CSAPR and reinstated the CAIR program.

On October 5, 2012, EPA filed a petition for rehearing of the Court's decision on CSAPR. On November 19, 2012, EPA sent a Memo to Regions: Next Steps for Pending Redesignation Requests and State Implementation Plan Actions Affected by the Recent Court Decision Vacating the 2011 CSAPR. On January 24, 2013, the U.S. Court of Appeals declined the rehearing petition. On March 29, 2013, EPA petitioned the U.S. Supreme Court to review the judgment of the U.S. Court Appeals on CSAPR. On June 24, 2013, the U.S. Supreme Court granted EPA's petition.

On April 29, 2014, the Supreme Court reversed the D.C. Circuit opinion on CSAPR. On June 26, 2014, EPA filed a motion in the U.S. Court of Appeals for the D.C. Circuit to lift the stay of CSAPR. While the Court considered the motion, CAIR remained in effect. EPA's request for a three-year delay in the compliance deadlines would make the Phase 1 emissions budgets applicable in 2015 and 2016 (versus 2012 and 2013) and the Phase 2 emissions budgets applicable in 2017 and beyond (versus 2014 and beyond).

On October 23, 2014, the U.S. Court of Appeals for the D.C. Circuit ordered that EPA's motion to lift the stay of the CSAPR be granted. CSAPR Phase 1 implementation went into effect in 2015 with Phase 2 beginning in 2017. As of May 1, 2015, states are required to implement the requirements of CSAPR.

On April 8, 2015, EPA issued a proposed Federal Implementation Plan (FIP) for Arkansas (Promulgation of Air Quality Implementation Plans; State of Arkansas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan; Proposed Rule – 80 Fed. Reg.

18944, April 8, 2015) and solicited comments on the approach to Regional Haze implementation described therein. ADEQ is evaluating the proposed FIP.

List of Acronyms and Abbreviations

ACI	Activated Carbon Injection
ADEQ, Department	Arkansas Department of Environmental Quality
ADF	Agriculture Derived Fuel
AECC	Arkansas Electric Cooperative Corporation
AEP	American Electric Power
AFIN	Arkansas Facility Identification Number
AL	Alabama
APC&EC	Arkansas Pollution Control and Ecology Commission
AR	Arkansas
Ark. Code Ann.	Arkansas Code Annotated
BART	Best Available Retrofit Technology
b_{ext}	Light extinction
C.A.A.	Clean Air Act
CAIR	Clean Air Interstate Rule
CAMD	Clean Air Markets Division
CENRAP	Central Regional Air Planning Association
C.F.R.	Code of Federal Regulations
CenSARA	Central States Air Resource Agencies
CO	Carbon Monoxide
CSAPR	Cross-State Air Pollution Rule
CSN	Chemical Speciation Network
dv	Deciview
EC	Elemental Carbon
EGU	Electric Generating Unit
EI	Emission Inventories
EIQ	Emission Inventory Questionnaire
EPA	United States Environmental Protection Agency
Fed. Reg.	Federal Register
FETS	Fire Emissions Tracking System
FIP	Federal Implementation Plan
f(RH)	A water growth factor for sulfate, nitrate, and sea salt based on relative humidity
FLM	Federal Land Manager
FS	Forest Service, United States Department of Interior
FWS	Fish and Wildlife Service
FY	Fiscal Year
G-P	Georgia-Pacific
GCVTC	Grand Canyon Visibility Transport Commission
Go RED!	Reduce Emissions from Diesels
HAP	Hazardous Air Pollutant
IMPROVE	Interagency Monitoring of Protected Visual Environments

LAC	Light Absorbing Carbon
LADCO	Lake Michigan Air Directors Consortium
lb/hr	Pound(s) per hour
lb/MMBtu	Pound(s) per million British thermal units
LEV	Low Emissions Vehicle
LTS	Long-term strategy
MACT	Maximum Achievable Control Technology
MANE-VU	Mid-Atlantic/Northeast Visibility Union
MARAMA	Mid-Atlantic Regional Air Management Association
MATS	Mercury and Air Toxics Standards
MEK	Methyl ethyl ketone
METRO4, Inc.	Southeastern Local Air Pollution Control Agencies
MJO	Multi-Jurisdictional Organization
Mm^{-1}	Inverse Mega meter
MMBtu	Million British Thermal Units
MO	Missouri
MOA	Memorandum of Agreement
MOBILE6	The sixth version of an emission factor model for predicting gram per mile emissions, replaced by MOVES
MON	Miscellaneous Organic Chemical Production and Processes
MOVES	Motor Vehicle Emission Simulator
MRPO	Midwest Regional Planning Organization
msl	Mean sea level
NAAQS	National Ambient Air Quality Standards
NaOH	Sodium hydroxide
NCDC	National Clean Diesel Campaign
NCG	Non-condensable Gases
NEI	National Emissions Inventory
NESCAUM	Northeast States for Coordinated Air Use Management
NESHAP	National Emission Standards for Hazardous Air Pollutant
NH_3	Ammonia
NID	Novel Integrated Desulphurization
NPS	National Park Service
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
NSPS	New Source Performance Standards
OAQPS	Office of Air Quality Planning and Standards
OAR	Office of Air and Radiation
OC	Organic Carbon
OTC	Ozone Transport Commission
PM	Particulate matter
$PM_{2.5}$	Particulate matter of diameter of 2.5 micrometers or smaller
PM_{10}	Particulate matter of diameter of 10 micrometers or smaller
ppb	Part(s) per billion
PPF	Pelletized Paper Fuel

ppm	Part(s) per million
PSD	Prevention of Significant Deterioration
psig	Pound(s) per square inch [gauge]
PTE	Potential to Emit
RAVI	Reasonably Attributable Visibility Impairment
RDF	Refuse Derived Fuel
RH	Relative Humidity
RHR	Regional Haze Rule
RICE	Reciprocating Internal Combustion Engines
RPO	Regional Planning Organization
RPG	Reasonable Progress Goals
SAMI	Southern Appalachian Mountains Initiative
SESARM	Southeastern States Air Resource Managers
SIP	State Implementation Plan
SLEIS	State and Local Emissions Inventory System
SMP	Smoke Management Plan
SO_2	Sulfur dioxide
STN	Speciation Trends Network
TDF	Tire Derived Fuel
tpd	Tons per day
tpy	Tons per year
TRS	Total Reduced Sulfur
µg/m³	Micrograms per cubic meter
ULSD	Ultra Low Sulfur Diesel
URP	Uniform Rate of Progress
VIEWS	Visibility Information Exchange Web System
VMT	Vehicle Miles Traveled
VISTAS	Visibility Improvement State and Tribal Association of the Southeast
VOC	Volatile Organic Compound
WESP	Wet Electrostatic Precipitator
WESTAR	Western States Air Resource Council
WRAP	Western Regional Air Partnership

List of Tables

List of Figures

Chapter 1: Introduction to the Federal Regional Haze Program Requirements

1. Background

In amendments to the C.A.A. in 1977, Congress added Section 169 (42 U.S.C. § 7491) setting forth the following national visibility goal of restoring pristine conditions in national parks and Wilderness areas:

"*Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from man-made air pollution*."

When the C.A.A. was amended in 1990, Congress added Section 169B (42 U.S.C. § 7492), authorizing further research and regular assessments of the progress made so far. In 1993, the National Academy of Sciences concluded that "current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility."

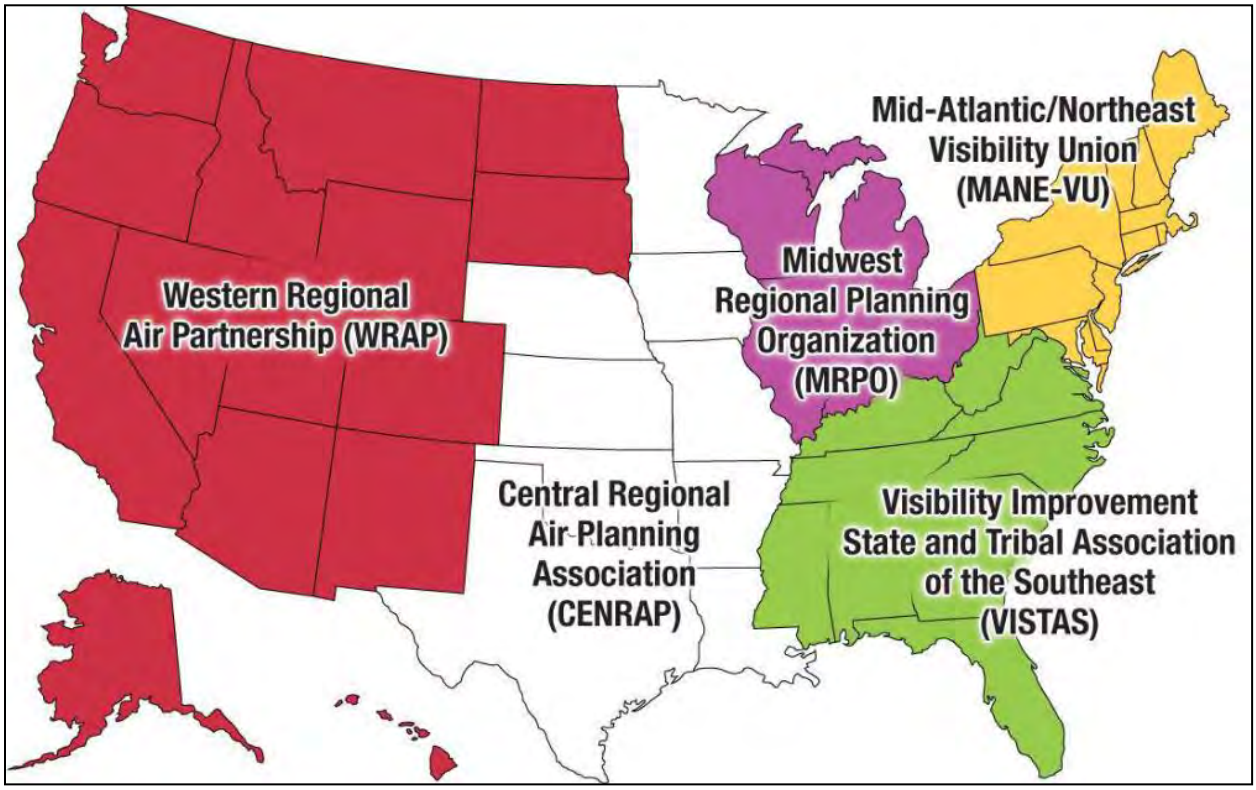
In addition to authorizing creation of visibility transport commissions and setting forth their duties, Section 169B(f) of the C.A.A. specifically mandated creation of the Grand Canyon Visibility Transport Commission (GCVTC) to make recommendations to the EPA for the region affecting the visibility of the Grand Canyon National Park. In June 1996, following four years of research and policy development, the GCVTC submitted its report to EPA. This report, as well as the many research reports prepared by GCVTC, contributed invaluable information to EPA in its development of the federal regional haze rule.

EPA's RHR was adopted July 1, 1999, (64 Fed. Reg. 35714) and aims to reach natural background conditions by 2064. This rulemaking addressed the combined visibility effects of various pollution sources over a wide geographic region. EPA concluded that this meant that many states—even those without Class I areas—would be required to participate in haze reduction efforts.

2. Regional Planning

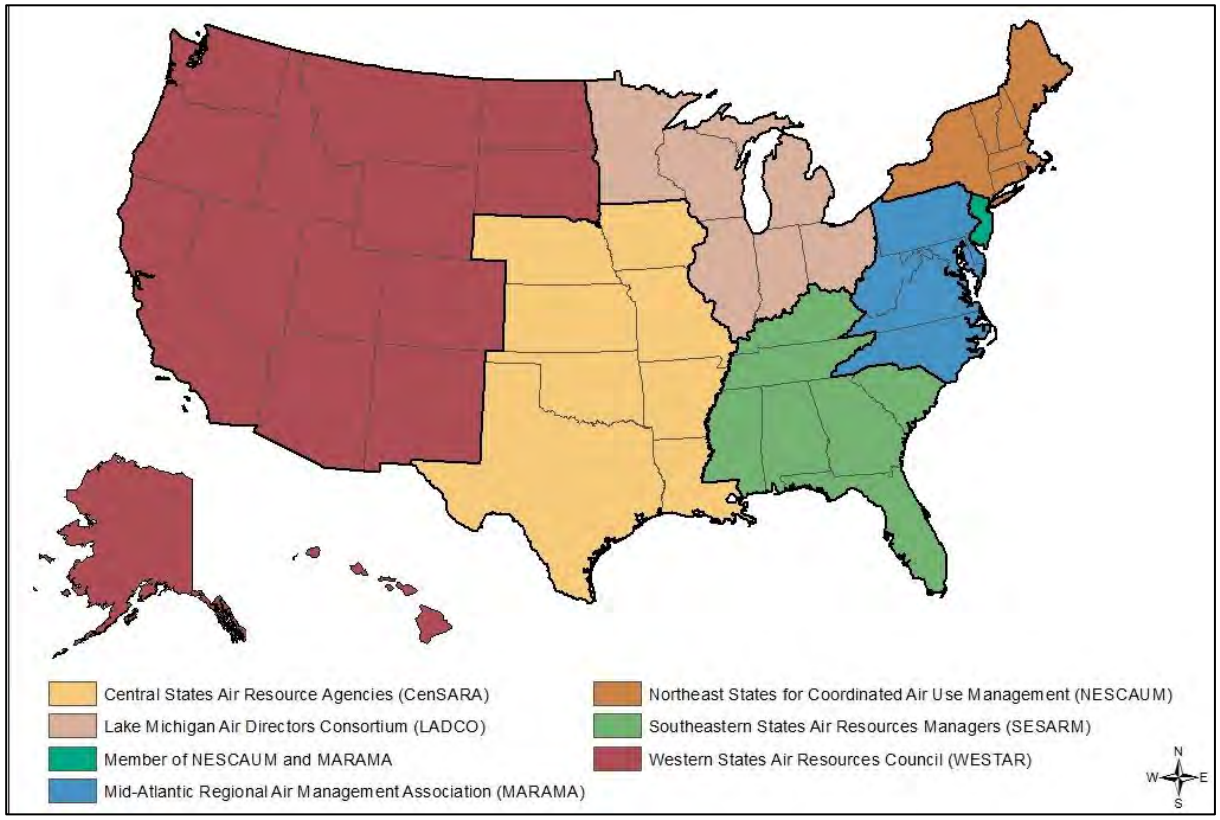
EPA designated five RPOs to assist with the coordination and cooperation needed to address the visibility issues that states in the five regions share or have in common. Those states that make up the midsection of the contiguous United States were designated as the Central Regional Air Planning Association (CENRAP). CENRAP subsequently ceased to function and Arkansas is communicating through the Central States Air Resource Agencies (CenSARA) with the other states that were part of CENRAP . Figure 1.1 is a map depicting the five RPO regions.

Figure 1.1. Regional Planning Organizations



Using federal funds available to them, the RPOs developed a wide array of technical products for their member and non-member states, including updated emissions inventories, additional monitoring to help answer questions related to visibility impacts, and modeling to help determine which pollutants should be the focus for control measures. The RPOs were also key to coordination and consultation efforts among states, tribes, federal land managers, and EPA. The products and efforts of the RPOs culminated in the SIPs submitted to EPA. RPO funding ceased in 2011 and, currently, multi-jurisdictional organizations (MJOs), such as CenSARA, manage and coordinate multi-state air quality technical projects. Figure 1.2 is a map depicting the six MJO regions. Because of directed funding, tribes and FLMs are not members of MJOs, though communication and coordination is still an important component of regional haze work.

Figure 1.2. Multi-Jurisdictional Organizations



3. Requirements for Periodic Reports Describing Progress towards Reasonable Progress Goals

Pursuant to the requirements of 40 C.F.R. § 51.308(g), (h), and (i), Arkansas submits this Progress Report as a SIP revision. Arkansas has adopted this SIP revision in accordance with State laws and rules.

The requirements addressed in the following sections include the status of implementing committed control measures, summaries and analyses of emissions and monitoring changes, and assessments of impacts on Class I areas identified in the 2008 Arkansas Regional Haze SIP.

Per 40 C.F.R. § 51.308(g), this submittal also complies with 40 C.F.R. §§ 51.102 and 51.103 to offer the public the opportunity to request a hearing and/or comment on a proposed SIP revision and to submit the SIP revision to EPA. Arkansas provided public notice of the opportunity to comment on the SIP revision on January 2, 2015. Arkansas held a public hearing regarding the SIP revision on February 2, 2015. Public comments received were addressed and are summarized under Appendix F: Compilation of Public Comments and Response to Comments found within this report.

Chapter 2: Progress Report Elements–40 C.F.R. § 51.308(g)

1. Introduction

As stated in 40 C.F.R. § 51.308(g), the RHR, final rule published July 1, 1999, (64 Fed. Reg. 35714) requires states to submit progress reports five years following the submission of the 2008 Regional Haze SIP and every five years following submission of a comprehensive regional haze SIP revision. The general purpose of the five-year review is to evaluate progress towards the reasonable progress goals of each mandatory Class I area which may be affected by emissions from within the State. Arkansas has two Class I areas: Upper Buffalo and Caney Creek Wilderness areas. This document fulfills 40 C.F.R. § 51.308(g) requirements. This reasonable progress report evaluates the progress made towards RPG for Caney Creek and Upper Buffalo Class I areas, as well as each mandatory Class I area located outside Arkansas that may be affected by emissions from Arkansas sources.

As suggested by EPA[1], the following is a brief description of the overall nature of the visibility problem in the two Class I areas affected by the State. As shown in Figure 2.1 and Figure 2.2, ammonium sulfate is the largest contributor to visibility impairment at Upper Buffalo and Caney Creek Wilderness areas on the 20% worst days. As evidenced by Figure 2.3 and Table 2.1, EGUs are the largest emitter of SO_2. After ammonium sulfate, the next largest fraction of regional haze at these two Class I areas is organic carbon. In 2004, Drs. Tom Moore and Brooke Hemming[2] suggested if the ratio of organic carbon to elemental carbon (OC/EC) was seven or greater, this may be associated with vegetation fires. The OC/EC[3] for the 20% worst days at Upper Buffalo and Caney Creek Wilderness area is 11. Therefore, the data seem to suggest the source of organic carbon at these two Class I areas was due to vegetation fires.

[1] U.S. EPA. (2013). *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans* (*Intended to Assist States and EPA Regional Offices in Development and Review of the Progress Reports).*

[2] Moore, Tom & Hemming, Brooke. (2005). *The Importance of Carbonaceous Aerosol in Air Quality Planning: Bridging the Gap between Researched Application, International Workshop on Organic Speciation Summary Report.*

[3] Data used to calculate the ratio was from the VIEWS website.

Figure 2.1. Percent Contribution of Major Haze Components to 20% Worst Days at Caney Creek Wilderness Area, Arkansas, for the Current Five-Year Average (2007-2011)

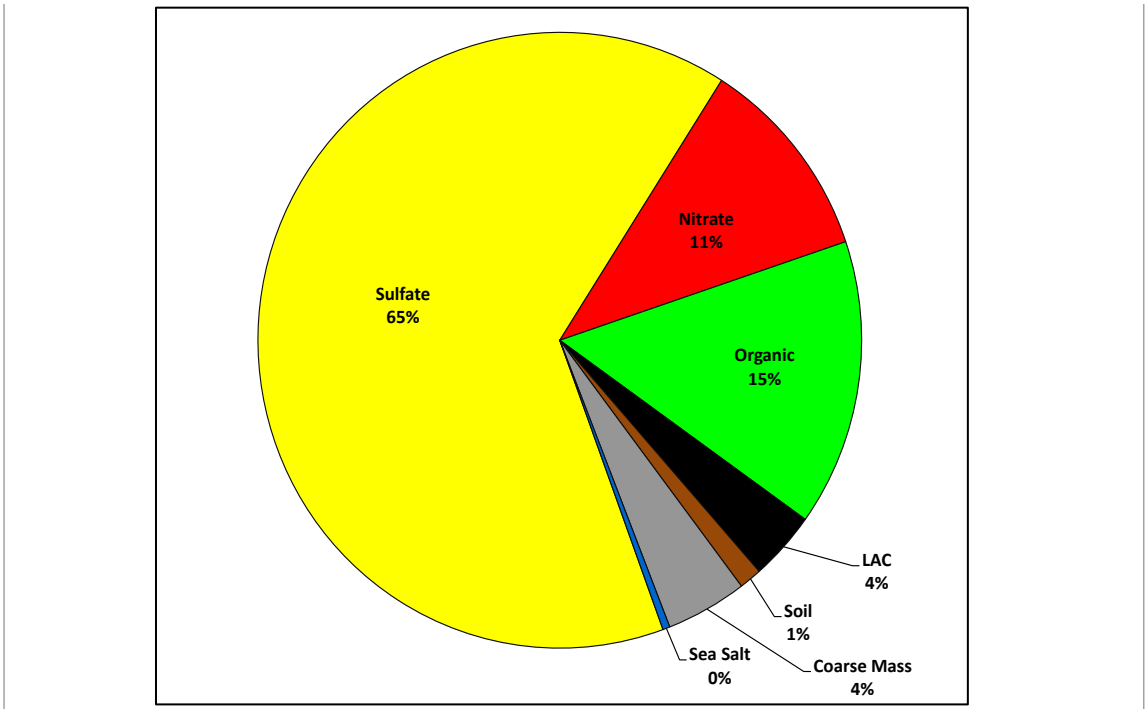
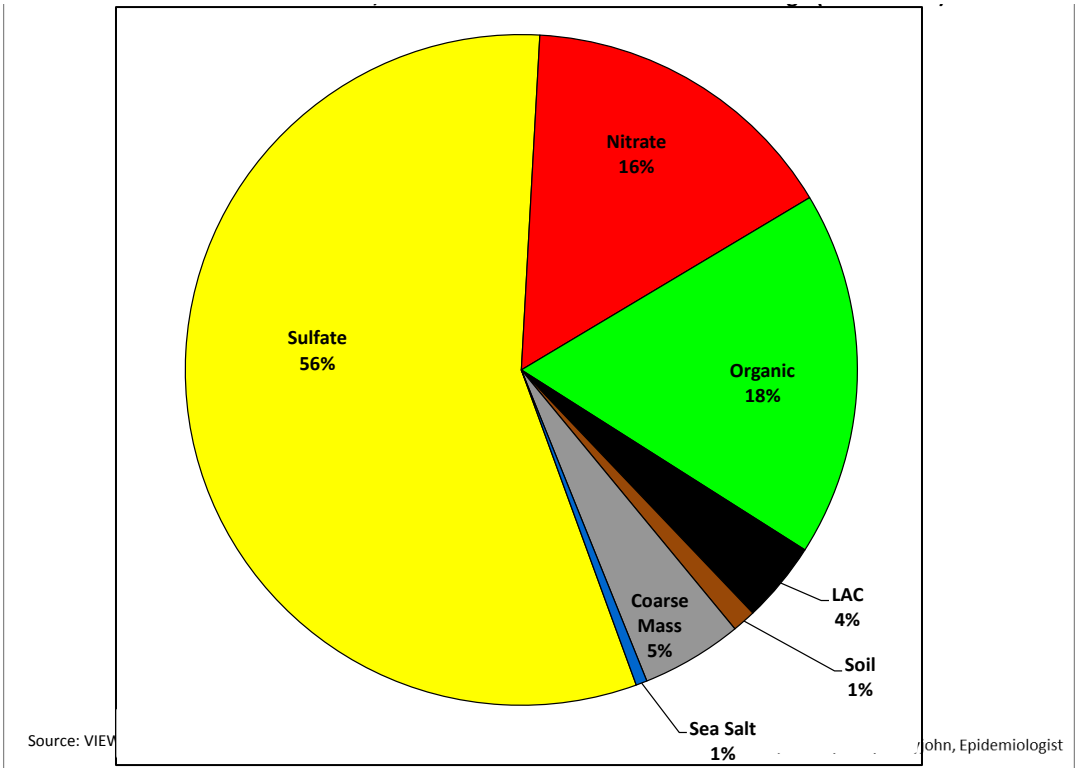


Figure 2.2. Percent Contribution of Major Haze Components to 20% Worst Days at Upper Buffalo Wilderness Area, Arkansas, for the Current Five-Year Average (2007-2011)



Source: VIEW

ohn, Epidemiologist

As evidenced by Figure 2.3, the largest emitters of SO_2 in Arkansas are EGUs.

Figure 2.3. Percent Contribution by Source to SO_2 Emissions in Arkansas for 2011

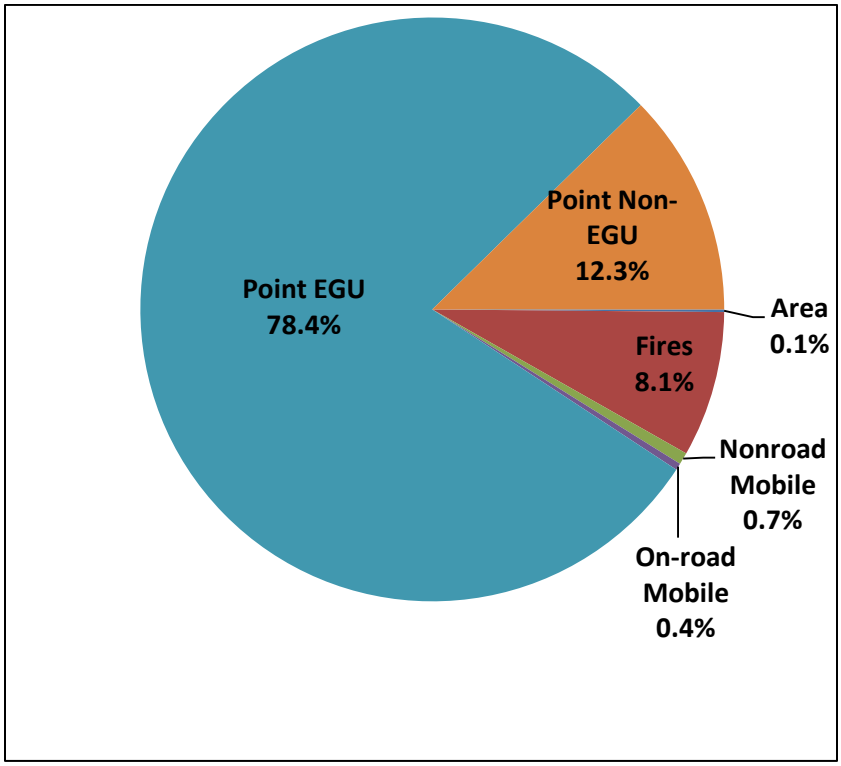


Table 2.1. Arkansas's 2011 SO_2 Emissions by Source Category [4]

Area (tpy)	Fires (tpy)	Nonroad Mobile (tpy)	On-road Mobile (tpy)	Point EGU (tpy)	Point Non-EGU (tpy)
137	7,572	618	357	73,629	11,587

2. Status of Control Measures

40 C.F.R. § 51.308(g)(1) requires that the five-year periodic report contain: "*A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.*"

The long-term strategy (LTS) developed for the 2008 Arkansas Regional Haze SIP was to include all measures relied upon by a state to achieve the reasonable progress goals of Class I areas affected by their emissions. Arkansas's LTS was broad in scope to ensure it encompassed all ongoing state and federal programs reducing the types of air pollutants that might be associated with visibility impairment. Additional factors listed in 40 C.F.R. § 51.308(d)(3)(v)

[4] Source: U.S. EPA, 2011 NEI version 1.

such as smoke management plans, source retirements and replacements, emissions limits, and the net effect upon visibility from projected changes in emissions from anthropogenic emissions over the period addressed by the long-term strategy, were also required components of the long-term strategy. Not all items included in Arkansas's LTS are expected to significantly influence visibility impairment in a Class I area but were included for completeness. A review of all applicable measures, either specifically identified by the 2008 Arkansas Regional Haze SIP or other measures of greatest relevance to the reasonable progress goals (RPGs) of the Arkansas Class I areas, is provided below.

i. Best Available Retrofit Technology

As stated in the Executive Summary, EPA partially approved and partially disapproved on March 12, 2012[5], the 2008 Arkansas Regional Haze SIP. This rule partially approved and partially disapproved Arkansas's identification of BART-eligible sources and subject-to-BART sources; requirements for BART, Chapter 15 of the APC&EC Regulation No. 19, the LTS, and the RPG.

EPA disapproved Arkansas's BART determinations for the following sources:

- SO_2, NO_x, and PM for Arkansas Electric Cooperative Corporation (AECC) Bailey Plant Unit 1 and the AECC McClellan Plant Unit 1;
- SO_2 and NO_x for American Electric Power (AEP) Flint Creek Plant Boiler No. 1;
- NO_x for the natural gas firing scenario and the SO_2, NO_x, and PM for the fuel oil firing scenario for Entergy Lake Catherine Plant Unit 4;
- SO_2 and NO_x for both the bituminous and sub-bituminous coal firing scenarios for Entergy White Bluff Plant Units 1 and 2;
- BART determination for the Entergy White Bluff Plant Auxiliary Boiler;
- SO_2 and NO_x for Domtar Ashdown Mill Power Boiler No. 1; and
- SO_2, NO_x and PM for Domtar Ashdown Mill Power Boiler No. 2.

As a result of the disapproval of the aforementioned BART elements, ADEQ had a meeting with the subject-to-BART sources (listed above) to inform them of EPA's final decision. As a follow up, ADEQ sent certified return receipt letters dated May 14, 2012[6], to the individual subject-to-BART sources informing them of ADEQ's decision to revise the SIP and comply with the statutory five-factor analysis requirements. This decision required the sources to prepare new BART-related analyses. Specifically, ADEQ requested the facilities to submit an analysis of the five factors specified in C.A.A. Section 169A(g)(2) for the affected subject-to-BART unit/units and pollutants. Each five-factor analysis was to be conducted in accordance with 40 C.F.R. Part 51, Appendix Y and the guidance provided by ADEQ. ADEQ has been working closely with the

[5] 77 Fed. Reg. 14604 (2012).
[6] See **Error! Reference source not found.**.

sources through phone calls, meetings, and other correspondence. In addition, ADEQ and sources are working with EPA, Region 6, on their five-factor analyses. EPA is reviewing these analyses and providing comments. These comments are forwarded to the sources for response. At the time of this document development, ADEQ is unable to determine when revisions to the disapproved portions of the SIP will be submitted to EPA.

ii. Subject-to-BART Sources and Class I Areas Affected

BART determination modeling performed by the Department indicated there were six Arkansas facilities with subject-to-BART units whose emissions caused or contributed to visibility impairment at four Class I areas. However, EPA disapproved ADEQ's BART exemption finding of Georgia-Pacific Paper's 6A and 9A Boilers and found these units to be subject-to-BART. Table 2.2 lists the facilities, subject-to-BART units, and pollutants that were not approved. A short description of the facilities with subject-to-BART units and the Class I areas affected follows.

Table 2.2. Facilities with Subject-to-BART Units in the State of Arkansas

Facility Name	Unit ID - Description	BART Pollutants
American Electric Power - Flint Creek Plant	SN-01 - Boiler	SO_2, NO_x
AR Electric Cooperative - Bailey Generating Station	SN-01 - Boiler	SO_2, NO_x, PM
AR Electric Cooperative - John L. McClellan Generating Station	SN-01 - Boiler	SO_2, NO_x, PM
Entergy - Lake Catherine	SN-02 - Unit 4 Boiler Natural Gas Firing	NO_x,
	SN-02 - Unit 4 Boiler Oil Firing	SO_2, NO_x, PM
Entergy - White Bluff	SN-01 - Unit 1 Bituminous and Sub-bituminous Coal Firing	SO_2, NO_x
	SN-02 - Unit 2 Bituminous and Sub-bituminous Coal Firing	SO_2, NO_x
	SN-05 - Auxiliary Boiler	
Domtar - Ashdown	SN-03 – No. 1 Power Boiler	SO_2, NO_x
	SN-05 – No. 2 Power Boiler	SO_2, NO_x, PM
Georgia-Pacific Paper - Crossett	6A Boiler	SO_2, NO_x, PM
	9A Boiler	SO_2, NO_x, PM

American Electric Power - Flint Creek Power Plant (Arkansas Facility Identification Number (AFIN) 04-00107)
is located in Gentry, Benton County, AR, and is currently permitted to operate under ADEQ Operating Air Permit Number 0276-AOP-R6. It produces power using a 6324 million British thermal units (MMBtu) per hour, dry bottom, wall fired Boiler (SN-01) to produce sufficient steam to operate the turbine generator at the 558 MW gross electrical output capability of the unit. The boiler burns primarily low sulfur western coal, but can also combust fuel oil and tire derived fuels (TDF). Fuel oil firing is only allowed during startup and shutdown of the boiler, startup and shutdown of the pulverizer mills, for flame stabilization when the coal is frozen, fuel oil tank maintenance, to prevent boiler tube failure in extreme cold weather, and when the unit is offline for maintenance. Fly ash resulting from the coal combustion process is collected by two hot side electrostatic precipitators. BART determination modeling indicated SN-01 affects Caney Creek and Upper Buffalo Wilderness areas, AR, and Hercules-Glades Wilderness area, MO.

Arkansas Electric Cooperative Corporation - Carl E. Bailey Generating Station (AFIN 74-00024)
is located in Augusta, Woodruff County, AR, and is currently permitted to operate under ADEQ Operating Air Permit Number 0154-AOP-R4. It produces power using a 1350 MMBtu per hour Riley Stoker Boiler (SN-01) to drive a 122 MW generator. The primary fuel is natural gas but the facility is also permitted to use any grade fuel oil with a sulfur content equal to or below 2.3%. Preliminary modeling of this unit showed emissions affect visibility in Upper Buffalo and Caney Creek Wilderness areas, AR,and Hercules-Glades and Mingo Wilderness areas, MO.

Arkansas Electric Cooperative Corporation - John L. McClellan Generating Station (AFIN 52-00055)
is located in Camden, Ouachita County, AR, and is currently permitted to operate under ADEQ Operating Air Permit Number 0181-AOP-R5. The plant produces power using a 1436 MMBtu per hour Riley Stoker Boiler (SN-01) to drive a 134 MW generator. The primary fuel is natural gas but the facility is also permitted to use any grade fuel oil with a sulfur content equal to or below 2.8%. Emissions from this source affect Upper Buffalo and Caney Creek Wilderness areas' visibility.

Entergy - Lake Catherine (AFIN 30-00011)
is located in Malvern, Hot Spring County, AR, and is currently permitted to operate under ADEQ Operating Air Permit Number 1717-AOP-R6. Lake Catherine is a single unit electric generating station which generates electric energy for sale. Three units that were previously in operation were retired in 2014. Unit 4 (SN-03) is the only remaining unit. Electricity for sale is produced by burning natural gas. The burning of No. 6 fuel oil as a secondary fuel has been discontinued. The subject-to-BART source is Unit 4 (SN-03) which is a Combustion Engineering tilting tangential fired 5,850 MMBtu per hour Boiler powering a 552 MW generator. BART determination modeling indicated emissions from this unit affect the visibility at Hercules-Glades, MO, and the Upper Buffalo and Caney Creek Class I areas, AR. The

discontinuance of fuel oil use will result in significant reductions of SO_2 emissions from this source.

Entergy - White Bluff (AFIN 35-00110)

is located in Redfield, Jefferson County, AR, and is currently permitted to operate under ADEQ Operating Air Permit Number 0263-AOP-R7. Units Nos. 1 (SN-01) and 2 (SN-02) are identical Combustion Engineering tilting tangential 8950 MMBtu per hour coal fired Boilers with a maximum power rating of 850 MW each. The Boilers use sub-bituminous or bituminous coal as the primary fuel and No. 2 fuel oil as a start-up fuel. Particulate matter is controlled by an electrostatic precipitator on each Boiler. The Auxiliary Boiler (SN-05) is a 183 MMBtu per hour Boiler burning No. 2 fuel oil as its only fuel type. The purpose of the Auxiliary Boiler is to provide steam for the start-up of the two primary Boilers, SN-01 and SN-02. Results from the BART determination modeling indicated emissions from Units 1 and 2 and the Auxiliary Boiler affect visibility at Hercules-Glades, MO, and Upper Buffalo and Caney Creek, AR.

Domtar - Ashdown (AFIN 41-00002)

is located in Ashdown, Little River County, AR, and is currently permitted to operate under ADEQ Operating Air Permit Number 0287-AOP-R14. Domtar is a paper mill facility and has two Power Boilers, No. 1 Power Boiler (SN-03) and No. 2 Power Boiler (SN-05), that are subject-to-BART. The No. 1 Power Boiler was installed in 1968 as part of the original construction of the Ashdown Mill. It has a heat input rating of 580 MMBtu per hour and an average steam generating rate of 120,000 pounds per hour (lb/hr) of steam at 850 pounds/square inch [gauge] (psig). It combusts primarily bark, but it is also permitted to burn wood chips, wood waste, recycled sanitary products composed of cellulose and polypropylene, pelletized paper fuel (PPF), TDF, municipal yard waste, No. 6 fuel oil, reprocessed fuel oil, used oil generated on site, and natural gas. Natural gas is only used to supplement other fuels during high steam demand periods. The No.1 Power Boiler is equipped with a traveling grate and a combustion air system. To meet applicable Boiler Maximum Achievable Control Technology (MACT) PM emissions standard of 0.07 lb/MMBtu Domtar Industries installed a wet electrostatic precipitator (WESP) during the spring of 2007. The No. 2 Power Boiler started operation in February 1976. It has a heat input rating of 820 MMBtu per hour and an average steam generating rate of approximately 600,000 lb/hr. It combusts primarily bituminous coal (over 80% of the heat input is supplied by coal), but it is also permitted to burn bark, bark and wood chips used to absorb oil spills, wood waste, petroleum coke, recycled sanitary products based on cellulose and polypropylene, PPF, TDF, municipal waste, No. 6 fuel oil, reprocessed fuel oil, used oil generated on site, natural gas, and non-condensable gases (NCGs). The NCGs are produced in the pulp and evaporator areas. It consist of nitrogen, total reduced sulfur (TRS) compounds, methanol, SO_2, and minor quantities of other compounds such as methyl ethyl ketone (MEK). Under normal conditions, natural gas is not combusted. The No. 2 Power Boiler is equipped with a traveling grate, combustion air system including overfire air, multi-clones, and two parallel venturi scrubbers. The SO_2 loading to the Boiler is significant since it burns

coal and NCGs. Therefore, the scrubbing fluid includes water and a source of alkali, such as sodium hydroxide (NaOH) and/or pulp mill extraction stage filtrate. BART determination modeling indicated emissions from the two Power Boilers affect visibility at Upper Buffalo and Caney Creek, AR.

Georgia-Pacific Paper (AFIN 02-00013)

is located in Crossett, Ashley County, AR, and is currently permitted under ADEQ Operating Air Permit Number 0597-AOP-R15. Georgia-Pacific is a Kraft paper mill that has two subject-to-BART sources, 6A (SN-19) and 9A (SN-22) boilers. The 6A Boiler is a 357 MMBtu per hour boiler. The boiler burns natural gas and specification grade oil. Specification grade oil consists of new oil, used oil, and pitch from the production of tall oil. The 6A Boiler was installed in 1962 and there are no emissions controls associated with it. The 9A Boiler is a 720 MMBtu per hour combination fuel boiler that is used to generate steam for general use throughout the facility. It was installed in 1973. This Boiler may serve as a backup combustion unit when the incinerator (SN-83) is offline. The combination of fuels permitted for this Boiler are TDF, agriculture derived fuel (ADF), refuse derived fuel (RDF), NCGs, wood waste, specification grade oil, natural gas, and sludge. The 9A Boiler is equipped with a wet Venturi scrubber to control sulfur compound emissions. The scrubber was installed in 1980. ADEQ determined 6A Boiler was pre-BART and emissions from 9A Boiler do not cause or contribute to visibility impairment at Caney Creek Wilderness area, AR. However, in the final rule on the 2008 Arkansas Regional Haze SIP, EPA found the 6A Boiler to be BART eligible. EPA also found both the 6A and 9A Boilers to be subject-to-BART and a full BART analysis is required (77 Fed. Reg. 14606). However, Georgia-Pacific (G-P) voluntarily reduced 9A Boiler's permitted SO_2 emission rate to 484.6 tons per year (a 64% reduction). However, permitted PM_{10} rates increased to 339.0 tpy (from 243.3 tpy). Modeling performed by G-P indicates the current emission rate affects Caney Creek below 0.5 deciview (dv). Based on a call on March 20, 2013, with EPA Region 6 staff and G-P, the current permit limit for the 9A Boiler exempts this facility from the requirement to perform a five-factor analysis.

3. Additional Control Measures – Federal and State Programs

i. Clean Air Interstate Rule (CAIR) and Cross-State Air Pollution Rule (CSAPR)

On May 30, 2012, EPA finalized the rule: "Regional Haze: Revisions to Provisions Governing Alternatives to Source-Specific BART Determinations, Limited SIP Disapprovals, and Federal Implementation Plans" (77 Fed. Reg. 33643, June 7, 2012). This rule allows the trading programs in the CSAPR Rule to serve as an alternative to determining source-by-source BART. This rule provides that states in the CSAPR region can substitute participation in CSAPR for source-specific BART for SO_2 and/or NO_x emissions from power plants. This determination is commonly referred to as CSAPR being "better-than-BART." EPA also determined "that a state in the Transport Rule region whose EGUs are subject to the requirements of the Transport Rule trading program only for ozone season NO_x is allowed to rely on our determination that the Transport Rule makes greater reasonable progress than source-specific BART for NO_x" (77 Fed.

Reg. 33652). Arkansas is included in this determination, which did not require the state's subject-to-BART EGUs to perform a five-factor analysis of NO_x emissions. However, in light of the U.S. Court of Appeals decision as previously discussed in the Executive Summary to vacate CSAPR and reinstate CAIR, a five-factor analysis of NO_x emissions was developed in Arkansas. On October 12, 2014, the stay of CSAPR was revoked. Beginning May 1, 2015, CSAPR is in effect and being implemented in Arkansas. ADEQ is currently reevaluating the NO_x emission limits that are in the disapproved SIP and considering appropriate revisions. See Table 2.3 for information regarding CAIR sources in Arkansas.

Arkansas's participation in the CAIR NO_x Ozone season only cap and trade program was also a significant component of the State's LTS and was expected to yield EGU NO_x emissions reductions. While CAIR was remanded by the D.C. Circuit Court of Appeals, as previously discussed in the Executive Summary, CAIR remains in effect and sources in Arkansas continue to comply with the state and federal requirements associated with CAIR. Also, as mentioned on the Executive Summary, EPA's request for a three-year delay in the compliance deadline as well as EPA's motion to lift the stay of the CSAPR were granted by the Courts. Until EPA provides guidance to the states, Arkansas will continue its participation in the CAIR NO_x Ozone season only cap and trade program.

Table 2.3. CAIR NO_x Ozone Season Allocations for Arkansas (2009–2017) as Allocated per APC&EC Reg. No. 19.1404.
Listed by Vintage Year.

Facility Name	Unit ID	2017	2016	2015	2014	2013	2012	2011	2010	2009
Hot Spring Generating Station (Magnet Cove)	SN-01	*299*	305	***	*1*	*22*	*13*	*29*	*28*	*37*
Hot Spring Generating Station (Magnet Cove)	SN-02	*312*	317	***	*1*	*20*	*11*	*36*	*25*	*32*
Carl E. Bailey Generating Station	1	21	17	15	35	69	70	92	93	94
Cecil Lynch Plant	Unit 2	2	3	3	5	5	2	19	19	19
Cecil Lynch Plant	Unit 3	27	30	16	11	11	8	35	36	36
Dell Power Plant	1	99	78	***	*4*	*12*	*11*	*13*	*4*	*2*
Dell Power Plant	2	105	90	***	*3*	*12*	*15*	*13*	*7*	*3*
Thomas B. Fitzhugh Generating Station	2	39	37	49	88	85	86	*34*	*21*	*21*
Flint Creek Power Plant	SN-01	774	800	872	1099	1089	1062	1363	1382	1384
Fulton Generating Station	1	22	21	23	30	29	24	*8*	*4*	*3*
Hamilton Moses Plant	Unit 1	0	0	0	0	0	0	24	24	24
Hamilton Moses Plant	Unit 2	0	0	0	0	0	0	23	23	23

Facility Name	Unit ID	2017	2016	2015	2014	2013	2012	2011	2010	2009
Harry D. Mattison Power Plant	SN-01	16	***	***	*3*	0	*17*	*9*	*2*	*11*
Harry D. Mattison Power Plant	SN-02	12	***	***	*2*	0	*11*	*7*	*1*	*5*
Harry D. Mattison Power Plant	SN-03	8	11	***	*3*	0	*10*	*3*	*1*	*4*
Harry D. Mattison Power Plant	SN-04	6	10	***	*4*	0	*6*	*3*	*0*	*1*
Harvey Couch Plant	Unit 1	4	5	6	8	7	2	13	13	13
Harvey Couch Plant	Unit 2	22	24	28	29	28	29	57	58	58
Hot Spring Energy Facility (Formerly KGen)	CT-1	210	218	234	221	214	216	*16*	*28*	*15*
Hot Spring Energy Facility (Formerly KGen)	CT-2	195	202	224	231	223	226	*16*	*21*	*12*
Independence Plant	1	1224	1314	1473	1913	1863	1844	2029	2057	2060
Independence Plant	2	1150	1230	1436	1783	1800	1823	2073	2102	2105
Jonesboro City Water and Light	3	0	0	0	0	0	0	12	12	12
Jonesboro City Water and Light	SN04	11	11	8	6	6	6	0	0	0
Jonesboro City Water and Light	SN06	13	12	8	7	7	0	*12*	*2*	*2*
Jonesboro City Water and Light	SN07	15	13	***	***	*9*	*15*	*15*	*3*	*3*
Lake Catherine Plant	Unit 1	0	0	0	0	0	0	28	29	29
Lake Catherine Plant	Unit 2	0	0	0	0	0	0	24	24	24
Lake Catherine Plant	Unit 3	0	0	0	0	0	0	52	53	53
Lake Catherine Plant	Unit 4	111	63	71	62	70	107	546	554	554
John L. McClellan Generating Station	1	60	60	63	91	112	114	147	149	149
Harry L. Oswald Generating Station	1	23	24	19	22	20	18	*13*	*5*	*8*
Harry L. Oswald Generating Station	2	20	21	18	21	19	19	*10*	*6*	*6*
Harry L. Oswald Generating Station	3	24	23	21	19	18	15	*14*	*5*	*9*
Harry L. Oswald Generating Station	4	19	19	20	24	23	20	*12*	*6*	*10*
Harry L. Oswald Generating Station	5	22	22	20	23	22	20	*12*	*6*	*9*
Harry L. Oswald Generating Station	6	22	25	23	24	24	20	*17*	*5*	*10*

Facility Name	Unit ID	2017	2016	2015	2014	2013	2012	2011	2010	2009
Harry L. Oswald Generating Station	7	48	49	51	57	53	45	*15*	*7*	*10*
Pine Bluff Energy Center	CT1	365	361	386	378	382	368	*74*	*80*	*71*
Plum Point Energy Station	Unit 1	***	***	***	*381*	*501*	*467*	*0*	0	0
Robert E. Ritchie Plant	Unit 1	0	0	0	0	0	2	189	192	192
Robert E. Ritchie Plant	Unit 2	0	0	0	0	0	0	217	220	220
Union Power Station	CTG-1	178	155	169	189	182	185	*24*	*20*	*18*
Union Power Station	CTG-2	175	148	167	193	187	189	*24*	*20*	*15*
Union Power Station	CTG-3	188	167	166	163	158	172	*29*	*21*	*11*
Union Power Station	CTG-4	184	164	167	195	188	191	*25*	*18*	*8*
Union Power Station	CTG-5	180	158	180	218	211	205	*23*	*20*	*20*
Union Power Station	CTG-6	174	155	171	214	207	196	*22*	*20*	*24*
Union Power Station	CTG-7	199	164	175	213	205	208	*25*	*19*	*16*
Union Power Station	CTG-8	200	173	180	224	217	220	*24*	*19*	*14*
John W. Turk Jr. Plant	SN-01	***	***	***	*173*	0	0	0	0	0
White Bluff Plant	Unit 1	1144	1184	1293	1536	1563	1585	2007	2035	2038
White Bluff Plant	Unit 2	1194	1233	1361	1607	1642	1642	1988	2016	2018
Total Allocations per Year		**9116**	**9116**	**9116**	**11514**	**11515**	**11515**	**11515**	**11515**	**11515**
KEY:*(Italics) NEW SOURCE ALLOCATIONS* (Plain Text) EXISTING SOURCE ALLOCATIONS *** to be determined										

The following federal rules (40 C.F.R. Part 80, Subpart H; 40 C.F.R. Part 85, 40 C.F.R. Part 86, Subpart P) have offered significant air quality improvement and reductions in visibility-related pollutants.

ii. Tier 2 Vehicle and Gasoline Sulfur Programs

EPA's Tier 2 fleet averaging program for on-road vehicles, modeled after the California LEV (Low Emissions Vehicle) II standards, became effective in the 2005 model year. The Tier 2 program allows manufacturers to produce vehicles with emissions ranging from relatively dirty to very clean, but the mix of vehicles a manufacturer sells each year must have average NO_x emissions below a specified value. Mobile emissions continue to decline as a result of these programs as motorists replace older, more polluting vehicles with newer, cleaner vehicles.

iii. Nonroad Diesel and Ultra-Low Sulfur Diesel (ULSD) Rules

EPA adopted standards for emissions of NO_x, hydrocarbons, and carbon monoxide (CO) from several groups of nonroad engines, including industrial spark-ignition engines and recreational nonroad vehicles. Industrial spark-ignition engines power commercial and industrial applications and include forklifts, electric generators, airport baggage transport vehicles, and a variety of farm and construction applications. Nonroad recreational vehicles include snowmobiles, off-highway motorcycles, and all-terrain vehicles. These rules were initially effective in 2004 and were fully phased in by 2012.

The nonroad diesel rule set standards that reduced emissions by more than 90% from nonroad diesel equipment and, beginning in 2007, the rule reduced fuel sulfur levels by 99% from previous levels. The reduction in fuel sulfur levels applied to most nonroad diesel fuel in 2010 and applied to fuel used in locomotives and marine vessels in 2012.

The low sulfur content mandated by the Ultra-Low Sulfur Diesel (ULSD) Rule resulted in better control particulate emissions from diesel engines. The transition to ULSD for highway vehicles began in June 2006. EPA regulations required that at least 80% of highway diesel fuel in the United States be ULSD, and by 2010, all highway diesel fuel became ULSD. EPA standards also required a major reduction in the sulfur content of diesel fuel intended for use in locomotive, marine, and nonroad engines and equipment including construction, agricultural, industrial, and airport equipment.

iv. 2007 Heavy-Duty Highway Rule

The 2007 Heavy-Duty Highway Rule, also referred as the "Clean Air Highway Diesel Rule," was adopted on January 18, 2001, by EPA as a part of the National Clean Diesel Campaign (NCDC) with the objective of reducing emissions from diesel engines by setting a PM emission standard for new heavy-duty engines, which took effect with the 2007 model year. The rule also required reduction of sulfur in diesel fuel to facilitate the use of modern pollution control technology on these engines. EPA established a goal of reducing emissions from over 11 million diesel engines in the existing fleet by 2014, especially in the sectors of school buses, ports, construction, freight, and agriculture.

ADEQ has undertaken several initiatives to obtain reductions from on-road and nonroad engines, including construction equipment throughout the State. ADEQ offers these funds

annually as a competitive funding assistance opportunity for fleet managers and equipment suppliers entitled "Reduce Emissions from Diesels (Go RED!)," as a means of subsidizing diesel retrofits and the biodiesel market. Although ADEQ cannot provide SIP-quality quantification of the reduction of emissions due to these programs, it is important to note that these efforts have contributed to the state's improvement of air quality and visibility.

v. Source Retirement and Replacement Schedules

40 C.F.R. § 51.308(d)(3)(v)(B) requires the State of Arkansas to consider measures to mitigate the impacts of construction activities. In accordance with Subchapter 11.4.1.6 of the 2008 Arkansas Regional Haze SIP, ADEQ tracked Prevention of Significant Deterioration (PSD) new sources, source retirements, and replacements. Since 2002, five new PSD facilities have been permitted.

As shown in Table 2.4, these facilities' total potential to emit (PTE) of NO_x is 5,833 tons per year (tpy) and for SO_2 the total PTE is 7,373.7 tpy. However, as shown by Table 2.5, the total actual emissions, as reported by the facilities in their Annual Emissions Inventory Report, for 2012 for NO_x was lower at 1,740.8 tpy and for SO_2 it was 3,303.2 tpy.

Table 2.4. Arkansas New PSD Facilities

Facility Name	AFIN	PTE (tpy)		Permit Number	Start Date
		NO_x	SO_2		
Harry D. Mattison Power Plant	72-00695	242.6	3.2	2114-AOP-R5	02/13/07
Riceland Foods, Inc. - Soy Division	01-00008	542.7	232.9	0908-AOP-R6	02/14/08
Big River Steel, LLC.	47-00991	1,067.7	350.3	2305-AOP-R0	Pending
Plum Point Energy Station	47-00461	2,645.7	4,684.6	1995-AOP-R5	08/20/03
SWEPCO / AEP - John W. Turk, Jr. Plant	29-00506	1,334.3	2,102.7	2123-AOP-R2	11/05/08
Total PTE		5,833.0	7,373.7		

Table 2.5. Actual NO_x and SO_2 Emissions from the New PSD Facilities Listed in Table 2.4

Facility Name	AFIN	Reported Emissions (tpy)									
		2008		2009		2010		2011		2012	
		NO_x	SO_2	NO_x	SO_2	NO_x	SO_2	NO_x	SO_2	NO_x	SO_2
Harry D. Mattison Power Plant	72-00695	*7.0*	*0.7*	-	-	-	-	*65.9*	*0.5*	-	-
Riceland Foods, Inc. - Soy Division	01-00008	-	-	377.3	*97.4*	*369.8*	*95.6*	*335.7*	*86.8*	*146.8*	*100.4*
Big River Steel, LLC.	47-00991	-	-	-	-	-	-	-	-	-	-

Plum Point Energy Station	47-00461	-	-	-	-	*1,387.7*	*2,424.2*	*1,525.4*	*2,830.4*	*1,540.8*	*3,153.5*
SWEPCO / AEP - John W. Turk, Jr. Plant	29-00506	-	-	-	-	-	-	-	-	*53.3*	*49.4*
	Total	7.0	0.7	377.3	97.4	1,757.5	2,519.8	1,927.0	2,917.7	1,740.8	3,303.2

- Note: the emissions shown in *italics* are from the State and Local Emissions Inventory System (SLEIS) and the emissions in plain font are from EPA's National Emissions Inventory (NEI) database.

Sixteen PSD facilities have shut down in Arkansas since 2008, resulting in a total reduction of 15,892.5 tpy in permitted NO_x emissions and of 1,125.8 tpy in permitted SO_2 emissions. Table 2.6 shows the actual emissions reductions from these facilities.

Table 2.6. Closed Arkansas PSD Facilities Since 2008

Facility Name	AFIN	PTE (tpy)		Closure Date	Reported Actual Emissions (tpy)							
					2005		2008		2009		2011	
		NO_x	SO_2		NO_x	SO_2	NO_x	SO_2	NO_x	SO_2	NO_x	SO_2
Entergy - Moses	62-00010	1,789.6	93.0	03/11/13	-	-	*0.0*	*0.0*	-	-	-	-
Enterprise Refined Products	54-00110	10.4	0.0	02/19/13	-	-	*2.852*	*0.0*	-	-	-	-
Huntington Foam	66-00701	8.8	0.2	01/22/13								
Georgia Pacific - Fordyce Plywood	20-00004	194.0	21.5	01/01/11			297.3	29.4	188.1	16.3		
Pinnacle Frames and Accents	11-00075	3.6	0.1	01/25/11	0.446	0.0027	0.5	0.0			0.4	0.0
Potlatch Land and Lumber	50-00001	189.1	18.9	08/06/11	93.85	15.24	26.1	4.7	26.1	4.7	162.8	26.5
CenterPoint Energy - Hobbs	66-00640	201.4	0.3	08/09/10	131.9	0.05	*31.74*	*0.04*	1,103	0.1	-	-
Progressive Foam	23-00006	3.7	0.1	05/04/10			*0.47*	*0.003*			-	-
White Rodgers/Emerson Electric	32-00007	4.8	0.3	03/15/10	4.522	0.0273					-	-
Riverside Plant #5	58-00050	43.5	2.3	06/29/09	1.5	0.1					-	-
Allied Tube and Conduit	35-00117	16.0	0.0	10/22/08	1.465	0.005	*0.014*	*0.0*	-	-	-	-
G-P Wood Products	70-00032	71.5	10.5	04/18/08			83.5	10.7	-	-	-	-
Spang and Company-Magnetics	42-00064	0.3	0.1	01/25/08					-	-	-	-
GDX Automotive	32-00038	25.8	0.2	01/13/08					-	-	-	-
Entergy - Ritchie SN-01	54-	13,140.1	787.9	02/06/13	-	-	-	-	-	-	-	-

Facility Name	AFIN	PTE (tpy)		Closure Date	Reported Actual Emissions (tpy)							
					2005		2008		2009		2011	
		NO_x	SO_2		NO_x	SO_2	NO_x	SO_2	NO_x	SO_2	NO_x	SO_2
	00017											
Entergy - Lynch	60-00087	682.0	312.4	05/01/13	-	-	0.7	0.1	-	-	1.7	0.0
Entergy – Couch SN-02	37-00004	1786.2	71.3	12/18/13	112.5	.3	36.4	.127			22.7	.09
Entergy – Lake Catherine –SN-01	30-0001	3504.2	154.6	12/19/13	6.360	0.006	4.60	0.004	-	-	2.131	0.002
Entergy – Lake Catherine –SN-02	30-0001	2902.0	133.7	12/19/13	1.520	0.005	1.3	0.003	-	-	1.875	0.002
Total PTE (tpy)		24,577	1,607.1	Total Actual (tpy)	354.06	15.74	485.5	45.1	1,317	21.1	191.6	26.6

Note: the emissions shown in *italics* are from the State and Local Emissions Inventory System (SLEIS) and the emissions in plain font are from EPA's National Emissions Inventory (NEI) database.

vi. Agricultural and Forestry Smoke Management

40 C.F.R. § 51.308(d)(3)(v)(E) requires Arkansas to consider smoke management techniques for the purposes of agricultural and forestry management.

The Arkansas Forestry Commission approved revisions to the Arkansas Smoke Management Plan (SMP) in 2007, which is designed to assure that prescribed fires are planned and executed in a manner designed to minimize impacts associated with the smoke produced by prescribed fires.

4. Maximum Achievable Control Technology (MACT) (40 C.F.R. Part 63)

Since the development of the 2008 Arkansas Regional Haze SIP, EPA has promulgated standards that are anticipated to yield new emissions reductions and have the potential to further reduce emissions associated with visibility impairment in the federal and state Class I areas.

CENRAP estimated emissions reductions from the MACT standards for source categories with post-2002 compliance data[7]. MACT standards not expected to achieve significant VOC emission reductions were excluded. See Table 2.7. This table also provides the associated C.F.R. subpart containing the regulations, the compliance date for existing sources, and the pollutants considered in the 2018 inventory. The list is based upon the data developed by E. H. Pechan and Associates[8]. It is likely that the MACT standards did not significantly impact visibility impairment in Class I areas. CENRAP's review is provided only as a courtesy and for future reference.

Table 2.7 below describes the MACTs used as control strategies for the non-EGU point source emissions. The table notes the pollutants for which controls were applied as well as the promulgation dates and the compliance dates for existing sources.

Table 2.7. Post-2002 MACT Standards Considered in the 2018 Emissions Inventory

MACT Standard - Source Category	40 C.F.R. Part 63 Subpart	Promulgation (Publication in Federal Register)	Compliance Date (existing sources)	Pollutants Affected
Asphalt (Roofing Manufacturing and Asphalt Processing)	LLLLL	4/29/2003	5/1/2006	VOC
Auto and Light Duty Trucks	IIII	4/26/2004	4/26/2007	VOC
Coke Ovens: Pushing, Quenching and Battery Stacks	CCCCC	4/14/2003	4/14/2006	VOC

[7] The CENRAP modeling emissions inventory consists of several distinct datasets: the 2002 base case for model performance evaluation, 2002 typical, 2018 base case, and the 2018 control strategy scenario.

[8] Pechan, E.H. & Associates. (2005). *Development of Growth and Control Inputs for CENRAP 2018 Emissions, Draft Technical Support Document*. Durham, North Carolina. Carolina Environmental Program, University of North Carolina, Chapel, Hill, North Carolina. May.

MACT Standard - Source Category	40 C.F.R. Part 63 Subpart	Promulgation (Publication in Federal Register)	Compliance Date (existing sources)	Pollutants Affected
Fabric Printing, Coating and Dyeing	OOOO	5/29/2003	5/29/2006	VOC
Friction Products Manufacturing	QQQQQ	10/18/2002	10/18/2005	VOC
Integrated Iron and Steel	FFFFF	5/20/2003	5/20/2006	VOC,
Large Appliances	NNNN	7/23/2002	7/23/2005	VOC
Leather Finishing Operations	TTTT	2/27/2002	2/27/2005	VOC
Lime Manufacturing	AAAAA	1/5/2004	1/5/2007	PM
Manufacturing Nutritional Yeast	CCCC	5/21/2001	5/21/2004	VOC
Metal Can (Surface Coating)	KKKK	11/13/2003	11/13/2006	VOC
Metal Coil (Surface Coating)	SSSS	6/10/2002	6/10/2005	VOC
Metal Furniture	RRRR	5/23/2003	5/23/2006	VOC
Miscellaneous Coating Manufacturing	HHHHH	12/11/2003	12/11/2006	VOC
Miscellaneous Metal Parts and Products (Surface Coating)	MMMM	1/2/2004	1/2/2007	VOC
Miscellaneous Organic Chemical Production and Processes (MON)	FFFF	10/11/2003	10/11/2006	VOC
Paper and Other Web	JJJJ	4/12/2002	4/12/2005	VOC
Pesticide Active Ingredient Production	MMM	6/23/1999	12/23/2003	VOC
Petroleum Refineries	UUU	11/4/2002	11/4/2005	VOC
Plastic Parts	PPPP	4/19/2004	4/19/2007	VOC
Plywood and Composite Wood Products	DDDD	7/30/2004	1/10/2007	VOC
Polymers and Resins III	OOO	1/20/2000	1/20/2003	VOC
Reciprocating Internal Combustion Engines (RICE)	ZZZZ	6/15/2004	6/15/2007	VOC, NO_x
Rubber Tire Manufacturing	XXXX	9/7/2002	11/7/2005	VOC
Secondary Aluminum Production	RRR	3/23/2000	3/24/2003	PM
Site Remediation	GGGGG	8/10/2003	8/10/2006	VOC
Solvent Extraction for Vegetable Oil Production	GGGG	12/4/2001	12/4/2004	VOC
Stationary Combustion Turbines	YYYY	5/3/2004	5/3/2007	VOC
Taconite Iron Ore Processing	RRRRR	10/30/2003	10/30/2006	PM
Wet Formed Fiberglass Mat Production	HHHH	11/4/2002	11/4/2005	VOC
Wood Building Products (Surface Coating)	QQQQ	5/28/2003	5/28/2006	VOC

5. Mercury and Air Toxics Rule

On December 16, 2011, the EPA finalized national C.A.A. standards to reduce mercury and other toxic air pollution from coal and oil-fired power plants. The final rule established power plant emission standards for mercury, acid gases, and non-mercury metallic toxic pollutants that will prevent 90% of the mercury in coal burned in power plants from being emitted to the air; reduce by 88% the acid gas emissions from power plants; and cut power plant SO_2 emissions by 41% beyond the reductions expected from CSAPR. Existing EGUs have to comply with this rule by April 16, 2015; however, an additional one-year extension may be granted for compliance if additional time is needed to install controls. Although reductions cannot be quantified at this time, Arkansas anticipates that some reductions in SO_2 emissions from the state's coal-fired EGUs will occur as a result of the MATS rule. Flint Creek plans to install a NID (Novel Integrated Desulfurization) system, while the two Entergy facilities (White Bluff and Independence) currently plan to control mercury by activated carbon injection (ACI). The NID system will control SO_2 and other acid gases, the ACI will not. The remaining coal fired plants in the State (Plum Point and Turk) were constructed with dry flue gas desulfurization and will not be modified.

6. New NAAQS since the 2008 Arkansas Regional Haze SIP submittal

On January 22, 2010, EPA strengthened the health-based NAAQS for NO_2, establishing a new 1-hour standard at a level of 100 ppb. On January 20, 2012, EPA designated all areas of the country as "unclassifiable/attainment" for the 2010 NO_2 NAAQS.

On June 3, 2010, the EPA promulgated a new 1-hour SO_2 NAAQS at a level of 75 ppb. On August 5, 2013, EPA designated 29 areas in 16 states as nonattainment, none of which are located in Arkansas.

On December 14, 2012, EPA strengthened the $PM_{2.5}$ NAAQS, reducing the level of the annual standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. EPA is expected to finalize attainment designations by December 14, 2014. Projections provided by EPA suggest 99% of counties with monitors will meet the revised standard by 2020.

ADEQ initiated rulemaking to adopt these standards, except for the 2012 $PM_{2.5}$ NAAQS, into Arkansas's State regulations. APC&EC adopted this rulemaking on August 22, 2014, and ADEQ will incorporate these standards, for PSD sources only, into the SIP.

Chapter 3: Emissions Reductions-40 C.F.R. § 51.308(g)(2)

1. Summary of Emission Reductions Achieved

40 C.F.R. § 51.308(g)(2) requires, "*A summary of the emissions reductions achieved throughout the State through implementation of the measures in paragraph (g)(1).*"

To meet this requirement, states are required to identify and estimate emissions reductions primarily in NO_x, SO_2, and PM from SIP measures that were discussed in 40 C.F.R. § 51.308(g)(1). As stated in Chapter 2, the BART portion of the 2008 Arkansas Regional Haze SIP was partially approved and partially disapproved. (Please refer to Chapter 2 for the list of disapproved and approved BART elements.) Therefore, as of the submittal date of this report, there have not been any reductions from subject-to-BART sources due to BART limits.

Additional control measures included in the SIP were federal and state programs. Qualitatively, the continued implementation of those federal and state measures discussed in Chapter 2 not affecting point sources are expected to reduce emissions.

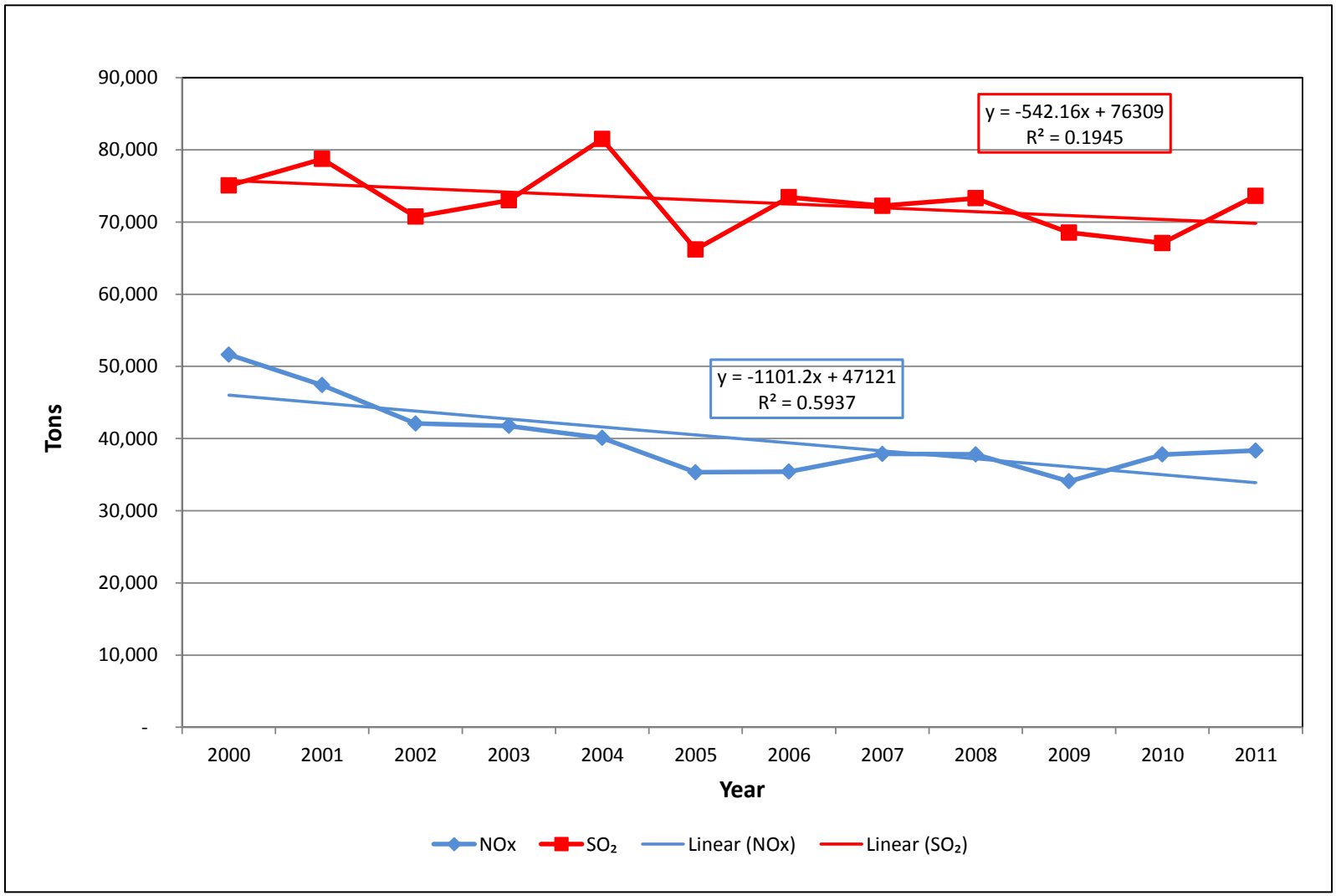
Emission data containing annual EGUs SO_2 and NO_x emissions in Arkansas were obtained from EPA's Clean Air Markets Division (CAMD). (See Table 3.1.)

Table 3.1. Annual NO_x and SO_2 emissions (Arkansas, 2000–2011)[9]

Year	NO_x (tpy)	SO_2 (tpy)
2000	51,624	75,057
2001	47,398	78,729
2002	42,079	70,738
2003	41,749	73,007
2004	40,083	81,483
2005	35,333	66,190
2006	35,414	73,432
2007	37,877	72,247
2008	37,800	73,289
2009	34,081	68,535
2010	37,785	67,084
2011	38,338	73,623

[9] Source: U.S. EPA Clean Air Market Division www.epa.gov/airmarkt/

Figure 3.1. Emissions Trends for Arkansas Electric Generation Units (2000–2011)



Looking at the long term (2000–2011), the overall SO_2 and NO_x emissions from Arkansas EGUs are trending downward. (Table 3.1 and Figure 3.1.) Although there was an uptick in 2011, these emissions are less than the 2000 emissions.

2. EGU SO_2 Emission Reductions and Utilization

Figure 3.2 shows a comparison of heat input to observed and projected SO_2 and NO_x emissions for Arkansas EGUs reported to CAMD. As of 2011, SO_2 emissions have increased by 2,885 tpy and NO_x emissions have decreased by 3,741 tpy since 2002. Annual SO_2 emissions are projected to increase by an additional 125 tpy in 2018 from 2011 observed emissions. Annual NO_x emissions are projected to decrease by an additional 10,167 tpy in 2018 from 2011 observed emissions. Although SO_2 emissions from Arkansas EGUs have increased from baseline years 2001–2004 and are projected to continue to do so through 2018, the rate of SO_2 emissions in lb/MMBtu at EGUs has actually decreased. The decrease in emissions rates of SO_2 and NO_x in pounds per MMBtu by Arkansas EGUs, as demonstrated in Figure 3.2, indicates that control efficiencies have improved since 2002 and that projected SO_2 emissions are due to increased activity by EGUs.

Additionally, on June 12, 2013, public notice was issued on SWEPCO/Flint Creek Power Plant's (AFIN 04-00107, Permit No. 027-AOP-R6) draft permit and the final permit was issued on August 25, 2013. This permit was necessary for the installation and operation of new control equipment on source number 01 (SN-01). The installation of this control will reduce the permitted SO_2 emissions by 87.5%. Further SO_2 emission reductions will be realized from existing subject-to-BART sources once the 2008 Arkansas Regional Haze SIP is approved.

Figure 3.2. Arkansas EGU Emissions and Heat Input (2000-2011)

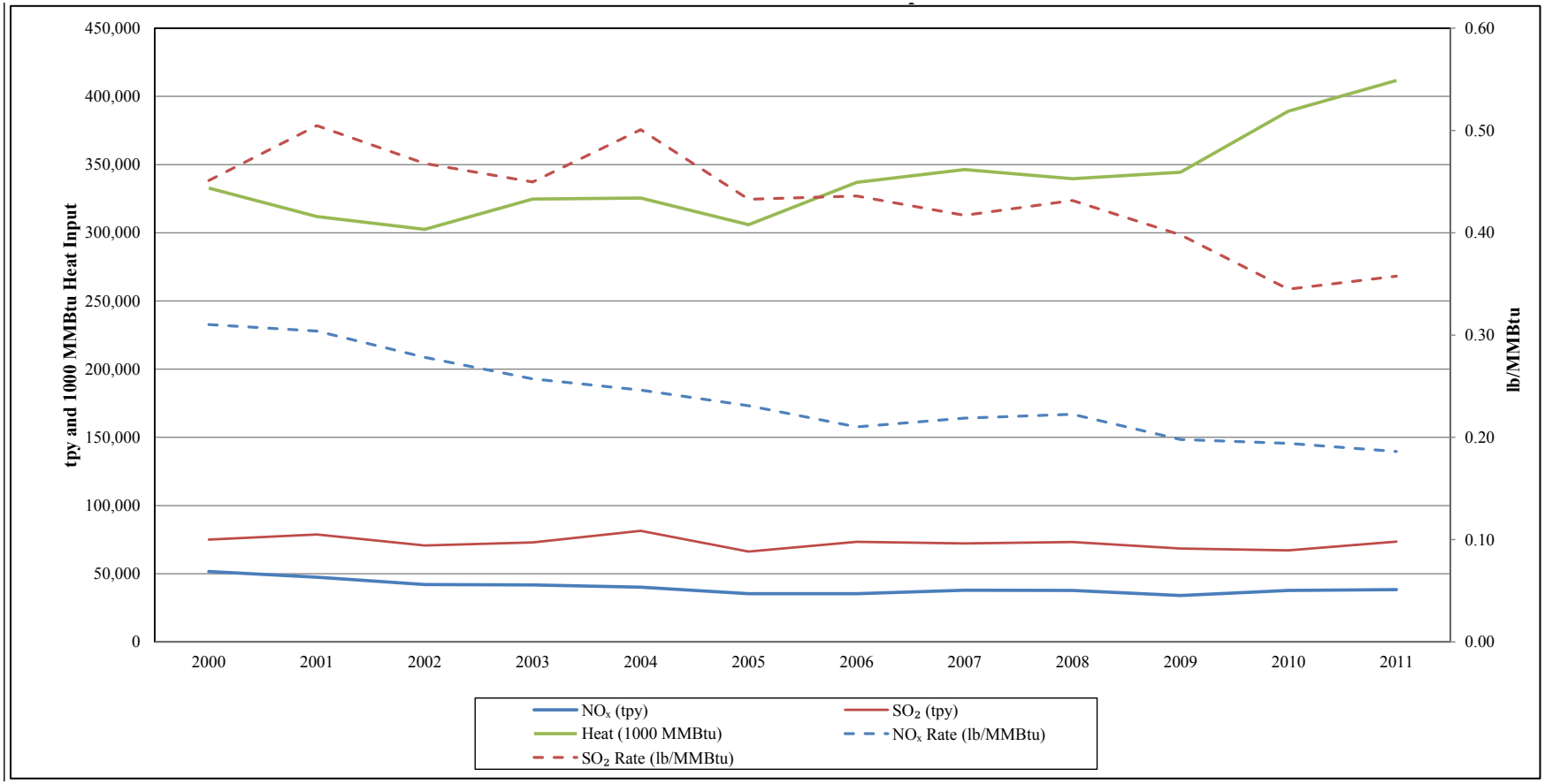


Figure 3.2 shows the rate of SO_2 and NO_x emitted per MMBtu is declining. Although Arkansas's SO_2 and NO_x emissions have not dropped significantly, the plants are operating more efficiently as shown by ratio of emissions to heat input.

Chapter 4: Assessment of Visibility Conditions–40 C.F.R. § 51.308(g)(3)

1. Introduction

40 C.F.R. § 51.308(g)(3) of the RHR requires for each mandatory Class I area in the state, an assessment of the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of five-year averages of these annual values*:*

- 40 C.F.R. § 51.308(g)(3)(i): *Current visibility conditions for the most and least impaired days.*
- 40 C.F.R. § 51.308(g)(3)(ii): *Difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions.*
- 40 C.F.R. § 51.308(g)(3)(iii): *Change in visibility impairment for the most impaired and least impaired days over the past 5 years.*

The goal of the RHR is to restore natural visibility conditions to the mandatory Class I federal areas by 2064. The regional haze SIP must contain measures that make "reasonable progress" toward this goal by reducing anthropogenic emissions that cause haze. Subchapter 2, Assessment of Reasonable Progress Goals*,* found within this Chapter, will address Arkansas's reasonable progress in detail. For each Class I area, there are three metrics of visibility that are part of the determination of reasonable progress:

- baseline conditions;
- natural conditions; and
- current conditions.

Each of the three metrics includes the concentration data of the visibility impairing pollutants as different terms in the light extinction equation, with respective extinction coefficients and relative humidity factors. The Speciation Trends Network (STN) was later transitioned into the Chemical Speciation Network (CSN) with 50 long-term trend sites and approximately 150 sites operated by state, local, and tribal agencies, primarily in urban/suburban settings.

The primary system used to measure air quality improvements for visibility purposes is the Interagency Monitoring of Protected Visual Environments (IMPROVE[10]) program, a cooperative effort between the EPA, federal land management agencies, and state agencies. Air quality measurements in the IMPROVE network began in 1988; as of June 2011, there were 212 sites (170 current and 42 discontinued). In addition, the EPA's STN of 84 sites was originally included to expand the spatial and seasonal aerosol and reconstructed light extinction coefficient

[10] IMPROVE is a network of monitors in various Class I areas, established to assess visibility impairment and its causes.

trends to include urban areas and to investigate the differences in urban and rural aerosol concentrations.

The RHR stipulates use of the IMPROVE algorithm for calculating light extinction in Class I areas. The algorithm uses measured ambient concentrations of light scattering aerosols and humidity to estimate light extinction. The 2011 IMPROVE[11] report describes in detail how visibility impairment is calculated. Total light extinction when converted to deciviews is calculated for the average of the 20% least impaired and 20% most impaired visibility days.

The IMPROVE equation[12] is used to convert monitored concentrations into extinction, a measure of visibility. The original IMPROVE equation converts PM species concentrations to light extinction (b_{ext}) as follows:

$$b_{ext} = 3 * f(RH) * [sulfate] + 3* f(RH) * [nitrate] + 4 * [organic carbon] + 10 * [elemental carbon] + 1 * [fine soil] + 0.6 * [coarse mass] + 10$$

The *f*(RH) is a water growth factor for sulfate and nitrate; its value depends on relative humidity (RH), ranging from one at low humidity to 18 at 98% humidity. Brackets ([]) represent the concentrations of the PM species measured in micrograms per cubic meter ($\mu g/m^3$). The constants are the individual component's extinction efficiency. The 10 that is added accounts for Rayleigh scattering, which is due to the interaction of light with molecules of air itself with no pollutants and is measured in inverse megameters (Mm^{-1}).

In 2007, the IMPROVE workgroup published a more robust algorithm for calculating background visibility.[13] The revised IMPROVE light extinction equation is expressed as follows:

$$b_{ext} = 2.2 * f_s(RH) * [small\ sulfate] + 4.8 * f_L(RH)\ [large\ sulfate] + 2.4 * f_s(RH) * [small\ nitrate] + 5.1 * f_L\ (RH) *[large\ nitrate] + 2.8 * [small\ organic\ mass] + 6.1 * [large\ organic\ mass] + 10 * [elemental\ carbon] + 1 * [fine\ soil] + 1.7 * f_{ss}(RH) * [sea\ salt] + 0.6 * [coarse\ mass] + Rayleigh\ scattering\ (site\text{-}specific) + 0.33 * [NO_2(ppb)]$$

Sulfate, nitrate, and organic mass are each split into two fractions representing small and large distributions of those species. Though not explicitly shown in the equation, the organic mass concentration used in this new algorithm is 1.8 times the organic carbon mass concentration, changed from 1.4 times carbon mass concentration as used for input for the original IMPROVE

[11] *Interagency Monitoring of Protected Visual Environments (IMPROVE) Report V* (2011).
[12] See: http://vista.cira.colostate.edu/improve/
[13] Pitchford, M. L., W. C. Malm, B. A. Schichtel, N. Kumar, D. Lowenthal, and. Hand, J. L. (2007). Revised algorithm for estimating light extinction from IMPROVE particle speciation data, *Journal of the Air and Waste Management Association, 57*, 1326-1336.

algorithm. Sea salt and light absorption by nitrogen dioxide (NO_2) which is measured in parts per billion (ppb) have been added. Distinct water growth curves for small sulfates and nitrates, large sulfates and nitrates, and sea salt have also been added. Site-specific Rayleigh scattering is calculated for the elevation and annual average temperature of each of the IMPROVE monitoring sites compared to the original equation that assumed extinction due to Rayleigh scattering was 10 Mm^{-1}.

2. Assessment of Visibility Conditions for Arkansas Class I Areas

The annual average visibility for 2001–2011 for the 20% best (least impaired) and 20% worst (most impaired) days at Caney Creek and Upper Buffalo Wilderness areas is displayed in Figure 4.1 and Figure 4.2. Visibility conditions have varied from year to year at each Wilderness area. The 2011 data for the least and most impaired days at Caney Creek and Upper Buffalo Wilderness areas shows an improvement in visibility for both areas since 2001.

Figure 4.1. Annual Average Visibility for 20% Best and 20% Worst Days at Caney Creek Wilderness Area, Arkansas (2001–2011)

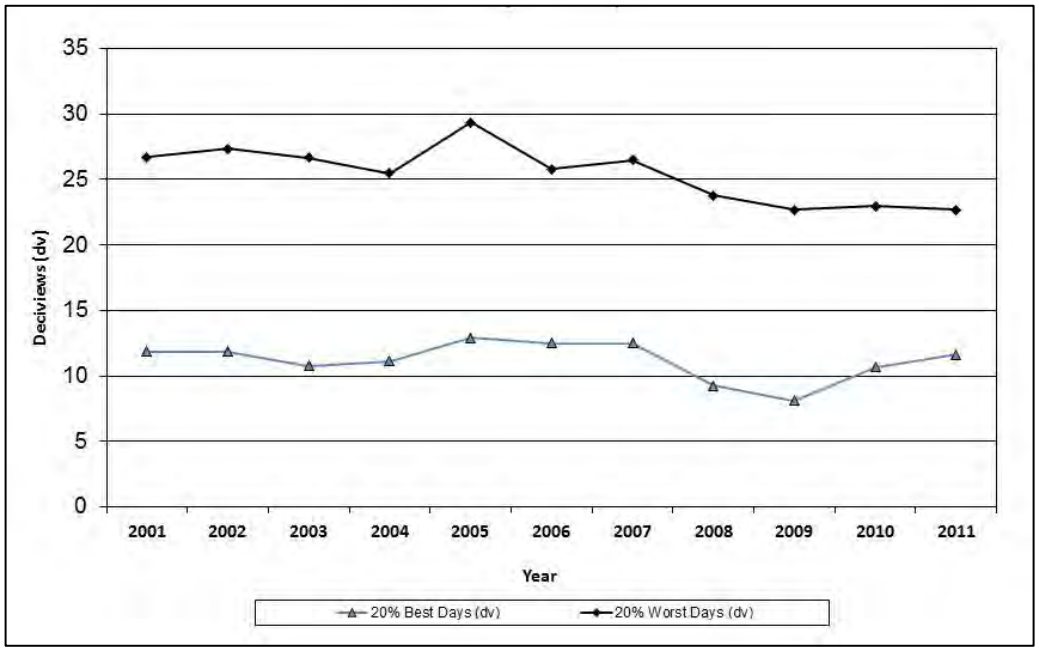


Figure 4.2. Annual Average Visibility for 20% Best and 20% Worst Days at Upper Buffalo Wilderness Area, Arkansas (2000–2011)

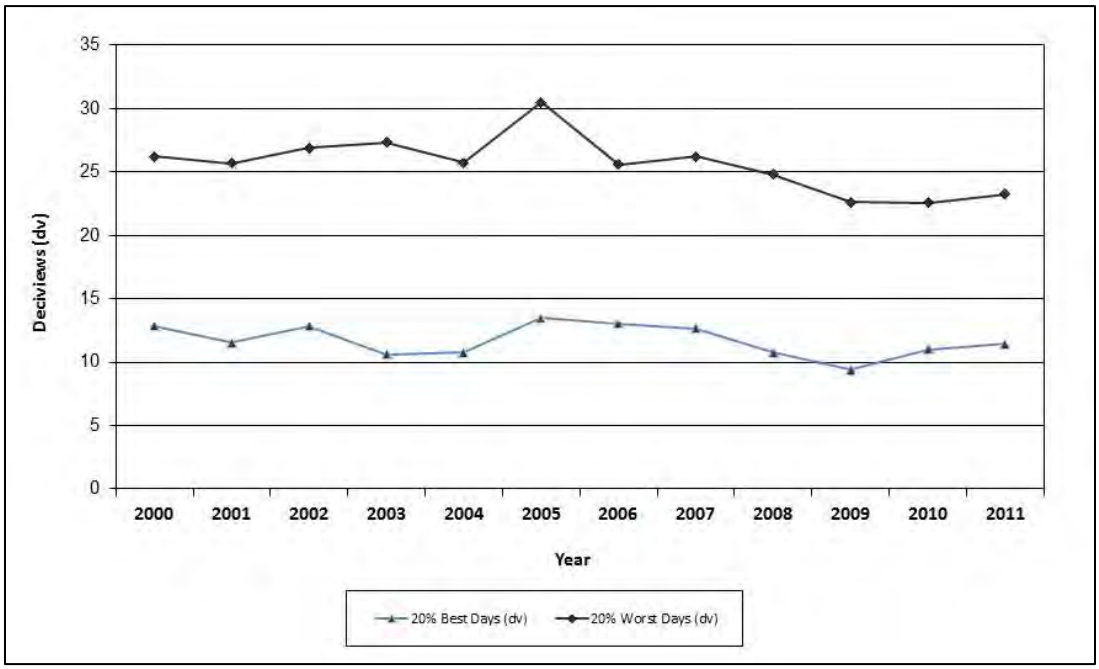


Table 4.1 demonstrates the change in visibility on the 20% worst days at Caney Creek and Upper Buffalo Wilderness areas based on observed data collected between 2001 and 2011 at Caney Creek Wilderness area and collected between 2000 and 2011 at Upper Buffalo Wilderness area. Both areas showed improved visibility from the baseline average in the periods of 2005–2009 and 2007–2011. The current five-year average shows that as of 2011, Caney Creek Wilderness area has achieved 73% of its visibility impairment reduction goal of 3.88 dv and Upper Buffalo Wilderness area has achieved 66% of its visibility impairment reduction goal of 3.75 dv by 2018.

Table 4.1. Visibility at Arkansas Class I Areas on the 20% Worst Days

Class I Area	Monitor ID	Baseline 5-Year Average 2000 – 2004 *(dv)	Current 5-Year Average 2007 – 2011 (dv)	Past 5-Year Average 2005 – 2009 (dv)	Current minus Baseline (dv) 5-Year Average
Caney Creek	CACR	26.55	23.73	25.63	-2.82
Upper Buffalo	UPBU	26.36	23.88	25.93	-2.47

*Data collection at Caney Creek Wilderness area began in 2001; therefore, only four years of data (2001–2004) were used to calculate the baseline.

Table 4.2 shows the five-year averages that were calculated for the 20% best days at Caney Creek and Upper Buffalo Wilderness areas. It also demonstrates the change in visibility on the 20% best days at Caney Creek and Upper Buffalo Wilderness areas based on observed data collected between 2001 and 2011 at Caney Creek Wilderness area and between 2000 and 2011 at Upper Buffalo Wilderness area. Caney Creek Wilderness area showed improved visibility from the baseline average for the periods of 2005–2009 and 2007–2011. Upper Buffalo Wilderness area showed degraded visibility from the baseline average in the average visibility impairment from 2005–2009 and improved visibility from the baseline average for the average of the years 2007–2011.

Table 4.2. Visibility at Arkansas Class I Areas on the 20% Best Days

Class I Area	Monitor ID	Baseline 5-Year Average 2000 – 2004 *(dv)	Current 5-Year Average 2007 – 2011 (dv)	Past 5-Year Average 2005 – 2009 (dv)	Current minus Baseline (dv) 5-Year Average
Caney Creek*	CACR	11.39	10.43	11.06	-0.97
Upper Buffalo	UPBU	11.71	11.04	11.85	-0.67

*Data collection at Caney Creek Wilderness area began in 2001; therefore, only four years of data (2001–2004) were used to calculate the baseline.

3. Summary

Caney Creek and Upper Buffalo Wilderness areas have both shown improved visibility for the most impaired and least impaired days since 2001 and are projected to continue to improve. Based on the five-year rolling averages and projected data, both Wilderness areas are on schedule to achieve their 2018 RPGs for the 20% worst days. Data from Caney Creek and Upper Buffalo Wilderness areas show that the goal of no visibility degradation on the 20% best days will be achieved and that visibility has and will continue to improve.

Chapter 5: Emissions Inventory Progress–40 C.F.R. § 51.308(g)(4)

The RHR 40 C.F.R. § 51.308(g)(4) requires: "*An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5 year period.*"

1. Background

The 1990 C.A.A. Amendments require that an Emission Inventory (EI) be prepared statewide for point, nonpoint (area), on-road, and nonroad mobile emissions categories statewide. ADEQ maintains an EI of up-to-date information on emissions of SO_2, VOC, CO, NO_x, lead and lead compounds, ammonia (NH_3), particulate matter less than 2.5 micrometers ($PM_{2.5}$), and particulate matter less than 10 micrometers (PM_{10}). The EI identifies the types of emissions sources present in an area, the amount of each pollutant emitted, the type of processes occurring, and any control devices employed at each plant or source category. The EI provides data for a variety of air quality planning tasks that include establishing baseline emission levels, calculating emission reduction targets, developing control strategy development for reducing emissions, providing emission inputs into air quality simulation models, and the tracking of emissions over time. These EIs are critical for the efforts of state, local, and federal agencies to demonstrate attainment of the NAAQS.

This chapter discusses general EI development for each of the anthropogenic source categories and compares actual emission trends with modeled projections for the State as a whole (all sources) as well as for electric generating utilities within the State.

2. Industrial Point Sources

Stationary point source emission data is collected annually from those sources that meet reporting requirements outlined in the Air Emissions Reporting Requirements (40 C.F.R. Part 51). These sources include, but are not limited to, refineries, chemical plants, bulk terminals, and utilities. Facilities are required to report emissions data to ADEQ. Reporting of information characterizing the process equipment, the abatement units, and the emission points is also required. All data submitted is reviewed for quality assurance purposes and then stored in the State and Local Emissions Inventory System (SLEIS) database. At the end of the annual reporting cycle, point source emission data is reported each year to the EPA for inclusion in the National Emissions Inventory (NEI).

3. Area Sources

Stationary sources that do not meet the reporting requirements for point sources are classified as area sources. Area sources are small-scale industrial, commercial, and residential sources that use materials or perform processes that generate emissions. Area sources can be characterized by the mechanism in which emissions are released into the atmosphere: evaporative or combustion. Evaporative emission sources include the following: oil and gas production facilities, printing processes, industrial coating and degreasing operations, gasoline service station underground tank filling, and vehicle refueling operations. Combustion sources include the following small facilities with less than 100 tons per year of emissions: oil and gas production facilities, stationary source fossil fuel combustion at residences and businesses, outdoor burning, structural fires, and wildfires.

Arkansas accepts EPA emission estimates for the Area Sources category.

4. On-Road Mobile Sources

On-road mobile sources consist of passenger cars, passenger trucks, motorcycles, buses, heavy-duty trucks, and other motor vehicles traveling on public roadways. Combustion-related emissions are estimated for vehicle engine exhaust, and evaporative hydrocarbon emissions are estimated for the fuel tank and other non-tailpipe sources from the vehicle. To calculate pollution from on-road mobile sources, emission rates are estimated as a function of county, vehicle type, roadway type, hour, and operating speed. These rates are then matched with appropriate activity from transportation data sources such as vehicle miles traveled (VMT), number of vehicles parked, hours spent in extended idle mode, etc.

Arkansas accepts EPA emission estimates for sources in the On-Road Mobile category.

5. Nonroad Mobile Sources

Nonroad mobile sources include vehicles, engines, and equipment used for construction, agriculture, transportation, recreation, and many other purposes. Nonroad vehicles are also referred to as off-road or off-highway vehicles and do not normally operate on roads or highways. This broad category is composed of a diverse collection of machines, many of which are powered by diesel engines. Examples of nonroad mobile sources include, but are not limited to: agricultural equipment, commercial and industrial equipment, construction and mining equipment, lawn and garden equipment, aircraft, locomotives, and commercial marine vessels.

Arkansas accepts EPA emission estimates for sources in the Nonroad Mobile category.

6. Emissions Data

Table 5.1 shows the consolidated 2002, 2005, 2008, and 2011 NEI emissions data as well as the 2018 projected inventory from the 2008 Arkansas Regional Haze SIP. Please note that the Emissions Data for 2011 was obtained from the 2011 NEI version 1.

Table 5.1. Consolidated 2002, 2005, 2008, and 2011 NEI Emissions Data as well as the 2018 Projected Inventory from the 2008 Arkansas Regional Haze SIP

Category	NO_x					SO_2				
	2002	**2005**	**2008**	**2011**	**2018**	**2002**	**2005**	**2008**	**2011**	**2018**
Agri/Bio	0	0	19,752	19,060	16,412	0	0	0	0	0
Area	20,596	31,184	6,848	30,173	1,474	27,232	41,811	477	2,005	159
Fires	405	405	11,347	14,640	2,443	1,071	819	4,741	7,571	1,581
Fugitive Dust	0	0	0	0	0	0	0	0	0	0
Nonroad Mobile	64,942	64,942	46,685	43,367	34,305	5,540	5,540	814	320	211
On-road Mobile	83,722	83,722	88,416	82,448	33,640	3,078	3,078	819	357	443
Point EGU	42,220	35,431	37,911	38,606	10,882	70,759	66,352	73,292	73,629	39,194
Point Non-EGU	27,602	23,803	36,775	32,443	10,556	19,027	9,107	13,970	11,241	7,471
Road Dust	0	0	0	0	0	0	0	0	0	0
TOTAL	239,487	239,487	247,734	260,737	97,552	126,707	126,707	94,113	95,123	49,059

Category	$PM_{2.5}$					PM_{10}				
	2002	**2005**	**2008**	**2011**	**2018**	**2002**	**2005**	**2008**	**2011**	**2018**
Agri/Bio	4,743	4,743	28,964	27,134	0	31,657	31,657	144,820	135,672	0
Area	7,216	66,389	6,767	8,027	3,215	8,875	78,279	10,324	10,910	2,858
Fires	18,350	13,718	51,905	72,256	24,663	19,320	13,848	59,941	86,432	16,596
Fugitive Dust	237	237	1,979	1,518	940	1,717	1,717	19,792	15,184	5,480
Nonroad Mobile	4,145	1,043	3,139	2,953	3,387	4,367	1,165	3,416	3,134	3,678
On-road Mobile	1,612	1,386	2,818	2,885	949	2,202	1,988	3,647	3,707	949
Point EGU	2,124	1,797	1,332	1,091	74	2,512	2,058	2,195	2,643	218
Point Non-EGU	9,220	4,191	6,244	5,505	347	13,598	6,313	8,657	7,592	861
Road Dust	14,858	14,858	21,681	22,822	10,302	159,124	159,124	190,421	202,253	52,722
TOTAL	62,505	108,362	124,829	144,191	43,877	243,372	296,149	443,213	467,527	83,362

Category	VOC					NH_3				
	2002	2005	2008	2011	2018	2002	2005	2008	2011	2018
Agri/Bio	0	0	1,124,476	1,303,104	0	111,187	111,187	120,201	117,710	45,179
Area	76,164	233,647	74,620	79,601	59,313	7,384	18,498	413	426	155
Fires	25,581	11,838	125,592	182,379	99,829	1,082	128	8,410	12,271	3,161
Fugitive Dust	0	0	0	0	0	0	0	0	0	0
Nonroad Mobile	37,258	1,657	33,830	30,634	31,475	42	19	35	37	49
On-road Mobile	56,465	46,267	40,952	25,871	19,924	3,001	3,254	1,464	1,236	3,412
Point EGU	527	481	529	551	119	346	281	312	324	4
Point Non-EGU	32,037	18,758	27,041	21,839	6,069	1,255	789	875	936	11
Road Dust	0	0	0	0	0	0	0	0	0	0
TOTAL	228,032	312,648	1,427,040	1,643,979	216,728	124,297	134,156	131,710	132,940	51,972

Note: The 2018 Point and Area source emissions were broken down by percentages relative to the 2008 NEI data.
Source: EPA EIS

7. Statewide Emissions Data Comparison

In the 2008 Arkansas Regional Haze SIP, actual 2002 inventory data was used to forecast 2018 emissions. Projected 2018 emission data, the approach used to develop the projections, and the modeling data were summarized in two chapters of the 2008 Arkansas Regional Haze SIP: Chapter 7 Emissions Inventory and Chapter 8 Modeling Assessment.

CENRAP-sponsored regional haze SIP modeling predicted that emissions of both NO_x and PM_{10} would decrease between 2002 and the projected 2018 inventory. Increases in statewide emissions were predicted between 2002 and 2018 for both SO_2 and $PM_{2.5}$.

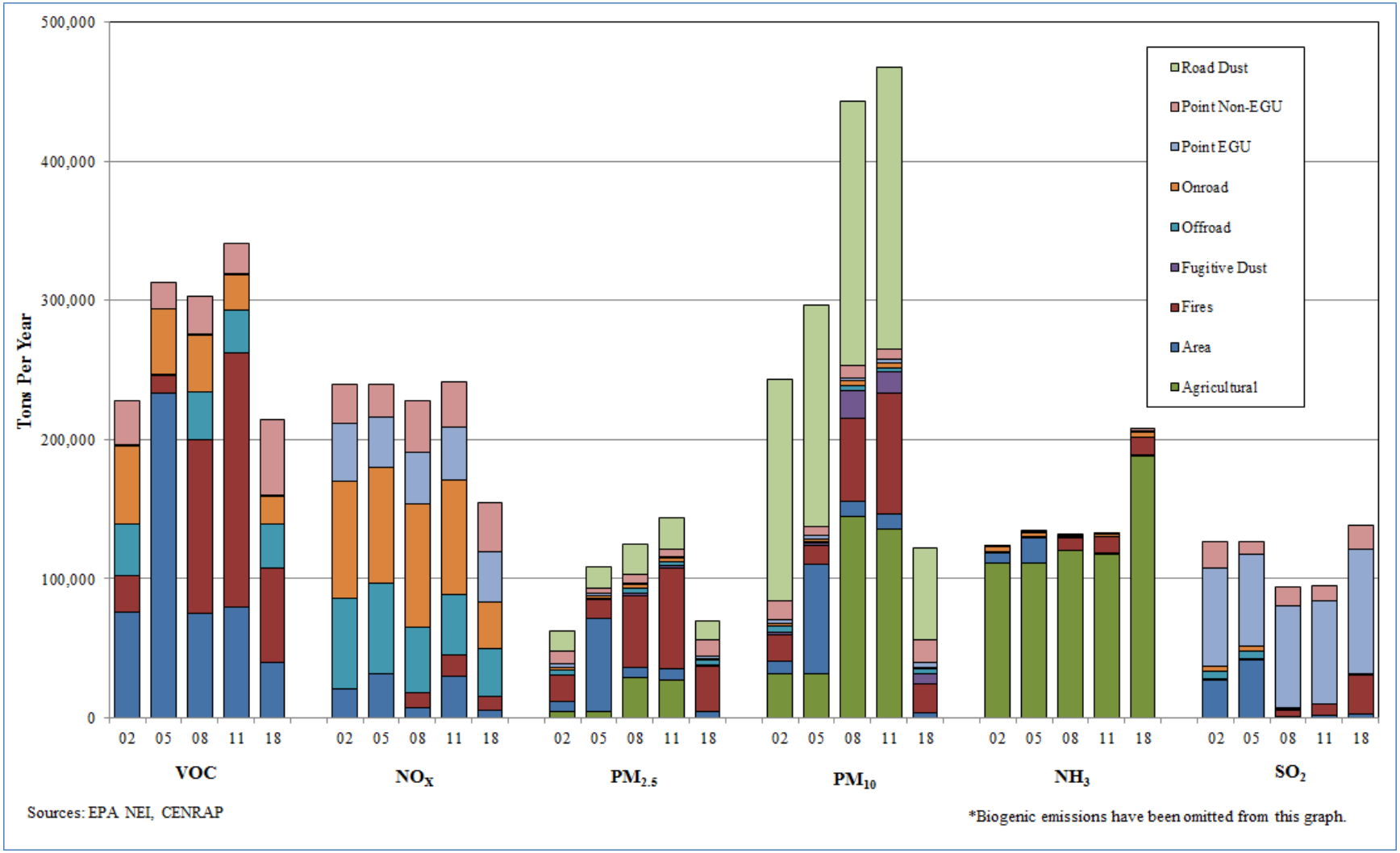
Emission changes were seen in the on-road mobile source inventory between 2008 and 2011 as a result of the transition from EPA's MOBILE6 model to the Motor Vehicle Emission Simulator (MOVES) model for estimation of emissions. Increases in on-road mobile source PM_{10} and $PM_{2.5}$ emissions have been documented[14] as part of the new model's estimation methodology. The transition to MOVES model estimation methodology also resulted in increased NO_x emissions for on-road mobile sources[15]. These modeling changes may account for the increased emission estimates for PM_{10}, $PM_{2.5}$, and NO_x as EPA estimates were accepted by Arkansas for the 2011 NEI. EPA modeling figures for fires accounted for a major portion of the estimated emission increase for $PM_{2.5}$ from 2008 to 2011. EPA figures for fires were also responsible for much of the estimated emission increase for NO_x from 2005 to 2008. EPA estimates (mainly

[14] U.S. EPA. (2009). "Draft MOVES2009" for Comment: Questions and Answers. April.
[15] Simon, Heather, et al. (2012). Analysis of US NO_x Emissions from Two Mobile Source Emissions Model: Magnitude, Spatial and Temporal Patterns, and Effects on Photochemical Modeling Outputs, Regional, State and Local Modeling Workshop Presentation.

fugitive dust, road dust, agriculture, and fires) accounted for a major portion of the estimated emission increase for PM_{10} from 2005 to 2011.

The SO_2 emissions decreased between 2005 and 2011 as a result of phasing in low sulfur [500 parts per million (ppm)] ULSD fuels for nonroad, locomotive, and marine engines beginning in 2007. These lower sulfur fuel requirements, coupled with advanced emission control technologies, are expected to decrease emissions from these engines between 2007 and 2014.

Figure 5.1. Comparison of Arkansas's Actual Emissions for 2002, 2005, 2008, and 2011 with the 2018 CENRAP Projected Emissions



Emissions from 2002 are compared to 2011 emissions in Tables 5.2, 5.3, and 5.4.

Table 5.2. Summary of Arkansas Emissions from the 2002 NEI (tons)

Category	VOC	NO_x	$PM_{2.5}$	PM_{10}	NH_3	SO_2
Agri/Biogenics	0	0	4,743	31,657	111,187	0
Area	76,164	20,596	7,216	8,875	7,384	27,232
Fires [b]	25,581	405	18,350	19,320	1,082	1,071
Fugitive Dust [a]	0	0	237	1,717	0	0
Nonroad Mobile	37,258	64,942	4,145	4,367	42	5,540
On-road Mobile	56,465	83,722	1,612	2,202	3,001	3,078
Point EGU	527	42,220	2,124	2,512	346	70,759
Point Non-EGU	32,037	27,602	9,220	13,598	1,255	19,027
Road Dust [a]	0	0	14,858	159,124	0	0
TOTAL	228,032	239,487	62,505	243,372	124,297	126,707

[a] Fugitive dust and road dust emission rates reflect what remains after the application of transport factors.

[b] Represents the sum of the 2002 "Area Fire," "Point Fire," and "Wildfire" categories.

Table 5.3. Summary of Arkansas Emissions from the 2011 NEI (tons)

Category	VOC	NO_x	$PM_{2.5}$	PM_{10}	NH_3	SO_2
Agri/Biogenics	1,303,104	19,060	27,134	135,672	117,710	0
Area	79,601	30,173	8,027	10,910	426	2,005
Fires	182,379	14,640	72,256	86,432	12,271	7,571
Fugitive Dust [a]	0	0	1,518	15,184	0	0
Nonroad Mobile	30,634	43,367	2,953	3,134	37	320
On-road Mobile	25,871	82,448	2,885	3,707	1,236	357
Point EGU	551	38,606	1,091	2,643	324	73,629
Point Non-EGU	21,839	32,443	5,505	7,592	936	11,241
Road Dust [a]	0	0	22,822	202,253	0	0
TOTAL	1,643,979	260,737	144,191	467,527	132,940	95,123

[a] Transport factors were not applied to the 2011 fugitive dust or road dust emissions

Table 5.4. Changes in Emissions from 2002 to 2011 (tons)

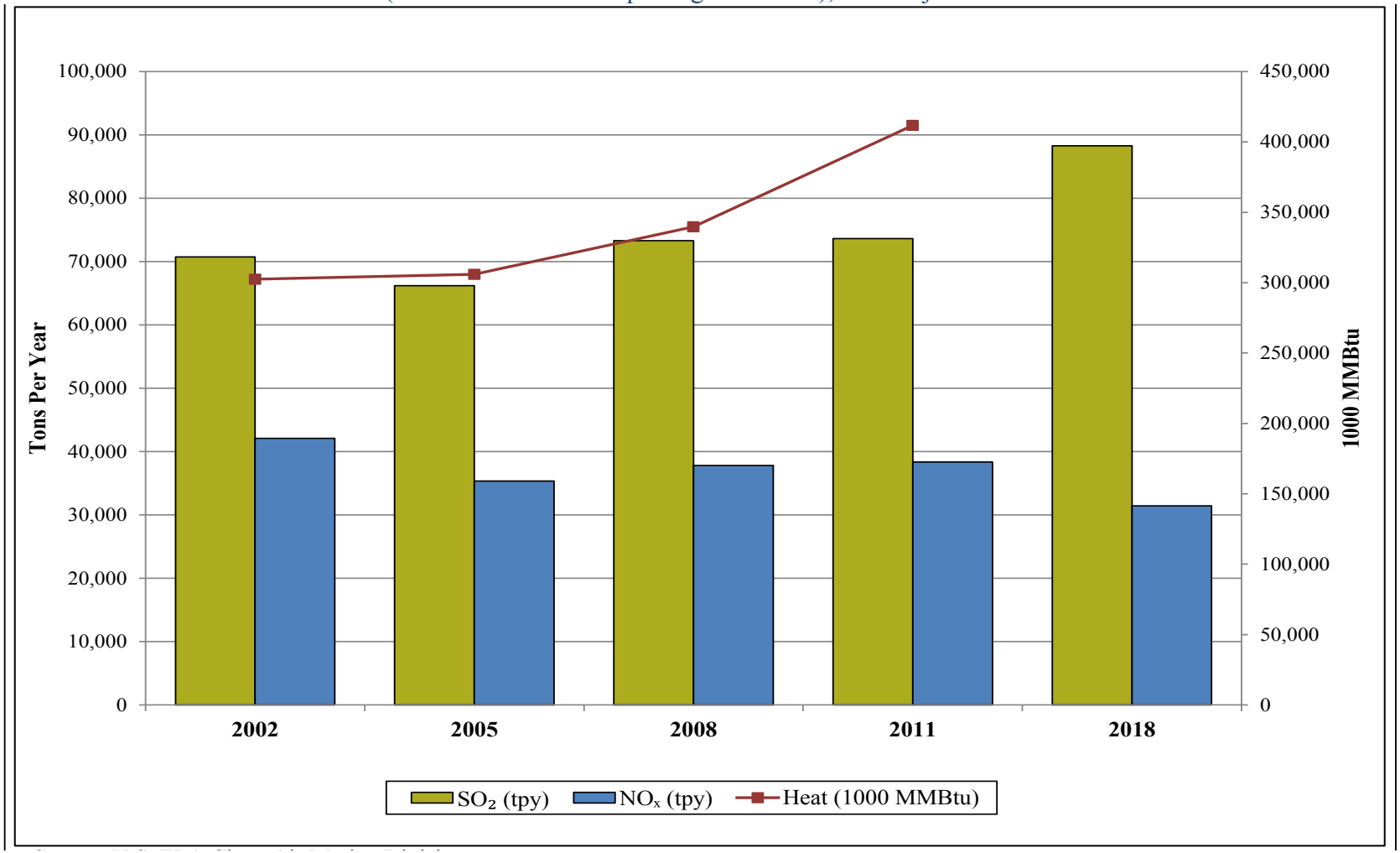
Positive values indicate growth.

Category	VOC	NO_x	$PM_{2.5}$	PM_{10}	NH_3	SO_2
Agri/Biogenics	1,303,104	19,060	22,391	104,015	6,523	0
Area	3,437	9,577	811	2,035	-6,958	-25,227
Fires	156,798	14,235	53,906	67,112	11,189	6,500
Fugitive Dust [a]	0	0	1,281	13,467	0	0
Nonroad Mobile	-6,624	-21,575	-1,192	-1,233	-5	-5,220
On-road Mobile	-30,594	-1,274	1,273	1,505	-1,765	-2,721
Point EGU	24	-3,614	-1,033	131	-22	2,870
Point Non-EGU	-10,198	4,841	-3,715	-6,006	-319	-7,786
Road Dust [a]	0	0	7,964	43,129	0	0
Total Change	1,415,947	21,250	81,686	224,155	8,643	-31,584

[a] Apparent increases in PM_{10} and $PM_{2.5}$ emissions from the fugitive dust and road dust categories are predominantly, if not wholly attributable to the 2011 emissions not being reduced by transport factors.

It was also noted that overall efficiency of EGU facilities has been increasing. This conclusion was based on the observation that the rate of heat input has increased at a higher rate than the rate of SO_2 and NO_x emissions. (See Figure 5.2.)

Figure 5.2. Actual Annual Emissions of SO_2 and NO_x and Heat Input (in 1000 MMBtu) in 2002, 2005, 2008 and 2011 as Reported to CAMD (Includes All Units Reporting to CAMD), and Projected 2018 Emissions



As predicted in the CENRAP-sponsored regional haze SIP modeling projections for 2018, estimated $PM_{2.5}$ emissions have increased from 2002 to 2011. Estimated emissions of PM_{10} and NO_x have also increased from 2002 to 2011. The increase in estimated emissions for both PM_{10} and NO_x may be due to the use of newer modeling methodologies that have been developed since the 2018 projections were made. The reported PM_{10} emissions from Point Source EGUs generally increased between 2002 and 2011; however, these emissions are projected to decrease by 2018. Although overall emissions for both NO_x and $PM_{2.5}$ have increased from 2002 to 2011, the reported $PM_{2.5}$ emissions from Point Source EGUs generally decreased between 2002 and 2011 while NO_x emissions from Point EGU sources were also lower in 2011 than in 2002. The majority of the NO_x, PM_{10} and $PM_{2.5}$ emission estimates referenced in Figure 5.1 for Point Source EGUs were obtained from NEI reports, which included data obtained directly from the reporting facilities. Those emission values therefore represent the most accurate data available at the time this document was developed. The remaining NO_x, $PM_{2.5}$, and PM_{10} emissions that contributed to the overall increases were the results of EPA modeling. EPA-modeled emissions may have seen increases resulting from the use of newer modeling methodologies between 2005 and 2011. There was a decrease in estimated SO_2 emissions between 2002 and 2011 and this is likely due to phasing in of low sulfur fuels that may not have been factored into the original 2018 predictions.

8. Summary

As required in 40 C.F.R. § 51.308(g)(4), Arkansas analyzed changes in emissions of pollutants contributing to visibility impairment from sources within the State. Table 5.4 indicates that total SO_2 emissions have decreased since 2002. Although NEI emission figures for NO_x, PM_{10}, and $PM_{2.5}$ have shown a general increase from 2002 to 2011, much of the increase for these pollutants is based on emission modeling/estimates from EPA. These modeled emissions may have shown increases due to the use of newer modeling methodologies that were not available when the baseline projections were developed in 2002. It was also observed, as shown on Table 5.1 and Table 5.4, NO_x, PM_{10} and $PM_{2.5}$ are trending down in the Point EGU category.

Chapter 6: Assessment of Changes Impeding Visibility Progress–40 C.F.R. § 51.308(g)(5)

1. Introduction

40 C.F.R. § 51.308(g)(5) requires: "*An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past five years that have limited or impeded progress in reducing pollutant emissions and improving visibility*."

To address 40 C.F.R. § 51.308(g)(5), Arkansas is explicitly indicating there were no significant changes in the anthropogenic emissions of concern that have limited or impeded progress in reducing pollutant emissions and improving visibility. Further information on how Arkansas is assessing visibility emissions in both of its Class I areas can be found in Chapter 4, Assessment of Visibility Conditions, which addresses Arkansas's reasonable progress in detail, and Chapter 5, Emissions Inventory Progress, which provides the general EI development for each of the anthropogenic source categories.

Chapter 7: Assessment of Current Strategy to Meeting Reasonable Progress Goals–40 C.F.R. § 51.308(g)(6)

1. Introduction

40 C.F.R. § 51.308(g)(6) of the RHR requires: "*An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.*"

EPA, as discussed in the Executive Summary, disapproved the RPGs set forth in the 2008 Arkansas Regional Haze SIP. The evaluation set forth in this chapter is based on the RPGs as established in the 2008 Arkansas Regional Haze SIP. ADEQ is presently working on revisions to the SIP to address the portions that EPA disapproved.

ADEQ has assessed the current SIP elements and strategies and determined that, based upon relevant data (i.e. projected emissions and modeling results), they are sufficient to enable Arkansas and other states with Class I areas affected by emissions from Arkansas to meet all established reasonable progress goals.

2. Control Measures in the 2008 Arkansas Regional Haze SIP

As stated in the 2008 Arkansas Regional Haze SIP, the CENRAP modeling showed that Arkansas's Class I areas could achieve the 2018 RPGs without additional control measures beyond those described in the SIP.

The 2008 Arkansas Regional Haze SIP described emission reductions that would produce a 2018 outcome that could show progress toward the goal of natural background conditions and therefore it was concluded that there was not an immediate need to evaluate additional control measures beyond BART. This portion of the SIP was disapproved by EPA. Arkansas will reevaluate the need for additional control measures by performing the four-factor analysis described in 40 C.F.R. § 51.308(d)(1)(i)(A) and submit its findings as part of the responses to the disapproved portions of the 2008 Arkansas Regional Haze SIP. During this reevaluation process, ADEQ will work with EPA.

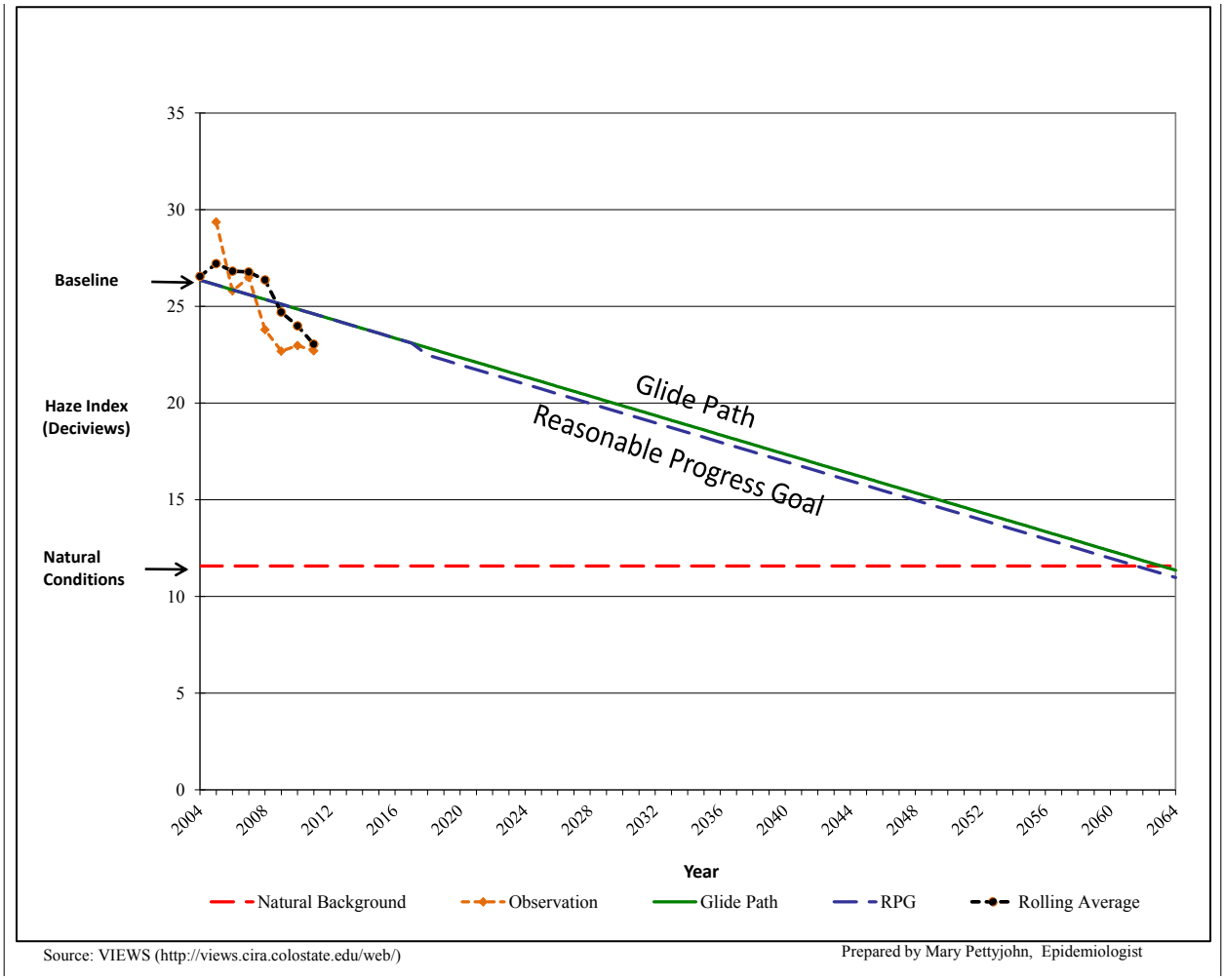
3. Assessment of Reasonable Progress Goals

The RHR at 40 C.F.R. § 51.308(d)(1) requires states to establish RPGs (in dv) for each Class I area within the state that provide for reasonable progress towards achieving natural visibility. In the 2008 Arkansas Regional Haze SIP, the Department established RPGs for reduction of visibility impairment by 2018 to demonstrate consistency with the uniform rate of progress needed to achieve natural background conditions by 2064 in Caney Creek and Upper Buffalo Wilderness areas. For Caney Creek Wilderness area, the Department established a RPG of 3.88

dv reduction in visibility impairment by 2018 for the 20% worst days. A 2018 RPG of 3.75 dv reduction in visibility impairment on the 20% worst days was established for Upper Buffalo Wilderness area. These RPGs should result in visibility improvement that exceeds the uniform rate of progress needed to achieve natural background conditions by 2064. The Department also established a goal of no visibility degradation for the 20% best days for Caney Creek and Upper Buffalo Wilderness areas. Based on the RPGs established by the Department, visibility at Caney Creek and Upper Buffalo Wilderness areas could achieve background conditions by 2062 and 2063, respectively.

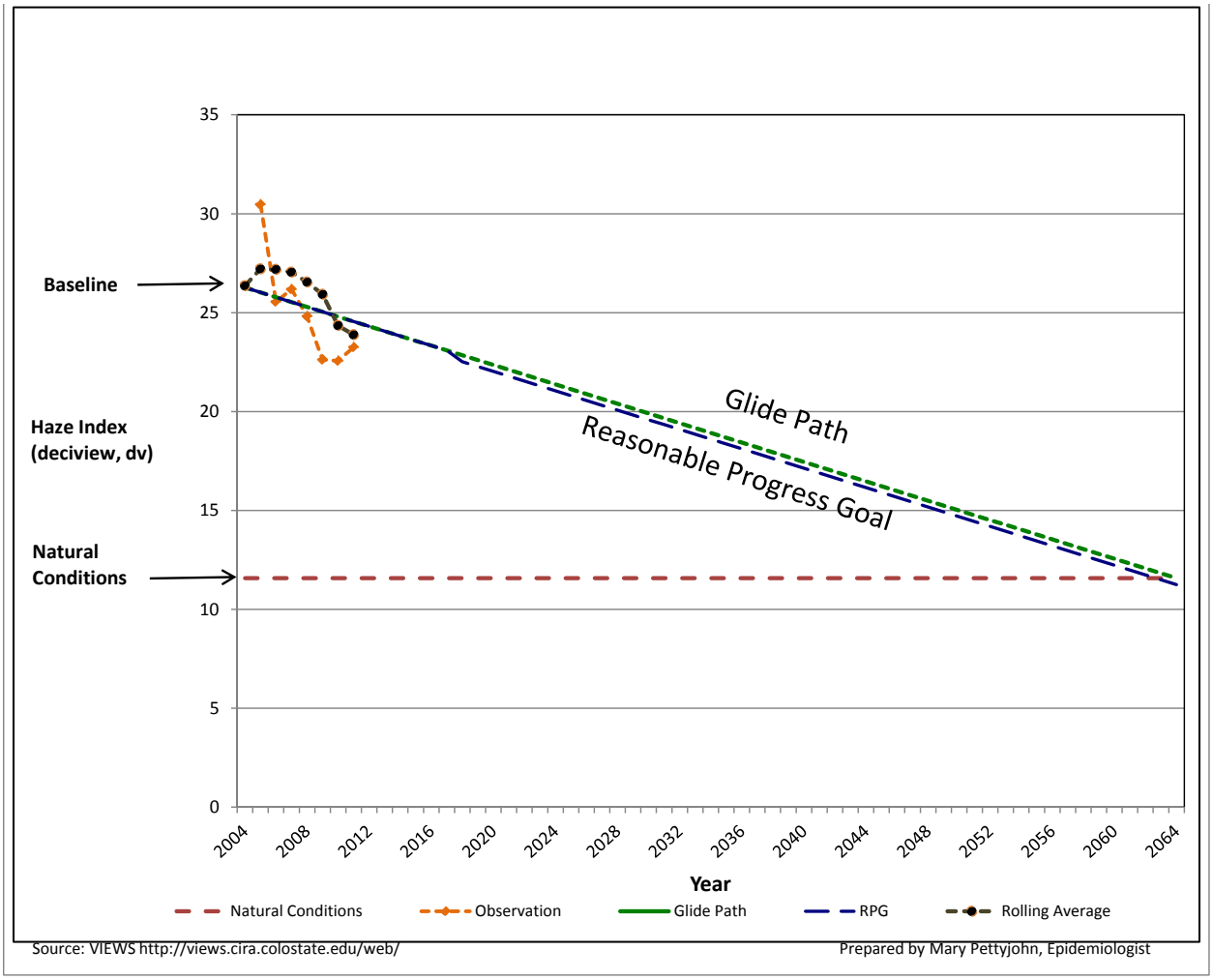
An assessment of visibility improvement progress for the 20% worst days at Caney Creek Wilderness area is depicted in Figure 7.1. A glide path has been drawn to indicate the uniform rate of visibility improvement required to reach the goal of natural conditions by 2064. The most recent data from 2011 and the current five-year rolling average (2007–2011) show that visibility impairment is decreasing more rapidly than the glide path and the RPG. Based on current data and without additional controls on sources, Caney Creek Wilderness area is expected to achieve its 2018 RPG of 3.88 dv of visibility improvement for the 20% worst days.

Figure 7.1. Reasonable Progress Assessment Caney Creek Wilderness Area, Arkansas: 20% Worst Days



An assessment of visibility improvement progress for the 20% worst days at Upper Buffalo Wilderness area is depicted in Figure 7.2. A glide path has been drawn to indicate the uniform rate of visibility improvement required to reach the goal of natural conditions by 2064. The most recent data from 2011 and the current five-year rolling average show that visibility impairment is decreasing more rapidly than the glide path and the RPG. Based on current data, and without additional controls on sources, Upper Buffalo Wilderness area is expected to achieve its 2018 RPG of 3.75 dv of visibility improvement for the 20% worst days.

Figure 7.2. Reasonable Progress Assessment Upper Buffalo Wilderness Area, Arkansas 20% Worst Days



An assessment of visibility improvement progress for the 20% best days at Caney Creek Wilderness area is depicted in Figure 7.3. A glide path has been drawn to indicate the uniform rate of visibility improvement required to reach natural visibility conditions by 2064. Although the most recent observed data collected in 2011 shows that visibility impairment on the 20% best days was greater than the baseline, the five-year rolling average shows a reduction in visibility impairment from the baseline.

Figure 7.3. Reasonable Progress Assessment Caney Creek Wilderness Area, Arkansas 20% Best Days

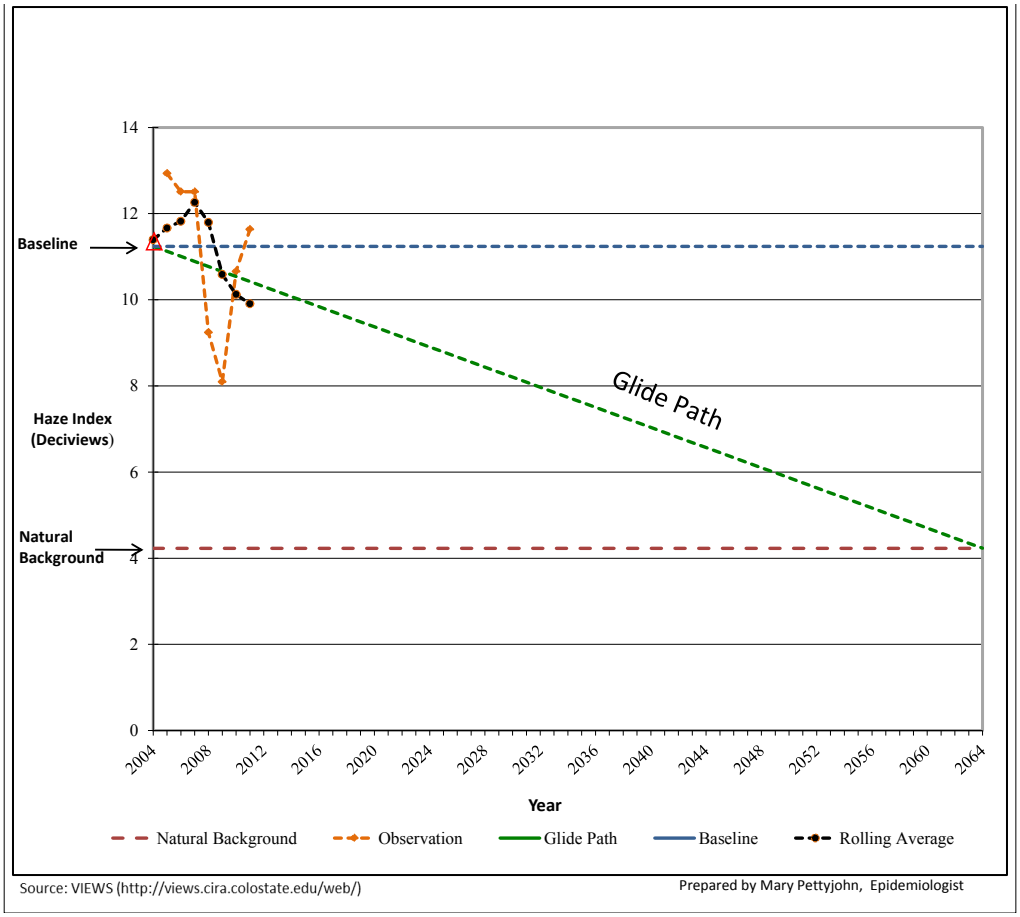
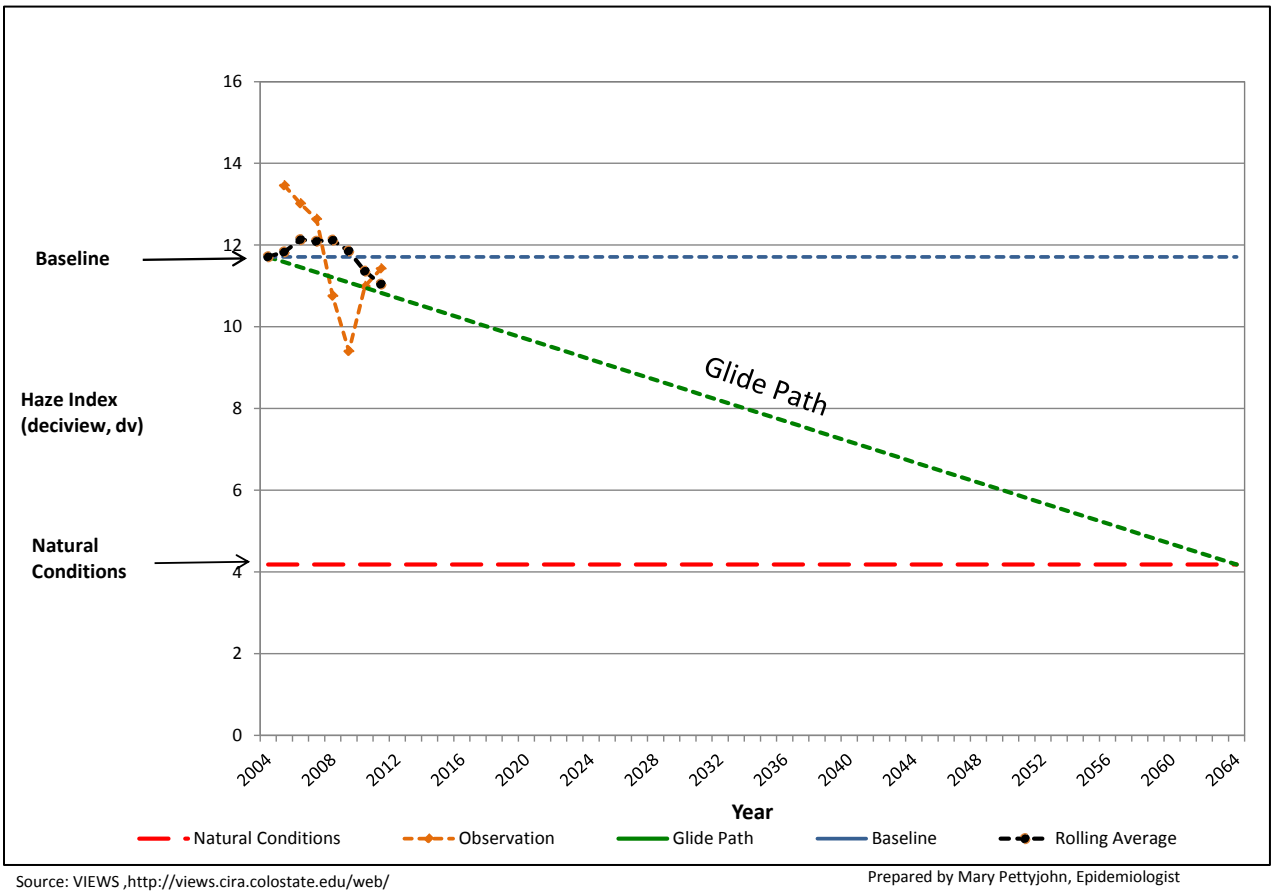


Figure 7.4 depicts an assessment of visual improvement progress for the 20% best days at Upper Buffalo Wilderness area. The five-year rolling average and the most recent observed data (2011) for visual impairment for the 20% best days are below the baseline.

Figure 7.4. Reasonable Progress Assessment Upper Buffalo Wilderness Area, Arkansas 20% Best Days



Source: VIEWS ,http://views.cira.colostate.edu/web/

Prepared by Mary Pettyjohn, Epidemiologist

4. Visibility Improvements at Class I Areas in Other States

As indicated in the above subchapter, Assessment of Regional Progress Goals, Caney Creek and Upper Buffalo Wilderness areas show an improvement in visibility for both areas from the baseline average in the 2005–2009 and 2007–2011 periods. The current five-year average indicates that as of 2011, Caney Creek Wilderness area has achieved 73% of its visibility impairment reduction goal of 3.88 dv and Upper Buffalo Wilderness area has achieved 66% of its visibility impairment reduction goal of 3.75 dv by 2018.

Also indicated in the RPG assessment, the two Class I areas in another state which may be impacted by facilities in Arkansas (Hercules Glade, MO and Mingo, MO) have demonstrated visibility improvement for the least and most impaired days between 2000 and 2011 as shown in Table 7.1 and Table 7.2.

Table 7.1 demonstrates the change in visibility on the 20% worst days at Hercules Glade and Mingo Wilderness areas based on observed data collected between 2001 and 2011. Table 7.2 demonstrates the change in visibility on the 20% best days at Hercules Glade and Mingo Wilderness areas based on observed data collected between 2001 and 2011.

Table 7.1. Visibility at Nearby Class I Areas for the 20% Worst Days

Class I Area	Monitor ID	Baseline 5-Year Average 2000 – 2004 (dv)	Current 5-Year Average 2007 – 2011 (dv)	Past 5-Year Average 2005 – 2009 (dv)	Current minus Baseline	Past minus Baseline
Hercules-Glade, MO	HEGL	26.90	24.62	26.15	-2.28	-0.75
Mingo, MO	MING	28.40	26.48	27.10	-1.92	-1.30

Table 7.2. Visibility at Nearby Class I Areas for the 20% Best Days

Class I Area	Monitor ID	Baseline 5-Year Average 2000 – 2004 (dv)	Current 5-Year Average 2007 – 2011 (dv)	Past 5-Year Average 2005 – 2009 (dv)	Current minus Baseline	Past minus Baseline
Hercules-Glade, MO	HEGL	12.82	11.71	12.55	-1.11	-0.27
Mingo, MO	MING	14.30	13.47	13.90	-0.83	-0.40

Chapter 8: Visibility Monitoring Strategy Review – 40 C.F.R. § 51.308(g)(7)

1. Introduction

40 C.F.R. § 51.308(g)(7) requires: "*A review of the State's visibility monitoring strategy and any modifications to the strategy, as necessary.*"

The monitoring strategy for regional haze in Arkansas relies upon participation in the IMPROVE network, which is the primary monitoring network for regional haze nationwide. The IMPROVE network provides the only long-term record for tracking visibility improvement or degradation, therefore, Arkansas intends to rely on data collected through the IMPROVE network to satisfy the regional haze monitoring requirement as specified in 40 C.F.R. § 51.308(d)(4) of the RHR.

EPA's approval (77 Fed. Reg. 14604) of several core elements of the 2008 Arkansas Regional Haze SIP included the SIP's proposed regional haze monitoring strategy.

2. Monitoring at Class I Areas in Arkansas

In Arkansas, IMPROVE sites are located at the 14,460 acre Caney Creek Wilderness area in the Ouachita National Forest in Polk County, and the 11,801 acre Upper Buffalo Wilderness area in the Ozark National Forest in Newton County. Upper Buffalo Wilderness area includes the original Wilderness and the additions to it. It does not include the Buffalo National River. In addition to the IMPROVE monitor, the Upper Buffalo Wilderness area monitor site also includes a nephelometer and a meteorological monitor. The applicable FLM for these areas is the Forest Service under the U.S. Department of Agriculture (USDA).

The IMPROVE measurements are critical to Arkansas's regional haze monitoring strategy, and it is difficult to visualize how the objectives listed above could be met without the monitoring and sample analysis provided by IMPROVE. Any reduction in the scope of the IMPROVE network in Arkansas would jeopardize the State's ability to demonstrate reasonable progress toward visibility improvement in its Class I areas. In the event of such reduction affecting Arkansas's ability to track regional haze impacts in Class I areas, Arkansas, in consultation with EPA and relevant FLM, will develop an alternative approach for meeting the tracking goal (e.g., relying on nearby urban monitoring sites or seeking contingency funding for limited monitoring).

Additionally, Upper Buffalo Wilderness area's visibility is monitored by a webcam serviced by the U.S. Forest Service. Real-time images can be viewed at http://www.fsvisimages.com.

3. Reporting Visibility Monitoring Data to EPA

Arkansas is committed to meeting the requirements under 40 C.F.R. § 51.308(d)(4)(iv), and reports to EPA visibility data for each of the Arkansas Class I areas annually. For the Five-Year Regional Haze Progress Report, Arkansas has evaluated its monitoring network and found there have not been any changes from the 2008 Arkansas Regional Haze SIP network.

Table 8.1. Arkansas Class I Areas Identification and Operational Dates

Class I Area	Monitor ID	State	Latitude	Longitude	Elevation Mean Sea Level (msl)	Dates of Operation
Caney Creek Wilderness	CACR1	AR	34.4544	-94.1429	683.00	6/22/2000 to present
Upper Buffalo Wilderness	UPBU1	AR	35.8258	-93.203	722.75	12/18/1991 to present

The filter samples from the IMPROVE monitors are sent for analysis to the Crocker Nuclear Laboratory of the University of California in Davis and the data is posted to the IMPROVE website at http://vista.cira.colostate.edu/improve and the Visibility Information Exchange Websystem (VIEWS) website at http://views.cira.colostate.edu/web/.

Data produced by the IMPROVE monitoring network will be used nearly continuously for preparing the five-year progress reports and the 10-year SIP revisions, each of which relies on analysis of the preceding five years of data. Consequently, the monitoring data from the IMPROVE sites needs to be readily accessible and to be kept up-to-date.

See Chapter 5 for monitoring data and assessment of changes impending visibility progress from 2000 to the latest quality assured IMPROVE data.

Chapter 9: Determination of Adequacy–40 C.F.R. § 51.308(h): Recommendations for Five-Year Progress Report

1. Introduction

40 C.F.R. § 51.308(h) or the RHR requires, "…*At the same time the State is required to submit any 5-year progress report to EPA in accordance with paragraph (g) of this section, the State must also take one of the following actions based upon the information presented in the progress report:*

> *(1) ...provide to the Administrator a negative declaration that further revision of the existing implementation plan is not needed at this time;*
>
> *(2) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress…the State must provide notification to the Administrator and to the other States which participated in the regional planning process…must also collaborate with the other States through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies;*
>
> *(3) Where...the implementation plan is or may be inadequate ...due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator; or*
>
> *(4) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan's deficiencies within one year.*"

2. Negative Declaration

Based on the options above and the evidence presented herein, ADEQ is providing a negative declaration to the EPA Administrator, specifying that no additional controls are necessary during this first five-year progress report period. ADEQ is committed to correcting the portions of the 2008 Arkansas Regional Haze SIP that EPA disapproved.

In keeping with the EPA's recommendations related to consultation, ADEQ enlisted the support of appropriate state, local and tribal air pollution agencies, as well as the corresponding FLMs to formulate this report. As part of this commitment, the Department made an advanced, draft copy of this report available to the aforementioned agencies and sought their input. Comments received, along with the Department's responses can be found under Appendix A: Interagency Consultation. Those comments seen as germane were taken into account in developing this progress report.

In addition, the Department also published a Notice of Public Hearing and Comment Period in the *Arkansas Democrat Gazette* on January 2, 2015, and provided a 30-day public comment period. A public hearing, was held on February 2, 2015. A copy of the public notice and Response to Comments can be found under Appendix D: Evidence Public Notice Was Given, and under Appendix F: Compilation of Public Comments and Response to Comments.

ADEQ remains committed to continued consultation with other relevant states and FLMs for this SIP revision and/or the implementation of other programs having the potential to contribute to visibility impairment in much the same fashion as did the pre-hearing meetings, comments, and responses, as required by 40 C.F.R. § 51.308(i)(3) and included under Appendix A: Interagency Consultation.

Chapter 10: Consultation with Federal Land Managers–40 C.F.R. § 51.308(i)(2)-(3)

1. Introduction

The state must provide the FLM with an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on an implementation plan (or plan revision) for regional haze required by this subpart. This consultation must include the opportunity for the affected Federal Land Managers to discuss their:

> *(i) Assessment of impairment of visibility in any mandatory Class I Federal area; and*
> *(ii) Recommendations on the development of the reasonable progress goal and on the development and implementation of strategies to address visibility impairment.*

In developing any implementation plan (or plan revision), the state must include a description of how it addressed any comments provided by the FLM.

2. Consultations

CenSARA arranged conference calls, which took place on February 27, 2012, April 30, 2013, July 30, 2013, August 13, 2013, and September 12, 2013, for the central states with the FLM who would be reviewing the five-year regional haze SIPs. The FLM offered suggestions on the content of the five-year SIP revisions as no further guidance had been provided by the EPA since the 1999 RHR at the time of this document development. The FLM representative suggested that states focus on the data in the 2011 Interagency Monitoring of Protected Visual Environments (IMPROVE) report, which analyzed the Class I area network data for five years, charted trends for each Class I area, and presented national trends. On April 12, 2013, the EPA released a guidance document to assist states in addressing the requirements for a five-year regional haze SIP revision, titled *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (Intended to Assist States and EPA Regional Offices in Development and Review of the Progress Reports)*.

The RHR requires that this SIP revision be reviewed by the appropriate FLMs and EPA before the SIP goes to public comment. The rule requires that FLMs be given 60 days to comment on Arkansas's SIP and that these comments be available to the public during the public comment period. As with the previous Regional Haze SIP revision, after the State receives comments from the federal agencies, ADEQ and FLMs and/or the EPA may confer on the federal comments for intent, clarification, or other reasons.

To enhance interstate consultation efforts, ADEQ submitted a draft SIP to the State of Missouri concurrently with the FLM review period. ADEQ has been and continues to be available for consultation concerning the Class I areas located in Arkansas.

3. FLM Comment Period

The FLM comment period opened on April 25, 2014, and closed on June 24, 2014, but it was extended until June 27, 2014, per FLM request. Comments were submitted to Tony Davis at the Arkansas Department of Environmental Quality, 5301 Northshore Dr., North Little Rock, AR 72118-5317.

Appendix A: Interagency Consultation

This is where Appendix A information will be inserted.

ADEQ
ARKANSAS
Department of Environmental Quality

April 21, 2014

Guy Donaldson
U.S. EPA Region 6
1445 Ross Avenue, Suite 1200
Mailcode: 6PD-L
Dallas, TX 75202-2733

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Donaldson:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP and we would appreciate your review. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

We also would like to inform you, in accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources, and we have submitted to them also a copy of this draft SIP for their revision. We expect to receive their formal comments by June 24, 2014, prior to ADEQ holding a public hearing to solicit public comments.

Should you have any questions, please contact Mark McCorkle at 501-682-0736 or by email at mac@adeq.state.ar.us.

Sincerely,

Mike Bates
Air Division Chief

Enclosure

ADEQ

A R K A N S A S
Department of Environmental Quality

April 21, 2014

Ms. Wendy Vit
Air Quality Planning Section
Air Pollution Control Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Ms. Vit:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP.

We also would like to inform you, in accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources, and we have submitted to them also a copy of this draft SIP for their review. We requested their formal comments to be submitted by June 24, 2014, prior to ADEQ holding a public hearing to solicit public comments.

In order to enhance interstate consultation, we are submitting this draft SIP for your information. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed. We would appreciate if you could send us any comments by June 24, 2014.

Should you have any questions, please contact Mark McCorkle at 501-682-0736 or by email at mac@adeq.state.ar.us.

Sincerely,

Mike Bates
Air Division Chief

Enclosure

ADEQ
ARKANSAS
Department of Environmental Quality

April 21, 2014

Tim Allen, Meteorologist / Modeler
U.S. Fish and Wildlife Service
National Wildlife Refuge System
Branch of Air Quality
7333 W Jefferson Ave., Suite 375
Lakewood, CO 80235-2017

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Allen:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP. In accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources. We believe that such consultation can be sufficiently accomplished via phone or written communication, including email and/or letter. However, if your agency desires an in-person consultation or teleconference, please advise us as soon as practicable, but no later than 30 days after receipt of this submittal. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

As part of the consultation process, FLMs have 60 days to review the draft SIP revision, prior to ADEQ holding a public hearing to solicit public comments. Therefore, ADEQ requests you to acknowledge April 25, 2014, as the formal commencement of the required 60-day review period. We would appreciate your formal comments by June 24, 2014, via conventional mail, express courier or by email to the address below. Should you have any questions, please contact Mark McCorkle at 501-682-0736 or by email at mac@adeq.state.ar.us.

Sincerely,

Mike Bates

Mike Bates
Air Division Chief

Enclosure

ADEQ
ARKANSAS
Department of Environmental Quality

April 21, 2014

Norm Wagoner, Forest Supervisor
U.S. Forest Service
Ouachita: Caney Creek Wilderness Area
P.O. Box 1270
Hot Springs, AR 71902

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Wagoner:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP. In accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources. We believe that such consultation can be sufficiently accomplished via phone or written communication, including email and/or letter. However, if your agency desires an in-person consultation or teleconference, please advise us as soon as practicable, but no later than 30 days after receipt of this submittal. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

As part of the consultation process, FLMs have 60 days to review the draft SIP revision, prior to ADEQ holding a public hearing to solicit public comments. Therefore, ADEQ requests you to acknowledge April 25, 2014, as the formal commencement of the required 60-day review period. We would appreciate your formal comments by June 24, 2014, via conventional mail, express courier or by email to the address below. Should you have any questions, please contact Mark McCorkle at 501-682-0736 or by email at mac@adeq.state.ar.us.

Sincerely,

Mike Bates
Air Division Chief

Enclosure

ADEQ
ARKANSAS
Department of Environmental Quality

April 21, 2014

Reggie Blackwell, Acting Forest Supervisor
U.S. Forest Service
Ozark/St. Francis: Upper Buffalo Wilderness Area
605 West Main Street
Russellville, AR 72801

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Blackwell:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP. In accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources. We believe that such consultation can be sufficiently accomplished via phone or written communication, including email and/or letter. However, if your agency desires an in-person consultation or teleconference, please advise us as soon as practicable, but no later than 30 days after receipt of this submittal. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

As part of the consultation process, FLMs have 60 days to review the draft SIP revision, prior to ADEQ holding a public hearing to solicit public comments. Therefore, ADEQ requests you to acknowledge April 25, 2014, as the formal commencement of the required 60-day review period. We would appreciate your formal comments by June 24, 2014, via conventional mail, express courier or by email to the address below. Should you have any questions, please contact Mark McCorkle at 501-682-0736 or by email at mac@adeq.state.ar.us.

Sincerely,

Mike Bates
Air Division Chief

Enclosure

ADEQ

ARKANSAS
Department of Environmental Quality

April 21, 2014

Reggie Blackwell, Acting Forest Supervisor
U.S. Forest Service
Ozark/St. Francis: Upper Buffalo Wilderness Area
605 West Main Street
Russellville, AR 72801

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Blackwell:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP. In accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources. We believe that such consultation can be sufficiently accomplished via phone or written communication, including email and/or letter. However, if your agency desires an in-person consultation or teleconference, please advise us as soon as practicable, but no later than 30 days after receipt of this submittal. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

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Sincerely,

Mike Bates
Air Division Chief

Enclosure

ADEQ
ARKANSAS
Department of Environmental Quality

April 21, 2014

Bill Nightingale
U.S. Forest Service
Mark Twain Forest: Hercules Glade Wilderness Area
401 Fairgrounds Road
Rolla, MO 65401

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Nightingale:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP. In accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources. We believe that such consultation can be sufficiently accomplished via phone or written communication, including email and/or letter. However, if your agency desires an in-person consultation or teleconference, please advise us as soon as practicable, but no later than 30 days after receipt of this submittal. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

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Sincerely,

Mike Bates
Air Division Chief

Enclosure

ADEQ

A R K A N S A S
Department of Environmental Quality

April 21, 2014

Pat Brewer
Regulatory, Policy, Smoke Management
NPS Air Resources Division
P.O. Box 25287
Denver, CO 80225-0287

Re: Arkansas Five-Year Regional Haze Progress Report State Implementation Plan (SIP) Revision Draft

Dear Mr. Brewer:

This letter serves to notify you that the Arkansas Department of Environmental Quality (ADEQ) has prepared the Five-Year Regional Haze Progress Report draft SIP. In accordance with 40 C.F.R. § 51.308(i), ADEQ is to consult with the Federal Land Managers (FLMs) responsible for Class I areas where visibility may be impacted by Arkansas sources. We believe that such consultation can be sufficiently accomplished via phone or written communication, including email and/or letter. However, if your agency desires an in-person consultation or teleconference, please advise us as soon as practicable, but no later than 30 days after receipt of this submittal. For your convenience, a hard copy of the draft SIP and a disc with an electronic copy are enclosed.

As part of the consultation process, FLMs have 60 days to review the draft SIP revision, prior to ADEQ holding a public hearing to solicit public comments. Therefore, ADEQ requests you to acknowledge April 25, 2014, as the formal commencement of the required 60-day review period. We would appreciate your formal comments by June 24, 2014, via conventional mail, express courier or by email to the address below. Should you have any questions, please contact Mark McCorkle at 501-682-0736 or by email at mac@adeq.state.ar.us.

Sincerely,

Mike Bates
Air Division Chief

Enclosure

United States Department of the Interior

NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225-0287

TRANSMITTED VIA ELECTRONIC MAIL - NO HARDCOPY TO FOLLOW

N3615 (2350)

June 23, 2014

Mike Bates
Air Division Chief
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

Dear Mr. Bates:

Thank you for the opportunity to review and comment on Arkansas's draft State Implementation Plan Review for the Five-Year Regional Haze Progress Report. While the draft report demonstrates that visibility is improving at Class I areas in Arkansas and Missouri, there is no demonstration that Arkansas is implementing all the reasonable control measures necessary to meet the 2018 reasonable progress goals for Class I areas in Arkansas and neighboring states. In March 2012, EPA disapproved portions of Arkansas' 2008 Regional Haze State Implementation Plan (SIP) that addressed Best Available Retrofit Technology, the long term strategy, and reasonable progress goals. Arkansas has not revised the 2008 Regional Haze SIP to resolve the deficiencies identified by EPA. For reasons outlined below, we do not agree with Arkansas' conclusion that the requirements of 40 CFR 51.308(g) have been met, nor can we support Arkansas' determination that no further actions are required.

Our specific comments follow:

Chapter 2.1: The description of pollutant contributions to haze on the 20% worst days at Caney Creek and Upper Buffalo Wilderness Areas (WAs) is good. Figures 2.1 and 2.2 demonstrate that sulfate is the largest contributor to haze of the 20% worst days. Figure 2.3 demonstrates that Electric Generating Units (EGU) and non-EGU point sources are the largest contributors to sulfur dioxide (SO_2) emissions in Arkansas. Therefore we would expect Arkansas to concentrate on reducing point source SO_2 emissions in the long-term strategy.

Chapter 3.1: Table 3.1 indicates that annual emissions of SO_2 from EGU in Arkansas actually increased between 2002 and 2011, while nitrogen oxide (NO_x) emissions decreased slightly. No information is presented about expected emissions reductions from existing EGU between 2011 and 2018 to support the 2018 emissions projections in Table 5.1. The information presented does not demonstrate reasonable progress in reducing point source emissions. Please identify any source specific controls planned and CAIR or CSAPR caps that have yet to be met that would require controls on these sources.

Chapter 5: There is a typo in sentence on top of page 50: Tables 5.2, 5.3, and 5.4 compare 2002 and 2011 emissions, not 2018 emissions. We recognize that emissions from area, non-road, and on-road sectors are calculated by EPA. Our concerns focus on point EGU and non-EGU facilities that are directly permitted by Arkansas and the lack of information supporting 2018 emissions projections.

Chapter 7: In 2012 EPA disapproved Arkansas's BART determinations and reasonable progress goals for 2018. Arkansas has not yet corrected the deficiencies in the 2008 SIP. Arkansas' draft 5-year progress report addresses goals that have been disapproved.

Arkansas commits on page 50 to work with EPA as it performs the required 4-factor analyses. We ask that Arkansas also consult with the affected Federal Land Managers.

Arkansas has not demonstrated that it is reducing emissions contributing to visibility impairment at Class I areas in neighboring states. Section 7.4 does not explain why Hercules Glade and Mingo WAs in Missouri were the only Class I areas reviewed. Arkansas should cite the CENRAP source apportionment analyses that show the contribution of Arkansas point, area, and mobile sources at neighboring Class I areas, compared to sources in other states.

For the reasons above, we disagree with Arkansas' conclusion that no additional actions are needed as part of this five year review. We encourage Arkansas to complete revisions to the 2008 Regional Haze SIP before requesting EPA approval of the 5-year regional haze progress report. If you have questions about our comments, please contact Pat Brewer of my staff at (303) 969-2153.

Sincerely,

Susan Johnson,
Chief, Policy, Planning, and Permit Review Branch

USDA United States Department of Agriculture | Forest Service | Ouachita National Forest, P.O. Box 1270, Hot Springs, AR 71902, 501-321-5202 | Ozark-St. Francis National Forests, 605 West Main, Russellville, AR 72801, 479-964-7200

File Code: 2580
Date: June 23, 2014

Teresa Marks
Director
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Dear Ms. Marks:

The U.S. Forest Service (FS) appreciates the opportunity to review and comment on the State Implementation Plan Review for the Five-Year Regional Haze Progress Report prepared by the Arkansas Department of Environmental Quality (ADEQ).

We are providing these comments to ADEQ, and ask that they be placed in the official public record. We look forward to your response as per section 40 CFR §51.308 (i)(3) and are willing to work with ADEQ staff towards addressing any of the issues discussed in this letter.

Again, we appreciate the opportunity to work closely with ADEQ to improve Arkansas's air quality and visibility. We thank you for the good working relations we have with you in our prescribed burning program.

If you have any questions, need clarification, or would like to discuss our comments, please feel free to contact Judy Logan at 501-321-5341. You may also contact Mr. Blackwell or Mr. Wagoner at the numbers listed above.

Sincerely,

NORMAN L. WAGONER
Forest Supervisor

Craig McBroome
for REGGIE L. BLACKWELL
Forest Supervisor

Enclosure

cc: Mark McCorkle, Guy Donaldson, Joe Kordzi, Mike Bates
Meredith Bond
7333 W. Jefferson Ave., Suite 375
Lakewood, CO 80235
Meredith_Bond@fws.gov

FS Comments regarding ADEQ's Proposed Regional Haze Implementation Plan Revision of June 23, 2014

The Forest Service (FS) appreciated the opportunity to comment on the proposed Regional Haze plan revision.

Arkansas Department of Environmental Quality (ADEQ) submitted a Regional Haze (RH) plan to the Environmental Protection Agency (EPA) on September 23, 2008. On March 12, 2012, EPA took action and partially approved and partially disapproved the Arkansas Regional Haze State Implementation Plan (SIP). The FS submitted comments on June 6, 2008. We had several areas of concern in 2008 that we again bring forward. Specifically, we are still concerned how Best Available Retrofit Technology (BART) decisions are being handled as well as the treatment of Reasonable Progress and Long Term Strategy. As you know, the inclusion of the compliance provision that would require Arkansas subject-to-BART sources to install and operate BART no later than six years after the effective date of the State's regulation was not approved by EPA and should be enforced as written in the Clean Air Act under Sec. 169A (g)(4).[1]

We would like to request that ADEQ summarize, on a facility-by-facility basis, levels of controls considered, final control selected, and information on how the "five factors" were considered in making its decisions. Detailed information can be placed in an Appendix, but BART information submitted by the owner or operator of a pollutant source is not a substitute for the State decision processes.

We request that ADEQ look at our previous comments on the Draft SIP dated June 6, 2008 as some of these are still pertinent.

The original Reasonable Progress discussion in the Draft SIP had several content deficiencies. It does not appear that ADEQ has made the needed correction. The SIP or the SIP review for the 5-year Regional Haze Progress Report (5-year review) does not identify any procedure to address single sources, or combinations of sources, that are predicted to continue to significantly impact visibility conditions in the future after implementing BART, CSAPR, (Cross State Air Pollution Rule) and any other on-the-books and on-the-way programs. Although the State concludes that additional controls are not necessary, we feel the following areas need further consideration:

- Summarize or offer clarity on what controls the Central Regional Air Planning Association (CENRAP[2]) Regional Planning Organization (RPO) utilized within Arkansas in their analyses. (See comment letter dated June 6, 2008, Page 7, #17).

[1] "Sec. 169A (g)(4) the term "as expeditiously as practicable" means as expeditiously as practicable but in no event later than five years after the date of approval of a plan revision under this section (or the date of promulgation of such a plan revision in the case of action by the Administrator under section 110(c) for purposes of this section);"

[2] Central Regional Air Planning Association CENRAP is an organization of states, tribes, federal agencies and other interested parties that identifies regional haze and visibility issues and develops strategies to address them. CENRAP

- A discussion of why model performance evaluation for the base year indicated significant under predictions of visibility impacts from sulfate at the two Class I areas located within Arkansas (See comment letter dated June 6, 2008, page 3, #7), and

- A discussion of the significance of 2002 to 2018 projections of increased point source sulfur emission within Arkansas. Although the model is used in a relative sense, no additional discussion or clarification is provided to address how model performance or model response is adequately addressing issues that may arise from impacts from sulfates, (See comment letter dated June 6, 2008, page 3, #8).

- New Prevention of Significant Deterioration permits (PSDs) that are not represented in the emissions inventory (i.e. John W. Turk and Plum Point II) should be considered as part of the Reasonable Progress Goals (RPG). Table 2.3 appears to have a number of gaps in the data. Please clarify if these sources were considered in the inventory presented.

- The Draft SIP and the 5-year review document omitted the required four factors analysis for establishing the Reasonable Progress Goals. Meeting the uniform rate of progress glide slope does not eliminate the need to analyze the four statutory factors of Reasonable Progress. (See comment letter dated June 6, 2008, page 9, #20).

Again, we wish to express our appreciation for the opportunity to comment on the proposed Regional Haze plan revision. If you have any questions or would like to further discuss or clarify our comments please feel free to contact Judy Logan (501) 321-5341, Mr. Blackwell (479)-964-7200, or Mr. Wagoner (501)-321-5202. We look forward to continuing to work closely with you at improving Arkansas's valuable air resources.

is one of the five Regional Planning Organizations RPOs across the U.S. and includes the states and tribal areas of Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, and Louisiana.

USDA United States Department of Agriculture | Forest Service | Ouachita National Forest
P.O. Box 1270
Hot Springs, AR 71902
501-321-5202

Ozark-St. Francis National Forests
605 West Main
Russellville, AR 72801
479-964-7200

File Code: 2580-2
Date: June 6, 2008

Ms. Teresa Marks
Director,
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock,, AR 72118-5317

Dear Ms. Marks:

On February 25, 2008, the State of Arkansas submitted a draft Regional Haze Rule State implementation plan (SIP), pursuant to the requirements codified in federal rule at 40 CFR 51.308(i)(2), describing its proposal to improve air quality regional haze impacts at mandatory Class I areas across your region. We appreciate the opportunity to work closely with the State through the initial evaluation, development, and, now, 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 all of our most pristine National Parks and Wilderness Areas for future generations.

The U.S. Department of Agriculture, U.S. Forest Service, received and has conducted a substantive review of your draft Regional Haze Rule implementation plan, which you are preparing in fulfillment of your requirements under the federal regulations 40 CFR 51.308(i)(2). Please note the U.S. Environmental Protection Agency (EPA) makes the final determination regarding the document's completeness and approval.

As outlined in a letter sent to each State in October, 2006, our review focused on eight basic content areas. The content areas reflect priorities for the Federal Land Manager agencies, and we have enclosed comments associated with these priorities. Note that we have highlighted comments in bold face that discuss what we consider to be major concerns of the proposed SIP that we believe warrant additional consultation prior to final adoption of the Arkansas Regional Haze Plan. The Forest Service air quality staffs stand ready to work with you towards resolution of these issues. We look forward to your response, as per section 40 CFR 51.308(i)(3). For further information, please contact Judith Logan at (501) 321-5341.

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

Sincerely,

MILBURN BREWSTER

for
NORMAN L. WAGONER
Forest Supervisor

RON KLOUZEK

for
JUDITH L. HENRY
Forest Supervisor

Enclosure

cc:
Mark McCorkle
Environmental Programs Manager
ADEQ
5301 Northshore Drive
North Little Rock, AR 72118-5317

Annette Sharp, Executive Director
CENRAP
10005 S. Pennsylvania, Ste. C
Oklahoma City, Oklahoma 73159

Guy Donaldson, Chief
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Joe Kordzi
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Enclosure

Forest Service Technical Comments on Arkansas' Department on Environmental Quality (ADEQ) Draft Regional Haze State Implementation Plan (SIP)

Overall Comment

The Forest Service has a significant concern that the information provided in the Arkansas' Draft Regional Haze SIP fails to describe or address content elements required by the Regional Haze Rule. In particular, the State relies on numerous appendices in lieu of sufficient summary descriptions to adequately address the content areas identified by the Act or rule.

Two specific content areas are lacking sufficient analysis, description, or comparison to the mandatory factors identified by the Act and subsequent rules. These are the presentation of Best Available Retrofit Technology (BART) decisions made by Arkansas, as well as the treatment of Reasonable Progress and Long Term Strategy. Detailed discussions of these issues are explained in the technical comments that follow.

We are concerned that the apparent lack of sufficient summary and reasonable progress or analyses of the statutory factors may make this draft un-approvable. The Forest Service respectfully requests that the State of Arkansas reconsider the Draft SIP in its present form before release to the public. We ask that the State review the eight elements identified by the Forest Service letter (October, 2006) and expand its discussion in the document regarding how ADEQ approached, evaluated, and drew conclusions on these important rule elements.

The remaining comments provided here are organized according to the priorities that we presented in our October, 2006, letter. Many of the following comments will also provide direction towards building the narrative of the Draft SIP to satisfy the documentation and content area deficiencies noted above.

Baseline, Natural Conditions, Uniform Rate

1. Sections 5.1 states that baseline visibility conditions for the Caney Creek Wilderness Area was established using three years of IMPROVE data, and notes that this "does not meet EPA completeness criteria for the five year averaging period." Section 6 indicates that the Caney Creek IMPROVE site was installed between 2000 and 2003, which is the reason for not having five years of monitoring data at the time baseline was set. Please note that the Regional Haze Rule requires three of five years for baseline calculations, and thus the Caney Creek monitoring site does have sufficient years of valid data to meet the completeness criterion.

2. Sections 5.1 and 5.2 of the Draft SIP discuss baseline and natural visibility conditions for the Caney Creek and Upper Buffalo Class I areas. One minor discrepancy that we noted was with

the baseline 20% worst B_{ext} Nitrate value in Appendix 5.2, table 5.2a – it should be 13.78 rather than 13.76.

3. Figures 10.2 and 10.4 present a "Uniform Rate of Progress for the Twenty Percent Best Days" for both Arkansas Class I areas. Table 10.2 presents the information from those figures in tabular form. The Regional Haze Rule requires that visibility impairment on the worst 20% days be restored to natural conditions over the 60 year timeframe; however, the Rule requires that at a minimum the cleanest 10% days cannot be degraded. The figures 10.6 and 10.8 showing the Reasonable Progress Goals for the Best Days, which appear in the following section, address the Regional Haze Rule Best-Days goal appropriately. Figures 10.2, 10.4, and table 10.2 should be deleted from the Draft SIP because they are not pertinent to the SIP. In addition, the actual deciview Reasonable Progress Goals for both worst- and best-days at each of the Arkansas Class I areas need to be explicitly stated in the SIP narrative, not just shown in the graphics accompanying the discussion.

4. Generally, Regional Planning Organization (RPO) future projections were based on applying relative response factors (RRF) to the modeled results. However, the Draft SIP does not mention RRFs in conjunction with the future year visibility predictions. Please identify whether "Uniform Rate of Reasonable Progress Glide Paths" presented in section 10.1 of the Draft SIP were produced using actual model outputs or the results of applying a relative response factor. If these numbers were the result of a relative reduction, please provide a discussion in the SIP of how they were generated.

Emission Inventories

5. Section 7.0 – Tables 7.1 and 7.2 list 2002 and 2018 emission estimates by basic source category, respectively. This very brief chapter provides reference to two appendices – the first is a lengthy technical report prepared by a contractor, and the second is a "Short Summary of the 2002 Emission Inventories Methodology Utilized by Arkansas." The chapter then indicates that the 2018 emissions inventory will be further discussed in the next chapter. Chapter 8 covers the modeling assessments conducted for this SIP development, with section 8.4.1 providing a one-paragraph description of the basis for the "2018 base case."

   Throughout all of these discussions, there is too much burden placed on the reader to review large reports in the appendices, with no discussion or conclusions provided by ADEQ except for the unsupported numerical data in the chapter 7 tables. For instance, we were unable to determine whether the "2018 Emissions Inventory Summary" presented in Table 7.2 represents the future base case without additional controls, the future projection utilizing CAIR and/or BART controls, or possibly some other future control scenario. This Chapter should identify and describe the differences between the various emissions scenarios that ADEQ employed for its Regional Haze SIP analyses and decisions, including Base/Performance, Typical 2002, Base 2018, and any Alternate 2018, emissions inventories, and how it is utilizing each scenario.

6. There are inconsistent emission discussions starting with section 8.1 leading into section 8.4. Model performance should not use typical base or future emission inventory data. Section 8.3 provides non-related information on emission development for other purposes in the middle of

a performance discussion. No information is provided to describe the performance inventory. Section 8.4 also skips from one topic to another, with discussions of future inventory, typical inventory, and model performance intermingled.

7. Section 8.4.2 presents the results of model performance evaluations for the Arkansas Class I areas. The discussions for Caney Creek and Upper Buffalo suggest significant underestimation of impacts due to sulfur, in the range of 30%-50%. These data are simply stated, but their implications and ADEQ's conclusions based upon the information are not explained. RPO final projections are generally based on relative response factors (RRF) corrections, which allow that, while the model may be "off" in absolute terms, it still responds to increases or decreases in impact. There is no mention of RRFs or appropriate model response analyses.

8. There is significant uncertainty with the future projection of sulfur dioxide emissions from the Electric Generating Utility (EGU) sector. As currently drafted, the SIP projects an overall increase in SO_2 emissions between the baseline and 2018, despite inclusion of BART controls on a significant amount of current emissions. The SIP should commit the State to review and revise emissions projections from 2012 to 2018 as part of a 5-year review required by the regional haze rule. This commitment will assure that the projected improvements represented by the reasonable progress goals set in Section 10 will be achieved. The commitment to review must include a commitment to seek further controls or adjust the reasonable progress goals though a SIP revision should the emissions projections vary substantially from those projected at this time. Those revisions may result in additional improvement in visibility if the current projection of new power generation in Arkansas does not materialize, or if such generation does not yield the expected amount of new emissions.

   Section 12 briefly provides a broad commitment to periodic review and revision of the SIP as a whole. The Emission Inventory sections should discuss the uncertainty and then point to the Section 12 commitment as ADEQ's plan of action on that front, and ensure that the statement provided in Section 12 adequately encompasses the scope described in this comment.

9. Section 8.5 presents a short discussion and a few figures about the "2018 Base G C1 Control Strategy" that CENRAP generated. This scenario involved examining the pollution sources within the "areas of influence" of the nearby Class I areas, and assuming that controls would be applied up to a cost of $5,000/ton level for all such facilities that had a ratio of emissions-to-distance-from-Class-I-area of 5 or more (tons per year/kilometers). Resulting reductions to visibility impacts are described as significant, yet nowhere does the Draft SIP explain whether Arkansas or any other State identified in that scenario, has committed to or will benefit from such an inventory. Thus, we do not understand the context in which ADEQ is discussing the 2018 Base G C1 scenario.

Best Available Retrofit Technology (BART)[1]

1 BART-eligible sources are those sources that have the potential to emit 250 tons or more of a visibility-impairing air pollutant, were put in place or under construction between August 7, 1962 and August 7, 1977, and whose operations fall within one or more of 26 specifically listed source categories. Under CAA section 169A(b)(2)(A), BART is required for any BART-eligible source which "emits any air pollutant that may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area."

10. **BART, although partially described, does not offer a sufficient summary of process, source identification, impacts, controls associated with exemption or subsequent determinations. In Arkansas's own statement, the Clean Air Interstate Rule (CAIR) does not constitute sufficient controls to be better than BART. This statement places an additional burden on Arkansas, as compared to a typical CAIR State, to develop and describe a BART process that clearly identifies, evaluates, and decides levels of control or exemption for eligible single sources. The State appears to have conducted much of the necessary steps. However, the SIP document does not adequately describe the analyses and how alternatives associated with controls were considered by the State.**

11. Specifically regarding the BART exemption process, we have the following comments:

    a. On page 46, at the end of section 9.2, Arkansas explains that, since it's EGU sources are only required to participate in ozone-season NOx reductions under CAIR, that meeting CAIR requirements does not satisfy BART for these facilities. We concur with this decision. It would be helpful to the reader if this paragraph was relocated earlier in the chapter, prior to BART exemption discussions, to explain why so many EGU emission sources are included in the subsequent BART determination/exemption process in Arkansas.
    b. Section 9.2 does not provide sufficient summary of ADEQ's BART exemption process or results, including the reasons why remaining BART sources were not exempt.
    c. Section 9.2, says that the State will exempt BART-eligible through source-by-source evaluation (that is, in accordance with option 1 listed on page 42). Yet, the text that follows suggests that a cumulative visibility analysis was performed on the six remaining subject-to-BART sources. Readers are referred to Appendix 9.2C for description and methodology. Appendix 9.2C does not include information from ENVIRON or Alpine, nor does it offer another cumulative analysis. It is not clear what purpose or application a cumulative analysis serves for the State.

12. Section 9.4 (together with Appendix 9.2C) of the Draft SIP present a discussion relating to post-control visibility improvement at ten Class 1 areas as a result of BART controls on several subject-to-BART facilities. It demonstrates significant improvement which is to be commended, but also shows that very significant visibility impairment still exists after BART controls are in place. This issue is to be addressed in the Reasonable Progress portion of the Draft SIP. However, some consideration might be given as to whether some of the BART control technology chosen by the sources specifically to satisfy the BART requirements might preclude possibly more effective technology that could have been deployed in an overall more cost-effective manner as part of the Reasonable Progress phase. The ADEQ might determine if a much higher level of control (beyond BART) by a BART source at this time might allow the ADEQ to not require further controls from that particular source as part of it's Reasonable Progress determination.

    The attachment to this comment document provides source-specific recommendations regarding control technology options that ADEQ should consider for its six "subject-to-BART sources.

13. Specifically regarding the Draft SIP's presentation of BART control determinations, we have the following comments:

a. Section 9.3 is where the Draft SIP should provide a summary of the BART determinations for the Subject-to-BART sources. However, the few paragraphs and tables presented are insufficient. ADEQ should summarize, on a facility-by-facility basis, levels of controls considered, final control selected, and information on how the "five factors" were considered in making its decisions. Detailed information can be placed in an Appendix, but company submitted BART information is not a substitute for State decision processes.

b. The information presented in the tables 9.3a through 9.3d is difficult to follow. Earlier in this chapter, the BART-eligible units are identified by name, with Facility ID, AFIN, and Unit ID noted (table 9.1). Subsequently, the Subject-to-BART source subset is listed, again by name with Facility ID and Emission Unit descriptions, but no AFIN numbers (table 9.2). But, tables 9.3a thru 9.3d omit the source names, list the units apparently with the AFIN number (but in the column titled "Source and Unit"), and include what appears to be a reference to a State-issued operating permit number that presumably contains the emission limits provided in those tables. It would be very helpful for the tables throughout this chapter to be consistent in the syntax of referencing the specific BART units. We suggest that the tables do include the source names to help those unfamiliar with the syntax of the air pollution source ID listings and ADEQ's permit number assignments.

c. Tables 9.3a thru 9.3d appear to have some errors, and/or information that may need further explanation:

- Table 9.3a, sixth data row – we believe that this source AFIN number should be "30-00011," for the Entergy-Lake Catherine facility, instead of "30-00110." The latter does not appear on the BART-eligible list of Table 9.1. But, note that the unit listed for this entry in table 9.3a, "SN-03 *oil*" does not match any BART-eligible unit for the Entergy-Lake Catherine facility, per table 9-1; it does match the unit description for this facility in table 9-2.
- We do not understand the information presented in these tables across the following columns: "Baseline Peak 24-hour Emissions (lb/hr)," "BART Level of Control %," and "Future Peak 24-hour Emission Rate (lb/hr)." The first several entries in table 9.3a, the calculation of Future Peak 24-hour Emission Rate is consistent with applying the listed BART Level of Control to the Baseline Peak 24-hour Emissions values. But, the listings for three units with "0%" control are confusing. The footnote indicates that the BART Level of Control is "only listed if facility is adding controls or taking limits that will reduce emission per BART requirements. Facilities which are not adding controls or using controls which are already installed have a 0% BART control efficiency." Yet, one of these three units shows that, after applying a 0% BART control level, its emission will still be reduced by nearly half. In addition, there are two entries that state the BART Level of Control will be "up to 95%," but that only calculate a Future Peak 24-hour Emission Rate representing approximately 80% control each. Similar confusing data are presented in tables 9.3b (for the four units with 69% NOX BART control), and for the entries of table 9.3c. The single footnote under table 9.3a does not adequately explain the

data that ADEQ includes in these tables. The added discussion of the BART determinations that we recommend earlier in this comment (see paragraph a, above) will help a lot, but ADEQ should ensure that the meaning of the data in the tables is clear to the reader.

d. Section 9.4 introduces a statistically based test (TTEST in Excel) as a way for the State to evaluate BART control significance. *This test or cumulative modeling is not a substitute for the 5 factor analysis.*

Area of Influence (AOI)

14. The Consultation Plan and associated information that is included as Appendix 10.2 to the Draft SIP contains a general AOI map for the combined Arkansas-Missouri Class I areas, and several assorted graphics for each Class I area of interest. However, the results of these studies, concepts, and graphics, are not presented in the Draft SIP text. They should be integral to the discussions of attribution of regional haze causing pollution, identification of reasonable progress goals, and development of long term strategies for this Regional Haze Plan.

Figures 9.1 and 9.2 of the Draft SIP present geographic representations of Arkansas' BART-eligible and BART-subject sources with relation to the Arkansas and Missouri Class I areas. However, instead of overlaying AOI information, the diagrams use "300 km buffers" about those Class I areas.

In contrast, CENRAP conducted extensive AOI analyses, and produced graphic representations for each of the Class I areas within and near to the CENRAP region. However, the Draft SIP does not provide any of these graphics for the local Class I areas of concern, nor does it discuss any of the work or results from those analyses.

15. *Arkansas Sources' Impacts on Out-of-State Class I Areas:* Section 1.2 identifies Class I areas affected by visibility impairing emissions originating from the State of Arkansas. Specifically, two such Class I areas are located within Arkansas (the Caney Creek and Upper Buffalo Wilderness Areas, both managed by the Forest Service), and two are located in Missouri (the Mingo Wilderness Area managed by FWS, and the Hercules Glades Class I area managed by the Forest Service). Although this section states that emissions from Arkansas are likely to cause or contribute to regional haze in the identified out-of-State areas, little to no consideration is afforded to the Missouri Class I areas and Arkansas sources' impacts to visibility impairment in them, for the remainder of the Draft SIP.

Overall, the Draft SIP fails to utilize appropriate Area of Influence (AOI) information generated by CENRAP and the other RPOs in its analyses of both contributions of other States' sources to Arkansas' Class I areas visibility impairment as well as contributions of Arkansas' sources emissions to out-of-state Class I areas.

The documents provided with appendix 10.2 of the Draft SIP include an August 17, 2007, letter from ADEQ Air Division Chief Mike Bates to Oklahoma Department of Environmental Quality (ODEQ) Air Quality Division Director Eddie Terrill. This letter responds to ODEQ's initial consultation meeting regarding the Regional Haze planning for its Wichita Mountains

Wilderness Area. In this letter, Arkansas disagrees with ODEQ's "assertion that sources in Arkansas contribute significantly to an inability to achieve reasonable progress [at Wichita Mountains]." It is unclear whether ODEQ has accepted Arkansas' opinion in this matter. As an additional note, while the discussion in Section 11.3 of Arkansas' Draft SIP (quoted below in comment #19) says that visibility projections for outside-of-Arkansas Class I areas will meet or exceed the uniform rate of progress, this letter to ODEQ indicates that the projections for Wichita Mountains "will not meet the glidepath representing a return to natural conditions by 2064." In addition, one of the BART appendices identifies the Sipsey Wilderness Area (Forest Service managed) in Alabama as potentially being impacted by that source's emissions.

The State should discuss in more detail how analysis of its sources' impact became limited to only the Arkansas and Missouri Class I areas, and why the areas outside Arkansas itself did not appear to be part of the consideration when ADEQ evaluated emission controls for its sources.

16. *Other States' Sources Impacts on Arkansas' Class I areas:* As an example, the data contained within both the Draft CENRAP TSD and ADEQ's Consultation Plan (appendices 8.1 and 10.2 to the Draft SIP, respectively), indicate that the areas of influence that affect the Arkansas and Missouri Class I areas extend across several surrounding States. In fact, the CENRAP "PSAT" source apportionment modeling results for the Upper Buffalo Class I area, show that sulfur emissions from elevated point sources in Illinois, Missouri, Indiana, Kentucky, and the collective states to the east beyond those, are all more significant than Arkansas' sulfate sources in contribution to the 2018 projected 20% worst visibility days. And, for the Caney Creek Wilderness Area, the impact of all pollutant emissions originating in Texas outweighs Arkansas' own impacts to visibility impairment in the 2018 worst 20% projections. The Draft SIP needs to discuss the attribution of haze-causing pollution and the results of ADEQ's consultations with neighboring States regarding achieving Reasonable Progress Goals at its local Class I areas.

Reasonable Progress Goals and Long Term Strategy

17. **The Reasonable Progress discussion in the Draft SIP is a major content deficiency. The SIP document does not identify any procedure to address single sources, or combinations of sources, that are predicted to continue to significantly impact visibility conditions in the future after implementing BART, CAIR, and any other on-the-books and on-the-way programs. Although the State concludes that additional controls are not necessary, Arkansas does not summarize or offer any level of clarity on what controls the CENRAP[2] Regional Planning Organization (RPO) utilized within Arkansas in their analyses. Model evaluation at the two Class I areas located within Arkansas indicates significant under predictions of visibility impacts with regard to sulfates, and fails to address any significance of 2002 to 2018 projections of increased point source sulfur emission within Arkansas. Although the model is used in a relative sense, no additional discussion or clarification is provided to address how model performance or model response is**

[2] Central Regional Air Planning Association CENRAP is an organization of states, tribes, federal agencies and other interested parties that identifies regional haze and visibility issues and develops strategies to address them. CENRAP is one of the five Regional Planning Organizations RPOs across the U.S. and includes the states and tribal areas of Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, and Louisiana.

adequately addressing issues that may arise from impacts from sulfates. We are also concerned with the number of new PSDs that do not seem to be represented in the emissions inventory (i.e. John W. Turk and Plum Point II). It is going to be extremely difficult if not impossible to meet the RPG while adding new sources to the mix.

CENRAP (as well as the VISTAS RPO in the southeast United States) produced analyses to assist States in identifying geographic areas which may represent the source area most likely for a State to target additional controls for Reasonable Progress consideration. The State appears to have disregarded these supporting documents, and in spite of increasing sulfur emissions, did not discuss whether additional BART (beyond presumptive levels) for sources subject to BART, or other controls at non-BART pollution sources, may constitute a reasonable control. The SIP does not address the four statutory factors when making decisions to control or not control additional sources. Analysis of all control alternatives of potentially significant sources is necessary in order to fully evaluate reasonableness when looking at the factors. Although it is possible for the State to arrive at the same conclusions as presented in the draft SIP, there is no evidence that the State had sufficient information to conclude as to the reasonableness of its strategy to achieve the 2018 milestones.

18. In Section 10, titled "Reasonable Progress Goals" the State does not specifically declare reasonable progress goals, in deciview, for the year 2018. Table 10.3, on page 59, speaks to an amount of improvement for the most impaired days from baseline conditions. The reasonable progress goals should be clearly stated as the projected 2018 average of the 20 percent most impaired days and as the 20 percent least impaired days. These numbers are included in Figures 10.5 through 10.8 but are not declared in the text. Please revise the text in Section 10 to clarify ADEQ's choice of the 2018 reasonable progress goal and revise Table 10.3 to include a column indicating the goals for the least impaired days, as required by the regional haze rule.

19. Section 11.3 is very confusing, it switches back and forth between impacts at Arkansas' Class I areas and impacts beyond the State's borders, and declares that otherwise unspecified emission reductions will achieve the RPG goals across seemingly both geographic divisions of Class I areas.

The section opens with a paragraph indicating that the section will cover Arkansas' demonstrating that its SIP includes "all measure as necessary to obtain its fair share of emission reductions needed to meet [reasonable progress goals] in other Class 1 areas." The next paragraph identifies the categories of technical material that Arkansas relied upon to conduct a gross identification of other states with emissions that influence Arkansas Class I areas, says that those identified States were included in the consultation process, and then asserts that "CENRAP-modeled visibility projections indicate that the emission reductions planned for these states are sufficient to achieve the [reasonable progress goals] for all Class I areas located in Arkansas and Missouri." Nowhere are the emission reductions further described or quantified. The next paragraph indicates that, since CENRAP and ADEQ analysis show that visibility projections for the Class I areas outside Arkansas and Missouri "will all be able to demonstrate a better than uniform rate of progress through the

implementation of existing and forthcoming State and federal emission reduction programs.... The emission reductions described elsewhere herein are sufficient to constitute a fair share of emission reductions needed to meet RPGs in affected Class I areas."

This is the bulk of Arkansas' evaluation of its Long Term Strategy to achieve Reasonable Progress towards visibility improvement both for its Class I areas and for those outside of the State to which Arkansas source emissions contribute. This discussion, both independently and in conjunction with the complete Draft SIP narrative, fails to provide the reader with an understanding of the causes of visibility impairment at either Arkansas' Class I areas or those in nearby States, the control strategies that were considered and levels of control that ADEQ decided to require for this SIP, or the anticipated results of those controls.

20. At the beginning of Section 10 of the Draft SIP, ADEQ outlines the four statutory factors that each State must consider in setting its Reasonable Progress Goals. These factors are intended to be applied holistically, across all contributing sources of visibility impairing pollutants, to inform the decision being made by the State. However, the remainder of the chapter never connects back to the four statutory factors, and in fact points to appendix 10.1, *"Analysis of Control Strategies and Determination of Reasonable Progress Goals,"* which argues that meeting the uniform rate of progress glide slope obviates any need for analyzing the four statutory factors for Reasonable Progress. Thus, the Draft SIP omits the required four-factor analysis for establishing the Reasonable Progress Goals.

21. In Section 11.4.1.6, the Draft SIP identifies "source retirement and replacement," saying that: "retirement and replacement will be managed in conformance with existing SIP requirements pertaining to PSD and New Source Review. Source retirement and replacement will be tracked through on-going point source inventories." Please elaborate on how the PSD and NSR permitting programs will be utilized by ADEQ as part of its Long Term Strategy for meeting Reasonable Progress Goals.

Fire

22. The Arkansas Smoke Management Plan (SMP) and the summary discussion in section 11.4.1.8 of the Draft SIP properly identify Class I areas as being smoke-sensitive, and the SMP instructs prescribed burners to apply the appropriate smoke management techniques to minimize impacts. Overall, this is one of the best presentations of fire-emission-related Regional Haze considerations that we have seen to date.

23. We recommend that ADEQ ensure that its Regional Haze SIP refers to the Arkansas SMP in a way that does not require SIP updates each time the SMP is updated. Also, please indicate whether Arkansas intends to "certify" its SMP as provided for by the 1998 EPA Interim Air Quality Policy on Wildland and Prescribed Fire.

Regional Consistency

24. Arkansas is situated geographically at the boundary between three multi-state Regional Planning Organizations (RPO): CENRAP running along the west of the Mississippi River

ATTACHMENT

U.S. Forest Service Comments Regarding
Best Available Retrofit Technology (BART) Determinations
Arkansas Draft Regional Haze Rule State Implementation Plan

April 1, 2008

This document is an attachment to the U.S. Forest Service (FS) comments on the Draft Regional Haze State Implementation Plan prepared by Arkansas and received by the FS on February 25, 2008. It provides source-specific recommendations regarding the Best Available Retrofit Technology (BART) determinations contained within that package.

Entergy Services, Inc. BART Determination for the Lake Catherine Plant

Table 9.2 of the ADEQ RH SIP shows that the Lake Catherine Plant is a subject-to-BART source, but Tables 9.3 a-d do not include emission reductions from the 2002 Baselines for this source. Either the data for the Plant should be included or a reason for their exclusion should be noted.

The low 10% plant utilization rate causes any capital equipment alternative to magnify the cost per ton or incremental cost per ton, thus eliminating standard alternatives available to other BART determinations. For this reason it is important to impose strict emission limitations commensurate with 10% plant utilization in the plant's permit.

Section 3.1 of the BART determination proposes that boiler tuning, BOOS and IFGR is NO_x BART for gas firing. The addition of overfire air to the above three controls results in an annual cost effectiveness of $1,700 per ton for NO_x control and a $1.3 million cost per deciview. This is not an unreasonable cost for BART and should be considered. The value of this step would be to decrease the visibility impact from 0.56 deciviews to 0.34 deciviews.

The Arkansas Regional Haze SIP acknowledges that BART requirements are applicable requirements of the Clean Air Act and they will be included as title V permit conditions. It would be desirable that systems be installed to automatically monitor and trim oxygen and fuels for peak performance. Emission limits reflecting the above BART should be met on a continuous basis. For a discussion of this topic please refer to EPA's BART Guidelines.[3]

[3] See 40 CFR Part 51, Appendix Y. The U.S. Environmental Protection Agency finalized it's BART Guidelines on June 15, 2005, and published the preamble and final rule text in the Federal Register on July 6, 2005. The rulemaking action added Appendix Y to Part 51, titled "Guidelines for BART Determinations Under the Regional Haze Rule." See Section V.

The costs of alternatives were stated by Entergy, but there was no documentation or a detailed break-out of the costs. The basis for equipment cost estimates also should be documented either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the EPA OAQPS Control Cost Manual), where possible.[4] A discussion of amortization of costs is presented, but the actual amortization factors are not given.

Entergy Services, Inc. BART Determination for the White Bluff Steam Electric Station

Entergy proposes to install SO_2 and NO_x control equipment that will meet the presumptive requirements of the EPA's BART Guidelines. The Arkansas Regional Haze SIP acknowledges that BART requirements are applicable requirements of the Clean Air Act and they will be included as Title V operating permit conditions. Emission limits such as BART must be met on a continuous basis. Although this provision does not necessarily require the use of continuous emissions monitoring (CEMs), it is important that sources employ techniques that ensure compliance on a continuous basis. The only such reference found in the BART determination was in Section 3.1 relating to boiler tuning, so further discussion of meeting emission limits on a continuous basis should be included. For a discussion of this topic please refer to EPA's BART Guidelines.[5]

Though presumptive BART is met for both NO_x and SO_2 using the proposed emission controls, Table 5-1 shows that the White Bluff Station will still "cause" visibility impairment at the Caney Creek Class I area. In considering its Long Term Strategy in the Regional Haze SIP for Caney Creek, the State should hold discussions at this time with the source to determine the possible need for additional future controls. Entergy might consider an altered mix of capital expenditures for emission control at this time given that information.

Domtar Industries Inc. BART Determination for the Ashdown Mill

The costs of the NO_x control alternatives of Low NOx (LNB) burners and Overfire Air (OFA) for boilers #1 and #2 are presented in Table 4-3 and the conclusion is that the average cost per ton of NO_x control is cost-prohibitive. Costs in Table 4-3 are derived from total costs shown in Appendix B. The total costs from Appendix B and the Total Annualized Cost for LNB and OFA shown in Table 4-3 seem excessive. For example, the total capital costs are not generally consistent with those presented in Appendix E of the National Council for Air and Stream Improvement (NCASI) paper entitled, "NO_x Control in Forest Products Industry Boilers: A Review of Technologies, Costs, and Industry Experience."[6] Also, the amortization factors of 5% interest and 10 year life are not consistent with the 7% and 15 year life required by the OAQPS

[4] See EPA's BART Guidelines, Section IV.D.Step 4.
[5] See EPA's BART Guidelines, Section V.
[6] Report by the National Council For Air and Stream Improvement entitled, "NO_x Control in Forest Products Industry Boilers: A Review of Technologies, Costs, and Industry Experience", Special Report No. 03-04, August 2003, by: Arun V. Someshwar, Ph.D. and Ashok K. Jain, NCASI Southern Regional Center, Gainsville, Florida, Appendix E.

Control Cost Manual.[7] The basis for equipment cost estimates should be documented either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the EPA *OAQPS Control Cost Manual*, where possible.[8] More realistic figures may make LNB and OFA cost-effective BART alternatives.

Table 4-7 shows that the Ashdown Mill will still "cause" visibility impairment at the Caney Creek Class I area after implementation of controls. In considering its Long Term Strategy in the Regional Haze SIP for Caney Creek, the State should hold discussions at this time with sources to determine the need for additional future controls. The sources might consider an altered mix of capital expenditures for emission control at this time given that information.

Arkansas Electric Cooperative Corporation BART Determination for Bailey and McClellan Stations

Pages 2 and 5 state that because pollutant-specific modeling for these facilities showed that NO_x did not cause or contribute to visibility impacts at any Class I areas and since the PM impact was less than NO_x, only SO_2 BART controls would be considered. This is not correct. The EPA's BART Guidelines describe a *state-wide cumulative, pollutant-by-pollutant* modeling analysis of all BART-eligible sources.[9] If such an analysis shows that NO_x, for example, does not cause or contribute to visibility impairment, you may conclude that none of the BART-eligible sources in the state are subject to BART for NO_x. However, such an exemption is not derived from the modeling of a single, or even two sources. Therefore, NO_x and PM should have been included in the BART determinations for the Bailey and McClellan Stations.

The SO_2 BART determination concluded that "a *lower-sulfur fuel oil*" should be considered as BART. Only a footnote to a table indicated that 1% low sulfur fuel oil was used for modeling the post-control scenario. First, the BART determination should have considered 1% sulfur fuel oil along with other ultra-low sulfur fuel oils in the analysis and then should have shown the economic viability of one fuel over the others. This is especially true since the table showing post-control modeling results for the Bailey Plant for 2002 showed 8 days above 0.5 dV visibility impact at Mingo using 1% sulfur fuel oil. This indicates that the chosen BARP for the Bailey Plant still 'contributes' to visibility impairment at Mingo. Serious consideration should be given to a lower-sulfur fuel. Second, a more definitive description of the chosen fuel should be stated and ADEQ should make it an enforceable permit condition.

Other BART determinations reviewed by the FS contain more supporting documentation than the subject determination in terms of exemption modeling data (before and after controls), scrubber cost estimates, fuel alternatives and the Section 4.4 claim that ". . . high capital cost control of the scrubber alternative (emphasis added). . . may cause the retirement of these units."

[7] U. S. Environmental Protection Agency, Office of Air Quality Planning and Standards, OAQPS Control Cost Manual, Fifth Edition, February 1996, EPA 453/B-96-001.
[8] See EPA's BART Guidelines, Section IV.D.Step 4.a.5.
[9] See EPA's BART Guidelines, Section III.A.3.Option 3.

The EPA's BART Guidelines describe an analysis to be followed when viability of continued plant operations is an issue.[10]

Finally, since the Bailey plant is currently operated at only 20% of capacity and since the use of 1% sulfur fuel oil results in a continuing "contribution" to visibility impairment at Mingo; ADEQ should place a permit condition on the facility to operate with emission limitations reflecting 20% of capacity. Of course, if technology with higher emissions control efficiency can be provided, then such a permit condition can be relaxed.

AEP Southwestern Electric Power Company (SWEPCO) BART Discussions for the Flint Creek Power Plant

A two-page letter from SWEPCO to the Arkansas Department of Environmental Quality, dated October 26, 2006, is the only information we have available regarding the subject Plant's effort to meet BART. The RH SIP and/or appendices should contain all of the BART-related data so that they are available to third-party reviewers.

With reference to Item 1, electrostatic precipitators may be BART for particulate matter (PM), but not for the reason cited. For BART purposes it is inappropriate for a source to model for a single pollutant (e.g., PM) and if that single pollutant does not impact a Class I area by more than the threshold, to eliminate emission units which emit that pollutant from BART for that pollutant. As discussed in EPA's BART Guidelines, the total emissions (SO_2, NO_x and PM) from all emission units from the source should be summed.[11] If the potential to emit of any single visibility impairing pollutant exceeds 250 tons per year then that collection of emissions units is a BART-eligible source. Each emission unit is then subject to a BART review for each of the visibility impairing pollutants. Thus, a BART review should have occurred for the emission units that feed the electrostatic precipitators (ESP). It is acknowledged that on a cost basis, it is likely that no other control equipment would be required other than possibly adjustments to the ESPs.

Item 2 of the letter is not clear as to whether control equipment is already functioning at the presumptive limits of 0.15 lbs/mmBTU for SO_2 and 0.23 lbs/mmBTU for NO_x or whether such equipment is proposed to be added to meet BART. The record should contain information that describes the control equipment that is already or will be installed, along with the data that demonstrates how it is deemed to meet BART. If BART is met by the *current* plant configuration then Item 3 referring to "post-control" CALPUFF modeling should not show visibility improvements.

Item 3 of the letter seems to imply (but does not state) that visibility impairment still exists at one or more Class I areas. In considering its Long Term Strategy in the Regional Haze SIP, the State should hold discussions at this time with sources to determine the need for additional future controls. The sources might consider an altered mix of capital expenditures for emission control at this time given that info

[10] See EPA's BART Guidelines, Section IV.D.Step 4.k.
[11] See EPA's BART Guidelines, Section II.A.3 and 4.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
National Wildlife Refuge System
Branch of Air Quality
7333 W. Jefferson Ave., Suite 375
Lakewood, CO 80235-2017

In Reply Refer To:
FWS/ANRS-NRCP-AQ/

June 27, 2014

Mr. Mike Bates, Chief
Air Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

Dear Mr. Bates:

On April 21, 2014, the State of Arkansas provided a draft 5-year progress report for the State's Regional Haze State Implementation Plan (SIP). Overall, the draft included several of the necessary elements and information needed to adequately address regional haze progress. However, we do not feel that a comprehensive review can be conducted prior to the State completing the outstanding core elements of the SIP. At this time, we feel that additional information is necessary prior to concurring with the State's "negative declaration". We welcome further consultation regarding the following concerns:

- Critical core elements of the State's Regional Haze Rule SIP are not approved and therefore cannot be evaluated. Elements include the evaluation and determination of Best Available Retrofit Technology (BART) eligible sources, implementation of additional control technologies related to BART, and the establishment of Reasonable Progress Goals for Class I areas within State boundaries.

- Much of the report indicates emission growth through the year 2011, but then predicts significant emission reductions by year 2018. We are unable to see how the State will accomplish these significant emission reductions, and the report provides no explanation.

- Given the general rise in Arkansas' air pollution emissions through 2011 for most categories, the report does not explain why visibility impacts are improving at the State's Class I areas.

- The report declares that emissions generated within the State of Arkansas are not significantly impacting Class I areas located in nearby States, but it does not provide supporting information or explanation to substantiate the claim.

This letter acknowledges that the U.S. Department of Interior, U.S. Fish and Wildlife Service, has conducted a review of the submitted draft 5-year progress report for your Regional Haze SIP. Please note, that only the U.S. Environmental Protection Agency (EPA) can make a final determination regarding the document's completeness and, therefore, ability to receive federal approval from EPA.

We appreciate the opportunity to review your draft Regional Haze SIP 5-year progress report and look forward to continuing consultations as you pursue approval of the original SIP and this subsequent progress report. If you have questions of concerns, please contact Tim Allen at (303) 914-3802. We appreciate your hard work and dedication to the significant improvement in our nation's air quality related values and visibility.

Sincerely,

Catherine Collins
Chief, Branch of Air Quality (Acting)

cc (via e-mail):

Mark McCorkle, Environmental Programs Manager, ADEQ
Guy Donaldson, Chief, Air Planning Section, U.S. EPA Region 6
Joe Kordzi, Air Planning Section, US EPA Region 6
Charlie Blair, Regional Refuge Chief, USFWS Midwest Region
Ben Mense, Refuge Manager, Mingo National Wildlife Refuge
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Federal Land Manager Consultation

As required by the federal Regional Haze Rule (40 C.F.R. § 51.308), the Arkansas Department of Environmental Quality (ADEQ, Department) prepared and submitted for review by regional Federal Land Managers (FLMs) a draft document titled "State Implementation Plan Review for the Five-Year Regional Haze Progress Report." Comments submitted by the FLMs are addressed here. Copies of the FLMs comment letters are included in this appendix. FLMs comments were received from:

- United States Department of Agriculture – Forest Service - Ouachita National Forest,
- United States Department of the Interior – Fish and Wildlife Service, and
- United States Department of the Interior – National Park Service.

On September 23, 2008, the ADEQ submitted an initial Regional Haze State Implementation Plan (SIP) to the Environmental Protection Agency (EPA). On March 12, 2012, the Environmental Protection Agency published a Final Rule that partially approved and partially disapproved the 2008 Arkansas Regional Haze SIP (2008 Arkansas RH SIP).

The Regional Haze Rule requires states to "submit a report to the Administrator every five years evaluating progress towards the reasonable progress goal for each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State." The required elements of this five-year review, which states must submit five years following the initial Regional Haze SIP submission, are described at 40 C.F.R. § 51.308(g).

The five-year Regional Haze Progress Report (five-year RHPR) also provides an opportunity for public input on the state and the EPA's assessment of whether the approved regional haze SIP is being implemented appropriately and whether reasonable visibility progress is being achieved consistent with the projected visibility improvement in the SIP. As of July 2014, ADEQ has been unable to fully respond to the EPA with information sufficient to address those disapproved elements of the 2008 Arkansas RH SIP. The Department has been working with the EPA and affected sources towards fulfilling EPA's requirements for an approvable SIP. Therefore, this required five-year RHPR cannot at this time fully address the goals and implementation measures that the State of Arkansas originally identified as appropriate, but which are disapproved by EPA.

All comments submitted by FLMs are addressed herein. However, ADEQ is currently unable to provide the FLMs with some of the requested information because the comments are either not relevant to this progress report or ADEQ has been continuing to work on the disapproved elements of the 2008 Arkansas RH SIP with EPA and affected sources and cannot provide

further information on this report. In this document, the responses to specific comments that are affected by the ultimate resolution of the EPAs' partial disapproval are identified. A response to these comments would serve no useful regulatory purpose at this time. ADEQ has identified one Comment from FLMs that addresses portions of the Arkansas five-year RHPR draft that needs revisions.

United States Department of Agriculture – Forest Service (FS) - Ouachita National Forest Comments

Submitted by Norman Wagoner and Reggie Blackwell, Forest Supervisors

Comment 1: FS had several areas of concern in the Arkansas 2008 Regional Haze SIP (2008 Arkansas RH SIP) that they still would like to bring forward, specifically how the BART decisions are being handled as the treatment of Reasonable Progress and Long Term Strategy. FS requests ADEQ to summarize, on a facility-by-facility basis, levels of controls considered, final control selected, and information on how the "five factors" were considered in making its decisions.

Response: Any concerns that the FS has with regard to the 2008 Arkansas RH SIP, for the purposes of this five-year RHPR, are moot in view of the previous partial approval / partial disapproval action issued by EPA on March 12, 2012. The majority of the BART determinations as well as Reasonable Progress Goals and Long Term Strategy submitted in the 2008 Arkansas RH SIP were disapproved by EPA. Work with EPA and the affected facilities continue in an effort to revise the disapproved portions of the 2008 Arkansas RH SIP. Attempting to address such matters in this five-year RHPR would be premature.

No revisions to the final report are necessary due to this Comment.

Comment 2: FS requests ADEQ to look at their previous comments on the draft SIP dated June 6, 2008, as some of those comments are still pertinent. The Reasonable Progress discussion in the 2008 Arkansas RH draft SIP had several content deficiencies and it does not appear to FS that ADEQ has made the needed corrections. The five-year RHPR draft does not identify any procedure to address single sources, or combinations of sources, that are predicted to continue to significantly impact visibility conditions in the future after implementing BART, CSAPR, and any other on-the-books and on-the-way programs.

Response: Comments previously submitted with regard to the 2008 Arkansas RH SIP have been taken into consideration. ADEQ is working closely with EPA to resolve any issues that remain after the partial approval and partial disapproval of the 2008 Arkansas RH SIP.

No revisions to the final report are necessary due to this Comment.

Comment 3: FS does not agree with Arkansas's conclusion that additional controls are not necessary and points out the following areas that need further consideration:

a) Clarification on what controls the Central Regional Air Planning Association (CENRAP) Regional Planning Organization (RTO) utilized within Arkansas in their analysis (see comment letter dated June 6, 2008, p.7 #17);
b) A discussion of why model performance evaluation for the base year indicated significant under predictions of visibility impacts from sulfate at the two Class I areas located within Arkansas (see FS comment letter dated June 6, 2008, p. 3 #7); and
c) A discussion of significance of 2002 to 2018 projections of increased point source sulfur emission within Arkansas. Although the model is used in a relative sense, no additional discussion or clarification is provided to address how model performance or model response is adequately addressing issues that may arise from impacts from sulfates (see comment letter dated June 6, 2008, p.3 #8).

Response: These comments are based on the content of the 2008 Arkansas RH SIP submittal and are not relevant to the five-year review.

No revisions to the final report are necessary due to this comment.

Comment 4: FS states that new Prevention of Significant Deterioration (PSD) permits that are not represented in the emissions inventory (i.e. John W. Turk and Plum Point II) should be considered as part of the Reasonable Progress Goals (RPG). Table 2.3 appears to have a number of gaps in the data. FS requests clarification if these sources were considered in the inventory presented.

Response: The RPGs were established in 2008. The CENRAP modeling inventory did not include emissions from these facilities as they were not permitted at that time. The five-year review does not require revision to the previously established RPGs. Emissions from the John W. Turk and Plum Point facilities are included in current inventories and subject to consideration when establishing any future additional control strategies that might be required to maintain reasonable progress. To date, the RPGs established and committed to by Arkansas have been met.

No revisions to the final report are necessary due to this comment.

Comment 5: FS states that the draft 2008 Arkansas RH SIP and the draft RHPR omitted the required four-factor analysis for establishing the RPG. Meeting the uniform rate of progress glide slope does not eliminate the need to analyze the four statutory factors or Reasonable Progress. (See comment letter dated June 6, 2008, p.9 #20.)

Response: A four-factor analysis is not required for the five-year RHPR. The inadequacy of the four-factor analysis is an element of the EPA's partial disapproval of the 2008 Arkansas RH SIP and is under consideration by both ADEQ and EPA Region 6.

No revisions to the final report are necessary due to this Comment.

United States Department of the Interior, Fish and Wildlife Service (FWS) Comments

Submitted by Catherine Collins, Branch of Air Quality

Comment 1: FWS expresses that additional information to the Arkansas five-year RHPR draft is necessary for them to concur with the State's "negative declaration."

Response: Ultimate approval of the 2008 Arkansas RH SIP or supplemental SIP revision, or the possibility of new requirements in the form of a Federal Implementation Plan (FIP), will result in more certainty regarding what is considered to be a reasonable rate of progress. The current negative declaration is supported by evidence that visibility in the affected Class I areas is improving.

No revisions to the final report are necessary due to this Comment.

Comment 2: FWS believes that the critical core elements of the 2008 Arkansas RH SIP are not approved and therefore cannot be evaluated. Elements include the evaluation and determination of best available retrofit technology (BART) eligible sources, implementation of additional control technologies related to BART, and the establishment of Reasonable Progress Goals and a Long-Term Strategy for Class I areas within the State boundaries.

Response: FWS correctly states that unapproved elements of the SIP cannot be readily evaluated. Despite the disapproved portions of the 2008 Arkansas RH SIP, visibility is improving in the affected Class I areas. As of September 2014, ADEQ is still working with EPA and affected BART sources for an approvable RH SIP.

No revisions to the final report are necessary due to this Comment.

Comment 3: FWS states that much of the Arkansas five-year RH Progress Report draft indicates emission growth through the year 2011, but then predicts significant emission reductions by the year 2018. FWS is unable to see how the State will accomplish emission reductions as the draft report does not provide an explanation.

Response: The documentation for 2018 emissions is contained in the 2008 Arkansas RH SIP. Expected emission reductions from BART sources have not been achieved to date. Implementation of BART controls at affected facilities has been delayed by the federal review that resulted in a partial disapproval of the 2008 Arkansas RH SIP. BART reductions at least as stringent as those described in the SIP will be recognized at a future date yet to be determined. Other federal measures will also result in future emission reductions.

No revisions to the final report are necessary due to this Comment.

Comment 4: FWS states that, given the general rise of Arkansas's air pollution emissions through 2011, for most categories, the draft report does not explain why visibility impacts are improving at the State's Class I areas.

Response: The many possible causes for improvement at affected Class I areas cannot be readily determined. Emission reductions achieved through other state and federal programs may account for some of the observed improvement.

No revisions to the final report are necessary due to this Comment.

Comment 5: FWS points out that the draft report declares that emissions generated within the State of Arkansas are not significantly impacting Class I areas located nearby states, but it does not provide supporting information or explanation to substantiate the claim.

Response: ADEQ does not find this declaration within the five-year RHPR. At the top of p.5, ADEQ describes the EPA determination that "Arkansas did not show that the strategy will adequately achieve the RPGs set by Arkansas and by other nearby states."

At this time, all Class I areas identified as affected by Arkansas sources are meeting the RPGs that were established by the States. Regarding SIP elements and strategies, the report does state that "based upon relevant data (i.e. projected emissions and modeling results) they are sufficient to enable Arkansas and other states with Class I areas affected by emissions from Arkansas to meet all established reasonable progress goals. This appears to be the statement that FWS has misinterpreted.

No revisions to the final report are necessary due to this Comment.

United States Department of the Interior, National Park Service (NPS) Comments

Submitted by Susan Johnson, Air Resources Division, Chief Policy, Planning and Permit Review Branch.

Comment 1: In Chapter 2.1, the description of pollutant contributions to haze on the 20% worst days at Caney Creek and Upper Buffalo Wilderness Areas is good. Figures 2.1 and 2.2 demonstrate that sulfate is the largest contributor to haze of the 20% worst days. Figure 2.3 demonstrates that Electric Generating Units (EGU) and non-EGU point sources are the largest contributors to sulfur dioxide (SO_2) emissions in Arkansas. Therefore, NPS would expect Arkansas to concentrate on reducing point source SO_2 emissions in the long-term strategy.

Response: ADEQ will take actions to make necessary reductions to haze precursors based on the ability to make a demonstrable improvement in haze-related air quality values. SO_2 reductions will be achieved when BART sources are required to reduce SO_2. Other SO_2 reductions will be achieved through implementation of the SO_2 NAAQS, federal Tier III gasoline standards, New Source Performance Standards, and Emission Guidelines for existing facilities. Arkansas will continue to evaluate overall SO_2 emissions in an effort to determine which non-BART sources to consider for additional controls that might be needed to continue to meet the RPGs that have been established for Arkansas.

No revisions to the final report are necessary due to this Comment.

Comment 2: In Chapter 3.1, Table 3.1 indicates that annual emissions of SO_2 from EGU in Arkansas actually increased between 2002 and 2011, while nitrogen oxide (NOx) emissions decreased slightly. No information is presented about expected emissions reductions from existing EGU between 2011 and 2018 to support the 2018 emissions projections in Table 5.1. The information presented does not demonstrate reasonable progress in reducing point source emissions. NPS requests that ADEQ identify any source specific controls planned and CAIR or CSAPR caps that have yet to be met that would require controls on these sources.

Response: The emissions presented in Table 3.1 are historic. No point-source emission reductions associated with the Regional Haze Rule have been realized to date. The 2018 projections contained in Table 5.1 are from the future-year inventory developed by the Central Regional Air Planning Association (CENRAP). Arkansas developed RPGs that included specific emission reduction requirements for BART sources. Because EPA has not yet approved the 2008 Arkansas RH SIP in its entirety, these reductions have not yet been realized. Any source-specific control associated with the implementation of CAIR or CSAPR caps are, or will be, reflected in annual emission inventories.

No revisions to the final report are necessary due to this Comment.

Comment 3: In Chapter 5, there is a typo in the sentence on top of page 50: Tables 5.2, 5.3, and 5.4 compare 2002 and 2011 emissions, not 2018 emissions. NPS recognizes that emissions from area, non-road, and on-road sectors are calculated by EPA. NPS concerns focus on point EGU and non-EGU facilities that are directly permitted by Arkansas and the lack of information supporting 2018 emissions projections.

Response: The sentence at the top of page 50 has been revised to correctly identify the information contained in Table 5.2, Table 5.3 and Table 5.4. The documentation for 2018 emission projections is included in Appendix 7.2-E of the 2008 Arkansas RH SIP submittal.

Comment 4: In Chapter 7, NPS states that in 2012, EPA disapproved Arkansas's BART determinations and reasonable progress goals for 2018. Arkansas has not yet corrected the deficiencies in the 2008 SIP. Arkansas's five-year Progress Report draft addresses goals that have been disapproved.

Response: The progress goals that Arkansas identified in the 2008 Arkansas RH SIP submittal are based on emission reductions that were identified and modeled on a regional scale. Without re-conducting or otherwise updating the regional-scale modeling effort that was conducted by CENRAP, it is not possible to establish new progress goals. Arkansas is satisfied that its previously identified RPGs are currently being met regardless of the fact that BART controls have yet to be implemented. Having a regulatory requirement to submit a progress report, regardless of whether or not the original SIP submittal has been approved in its entirety by the EPA is problematic; however, ADEQ is attempting to meet that requirement notwithstanding partial disapproval. Goals other than those already disapproved have not been established at this time. As of this date, ADEQ is uncertain what EPA might accept as RPGs.

No revisions to the final report are necessary due to this Comment.

Comment 5: In Chapter 7, Arkansas commits on page 50 to work with EPA as it performs the required four-factor analyses. NPS asks that Arkansas also consult with the affected FLMs.

Response: The referenced commitment is expressed in the fifth paragraph on page 55. There is no regulatory requirement or express need to consult FLMs in the development of a four-factor analysis.

No revisions to the final report are necessary due to this Comment.

Comment 6: In Chapter 7, Arkansas has not demonstrated that it is reducing emissions contributing to visibility impairment at Class I areas in neighboring states. Section 7.4 does not explain why Hercules Glade and Mingo in Missouri were the only Class I areas reviewed. Arkansas should cite the CENRAP source apportionment analyses that show the contribution of Arkansas point, area, and mobile sources at neighboring Class I areas, compared to sources in other states.

Response: The Arkansas point source emission reductions envisioned in the 2008 Arkansas RH SIP have not been implemented as of this date. No additional assessment is ongoing at this time. Visibility impairment in affected out-of-state Class I areas has improved. The Class I areas addressed in this five-year review are those identified in the 2008 Arkansas RH SIP and approved by the EPA.

No revisions to the final report are necessary due to this Comment.

Comment 7: NPS disagrees with Arkansas's conclusion that no additional actions are needed as part of this five-year review. NPS encourages Arkansas to complete revisions to the 2008 Arkansas RH SIP before requesting EPA approval of the five-year RHPR.

Response: The Regional Haze Rule requires submission of a progress report within five years of the original submittal of a Regional Haze SIP. Whether or not the submitted SIP has been approved does not alter this requirement. Additional actions to be taken will be established upon approval of the 2008 Arkansas RH SIP or through federal action in the form of a FIP.

No revisions to the final report are necessary due to this Comment.

Comment 8: NPS states that while the Arkansas five-year RHPR draft demonstrates that visibility is improving at Class I areas in Arkansas and Missouri, there is no demonstration that Arkansas is implementing all the reasonable control measures necessary to meet the 2018 reasonable progress goals for Class I areas in Arkansas and neighboring states.

Response: The most recent assessment of visibility conditions in affected Class I areas in Arkansas and Missouri shows that RPGs established by Arkansas in the 2008 RH SIP are being met. ADEQ anticipates that as BART controls are established and implemented in Arkansas, additional progress will be demonstrated.

No revisions to the final report are necessary due to this Comment.

Comment 9: NPS states that Arkansas has not revised the 2008 Arkansas RH SIP to resolve the deficiencies identified by EPA, in the disapproved portions of the SIP, in March 2012.

Therefore, NPS does not agree with Arkansas's conclusion that the requirements of 40 C.F.R. § 51.308(g) have been met nor that they can support Arkansas's determination that no further actions are required.

Response: ADEQ acknowledges that the disapproved portions of the 2008 Arkansas RH SIP have resulted in a situation where less than desired progress can be achieved at this time. Resolution of the deficiencies identified by the EPA is underway. 40 C.F.R. § 51.308(g) requires only a periodic progress report. ADEQ disagrees with the assertion that the required elements described in 40 CFR 51.308(g) have not been addressed in the five-year RHPR draft.

No revisions to the final report are necessary due to this Comment.

Appendix B: State's Legal Authority to Adopt and Implement the Plan

The State's legal authority to adopt and implement this State Implementation Plan revision can be found in Ark. Code Ann. §§ 8-4-311(a)(1) and 8-4-317.

Ark. Code Ann. § **8-4-311. Powers generally.**

(a) The Arkansas Department of Environmental Quality or its successor shall have the power to:

(1) Develop and effectuate a comprehensive program for the prevention and control of all sources of pollution of the air of this state;

(2) Advise, consult, and cooperate with other agencies of the state, political subdivisions, industries, other states, the federal government, and with affected groups in the furtherance of the purposes of this chapter;

(3) Encourage and conduct studies, investigations, and research relating to air pollution and its causes, prevention, control, and abatement as it may deem advisable and necessary;

(4) Collect and disseminate information relative to air pollution and its prevention and control;

(5) Consider complaints and make investigations;

(6) Encourage voluntary cooperation by the people, municipalities, counties, industries, and others in preserving and restoring the purity of the air within the state;

(7) Administer and enforce all laws and regulations relating to pollution of the air;

(8) Represent the state in all matters pertaining to plans, procedures, or negotiations for interstate compacts in relation to air pollution control;

(9) (A) Cooperate with and receive moneys from the federal government or any other source for the study and control of air pollution.

(B) The Department is designated as the official state air pollution control agency for such purposes;

(10) Make, issue, modify, revoke, and enforce orders prohibiting, controlling, or abating air pollution and requiring the adoption of remedial measures to prevent, control, or abate air pollution;

(11) Institute court proceedings to compel compliance with the provisions of this chapter and rules, regulations, and orders issued pursuant to this chapter;

(12) Exercise all of the powers in the control of air pollution granted to the Department for the

control of water pollution under §§ 8-4-101 -- 8-4-106 and 8-4-201 -- 8-4-229; and

(13) Develop and implement state implementation plans provided that the commission shall retain all powers and duties regarding promulgation of rules and regulations under this chapter.

(b) The Arkansas Pollution Control and Ecology Commission shall have the power to:

(1) (A) Promulgate rules and regulations for implementing the substantive statutes charged to the Department for administration.

(B) In promulgation of such rules and regulations, prior to the submittal to public comment and review of any rule, regulation, or change to any rule or regulation that is more stringent than federal requirements, the commission shall duly consider the economic impact and the environmental benefit of such rule or regulation on the people of the State of Arkansas, including those entities that will be subject to the regulation.

(C) The commission shall promptly initiate rulemaking to further implement the analysis required under subdivision (b)(1)(B) of this section.

(D) The extent of the analysis required under subdivision (b)(1)(B) of this section shall be defined in the commission's rulemaking required under subdivision (b)(1)(C) of this section. It will include a written report that shall be available for public review along with the proposed rule in the public comment period.

(E) Upon completion of the public comment period, the commission shall compile a rulemaking record or response to comments demonstrating a reasoned evaluation of the relative impact and benefits of the more stringent regulation;

(2) Promulgate rules, regulations, and procedures not otherwise governed by applicable law that the commission deems necessary to secure public participation in environmental decision-making processes;

(3) Promulgate rules and regulations governing administrative procedures for challenging or contesting department actions;

(4) In the case of permitting or grants decisions, provide the right to appeal a permitting or grants decision rendered by the Director of the Arkansas Department of Environmental Quality or his or her delegatee;

(5) In the case of an administrative enforcement or emergency action, providing the right to

contest any such action initiated by the director;

(6) Instruct the director to prepare such reports or perform such studies as will advance the cause of environmental protection in the state;

(7) Make recommendations to the director regarding overall policy and administration of the Department, provided, however, that the director shall always remain within the plenary authority of the Governor;

(8) Upon a majority vote, initiate review of any director's decision;

(9) Adopt, after notice and public hearing, reasonable and nondiscriminatory rules and regulations requiring the registration of and the filing of reports by persons engaged in operations that may result in air pollution;

(10) (A) Adopt, after notice and public hearing, reasonable and nondiscriminatory rules and regulations, including requiring a permit or other regulatory authorization from the Department, before any equipment causing the issuance of air contaminants may be built, erected, altered, replaced, used, or operated, except in the case of repairs or maintenance of equipment for which a permit has been previously used, and revoke or modify any permit issued under this chapter or deny any permit when it is necessary, in the opinion of the Department, to prevent, control, or abate air pollution.

(B) A permit shall be issued for the operation or use of any equipment or any facility in existence upon the effective date of any rule or regulation requiring a permit if proper application is made for the permit.

(C) No such permit shall be modified or revoked without prior notice and hearing as provided in this section.

(D) Any person that is denied a permit by the Department or that has such permit revoked or modified shall be afforded an opportunity for a hearing in connection therewith upon written application made within thirty (30) days after service of notice of such denial, revocation, or modification.

(E) The operation of any existing equipment or facility for which a proper permit application has been made shall not be interrupted pending final action thereon.

(F) (i) An applicant or permit holder that has had a complete application for a permit or for a modification of a permit pending longer than the time specified in the state regulations

promulgated pursuant to Title V of the Clean Air Act Amendments of 1990, or any person that participated in the public participation process, and any other person that could obtain judicial review of such actions under state laws, may petition the commission for relief from Department inaction.

(ii) The commission will either deny or grant the petition within forty-five (45) days of its submittal.

(iii) For the purposes of judicial review, either a commission denial or the failure of the Department to render a final decision within thirty (30) days after the commission has granted a petition shall constitute final agency action; and

(11) (A) Establish through its rulemaking authority, either alone or in conjunction with the appropriate state or local agencies, a system for the banking and trading of air emissions designed to maintain both the state's attainment status with the national ambient air quality standards mandated by the Clean Air Act and the overall air quality of the state.

(B) The commission may consider differential valuation of emission credits as necessary to achieve primary and secondary national ambient air quality standards, and may consider establishing credits for air pollutants other than those designated as criteria air pollutants by the United States Environmental Protection Agency.

(C) Any regulation proposed pursuant to this authorization shall be reported to the House Interim Committee on Public Health, Welfare, and Labor and the Senate Interim Committee on Public Health, Welfare, and Labor or appropriate subcommittees thereof prior to its final promulgation; and

(12) In the case of a state implementation plan, provide the right to appeal a final decision rendered by the Director of the Arkansas Department of Environmental Quality or his or her delegate under § 8-4-317.

HISTORY: Acts 1949, No. 472, [Part 2], § 5, as added by Acts 1965, No. 183, § 7; A.S.A. 1947, § 82-1935; Acts 1993, No. 994, § 1; 1995, No. 895, § 4; 1997, No. 179, § 1; 1997, No. 1219, § 6; 1999, No. 1164, § 31; 2013, No. 1302, §§ 2, 3.

Ark. Code Ann. § **8-4-317. State implementation plans generally.**

(a) In developing and implementing a state implementation plan, the Arkansas Department of Environmental Quality shall consider and take into account the factors specified in § 8-4-312 and the Clean Air Act, 42 U.S.C. §7401 *et seq*., as applicable.

(b)(1)(A) Whenever the Department proposes to finalize a state implementation plan submittal for review and approval by the United States Environmental Protection Agency, it shall cause notice of its proposed action to be published in a newspaper of general circulation in the state.

(B) The notice required under subdivision (b)(1)(A) of this section shall afford any interested party at least thirty (30) calendar days in which to submit comments on the proposed state implementation plan submittal in its entirety.

(C)(i) In the case of any emission limit, work practice or operational standard, environmental standard, analytical method, air dispersion modeling requirement, or monitoring requirement that is incorporated as an element of the proposed state implementation plan submittal, the record of the proposed action shall include a written explanation of the rationale for the proposal, demonstrating the reasoned consideration of the factors in § 8-4-312 as applicable, the need for each measure in attaining or maintaining the National Ambient Air Quality Standards, and that any requirements or standards are based upon generally accepted scientific knowledge and engineering practices.

(ii) For any standard or requirement that is identical to an applicable federal regulation, the demonstration required under subdivision (b)(1)(C)(i) of this section may be satisfied by reference to the regulation. In all other cases, the Department shall provide its own justification with appropriate reference to the scientific and engineering literature considered or the written studies conducted by the Department.

(2)(A) At the conclusion of the public comment period and before transmittal to the Governor for submittal to the United States Environmental Protection Agency, the Department shall provide written notice of its final decision regarding the state implementation plan submittal to all persons who submitted public comments.

(B)(i) The Department's final decision shall include a response to each issue raised in any public comments received during the public comment period. The response shall manifest reasoned consideration of the issues raised by the public comments and shall be supported by appropriate legal, scientific, or practical reasons for accepting or rejecting the substance of the comment in the Department's final decision

(ii) For the purposes of this section, response to comments by the Department should serve the roles of both developing the record for possible judicial review of a state implementation plan decision and serving as a record for the public's review of the Department's technical and legal interpretations on long-range regulatory issues.

(iii) This section does not limit the Department's authority to raise all relevant issues of regulatory concern upon adjudicatory review by the Arkansas Pollution Control and Ecology Commission of a particular state implementation plan decision.

(c)(1) Only those persons that submit comments on the record during the public comment period have standing to appeal the final decision of the Department to the commission upon written application made within thirty (30) days after service of the notice under subdivision (b)(2)(A).

(2) An appeal under subdivision (c)(1) of this section shall be processed as a permit appeal under § 8-4-205. However, the decision of the Director of the Arkansas Department of Environmental Quality shall remain in effect during the appeal.

HISTORY: Acts 2013, No. 1302, § 4.

Appendix C: Evidence Public Notice Was Given

Arkansas Department of Environmental Quality

Public Notice

The Arkansas Department of Environmental Quality (ADEQ) will hold a public hearing at North Little Rock February 2, 2015, to receive comments on the proposed five-year regional haze progress report on a State Implementation Plan (SIP) revision prior to submission of the revised plan to the U.S. Environmental Protection Agency (EPA). The hearing will begin at 2:00 p.m. (Central Time) in the Commission Room at the ADEQ Headquarters Building, 5301 Northshore Drive, North Little Rock. The deadline for submitting comments on the SIP revisions is 4:30 p.m. (Central Time) February 17, 2015.

The progress report is intended to fulfill one of Arkansas's responsibilities under the Clean Air Act and Regional Haze Rule. Arkansas's original Regional Haze SIP revision was submitted to the U.S. Environmental Protection Agency (EPA) in September 2008 and addressed visibility impairment in the State's Class I Federal areas - Upper Buffalo and Caney Creek Wilderness areas. The proposed SIP is intended to address the requirements of 40 Code of Federal Register (C.F.R.) Section 51.308(g) requiring periodic reports evaluating progress towards the Reasonable Progress Goals established for mandatory Class I areas where visibility may be impacted by Arkansas sources.

This proposed SIP submittal is meant to demonstrate the actions ADEQ has taken to fulfill the requirements under 40 C.F.R. Section 51.308(g) for periodic progress reports. In accordance with 40 C.F.R. Section 51.308(h)(1), the State is submitting a negative declaration that further revision of the existing implementation plan is not needed at this time. However, ADEQ is cognizant of its obligation and the associated timeframe to address the disapproved components of the 2008 Arkansas Regional Haze SIP submittal.

ADEQ is providing the public with the opportunity to comment on this proposed SIP revision in two ways. In addition to commenting at the February 2, 2015, public hearing, interested parties may submit written or electronic mail comments prior to the comment deadline. Oral and written statements will be accepted at the hearing, but written comments are preferred in the interest of accuracy. Written comments should be mailed to Mike Bates, Air Division, Arkansas Department of Environmental Quality, 5301 Northshore Drive, North Little Rock, AR 72118. Electronic mail comments should be sent to: bates@adeq.state.ar.us. Written or E-mail comments must be received by 4:30 p.m. (Central Time) February 17, 2015, in order to be considered.

In the event of inclement weather or other unforeseen circumstances, a decision may be made to postpone the hearing. If the hearing is postponed and rescheduled, a new legal notice will be published to announce the details of the new hearing date and comment period.

Copies of Arkansas's proposed SIP revision are available for public inspection during normal business hours at the Public Outreach and Assistance (POA) Division in the ADEQ headquarters building in North Little Rock and in ADEQ information depositories located in public libraries at Arkadelphia, Batesville, Blytheville, Camden, Clinton, Crossett, El Dorado, Fayetteville, Forrest City, Fort Smith, Harrison, Helena, Hope, Hot Springs, Jonesboro, Little Rock (main branch),

Magnolia, Mena, Monticello, Mountain Home, Pocahontas, Russellville, Searcy, Stuttgart, Texarkana, and West Memphis; in campus libraries at the University of Arkansas at Pine Bluff and the University of Central Arkansas at Conway; and in the Arkansas State Library, 900 W. Capitol, Suite 100, Little Rock, AR. In addition, an electronic copy of the Arkansas's proposed SIP revision is available for viewing or downloading on ADEQ's Internet web site at http://www.adeq.state.ar.us/air/5year RH Progress Report.pdf

Published January 2, 2015
Ryan Benefield, P.E., Interim Director
Arkansas Department of Environmental Quality

Arkansas Democrat-Gazette
STATEMENT OF LEGAL ADVERTISING

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NORTH LITTLE ROCK AR 72118

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STATE OF ARKANSAS,)
COUNTY OF PULASKI,) ss.

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ADEQ NOTICE

pending in the Court, in said County, and at the dates of the several publications of said advertisement stated below, and that during said periods and at said dates, said newspaper was printed and had a bona fide circulation in said County; that said newspaper had been regularly printed and published in said County, and had a bona fide circulation therein for the period of one month before the date of the first publication of said advertisement; and that said advertisement was published in the regular daily issues of said newspaper as stated below.

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BENNIE J. FULLER
NOTARY PUBLIC - ARKANSAS
PULASKI COUNTY
MY COMMISSION EXPIRES: 3-21-2021

Arkansas Department of Environmental Quality
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This proposed SIP submittal is meant to demonstrate the actions ADEQ has taken to fulfill the requirements under 40 C.F.R. Section 51.308(g) for periodic progress reports. In accordance with 40 C.F.R. Section 51.308(h)(1), the State is submitting a negative declaration that further revision of the existing implementation plan is not needed at this time. However, ADEQ is cognizant of its obligation and the associated timeframe to address the disapproved components of the 2008 Arkansas Regional Haze SIP submittal.

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Published January 2, 2015
Ryan Benefield, P.E., Interim Director
Arkansas Department of Environmental Quality
72963334#

Appendix D: Certification That a Public Hearing Was Held

ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY

HEARING/MEETING REGISTRATION

Name *Please Print Legibly*	**Address** *Street*	*City*	*State*	*Zip*	Organization Represented
MARY CAMERON	[illegible]	LR			BLR
Jeremy Jewell					Trinity Cons.
Kelley Crouch		Ashdown			Domtar
David Triplett		LR			Entergy
STEPHEN CAIN		LR			AECC
Frank Allison	Diver D Von Horne				

Public hearing/meeting on: SIP - Regional Haze **Date:** 2-2-15

Location: ADEQ - NLR **Page** 1 **of** 1

ADEQ
ARKANSAS
Department of Environmental Quality

5-Year Regional Haze Progress Report Public Hearing

"Today is February 2, 2015, and we are here in the Commission Room of the Arkansas Pollution Control and Ecology Commission at the Arkansas Department of Environmental Quality for a public hearing on the SIP.

We are making SIP revisions in order to fulfill one of Arkansas's responsibilities under the Clean Air Act and Regional Haze Rule. Arkansas's original Regional Haze SIP revision was submitted to the U.S. Environmental Protection Agency (EPA) in September 2008 and addressed visibility impairment in the State's Class I Federal areas - Upper Buffalo and Caney Creek Wilderness areas. The proposed SIP is intended to address the requirements of 40 Code of Federal Register (C.F.R.) Section 51.308(g) requiring periodic reports evaluating progress towards the Reasonable Progress Goals established for mandatory Class I areas where visibility may be impacted by Arkansas sources.

This proposed SIP submittal is meant to demonstrate the actions ADEQ has taken to fulfill the requirements under 40 C.F.R. Section 51.308(g) for periodic progress reports. In accordance with 40 C.F.R. Section 51.308(h)(1), the State is submitting a negative declaration that further revision of the existing implementation plan is not needed at this time. However, ADEQ is cognizant of its obligation and the associated timeframe to address the disapproved components of the 2008 Arkansas Regional Haze SIP submittal.

At this time, we will accept comments from the audience. Is there anyone who wishes to comment from
the audience? [No response from those present]

Seeing no one wishing to comment, we will close the hearing and we remind everyone that the comment
period will remain open until 4:30 p.m., on February 17, 2015. Thank you very much for your attendance." —

Appendix E: Compilation of Public Comments and Response to Comments

This Appendix contains the Responsiveness Summary for public comments that were received and copies of the comment letters.

February 17, 2015

Ryan Benefield
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118

Via electronic delivery

Re: Comments Concerning the "State Implementation Plan Review for the Five-Year Regional Haze Progress Report"

Dear Director Benefield:

The Energy and Environmental Alliance of Arkansas ("EEAA") and its individual members[1] are pleased to submit these comments responding to the *State Implementation Plan Review for the Five-Year Regional Haze Progress Report* ("Progress Report"), as publicly noticed by the Arkansas Department of Environmental Quality ("ADEQ" or "Department") on January 2, 2015.

The EEAA is an ad-hoc collaboration of Arkansas' investor-owned, co-operative, municipal, and independent electric utilities and other energy companies formed to advocate, communicate and encourage energy and environmental policies that promote sound and predictable regulation of Arkansas' utility industry and support an economically viable and environmentally secure future for all Arkansans, including access to reliable and affordable energy resources.

Introduction and Background

Regulations implementing the regional haze visibility program of the federal Clean Air Act ("CAA") require each state to submit reports every five years describing the progress toward the regional progress goals for each mandatory Class I federal area located in the state or outside the state if

[1] The members of EEAA are: AEP/Southwestern Electric Power Company, Arkansas Electric Cooperative Corporation, Arkansas Municipal Power Association, Conway Corporation, Empire District Electric Company, Entergy Arkansas, Inc., Jonesboro City Water & Light, North Little Rock Electric, Oklahoma Gas & Electric Company, Plum Point Services Company, LLC, and West Memphis Utility Commission.

affected by emissions from within the state.[2] These reports must be in the form of and satisfy the requirements for state implementation plan revisions. In addition, the regulations require that each report contain specific information, including: (i) the status of all measures included in the implementation plan for achieving reasonable progress goals; (ii) a summary of the emissions reductions achieved throughout the state; (iii) current visibility conditions and changes in visibility impairment; (iv) analysis tracking the five-year change in emissions of pollutants contributing to visibility impairment; (v) significant changes in anthropogenic sources; (vi) analysis of whether current implementation plan elements and strategies are sufficient to enable the state to meet reasonable progress goals; and (vii) a review of the state's visibility monitoring strategy.[3] Finally, the report must conclude with a determination of adequacy regarding the existing regional haze implementation plan.[4]

On January 2nd, 2015, ADEQ publicly noticed the availability of the proposed Progress Report containing the information responsive to applicable regulatory requirements. The Progress Report concludes with ADEQ's proposed "negative declaration," which specifies "no additional controls are necessary during this first five-year progress report period."[5]

General Comments

I. The Progress Report and Negative Declaration Are Consistent with Federal Regulation and Guidance

Although federal regulations require that each state's five-year progress report contain specific elements, the individual states are left with the primary authority to assess and determine the "adequacy of [the] existing implementation plan."[6] The EPA intends for the five-year progress report to "involve significantly less effort than a comprehensive SIP revision."[7]

ADEQ's Progress Report contains the elements and considerations required under federal regulation[8], and more fully described in EPA's *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans* (Apr. 2013) ("Guidance"). The Department's

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[2] 40 C.F.R. § 51.308(g).
[3] *Id.* § 51.308(g)(1)–(7).
[4] *Id.* § 51.308(h).
[5] Progress Report at 64.
[6] 40 C.F.R. § 51.308(g) and (h).
[7] 64 *Fed. Reg.* 35714, 35747 (July 1, 1999).
[8] 40 C.F.R. § 51.308(g)(1)–(7)

draft enumerates each element in sequential chapters, and includes the data and analysis necessary to inform the public and EPA that Arkansas' Class I federal areas remain ahead of Uniform Rate of Progress necessary to attain the national goal of natural visibility conditions by the year 2064.[9] For these reasons, the Progress Report is consistent with EPA's intent, as spelled out in regulation and guidance.

II. Visibility Improvement at Arkansas' Class I Federal Areas Remains Ahead of the Federally Approved Glide Path

The overarching goal of the visibility program is to restore natural visibility conditions at each Class I federal area, therefore each state's regional haze state implementation plan required an assessment of "the rate of progress needed to attain natural visibility by the year 2064" (the "Uniform Rate of Progress" or "Glide Path").[10] Accordingly, Arkansas' state implementation plan provided a Uniform Rate of Progress equivalent to: (i) a 0.246 deciview (dv) per year (14.78 dv total) improvement for Caney Creek and (ii) 0.245 dv per year (14.70 dv total) improvement for Upper Buffalo.[11] The Uniform Rate of Progress for both areas was reviewed and approved by EPA.[12]

In order to track each state's progress toward natural visibility conditions, the regulations require that each state's five-year progress report must include an assessment of visibility conditions for the most and least impaired days, with the same expressed in terms of 5-year averages of the annual values. Specifically, the five-year progress report must provide:

(i) current visibility conditions for the most and least impaired days;

(ii) the difference between current visibility conditions for the most and least impaired days and the baseline visibility conditions; and

(iii) the change in visibility impairment for the most and least impaired days from the past five years.[13]

In order to comply with these requirements, ADEQ's assessment properly utilizes the data and algorithms from the Interagency Monitoring of Protected Visual Improvements ("IMPROVE") program to chart the rate of visibility

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[9] *See* Progress Report at 56–57.
[10] 40 C.F.R. § 51.308(d)(1)(i)(B)
[11] *See* 76 Fed. Reg. 64186, 64194 (Oct. 17, 2011)
[12] *See* 77 Fed. Reg. 14604, 14607 (Mar. 12, 2012).
[13] 40 C.F.R. § 51.308(g)(3).

improvement.[14] The data clearly demonstrates that visibility impairment is decreasing more rapidly than the federally approved Uniform Rate of Progress for each of Arkansas' Class I federal area. The continuing improvement is reflected in both the 20% worst days and 20% best days.[15] The documented rate of progress supports ADEQ's negative declaration.

III. The Progress Report Documents that Arkansas' Existing Emissions Controls and Strategy are Sufficient to Make Continued, Reasonable Progress Toward Natural Visibility Conditions

Though Arkansas' reasonable progress goals, as set forth in the 2008 Arkansas Regional Haze State Implementation Plan, are not approved and final, the Department relied on the goals to conduct the analysis and assessments necessary to complete the five-year progress report. The lack of finality concerning the reasonable progress goals does nothing to impugn the validity and authority of the monitoring data and assessments articulated in the Progress Report, which clearly demonstrate that the state's existing emission controls and strategy are moving the state's Class I federal areas toward the federal goal of natural visibility conditions.

The visibility impairment at Arkansas' Class I federal areas is decreasing *more rapidly* than the federally approved Uniform Rate of Progress.[16] The improvement in visibility is due in significant part to reductions in visibility related pollutants resulting from federal and state programs and increased control efficiencies from EGU sources.[17] Notably, the documented improvement in visibility at Arkansas' Class I federal areas is occurring *without the implementation of best available control technology ("BART") at the state's subject-to-BART sources and without additional controls on additional sources.*[18]

Accordingly, the Progress Report validates the state's original determination that existing federal and state programs are adequate to make reasonable progress toward natural visibility. The full implementation of BART controls should only expedite the rapid rate of progress toward 2018 and, ultimately, 2064. In sum, the existing plan and strategy are working and

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[14] *See* Progress Report at 39–41; *see also* Guidance at 8–9.
[15] *See* Progress Report at 41–43 and 56–57; Tables 4.1 and 4.2.
[16] *See* Progress Report at 56–57.
[17] *See* Progress Report at 35–37.
[18] *See* Progress Report at 35 and 55.

support ADEQ's proposed negative declaration that "no additional controls are necessary during this first five-year progress period."[19]

Specific Comments

- Page(s) 6 and 24: The proposed Progress Report contains statements referencing the D.C. Circuit Court of Appeals grant of EPA's request to lift the stay on CSAPR and indicating that ADEQ is awaiting guidance from the agency for implementation of CSAPR. On December 3, 2014, EPA published a ministerial rule amending the dates to correctly reflect the compliance deadlines for CSAPR.[20] Accordingly, ADEQ should revise the applicable sections to note that CSAPR will be implemented in Arkansas beginning with the 2015 ozone season.

- Page 21: The proposed Progress Report should be revised to note that Units 1 and 2 (SN-01) and Unit 3 (SN-02) at Lake Catherine (AFIN 30-00011) were permanently retired and removed from the facility's Title V permit, issued September 26, 2014 (Permit 1717-AOP-R6).

- Page 21: The Progress Report should be updated to note that Unit 4 (SN-03) is no longer permitted to burn fuel oil, with the permitted allowance for fuel oil removed with the issuance of Permit 1717-AOP-R6 on September 26, 2014. The removal of the permitted allowance for fuel oil at Unit 4 (SN-03) eliminates any need to review and consider BART controls for the fuel oil-firing scenario, and ADEQ should highlight the significant decrease in permitted SO2 emissions from Unit 4.

- Page(s) 30–31: Table 2-6 should be updated to include the retirement of Units 1 and 2 (SN-01) and Unit 3 (SN-02) at the Entergy - Lake Catherine facility.

- Page 37: The Progress Report states that annual SO_2 emissions are projected to increase by an additional 125 tpy in 2018 from 2011 observed emissions. This conclusory statement conflicts with language in the very next paragraph that documents an 87.5% reduction in SO_2 emissions at the SWEPCO Flint Creek Power Plant because of the operation of new control equipment. The statement also contradicts the 2018 emission projections detailed in Chapter 5, which project

[19] *See* Progress Report at 64.
[20] *See* 79 Fed. Reg. 71663 (Dec. 3, 2014).

significant decreases in SO_2 from EGU sources. The Progress Report should be revised and/or clarified to reconcile the statement on page 37 with the projected data provided in Chapter 5.

Conclusion

ADEQ's proposed Progress Report is consistent with existing regulatory requirements and conforms to agency Guidance. The data, analysis and assessments provide ample support for the Department's "negative declaration." Perhaps most important, the Progress Report validates ADEQ's determination that current and existing emission controls are more than adequate to make reasonable progress toward the federal goal of natural visibility conditions in the year 2064.

EEAA and its members sincerely appreciate the opportunity to provide comments in support of the proposed Progress Report, and the organization remains available to provide any additional information.

DATED: February 17, 2015

Respectfully Submitted,

Energy and Environmental Alliance of Arkansas

Chad L. Wood
GILL RAGON OWEN, P.A.
425 West Capitol Avenue, Suite 3800
Little Rock, Arkansas 72201

Counsel for Energy and Environmental Alliance of Arkansas

DOVER DIXON HORNE PLLC

Attorneys at Law

425 W. CAPITOL AVE STE 3700
LITTLE ROCK, AR 72201-3465
TELEPHONE (501) 375-9151
FACSIMILE (501) 375-6484
www.doverdixonhorne.com

February 17, 2015

VIA HAND DELIVERY

Mr. Ryan Benefield
Interim Director
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118

Re: Comments of Nucor Steel Arkansas and of Nucor-Yamato Steel Company on ADEQ's Five-Year Regional Haze Progress Report

Dear Mr. Benefield:

This firm represents Nucor Steel Arkansas, a division of Nucor Corporation (NSA), and Nucor Yamato Steel Company (NYS). Enclosed are NSA and NYS's comments on ADEQ's proposed Five Year Regional Haze Progress Report. Pursuant to ADEQ's public notice these comments are being submitted prior to the comment deadline at 4:30 p.m., Central Time, February 17, 2015.

Please let me know if you have any questions.

Sincerely,

DOVER DIXON HORNE

Mark H. Allison

Enclosure

cc: Tammera Haralson, Interim Deputy Director
Air Divison Chief, ADEQ
Wayne Turney, Nucor Steel Company
Les Jackson, Nucor-Yamato Steel Company

Responsiveness Summary for Public Comments on the State Implementation Plan Review for the Five-Year Regional Haze Progress Report

Two sets of comments on the State Implementation Plan Review for the Five-Year Regional Haze Progress Report (the Progress Report) were received. Both of these comments were supportive of ADEQ's determination that the Arkansas Regional Haze State Implementation Plan (SIP) and relevant suggestions were incorporated in this final Report. No adverse comments were received. Copies of the comments received (without attachments) are included herein.

The Progress Report provides an update on the status of visibility conditions in Class I areas and the implementation of the 2008 Arkansas Regional Haze SIP. One commenter "incorporates by reference" their comments submitted to EPA Region VI on December 22, 2011 regarding EPA's notice of its partial approval/disapproval of the Arkansas Regional Haze SIP. It should be noted that the comments submitted to EPA Region VI were with regards to a federal action that was promulgated as a Final Rule in the *Federal Register* on March 12, 2012. These comments would have been addressed by the EPA as part of that action. ADEQ does not consider these comments that were previously addressed by a federal agency to be relevant to the action at hand.

Appendix F: Statutory Five-Factor Analysis Letters to BART Facilities

On May 14, 2012, ADEQ sent letters to BART facilities, via certified mail through the U.S. Postal Service, with the intention to resolve disapproved portions of the 2008 Arkansas Regional Haze SIP. Facilities were asked to prepare the five-factor analysis for specific subject-to-BART units (per C.A.A. § 169(A)(g)(2)) in accordance with 40 C.F.R. Part 51, Appendix Y.

The following facilities were contacted by ADEQ (units listed below facility name):

Arkansas Electric Cooperative Corporation – Carl E. Bailey Generating Station

- Unit 1: SO_2, NO_x, and PM

Arkansas Electric Cooperative Corporation – John L. McClellan Generating Station

- Unit 1: SO_2, NO_x, and PM

American Electric Power – Flint Creek

- Unit 1: SO_2 and NO_x

Entergy – Lake Catherine

- Unit 4: NO_x for natural gas firing
- Unit 4: SO_2, NO_x, and PM for oil firing

Entergy – White Bluff

- Unit 1 and Unit 2: SO_2 and NO_x for both bituminous an sub-bituminous coal firing
- Auxiliary boiler

Domtar – Ashdown

- Power Boiler 1: SO_2 and NO_x
- Power Boiler 2: SO_2, NO_x, and PM

Georgia Pacific Paper – Crossett

- Power Boilers 6A and 9A: SO_2, NO_x, and PM

The letters are included under this Appendix for reference.

ADEQ

ARKANSAS
Department of Environmental Quality

Copy mailed 5-15-2012

Certified Return Receipt Number: 91 7199 9991 7030 4899 3210

91 7199 9991 7030 4899 3210

May 14, 2012

Tracy Johnson
Interim Manager, Arkansas Environmental Support
425 West Capitol Avenue
P.O. Box 551
Little Rock, AR 72203

Re: Arkansas Regional Haze Rule Revision – 5-Factor Analysis

Dear Mr. Johnson:

In accordance with CAA sections 110(a) and 169A, the Air Division of the Arkansas Department of Environmental Quality (ADEQ) is responsible for the development and implementation of a State Implementation Plan (SIP) incorporating the requirements of the federal Regional Haze Rule. ADEQ submitted a Regional Haze SIP on September 23, 2008.

On March 12, 2012, the federal Environmental Protection Agency (EPA) promulgated a Final Rule, Approval and Promulgation of Implementation Plans; Arkansas Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze – (Federal Register, March 12, 2012), that partially disapproved the Regional Haze SIP. In response to this disapproval, ADEQ has determined that it will take measures to develop appropriate SIP revisions.

As a result, ADEQ will conduct new Best Available Retrofit Technology determinations (BART determinations) for certain facilities identified in the EPA notice. This will require that your company prepare new BART-related analyses. Specifically, ADEQ is requesting that your company submit an analysis of the five factors specified in CAA section 169(A)(g)(2) for the following affected subject to BART unit/units and pollutants:

- White Bluff's Units 1 and 2 SO_2 and NOx for both bituminous and sub-bituminous coal firing
- White Bluff's auxiliary boiler
- Lake Catherine Unit 4 NOx for natural gas firing
- Lake Catherine Unit 4 SO_2, NOx, and PM for oil firing

Each "5 – Factor Analysis" is to be conducted in accordance with 40 CFR 51, App. Y and the guidance provided by ADEQ. This guidance can be obtained by accessing the BART Analysis folder located on the following ftp site:

ftp://gis.adeq.state.ar.us/pub/AirPermits/

The format of your submittal should closely follow the procedures described in App. Y. (Please see the attached BART Engineering Analysis Format and the letter from the U.S. EPA recommending the use of CALPUFF version 5.8, the NO OBS = 0 CALMET and CALPOST version 6.221.) This will assist ADEQ staff responsible for completing the BART determinations. I am requesting that you provide this analysis within two months of your receipt of this letter. Questions regarding the development of this analysis should be directed to Thomas Rheaume, Engineer P.E. Branch Manager at Tel. No.: (501) 682- 0762. Questions regarding air quality modeling should be directed to Mary Pettyjohn, Epidemiologist at Tel No.: (501) 682- 0070. Your immediate attention to this request is appreciated.

Sincerely,

Mike Bates, Chief – Air Division

Attachment: 2

Copy
mailed 5-15-2012

ADEQ
ARKANSAS
Department of Environmental Quality

Certified Return Receipt Number: 91 7199 9991 7030 4899 3180
91 7199 9991 7030 4899 3180

May 14, 2012

Jim W. Cutbirth
Environmental Affairs Manager
Georgia Pacific
100 Paper Mill Road
Crossett, AR 71635

Re: Arkansas Regional Haze Rule Revision – 5-Factor Analysis

Dear Mr. Cutbirth:

In accordance with CAA sections 110(a) and 169A, the Air Division of the Arkansas Department of Environmental Quality (ADEQ) is responsible for the development and implementation of a State Implementation Plan (SIP) incorporating the requirements of the federal Regional Haze Rule. ADEQ submitted a Regional Haze SIP on September 23, 2008.

On March 12, 2012, the federal Environmental Protection Agency (EPA) promulgated a Final Rule, Approval and Promulgation of Implementation Plans; Arkansas Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze – (Federal Register, March 12, 2012), that partially disapproved the Regional Haze SIP. In response to this disapproval, ADEQ has determined that it will take measures to develop appropriate SIP revisions.

As a result, ADEQ will conduct new Best Available Retrofit Technology determinations (BART determinations) for certain facilities identified in the EPA notice. This will require that your company prepare new BART-related analyses. Specifically, ADEQ is requesting that your company submit an analysis of the five factors specified in CAA section 169(A)(g)(2) for the following affected subject to BART unit/units and pollutants:

- Crossett Power Boilers 6A and 9A were found to be subject-to-BART for SO_2, NOx, and PM

Each "5 – Factor Analysis" is to be conducted in accordance with 40 CFR 51, App. Y and the guidance provided by ADEQ. This guidance can be obtained by accessing the BART Analysis folder located on the following ftp site:

ftp://gis.adeq.state.ar.us/pub/AirPermits/

The format of your submittal should closely follow the procedures described in App. Y. (Please see the attached BART Engineering Analysis Format and the letter from the U.S. EPA recommending the use of CALPUFF version 5.8, the NO OBS = 0 CALMET and CALPOST version 6.221.) This will assist ADEQ staff

responsible for completing the BART determinations. I am requesting that you provide this analysis within two months of your receipt of this letter. Questions regarding the development of this analysis should be directed to Thomas Rheaume, Engineer P.E. Branch Manager at Tel. No.: (501) 682- 0762. Questions regarding air quality modeling should be directed to Mary Pettyjohn, Epidemiologist at Tel No.: (501).682- 0070. Your immediate attention to this request is appreciated.

Sincerely,

Mike Bates, Chief – Air Division

Attachment: 2

ADEQ

ARKANSAS
Department of Environmental Quality

Copy mailed 5-15-2012

Certified Return Receipt Number: 91 7199 9991 7030 4899 3197

91 7199 9991 7030 4899 3197

May 14, 2012

Kris Gaus
Principal Environmental Specialist
C/O American Electric Power
Suite 800
1201 Elm Street
Dallas, TX 75270

Re: Arkansas Regional Haze Rule Revision – 5-Factor Analysis

Dear Mr. Gaus:

In accordance with CAA sections 110(a) and 169A, the Air Division of the Arkansas Department of Environmental Quality (ADEQ) is responsible for the development and implementation of a State Implementation Plan (SIP) incorporating the requirements of the federal Regional Haze Rule. ADEQ submitted a Regional Haze SIP on September 23, 2008.

On March 12, 2012, the federal Environmental Protection Agency (EPA) promulgated a Final Rule, Approval and Promulgation of Implementation Plans; Arkansas Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze – (Federal Register, March 12, 2012), that partially disapproved the Regional Haze SIP. In response to this disapproval, ADEQ has determined that it will take measures to develop appropriate SIP revisions.

As a result, ADEQ will conduct new Best Available Retrofit Technology determinations (BART determinations) for certain facilities identified in the EPA notice. This will require that your company prepare new BART-related analyses. Specifically, ADEQ is requesting that your company submit an analysis of the five factors specified in CAA section 169(A)(g)(2) for the following affected subject to BART unit/units and pollutants:

- Flint Creek Unit 1 SO_2 and NOx

Each "5 – Factor Analysis" is to be conducted in accordance with 40 CFR 51, App. Y and the guidance provided by ADEQ. This guidance can be obtained by accessing the BART Analysis folder located on the following ftp site:

ftp://gis.adeq.state.ar.us/pub/AirPermits/

The format of your submittal should closely follow the procedures described in App. Y. (Please see the attached BART Engineering Analysis Format and the letter from the U.S. EPA recommending the use of

CALPUFF version 5.8, the NO OBS = 0 CALMET and CALPOST version 6.221.) This will assist ADEQ staff responsible for completing the BART determinations. I am requesting that you provide this analysis within two months of your receipt of this letter. Questions regarding the development of this analysis should be directed to Thomas Rheaume, Engineer P.E. Branch Manager at Tel. No.: (501) 682- 0762. Questions regarding air quality modeling should be directed to Mary Pettyjohn, Epidemiologist at Tel No.: (501) 682- 0070. Your immediate attention to this request is appreciated.

Sincerely,

Mike Bates, Chief – Air Division

Attachment: 2

ADEQ

ARKANSAS
Department of Environmental Quality

Copy mailed 5-15-2012

Certified Return Receipt Number: 91 7199 9991 7030 4899 3203

91 7199 9991 7030 4899 3203

May 14, 2012

Stephen Cain
Senior Environmental Engineer
Arkansas Electric Cooperative Corporation
P.O. Box 194208
Little Rock, AR 72219-4208

Re: Arkansas Regional Haze Rule Revision – 5-Factor Analysis

Dear Mr. Cain:

In accordance with CAA sections 110(a) and 169A, the Air Division of the Arkansas Department of Environmental Quality (ADEQ) is responsible for the development and implementation of a State Implementation Plan (SIP) incorporating the requirements of the federal Regional Haze Rule. ADEQ submitted a Regional Haze SIP on September 23, 2008.

On March 12, 2012, the federal Environmental Protection Agency (EPA) promulgated a Final Rule, Approval and Promulgation of Implementation Plans; Arkansas Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze – (Federal Register, March 12, 2012), that partially disapproved the Regional Haze SIP. In response to this disapproval, ADEQ has determined that it will take measures to develop appropriate SIP revisions.

As a result, ADEQ will conduct new Best Available Retrofit Technology determinations (BART determinations) for certain facilities identified in the EPA notice. This will require that your company prepare new BART-related analyses. Specifically, ADEQ is requesting that your company submit an analysis of the five factors specified in CAA section 169(A)(g)(2) for the following affected subject to BART unit/units and pollutants:

- Bailey Plant Unit 1 SO_2, NOx, and PM
- McClellan Plant Unit 1 SO_2, NOx, and PM

Each "5 – Factor Analysis" is to be conducted in accordance with 40 CFR 51, App. Y and the guidance provided by ADEQ. This guidance can be obtained by accessing the BART Analysis folder located on the following ftp site:

ftp://gis.adeq.state.ar.us/pub/AirPermits/

The format of your submittal should closely follow the procedures described in App. Y. (Please see the attached BART Engineering Analysis Format and the letter from the U.S. EPA recommending the use of

CALPUFF version 5.8, the NO OBS = 0 CALMET and CALPOST version 6.221.) This will assist ADEQ staff responsible for completing the BART determinations. I am requesting that you provide this analysis within two months of your receipt of this letter. Questions regarding the development of this analysis should be directed to Thomas Rheaume, Engineer P.E. Branch Manager at Tel. No.: (501) 682- 0762. Questions regarding air quality modeling should be directed to Mary Pettyjohn, Epidemiologist at Tel No.: (501) 682- 0070. Your immediate attention to this request is appreciated.

Sincerely,

Mike Bates, Chief – Air Division

Attachment: 2

ADEQ

ARKANSAS
Department of Environmental Quality

Copy mailed 5-15-2012

Certified Return Receipt Number: 91 7199 9991 7030 4899 3227

91 7199 9991 7030 4899 3227

May 14, 2012

Kelley Crouch
Group Leader, Environmental & Energy
Domtar A.W. LLC
285 Highway 71 South
Ashdown, AR 71822

Re: Arkansas Regional Haze Rule Revision – 5-Factor Analysis

Dear Ms. Crouch:

In accordance with CAA sections 110(a) and 169A, the Air Division of the Arkansas Department of Environmental Quality (ADEQ) is responsible for the development and implementation of a State Implementation Plan (SIP) incorporating the requirements of the federal Regional Haze Rule. ADEQ submitted a Regional Haze SIP on September 23, 2008.

On March 12, 2012, the federal Environmental Protection Agency (EPA) promulgated a Final Rule, Approval and Promulgation of Implementation Plans; Arkansas Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan To Address Pollution Affecting Visibility and Regional Haze – (Federal Register, March 12, 2012), that partially disapproved the Regional Haze SIP. In response to this disapproval, ADEQ has determined that it will take measures to develop appropriate SIP revisions.

As a result, ADEQ will conduct new Best Available Retrofit Technology determinations (BART determinations) for certain facilities identified in the EPA notice. This will require that your company prepare new BART-related analyses. Specifically, ADEQ is requesting that your company submit an analysis of the five factors specified in CAA section 169(A)(g)(2) for the following affected subject to BART unit/units and pollutants:

- Domtar Ashdown's Power Boiler # 1 SO_2 and NOx
- Domtar Ashdown's Power Boiler #2 SO_2, NOx, and PM

Each "5 – Factor Analysis" is to be conducted in accordance with 40 CFR 51, App. Y and the guidance provided by ADEQ. This guidance can be obtained by accessing the BART Analysis folder located on the following ftp site:

ftp://gis.adeq.state.ar.us/pub/AirPermits/

The format of your submittal should closely follow the procedures described in App. Y. (Please see the attached BART Engineering Analysis Format and the letter from the U.S. EPA recommending the use of CALPUFF version 5.8, the NO OBS = 0 CALMET and CALPOST version 6.221.) This will assist ADEQ staff responsible for completing the BART determinations. I am requesting that you provide this analysis within two months of your receipt of this letter. Questions regarding the development of this analysis should be directed to Thomas Rheaume, Engineer P.E. Branch Manager at Tel. No.: (501) 682- 0762. Questions regarding air quality modeling should be directed to Mary Pettyjohn, Epidemiologist at Tel No.: (501) 682- 0070. Your immediate attention to this request is appreciated.

Sincerely,

Mike Bates, Chief – Air Division

Attachment: 2

Arkansas Regional Haze FIP update

Facility Name	Emission Units Subject-to-BART	Unit Description	EPA Final Action on 2008 RH SIP (3/12/12)	Baseline Visibility Impacts from Source	BART Limits Recommended by State and Facilities (We recommend going with these limits in our proposed FIP)
Arkansas Electric Cooperative Corporation (AECC) Carl E. Bailey Plant	Boiler SN-01 Installation date-1966	122 MW-- burns primarily natural gas and also fuel oil	Disapproved SO2, NOx, and PM BART	Caney Creek= 0.330 dv Upper Buffalo= 0.348 dv	**SO2 BART**= 0.5% Sulfur Fuel Total Annual Cost= $68,587 SO2 tons removed= 26.80 tpy Average Cost effectiveness: $2,559/ton removed Visibility Improvement at Caney Creek: 0.188 dv Visibility Improvement at Upper Buffalo: 0.221 dv Incremental Cost Effectiveness (compared to 1% Sulfur fuel): $4,693/ ton removed Incremental Visibility improvement over 1% Sulfur fuel at Caney Creek: 0.051 dv Incremental Visibility improvement over 1% Sulfur fuel at Upper Buffalo: 0.067 dv **Other SO2 Controls Evaluated (which we are not recommending):** Switch to 1% sulfur fuel oil: Total Annual Cost= $19,596 SO2 tons removed= 16.36 tpy Average Cost effectiveness: $1,198/ ton removed Visibility Improvement at Caney Creek: 0.137 dv Visibility Improvement at Upper Buffalo: 0.154 dv Incremental Cost Effectiveness: NA, least stringent option evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent option evaluated Incremental Visibility improvement at Upper Buffalo: NA, least stringent option evaluated Switch to Diesel (0.05% sulfur content): Total Annual Cost= $194,003 SO2 tons removed= 36.05 tpy Average Cost effectiveness: $5,382/ ton removed Visibility Improvement at Caney Creek: 0.246 dv Visibility Improvement at Upper Buffalo: 0.279 dv Incremental Cost Effectiveness (compared to 0.5% Sulfur fuel): $13,558/ ton removed Incremental Visibility improvement over 0.5% Sulfur fuel at Caney Creek: 0.058 dv Incremental Visibility improvement over 0.5% Sulfur fuel at Upper Buffalo: 0.058 dv Switch to Natural Gas: Total Annual Cost= ($384,550) SO2 tons removed= 37.02 Average Cost effectiveness: -$10,387/ ton removed (Note: negative value means there is a cost savings when switching from baseline fuel oil to natural gas) Visibility Improvement at Caney Creek: 0.247 dv Visibility Improvement at Upper Buffalo: 0.276 dv Incremental Cost Effectiveness (compared to diesel): N/A, natural gas is more cost effective Incremental Visibility improvement over diesel at Caney Creek: 0.001 dv Incremental Visibility improvement over diesel at Upper Buffalo: -0.003 dv

- Note: The total annual cost was calculated as the difference between the total annual cost of the baseline fuel oil and the total annual cost of each fuel switching option. Therefore, the total annual cost of switching to natural gas is a negative value due to the current lower cost of natural gas compared to the baseline fuel oil burned at the facility. The baseline fuel oil has a sulfur content of 1.81%.
- Although natural gas is the most cost-effective option based on the current market prices, we recommend that BART is switching to fuels with a sulfur content of no more than 0.5%. This will continue to give the facility the flexibility to burn either fuel oil or natural gas, especially considering that because of cost variability, natural gas curtailments, and other factors, the ability to burn fuel oil is important to the facility.

Arkansas Electric Cooperative Corporation (AECC) Carl E. Bailey Plant					**NOx BART**= Existing emission limit/No Additional Controls **Other NOx Controls Evaluated (which we are not recommending):** LNB/OFA/FGR (0.15 lb/MMBtu): Total Annual Cost= $700,477 NOx tons removed= 18.98 tpy Average Cost effectiveness: $36,905/ ton removed Visibility Improvement at Caney Creek: 0.005 dv Visibility Improvement at Upper Buffalo: 0.015 dv Incremental Cost Effectiveness: NA, least stringent option evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent option evaluated Incremental Visibility improvement at Upper Buffalo: NA, least stringent option evaluated LNB/OFA/FGR + SNCR (0.12 lb/MMBtu): Total Annual Cost= $1,223,157 NOx tons removed= 25.02 tpy Average Cost effectiveness: $48,884/ ton removed Visibility Improvement at Caney Creek: 0.005 dv Visibility Improvement at Upper Buffalo: 0.018 dv Incremental Cost Effectiveness (compared to LNB/OFA/FGR): $86,536/ ton removed Incremental Visibility improvement over LNB/OFA/FGR at Caney Creek: 0 dv Incremental Visibility improvement over LNB/OFA/FGR at Upper Buffalo: 0.003 dv SCR (0.05 lb/MMBtu): Total Annual Cost= $1,555,718 NOx tons removed= 40.16 tpy Average Cost effectiveness: $38,738/ ton removed Visibility Improvement at Caney Creek: 0.007 dv Visibility Improvement at Upper Buffalo: 0.022 dv Incremental Cost Effectiveness (compared to LNB/OFA/FGR + SNCR): $21,966/ ton removed Incremental Visibility improvement over LNB/OFA/FGR + SNCR at Caney Creek: 0.002 dv Incremental Visibility improvement over LNB/OFA/FGR + SNCR at Upper Buffalo: 0.004 dv

Rationale for Existing emission limit/No additional controls:

- None of the NOx control options evaluated are cost effective.
- All control options evaluated would result in minimal visibility benefit.

Arkansas Electric Cooperative Corporation (AECC) Carl E. Bailey Plant					**PM BART** = 0.5% Sulfur Fuel (consistent w/SO2 BART recommendation for this source) Total Annual Cost= $68,587 PM tons removed= 22.88 tpy Average Cost effectiveness: $2,997/ ton removed Visibility Improvement at Caney Creek: 0.188 dv Visibility Improvement at Upper Buffalo: 0.221 dv Incremental Cost Effectiveness (compared to 1% Sulfur fuel): $8,098/ ton removed Incremental Visibility improvement over 1% Sulfur fuel at Caney Creek: 0.051 dv Incremental Visibility improvement over 1% Sulfur fuel at Upper Buffalo: 0.067 dv **Other PM Controls Evaluated (which we are not recommending):** Switch to 1% sulfur fuel oil: Total Annual Cost= $19,596 PM tons removed= 16.83 tpy Average Cost effectiveness: $1,164/ ton removed Visibility Improvement at Caney Creek: 0.137 dv Visibility Improvement at Upper Buffalo: 0.154 dv Incremental Cost Effectiveness: NA, least stringent option evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent option evaluated Incremental Visibility improvement at Upper Buffalo: NA, least stringent option evaluated Switch to Diesel (0.05% sulfur content): Total Annual Cost= $194,003 PM tons removed= 25.50 tpy Average Cost effectiveness: $7,608/ ton removed Visibility Improvement at Caney Creek: 0.246 dv Visibility Improvement at Upper Buffalo: 0.279 dv Incremental Cost Effectiveness (compared to 0.5% Sulfur fuel): $47,869/ ton removed Incremental Visibility improvement over 0.5% Sulfur fuel at Caney Creek: 0.058 dv Incremental Visibility improvement over 0.5% Sulfur fuel at Upper Buffalo: 0.058 dv Switch to Natural Gas: Total Annual Cost= ($384,550) PM tons removed= 25.37 tpy Average Cost effectiveness: -$15,157/ ton removed (Note: negative value means there is a cost savings when switching from baseline fuel oil to natural gas) Visibility Improvement at Caney Creek: 0.247 dv Visibility Improvement at Upper Buffalo: 0.276 dv Incremental Cost Effectiveness (compared to diesel): N/A, natural gas is more cost effective Incremental Visibility improvement over diesel at Caney Creek: 0.001 dv Incremental Visibility improvement over diesel at Upper Buffalo: -0.003 dv …. continued

Arkansas Electric Cooperative Corporation (AECC) Carl E. Bailey Plant					**Other PM Controls Evaluated (which we are not recommending), continued:** Wet Scrubber (55% control): Total Annual Cost= $50,150,862 PM tons removed= 14.09 tpy Average Cost effectiveness: $3,558,286/ ton removed Visibility Improvement at Caney Creek: 0.002 dv Visibility Improvement at Upper Buffalo: 0.002 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology Cyclone (85% control): Total Annual Cost= $1,188,630 PM tons removed= 21.78 tpy Average Cost effectiveness: $54,570/ ton removed Visibility Improvement at Caney Creek: 0.002 dv Visibility Improvement at Upper Buffalo: 0.002 dv Incremental Cost Effectiveness (compared to Wet Scrubber): NA, cyclone is more cost effective Incremental Visibility improvement over Wet Scrubber at Caney Creek: 0 dv Incremental Visibility improvement over Wet Scrubber at Upper Buffalo: 0 dv Wet ESP (90% control): Total Annual Cost= $22,638,340 PM tons removed= 23.06 tpy Average Cost effectiveness: $981,583/ ton removed Visibility Improvement at Caney Creek: 0.003 dv Visibility Improvement at Upper Buffalo: 0.004 dv Incremental Cost Effectiveness (compared to Cyclone): $16,757,586/ ton removed Incremental Visibility improvement over Cyclone at Caney Creek: 0.001 dv Incremental Visibility improvement over Cyclone at Upper Buffalo: 0.002 dv

- Our recommendation is consistent with that of SO2 BART for the source.
- Lower sulfur content of the fuel combusted also results in lower PM emissions.
- All other more stringent options are not cost-effective.

Arkansas Electric Cooperative Corporation (AECC) John L. McClellan Plant	Boiler SN-01 Installation date- 1971	134 MW-- burns primarily natural gas and also fuel oil	Disapproved SO2, NOx, and PM BART	Caney Creek= 0.622 dv Upper Buffalo= 0.266 dv	**SO2 BART**= 0.5% Sulfur fuel Total Annual Cost= $510,532 SO2 tons removed= 133.55 tpy Average Cost effectiveness: $3,823/ton removed Visibility Improvement at Caney Creek: 0.3 dv Visibility Improvement at Upper Buffalo: 0.12 dv Incremental Cost Effectiveness (compared to 1% Sulfur fuel): $4,691/ ton removed Incremental Visibility improvement over 1% Sulfur fuel at Caney Creek: 0.215 dv Incremental Visibility improvement over 1% Sulfur fuel at Upper Buffalo: 0.085 dv **Other SO2 Controls Evaluated (which we are not recommending):** Switch to 1% sulfur fuel: Total Annual Cost= $145,866 SO2 tons removed= 55.81 tpy Average Cost effectiveness: $2,613/ ton removed Visibility Improvement at Caney Creek: 0.085 dv Visibility Improvement at Upper Buffalo: 0.035 dv Incremental Cost Effectiveness: NA, least stringent option evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent option evaluated Incremental Visibility improvement at Upper Buffalo: NA, least stringent option evaluated Switch to Diesel: Total Annual Cost= $1,444,077 SO2 tons removed= 202.11 tpy Average Cost effectiveness: $7,145/ ton removed Visibility Improvement at Caney Creek: 0.448 dv Visibility Improvement at Upper Buffalo: 0.193 dv Incremental Cost Effectiveness (compared to 0.5% Sulfur fuel): $13,616/ ton removed Incremental Visibility improvement over 0.5% Sulfur fuel at Caney Creek: 0.148 dv Incremental Visibility improvement over 0.5% Sulfur fuel at Upper Buffalo: 0.073 dv Switch to Natural Gas: Total Annual Cost= ($2,926,874) SO2 tons removed= 209.35 Average Cost effectiveness: -$13,980/ ton removed (Note: negative value means there is a cost savings when switching from baseline fuel oil to natural gas) Visibility Improvement at Caney Creek: 0.497 dv Visibility Improvement at Upper Buffalo: 0.214 dv Incremental Cost Effectiveness (compared to diesel): N/A, natural gas is more cost effective Incremental Visibility improvement over diesel at Caney Creek: 0.049 dv Incremental Visibility improvement over diesel at Upper Buffalo: 0.021 dv

- Note: The total annual cost was calculated as the difference between the total annual cost of the baseline fuel oil and the total annual cost of each fuel switching option. Therefore, the total annual cost of switching to natural gas is a negative value due to the current lower cost of natural gas compared to the baseline fuel oil burned at the facility. The baseline fuel oil has a sulfur content of 1.81%.
- Although natural gas is the most cost-effective option based on current market prices, we recommend that BART is switching to fuels with a sulfur content of no more than 0.5%. This will continue to give the facility the flexibility to burn either fuel oil or natural gas, especially considering that because of cost variability, natural gas curtailments, and other factors, the ability to burn fuel oil is important to the facility.

Arkansas Electric Cooperative Corporation (AECC) John L. McClellan Plant					**NOx BART**= Existing emission limit/No Additional Controls **Other NOx Controls Evaluated (which we are not recommending):** LNB/OFA/FGR (0.15 lb/MMBtu): Total Annual Cost= $746,051 NOx tons removed= 119.15 tpy Average Cost effectiveness: $6,261 ton removed Visibility Improvement at Caney Creek: 0.067 dv Visibility Improvement at Upper Buffalo: 0.002 dv Incremental Cost Effectiveness: NA, least stringent option evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent option evaluated Incremental Visibility improvement at Upper Buffalo: NA, least stringent option evaluated LNB/OFA/FGR + SNCR (0.12 lb/MMBtu): Total Annual Cost= $1,990,988 NOx tons removed= 157.64 tpy Average Cost effectiveness: $12,630/ ton removed Visibility Improvement at Caney Creek: 0.079 dv Visibility Improvement at Upper Buffalo: 0.002 dv Incremental Cost Effectiveness (compared to LNB/OFA/FGR): $32,344/ ton removed Incremental Visibility improvement over LNB/OFA/FGR at Caney Creek: 0.012 dv Incremental Visibility improvement over LNB/OFA/FGR at Upper Buffalo: 0 dv SCR (0.05 lb/MMBtu): Total Annual Cost= $1,732,870 NOx tons removed= 229.06 tpy Average Cost effectiveness: $7,565/ ton removed Visibility Improvement at Caney Creek: 0.073 dv Visibility Improvement at Upper Buffalo: 0.002 dv Incremental Cost Effectiveness (compared to LNB/OFA/FGR + SNCR): -$3,614/ ton removed Incremental Visibility improvement over LNB/OFA/FGR + SNCR at Caney Creek: -0.006 dv Incremental Visibility improvement over LNB/OFA/FGR + SNCR at Upper Buffalo: 0 dv

Rationale for Existing emission limit/No additional controls:

- None of the NOx control options evaluated are cost effective.
- All control options evaluated would result in minimal visibility benefit.

Arkansas Electric Cooperative Corporation (AECC) John L. McClellan Plant					**PM BART** = 0.5% Sulfur Fuel (consistent w/SO2 BART recommendation for this source) Total Annual Cost= $510,532 PM tons removed= 112.14 tpy Average Cost effectiveness: $4,553/ ton removed Visibility Improvement at Caney Creek: 0.3 dv Visibility Improvement at Upper Buffalo: 0.12 dv Incremental Cost Effectiveness (compared to 1% Sulfur fuel): $/ ton removed Incremental Visibility improvement over 1% Sulfur fuel at Caney Creek: Incremental Visibility improvement over 1% Sulfur fuel at Upper Buffalo: **Other PM Controls Evaluated (which we are not recommending):** Switch to 1% sulfur fuel oil: Total Annual Cost= $19,596 PM tons removed= 16.83 tpy Average Cost effectiveness: $1,164/ ton removed Visibility Improvement at Caney Creek: 0.137 dv Visibility Improvement at Upper Buffalo: 0.154 dv Incremental Cost Effectiveness: NA, least stringent option evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent option evaluated Incremental Visibility improvement at Upper Buffalo: NA, least stringent option evaluated Switch to Diesel (0.05% sulfur content): Total Annual Cost= $1,444,077 PM tons removed= 134.98 tpy Average Cost effectiveness: $10,698/ ton removed Visibility Improvement at Caney Creek: 0.448 dv Visibility Improvement at Upper Buffalo: 0.193 dv Incremental Cost Effectiveness (compared to 0.5% Sulfur fuel): $40,873/ ton removed Incremental Visibility improvement over 0.5% Sulfur fuel at Caney Creek: 0.148 dv Incremental Visibility improvement over 0.5% Sulfur fuel at Upper Buffalo: 0.073 dv Switch to Natural Gas: Total Annual Cost= ($2,926,874) PM tons removed= 134.72 tpy Average Cost effectiveness: -$15,157/ ton removed (Note: negative value means there is a cost savings when switching from baseline fuel oil to natural gas) Visibility Improvement at Caney Creek: 0.247 dv Visibility Improvement at Upper Buffalo: 0.276 dv Incremental Cost Effectiveness (compared to diesel): N/A, natural gas is more cost effective Incremental Visibility improvement over diesel at Caney Creek: 0.049 dv Incremental Visibility improvement over diesel at Upper Buffalo: 0.021 dv …. continued

Arkansas Electric Cooperative Corporation (AECC) John L. McClellan Plant					**Other PM Controls Evaluated (which we are not recommending):** Wet Scrubber (55% Control): Total Annual Cost= $52,056,542 PM tons removed= 74.84 tpy Average Cost effectiveness: $695,549/ ton removed Visibility Improvement at Caney Creek: dv Visibility Improvement at Upper Buffalo: dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology Cyclone (85% Control): Total Annual Cost= $1,721,384 PM tons removed= 115.67 tpy Average Cost effectiveness: $14,882/ ton removed Visibility Improvement at Caney Creek: 0.002 dv Visibility Improvement at Upper Buffalo: 0.001 dv Incremental Cost Effectiveness (compared to Wet Scrubber): NA, cyclone is more cost effective Incremental Visibility improvement over Wet Scrubber at Caney Creek: 0 dv Incremental Visibility improvement over Wet Scrubber at Upper Buffalo: -0.001 dv Wet ESP (90% Control): Total Annual Cost= $32,605,907 PM tons removed= 122.47 tpy Average Cost effectiveness: $266,237/ ton removed Visibility Improvement at Caney Creek: 0.004 dv Visibility Improvement at Upper Buffalo: 0.003 dv Incremental Cost Effectiveness (compared to Cyclone): $4,541,842/ ton removed Incremental Visibility improvement over Cyclone at Caney Creek: 0.002 dv Incremental Visibility improvement over Cyclone at Upper Buffalo: 0.002 dv

- Our recommendation is consistent with that of SO2 BART for the source.
- Lower sulfur content of the fuel combusted also results in lower PM emissions.
- All other more stringent options are not cost-effective.

AEP/SWEPCO Flint Creek	Boiler SN-01 Installation date- 1978	558 MW-- burns primarily coal, but can also burn TDF	Approved PM BART Disapproved SO2 and NOx BART	Caney Creek= 0.963 dv Upper Buffalo= 0.965 dv	**SO2 BART**= 0.06 lb/MMBtu (using NID) Total Annual Cost= $40,448,089 SO2 tons removed= 10,520.66 tpy Average Cost effectiveness: $3,845/ton removed Visibility Improvement at Caney Creek: 0.615 dv Visibility Improvement at Upper Buffalo: 0.464 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other SO2 Controls Evaluated (which we are not recommending):** Wet Scrubbers (0.04 lb/MMBtu): Total Annual Cost= $53,592,663 SO2 tons removed= 10,894.1 tpy Average Cost effectiveness: $4,919/ ton removed Visibility Improvement at Caney Creek: 0.629 dv Visibility Improvement at Upper Buffalo: 0.477 dv Incremental Cost Effectiveness (compared to NID): $35,199/ ton removed Incremental Visibility improvement over NID at Caney Creek: 0.014 dv Incremental Visibility improvement over NID at Upper Buffalo: 0.013 dv

Rationale for not selecting Wet Scrubbers for SO2 BART

- NID (a type of dry scrubbing technology) is much more cost effective than wet scrubbers; while wet scrubbers offer very little incremental visibility improvement.

AEP/SWEPCO Flint Creek					**NOx BART**= 0.23 lb/MMBtu (using LNB/OFA) Total Annual Cost= $1,454,621 NOx tons removed= 826 tpy Average Cost effectiveness: $1,762/ton removed Visibility Improvement at Caney Creek: 0.114 dv Visibility Improvement at Upper Buffalo: 0.026 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other NOx Controls Evaluated (which we are not recommending):** LNB/OFA + SNCR (0.2 lb/MMBtu): Total Annual Cost= $4,177,782 NOx tons removed= 1,348.45 tpy Average Cost effectiveness: $3,099/ton removed Visibility Improvement at Caney Creek: 0.114 dv Visibility Improvement at Upper Buffalo: 0.033 dv Incremental Cost Effectiveness (compared to LNB/OFA): $5,209/ton removed Incremental Visibility improvement over LNB/OFA at Caney Creek: 0.000 dv Incremental Visibility improvement over LNB/OFA at Upper Buffalo: 0.007 dv SCR (0.07 lb/MMBtu): Total Annual Cost= $13,769,599 NOx tons removed= 3,869.22 tpy Average Cost effectiveness: $3,559/ton removed Visibility Improvement at Caney Creek: 0.245 dv Visibility Improvement at Upper Buffalo: 0.07 dv Incremental Cost Effectiveness (compared to LNB/OFA + SNCR): $3,805/ton removed Incremental Visibility improvement over LNB/OFA + SNCR at Caney Creek: 0.131 dv Incremental Visibility improvement over LNB/OFA + SNCR at Upper Buffalo: 0.037 dv

Rationale for not selecting SNCR or SCR for NOx BART

- Facility offered to install LNB/OFA to meet BART requirement, even though the visibility benefit is on the low end considering the cost in terms of $/ton. Some could argue against controlling for NOx at all due to the relatively low visibility benefit.
- LNB/OFA + SNCR has no incremental visibility benefit over LNB/OFA alone at Caney Creek and negligible incremental visibility improvement at Upper Buffalo, so this makes for a strong case against SNCR.
- SCR has a cost ($/ton) somewhat on the high end, although it is expected to result in around twice as much visibility improvement as LNB/SOFA.

Entergy White Bluff Plant	Unit 1 Installation date- 1974	850 MW-- burns sub-bituminous or bituminous coal as primary fuel; No. 2 fuel oil is startup fuel	Approved PM BART Disapproved SO2 and NOx BART	Caney Creek= 1.628 dv Upper Buffalo= 1.140 dv	**SO2 BART**= 0.06 lb/MMBtu (using dry scrubbing) Total Annual Cost= $31,981,230 SO2 tons removed= 14,363 tpy Average Cost effectiveness: $2,227/ton removed Visibility Improvement at Caney Creek: 0.813 dv Visibility Improvement at Upper Buffalo: 0.762 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other SO2 Controls Evaluated (which we are not recommending):** Wet Scrubbers (0.04 lb/MMBtu): Total Annual Cost= $65,942,351 SO2 tons removed= 18,445 tpy Average Cost effectiveness: $3,575/ ton removed Visibility Improvement at Caney Creek: 0.834 dv Visibility Improvement at Upper Buffalo: 0.79 dv Incremental Cost Effectiveness (compared to NID): $8,320/ ton removed Incremental Visibility improvement over NID at Caney Creek: 0.021 dv Incremental Visibility improvement over NID at Upper Buffalo: 0.028 dv

Rationale for not selecting Wet Scrubbers for SO2 BART

- Dry scrubbers are much more cost effective than wet scrubbers; while wet scrubbers offer very little incremental visibility improvement.

Entergy White Bluff Plant	Unit 1				**NOx BART**= 0.15 lb/MMBtu (using LNB/SOFA) Total Annual Cost= $1,085,904 NOx tons removed= 3,104 tpy Average Cost effectiveness: $350/ton removed Visibility Improvement at Caney Creek: 0.166 dv Visibility Improvement at Upper Buffalo: 0.101 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other NOx Controls Evaluated (which we are not recommending):** LNB/SOFA + SNCR (0.13 lb/MMBtu): Total Annual Cost= $6,430,580 NOx tons removed= 3,657 tpy Average Cost effectiveness: $1,758/ton removed Visibility Improvement at Caney Creek: 0.2 dv Visibility Improvement at Upper Buffalo: 0.111 dv Incremental Cost Effectiveness (compared to LNB/SOFA): $9,665/ton removed Incremental Visibility improvement over LNB/SOFA at Caney Creek: 0.034 dv Incremental Visibility improvement over LNB/SOFA at Upper Buffalo: 0.01 dv LNB/SOFA + SCR (0.055 lb/MMBtu): Total Annual Cost= $20,349,142 NOx tons removed= 5,729 tpy Average Cost effectiveness: $3,552/ton removed Visibility Improvement at Caney Creek: 0.269 dv Visibility Improvement at Upper Buffalo: 0.149 dv Incremental Cost Effectiveness (compared to LNB/SOFA + SNCR): $6,717/ton removed Incremental Visibility improvement over LNB/SOFA + SNCR at Caney Creek: 0.069 dv Incremental Visibility improvement over LNB/SOFA + SNCR at Upper Buffalo 0.038 dv

Rationale for not selecting SNCR or SCR for NOx BART

- Although LNB/SOFA + SNCR is cost-effective, the incremental cost effectiveness compared to LNB/SOFA alone is high while the incremental visibility benefit is very small (0.034 dv and 0.01 dv).
- The cost ($/ton) of LNB/SOFA + SCR is somewhat on the high end, and the incremental visibility benefit compared to LNB/SOFA + SNCR is relatively small (0.069 dv and 0.038 dv).

Entergy White Bluff Plant	Unit 2 Installation date- 1974	850 MW-- burns sub-bituminous or bituminous coal as primary fuel; No. 2 fuel oil is startup fuel	Approved PM BART Disapproved SO2 and NOx BART	Caney Creek= 1.695 dv Upper Buffalo= 1.185 dv	**SO2 BART**= 0.06 lb/Mmbtu (using dry scrubbers) Total Annual Cost= $31,981,230 SO2 tons removed= 15,221 tpy Average Cost effectiveness: $2,101/ton removed Visibility Improvement at Caney Creek: 0.754 dv Visibility Improvement at Upper Buffalo: 0.767 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other SO2 Controls Evaluated (which we are not recommending):** Wet Scrubbers (0.04 lb/MMBtu): Total Annual Cost= $65,942,351 SO2 tons removed= 16,084 tpy Average Cost effectiveness: $4,100/ ton removed Visibility Improvement at Caney Creek: 0.775 dv Visibility Improvement at Upper Buffalo: 0.78 dv Incremental Cost Effectiveness (compared to dry scrubbers): $39,352/ ton removed Incremental Visibility improvement over dry scrubbers at Caney Creek: 0.021 dv Incremental Visibility improvement over dry scrubbers at Upper Buffalo: 0.013 dv

Rationale for not selecting Wet Scrubbers for SO2 BART

- Dry scrubbers are much more cost effective than wet scrubbers; while wet scrubbers offer very little incremental visibility improvement.

Entergy White Bluff Plant	Unit 2				**NOx BART**= 0.15 lb/MMBtu (using LNB/SOFA) Total Annual Cost= $1,403,376 NOx tons removed= 4,125 tpy Average Cost effectiveness: $340/ton removed Visibility Improvement at Caney Creek: 0.225 dv Visibility Improvement at Upper Buffalo: 0.139 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other NOx Controls Evaluated (which we are not recommending):** LNB/SOFA + SNCR (0.13 lb/MMBtu): Total Annual Cost= $ 6,759,102 NOx tons removed= 4,666 tpy Average Cost effectiveness: $1,449 /ton removed Visibility Improvement at Caney Creek: 0.258 dv Visibility Improvement at Upper Buffalo: 0.15 dv Incremental Cost Effectiveness (compared to LNB/SOFA): $9,900 /ton removed Incremental Visibility improvement over LNB/SOFA at Caney Creek: 0.033 dv Incremental Visibility improvement over LNB/SOFA at Upper Buffalo: 0.011 dv LNB/SOFA + SCR (0.055 lb/MMBtu): Total Annual Cost= $ 18,407,977 NOx tons removed= 6,697 tpy Average Cost effectiveness: $2,749/ton removed Visibility Improvement at Caney Creek: 0.327 dv Visibility Improvement at Upper Buffalo: 0.188 dv Incremental Cost Effectiveness (compared to LNB/SOFA + SNCR): $5,736 /ton removed Incremental Visibility improvement over LNB/SOFA + SNCR at Caney Creek: 0.069 dv Incremental Visibility improvement over LNB/SOFA + SNCR at Upper Buffalo: 0.038 dv

Rationale for not selecting SNCR or SCR for NOx BART.

- Although LNB/SOFA + SNCR is cost-effective, the incremental cost effectiveness compared to LNB/SOFA alone is high while the incremental visibility benefit is very small (0.033 dv and 0.011 dv).
- The cost ($/ton) of LNB/SOFA + SCR is slightly high, and the incremental visibility benefit compared to LNB/SOFA + SNCR is relatively small (0.069 dv and 0.038 dv).

Entergy Lake Catherine Plant	Unit 4 Installation date- 1970	552 MW-- burns primarily natural gas; No. 6 fuel oil is secondary fuel	Natural Gas Firing	Approved SO2, PM BART Disapproved NOx BART	Caney Creek= 1.371 dv Upper Buffalo= 0.532 dv	Natural Gas Firing Scenario: **NOx BART**= 0.22 lb/MMBtu (using Burners Out of Service) Total Annual Cost= $92,964 NOx tons removed= 673 tpy Average Cost effectiveness: $138/ton removed Visibility Improvement at Caney Creek: 0.596 dv Visibility Improvement at Upper Buffalo: 0.248 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other NOx Controls Evaluated (which we are not recommending):** LNB/SOFA (0.19 lb/MMBtu): Total Annual Cost= $1,075,905 NOx tons removed= 742 tpy Cost effectiveness: $1,450/ton removed Visibility Improvement at Caney Creek: 0.688 dv Visibility Improvement at Upper Buffalo: 0.282 dv Incremental Cost Effectiveness (compared to BOOS): $14,246/ton removed Incremental Visibility improvement over BOOS at CC: 0.092 dv Incremental Visibility improvement over BOOS at UB: 0.036 dv LNB/SOFA + SNCR (0.14 lb/MMBtu): Total Annual Cost= $3,047,525 NOx tons removed= 865 tpy Cost effectiveness: $3,523/ton removed Visibility Improvement at Caney Creek: 0.842 dv Visibility Improvement at Upper Buffalo: 0.339 dv Incremental Cost Effectiveness (compared to LNB/SOFA): $16,029/ton removed Incremental Visibility improvement over LNB/SOFA at Caney Creek: 0.154 dv Incremental Visibility improvement over LNB/SOFA at Upper Buffalo: 0.057 dv LNB/SOFA + SCR (0.03 lb/MMBtu): Total Annual Cost= $6,506,935 NOx tons removed= 1,159 tpy Cost effectiveness: $5,614/ton removed Visibility Improvement at Caney Creek: 1.208 dv Visibility Improvement at Upper Buffalo: 0.475 dv Incremental Cost Effectiveness (compared to LNB/SOFA + SNCR): $11,767/ton removed Incremental Visibility improvement over LNB/SOFA + SNCR at Caney Creek: 0.52 dv Incremental Visibility improvement over LNB/SOFA + SNCR at Upper Buffalo: 0.193 dv

Rationale for not selecting LNB/SOFA or other more stringent controls for NOx BART.

- The incremental cost effectiveness of LNB/SOFA compared to Burners out of Service is $14,246/ ton removed. The incremental cost effectiveness was calculated as follows: (Total Annual Cost of LNB/SOFA - Total Annual Cost of BOOS) / (Annual NOx emissions reductions due to LNB/SOFA - Annual NOx emissions reductions due to BOOS) = ($1,075,905 - $92,964) / (742 tpy – 673 tpy) = $14,246/ ton removed.
- Based on feedback we have received from OGC in the past, where the incremental cost effectiveness is greater than $10,000/ton removed, we can rule out that technology based on cost.
- The incremental cost effectiveness of SNCR and SCR is also greater than $10,000/ton removed.
- Although LNB/SOFA is cost-effective, the incremental visibility benefit over Burners out of Service is under 0.1 dv, yet the cost on a $/ton basis is much higher than Burners out of Service ($1,450/ton removed vs. $138/ton removed).
- Lake Catherine Unit 4 is an oil/gas fired peaking unit, with NOx baseline emissions of 1,236 tpy. By comparison, AEP/SWEPCO Flint Creek Unit 1 is a coal fired base load unit with NOx baseline emissions of 5,120 tpy.

Entergy Lake Catherine Plant	Unit 4		Fuel Oil Firing	Disapproved SO2, NOx, and PM BART	Caney Creek= 1.371 dv Upper Buffalo= 0.532 dv	Fuel Oil Firing Scenario: Facility has not burned fuel oil in over 10 years and does not anticipate burning fuel oil in the near future, and would therefore like to defer getting a BART determination until they start burning fuel oil. Facility will accept a permit condition that would not allow fuel burning until BART limit is in place.
Domtar-Ashdown Mill	Power Boiler #1 (SN-03) Installation date-1968	580 MMBtu/hr--combusts primarily bark (75%), also fuel oil and natural gas	Approved PM BART Disapproved SO2 and NOx BART		Caney Creek= 0.335 dv Upper Buffalo= 0.038 dv	**SO2 BART**= 21.0 lb/hr (Baseline Emission Rate/No Additional Controls) Facility took a streamlined approach to the BART analysis due to the low baseline emissions and that the boiler burns primarily bark, which has low sulfur content.

Domtar-Ashdown Mill	Power Boiler #1				**NOx BART**= 207.4 lb/hr (Baseline Emission Rate//No Additional Controls) **Other NOx Controls Evaluated (which we are not recommending):** SNCR (20% control): Total Annual Cost= $ 1,118,178 NOx tons removed= 88 tpy Cost effectiveness: $12,700/ ton removed Visibility Improvement at Caney Creek: 0.061 dv Visibility Improvement at Upper Buffalo: 0.007 dv Incremental Cost Effectiveness: NA, least stringent control technology evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology SNCR (32.5% control): Total Annual Cost= $1,144,103 NOx tons removed= 143 tpy Cost effectiveness: $7,996/ ton removed Visibility Improvement at Caney Creek: 0.098 dv Visibility Improvement at Upper Buffalo: 0.011 dv Incremental Cost Effectiveness (compared to 20% control): $471/ ton removed Incremental Visibility improvement over 20% control at Caney Creek: 0.037 dv Incremental Visibility improvement over 20% control at Upper Buffalo: 0.004 dv SNCR (45% control): Total Annual Cost= $1,513,602 NOx tons removed= 379 tpy Cost effectiveness: $7,640/ ton removed Visibility Improvement at Caney Creek: 0.136 dv Visibility Improvement at Upper Buffalo: 0.015 dv Incremental Cost Effectiveness (compared to 20% control): $1,566/ ton removed Incremental Visibility improvement over 20% control at Caney Creek: 0.038 dv Incremental Visibility improvement over 20% control at Upper Buffalo: 0.004 dv

Rationale for not selecting SNCR for NOx BART:

- Facility evaluated SNCR at various levels of control, although they believe 20% removal efficiency is the most reasonable estimate of the level of NO_X control SNCR can achieve at Power Boiler No. 1 on a long-term basis due to the boiler's high load swing.
- When operated at 20% removal efficiency, SNCR is projected to result in visibility improvement of 0.061 and 0.007 dv and is estimated to cost $12,700 per ton of NO_X removed. We do not believe this high cost justifies the modest visibility improvement projected from the installation and operation of SNCR at 20% removal efficiency.
- In the BART evaluation submitted as part of the 2008 Arkansas RH SIP, LNB, ultra-Low NOx Burners, OFA, Flue gas recirculation, and SCR were considered and determined to be technically infeasible for this boiler.

Domtar-Ashdown Mill	Power Boiler #2 (SN-05) Installation date-1975	820 MMBtu/hr--combusts primarily bituminous coal (80%), also bark/wood chips, natural gas	Disapproved SO2, NOx, and PM BART	Caney Creek= 0.844 dv Upper Buffalo= 0.146 dv	**SO2 BART**= Facility is recommending an emission limit of 0.31 lb/MMBtu (Based on the use of additional scrubbing reagent in the existing scrubbers) **We are recommending an emission limit in the range of 0.11 lb/MMBtu, which is representative of operating the existing scrubbers at 90% control efficiency, we will invite comment in our proposal on the appropriateness of this emission limit** Total Annual Cost= $1,960,434 SO2 tons removed= 1,401 tpy Average Cost effectiveness: $1,411/ton removed Estimated Visibility Improvement at Caney Creek: 0.139 dv Estimated Visibility Improvement at Upper Buffalo: 0.05 dv Incremental Cost Effectiveness: NA, least stringent control technology evaluated Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology **Other SO2 Controls Evaluated (which we are not recommending):** Add-on Spray Scrubbers: Total Annual Cost= $9,833,378 SO2 tons removed= 1,870 tpy Average Cost effectiveness: $5,258/ ton removed Visibility Improvement at Caney Creek: 0.146 dv Visibility Improvement at Upper Buffalo: 0.053 dv Incremental Cost Effectiveness (compared to using additional scrubbing reagent): $16,787/ ton removed Incremental Visibility improvement over additional scrubbing reagent at Caney Creek: 0.007 dv Incremental Visibility improvement over additional scrubbing reagent at Upper Buffalo: 0.003 dv

Rationale for not selecting Add-On Spray Scrubbers for SO2 BART:

- The cost of add-on spray scrubbers (which would have been added on top of the existing wet venturi scrubbers) is estimated to be much higher than using the existing scrubbers with additional scrubbing reagent. Add-on spray scrubbers would also have negligible incremental visibility benefit.

Domtar-Ashdown Mill	Power Boiler #2				**NOx BART**= 345 lb/hr (using LNB, 30% control) Total Annual Cost: $899,605 NOx tons removed= 461 tpy Average Cost effectiveness: $1,951/ton removed Visibility Improvement at Caney Creek: 0.181 dv Visibility Improvement at Upper Buffalo: 0.014 dv Incremental Cost Effectiveness (compared to SNCR 27.5% control): $1,437/ ton removed Incremental Visibility improvement at Caney Creek: 0.015 dv Incremental Visibility improvement at Upper Buffalo: 0.002 dv **Other NOx Controls Evaluated (which we are not recommending):** SNCR (27.5% control): Total Annual Cost= $843,575 NOx tons removed= 422 tpy Cost effectiveness: $1,998/ ton removed Visibility Improvement at Caney Creek: 0.166 dv Visibility Improvement at Upper Buffalo: 0.012 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology SNCR (35% control): Total Annual Cost= $1,026,214 NOx tons removed= 537 tpy Cost effectiveness: $1,909/ ton removed Visibility Improvement at Caney Creek: 0.212 dv Visibility Improvement at Upper Buffalo: 0.017 dv Incremental Cost Effectiveness (compared to LNB): $/ ton removed Incremental Visibility improvement over LNB at Caney Creek: 0.031 dv Incremental Visibility improvement over LNB at Upper Buffalo: 0.003 dv

Rationale for not selecting SNCR for NOx BART:

- SNCR was evaluated at 27.5% and 35% control efficiency, but based on the information provided by the facility we believe that due to the wide variability in steam demand and wide range in furnace temperature observed in Power Boiler No. 2, the NO_X control efficiency of SNCR at the boiler would not reach 35% control on a long-term basis.
- There is uncertainty as to the level of control efficiency that SNCR is able to achieve on a long-term basis for Power Boiler No. 2.
- LNB are cost effective and are expected to result in considerable visibility improvement.

Domtar-Ashdown Mill	Power Boiler #2				**PM BART**= 0.44 lb/MMBtu (No Additional Controls) 0.44 lb/MMBtu is the PM Boiler MACT standard the boiler is subject to. The BART Guidelines allow for a streamlined approach for determining BART for sources subject to the PM Boiler MACT standard. As long as no new cost-effective technologies have been developed subsequent to the MACT standards, the MACT standard may be relied on to satisfy the BART requirement. We recommend taking the streamlined approach for determining BART in this case.

Reasonable Progress Analysis

Issue: Do we propose SO2 and NO_X controls on the Entergy Independence Power Plant (a non-BART source) under the Reasonable Progress Requirements?

Option 1: Propose No Additional Controls under Reasonable Progress

- CENRAP modeling shows all Arkansas areas are on or beneath the glide path.
- This approach would not be consistent with our TX/OK Regional Haze FIP proposal.

Option 2: Propose Only SO2 Controls under Reasonable Progress

- Independence and White Bluff (BART source) are sister facilities, and they have similar baseline visibility impacts at Arkansas Class I areas.
- Independence is currently the second largest point source of SO2 emissions in Arkansas (2011 NEI), so it is an obvious source to evaluate for controls under RP.
- Based on CALPUFF modeling, the visibility improvement of SO2 controls at affected Class I areas is projected to be considerable.
- The approach of proposing SO2 controls and no NOx controls under RP is consistent with our TX/OK Regional Haze FIP proposal.
- Under Reasonable Progress, the focus is on improving the 20% worst days, and CENRAP modeling shows that SO2 is the driver while NOx is not a driver of regional haze on the 20% worst days at Arkansas Class I areas.

Option 3: Propose Both SO2 and NOx Controls Under Reasonable Progress

- Both SO2 and NOx controls are estimated to be cost-effective and are projected to result in considerable visibility benefit at the affected Class I areas based on CALPUFF modeling that looks at the 8th high day of the modeled period.
- This approach would not be somewhat inconsistent with our TX/OK Regional Haze FIP proposal.

Recommendation: Our recommendation is Option 3 above. Propose an SO2 emission limit of 0.06 lb/MMBtu and a NOx emission limit of 0.15 lb/MMBtu under Reasonable Progress for Units 1 and 2 of the Independence Power Plant, based on the installation of semi-dry scrubbers and LNB/SOFA. We will invite public comment on whether NOx controls are appropriate Expect significant comment on this issue.

Facility Name	Emission Units Subject-to-BART	Unit Description	Baseline Visibility Impacts from Source	Recommended Emission Limit/ Visibility Improvement
Independence Power Plant	Unit 1 Installation date-1983	850 MW-- burns sub-bituminous or bituminous coal as primary fuel; No. 2 fuel oil is startup fuel	**Unit 1 Impacts** Caney Creek= 1.133 dv Upper Buffalo= 0.845 dv Hercules Glades= 0.793 dv Mingo= 0.739 dv **Facility-wide Impacts** Caney Creek= 2.412 dv Upper Buffalo= 1.764 dv Hercules Glades= 1.704 dv Mingo= 1.547 dv	**SO2 Under RP= 0.06 lb/MMBtu (Based on semi-dry scrubber installation)** Cost Effectiveness of Semi-Dry Scrubbers (Unit 1) Total Annual Cost = $31,981,230 SO2 tons removed= 12,912 tpy Average Cost effectiveness: $2,477/ton removed Visibility Improvement at Caney Creek: 0.476 dv Visibility Improvement at Upper Buffalo: 0.46 dv Visibility Improvement at Hercules Glades: 0.498 dv Visibility Improvement at Mingo: 0.441 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology Incremental Visibility improvement at Hercules Glades: NA, least stringent control technology Incremental Visibility improvement at Mingo: NA, least stringent control technology Facility-wide (Units 1 and 2) Visibility Improvement from Dry Scrubber controls Caney Creek: 0.938 dv Upper Buffalo: 0.888 dv Hercules Glades: 1.056 dv Mingo: 0.871 dv Total Visibility Improvement: 3.753 dv **Other SO2 Controls Evaluated for Unit 1 (which we are not recommending):** Wet Scrubbers (0.04 lb/MMBtu): Total Annual Cost= $65,942,351 SO2 tons removed= 13,463 tpy Average Cost effectiveness: $4,898/ ton removed Visibility Improvement at Caney Creek: 0.493 dv Visibility Improvement at Upper Buffalo: 0.468 dv Visibility Improvement at Hercules Glades: 0.526 dv Visibility Improvement at Mingo: 0.455 dv Incremental Cost Effectiveness (compared to dry scrubbers): $61,635/ ton removed Incremental Visibility improvement over dry scrubbers at Caney Creek: 0.017 dv Incremental Visibility improvement over dry scrubbers at Upper Buffalo: 0.008 dv Incremental Visibility improvement over dry scrubbers at Hercules Glades: 0.028 dv Incremental Visibility improvement over dry scrubbers at Mingo: 0.014 dv Facility-wide Visibility Improvement from Wet Scrubber controls Caney Creek: 0.97 dv Upper Buffalo: 0.904 dv Hercules Glades: 1.096 dv Mingo: 0.898 dv Total Visibility Improvement: 3.868 dv

Independence Power Plant	Unit 2 Installation date- 1984	850 MW-- burns sub-bituminous or bituminous coal as primary fuel; No. 2 fuel oil is startup fuel	**Unit 2 Impacts** Caney Creek= 1.412 Upper Buffalo= 0.997 dv Hercules Glades= 0.977 dv Mingo= 0.883 dv **Facility-wide Impacts** Caney Creek= 2.412 dv Upper Buffalo= 1.764 dv Hercules Glades= 1.704 dv Mingo= 1.547	**SO2 Under RP= 0.06 lb/MMBtu (Based on semi-dry scrubber installation)** Cost Effectiveness of Semi-Dry Scrubbers (Unit 2) Total Annual Cost= $31,981,230 SO2 tons removed= 13,990 tpy Average Cost effectiveness: $2,286/ton removed Visibility Improvement at Caney Creek: 0.547 dv Visibility Improvement at Upper Buffalo: 0.488 dv Visibility Improvement at Hercules Glades: 0.613 dv Visibility Improvement at Mingo: 0.495 dv Incremental Cost Effectiveness: NA, least stringent control technology Incremental Visibility improvement at Caney Creek: NA, least stringent control technology Incremental Visibility improvement at Upper Buffalo: NA, least stringent control technology Incremental Visibility improvement at Hercules Glades: NA, least stringent control technology Incremental Visibility improvement at Mingo: NA, least stringent control technology Facility-wide (Units 1 and 2) Visibility Improvement from Dry Scrubber controls Caney Creek: 0.938 dv Upper Buffalo: 0.888 dv Hercules Glades: 1.056 dv Mingo: 0.871 dv Total Visibility Improvement: 3.753 dv **Other SO2 Controls Evaluated for Unit 2 (which we are not recommending):** Wet Scrubbers (0.04 lb/MMBtu): Total Annual Cost= $65,942,351 SO2 tons removed= 14,532 tpy Average Cost effectiveness: $4,538/ ton removed Visibility Improvement at Caney Creek: 0.569 dv Visibility Improvement at Upper Buffalo: 0.498 dv Visibility Improvement at Hercules Glades: 0.622 dv Visibility Improvement at Mingo: 0.509 dv Incremental Cost Effectiveness (compared to dry scrubbers): $62,659/ ton removed Incremental Visibility improvement over dry scrubbers at Caney Creek: 0.022 dv Incremental Visibility improvement over dry scrubbers at Upper Buffalo: 0.01 dv Incremental Visibility improvement over dry scrubbers at Hercules Glades: 0.009 dv Incremental Visibility improvement over dry scrubbers at Mingo: 0.014 dv Facility-wide (Units 1 and 2) Visibility Improvement from Wet Scrubber controls Caney Creek: 0.97 dv Upper Buffalo: 0.904 dv Hercules Glades: 1.096 dv Mingo: 0.898 dv Total Visibility Improvement: 3.868 dv

Independence Power Plant	Unit 1		**Facility-wide Impacts** Caney Creek= 2.054 dv Upper Buffalo= 1.724 dv Hercules Glades= 1.482 dv Mingo= 1.492 dv	**NO_X Under RP= 0.15 lb/MMBtu (LNB/SOFA)** **We will invite public comment on whether NOx controls are appropriate.** Cost Effectiveness for Unit 1 Total Annual Cost for Unit 1= $1,085,904 NOx tons removed= 2,710 tpy Average Cost effectiveness: $401/ton removed Incremental Cost Effectiveness: NA, we did not evaluate other NOx controls Facility-wide Visibility Improvement from NOx controls Caney Creek: 0.461 dv Upper Buffalo: 0.248 dv Hercules Glades: 0.264 dv Mingo: 0.213 dv Total Visibility Improvement: 1.186 dv
Independence Power Plant	Unit 2		**Facility-wide Impacts** Caney Creek= 2.054 dv Upper Buffalo= 1.724 dv Hercules Glades= 1.482 dv Mingo= 1.492 dv	**NO_X Under RP= 0.15 lb/MMBtu (LNB/SOFA)** **We will invite public comment on whether NOx controls are appropriate.** Cost Effectiveness for Unit 2 Total Annual Cost for Unit 2= $1,403,376 NOx tons removed= 3,217 tpy Average Cost effectiveness: $436/ton removed Incremental Cost Effectiveness: NA, we did not evaluate other NOx controls Facility-wide Visibility Improvement from NOx controls Caney Creek: 0.461 dv Upper Buffalo: 0.248 dv Hercules Glades: 0.264 dv Mingo: 0.213 dv Total Visibility Improvement: 1.186 dv

Slides from Thompson's Prescribed Fire talk showing :

1) month when most PFs are done in Arkansas by #, acres, and available tons of fuel;

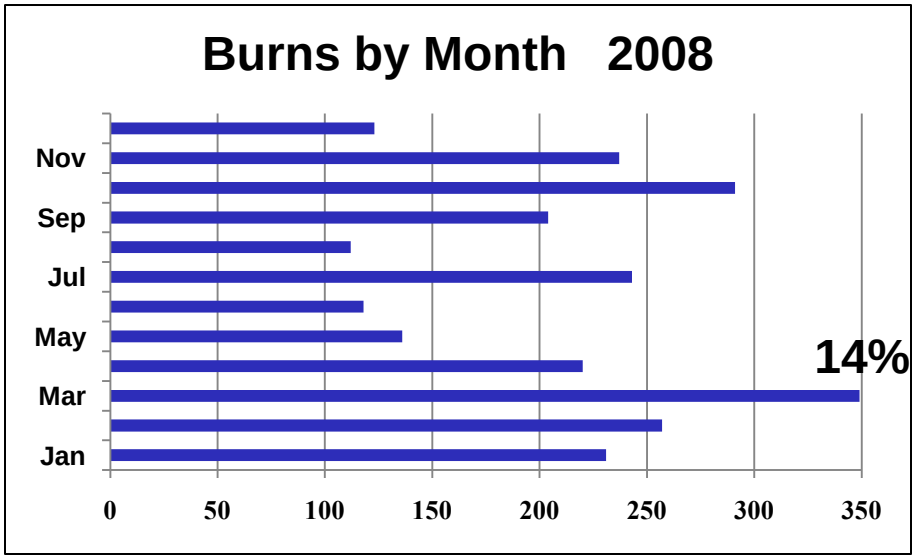
2) who the primary burners are

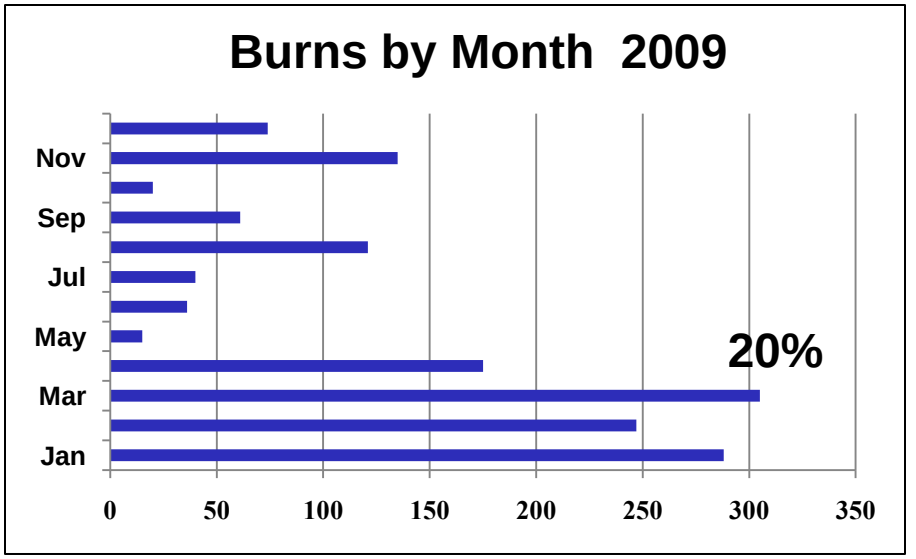
3) where in the state most of the smoke exceeds occur, and who are the burners

4) NRCS burns

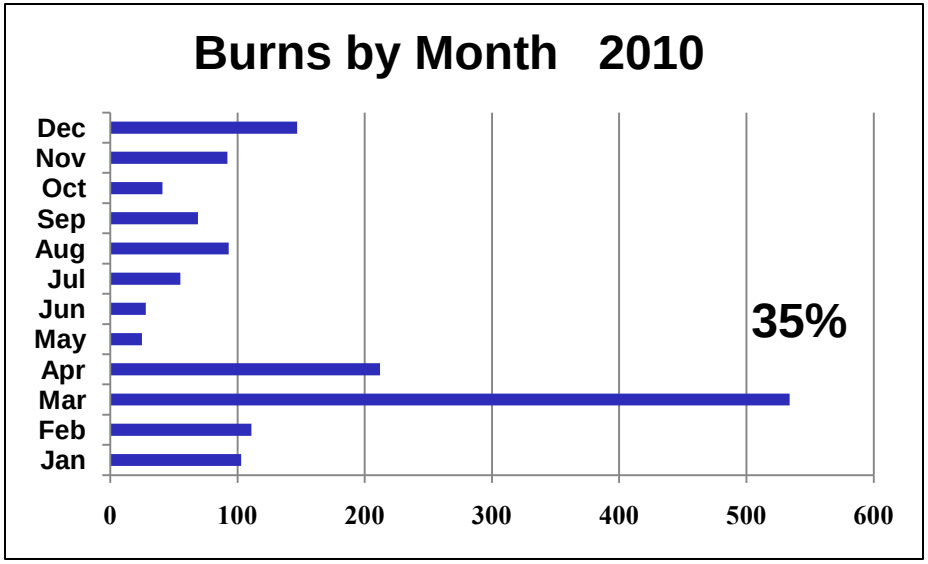
5) map from ADEQ showing differences in Air Quality for 2005 and 2015

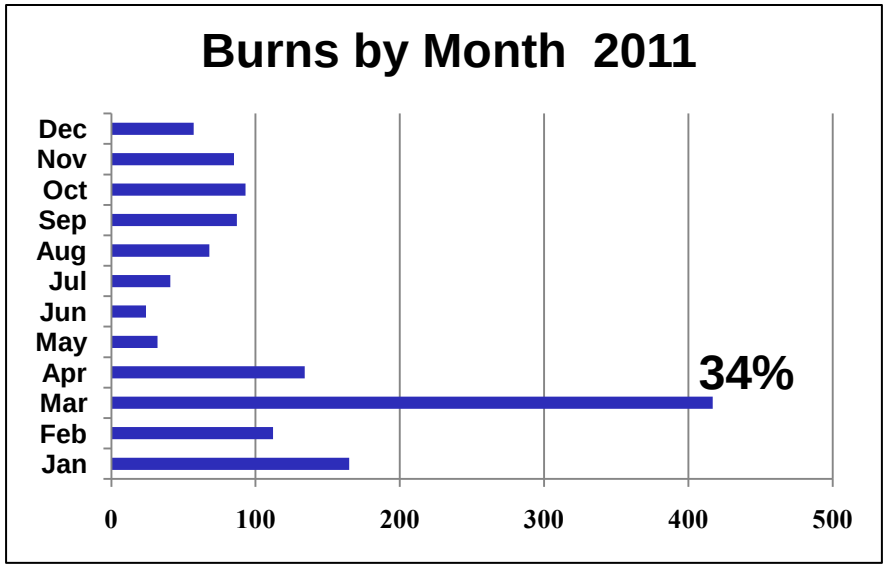
They give us a basic understanding of the nature of our smoke issues

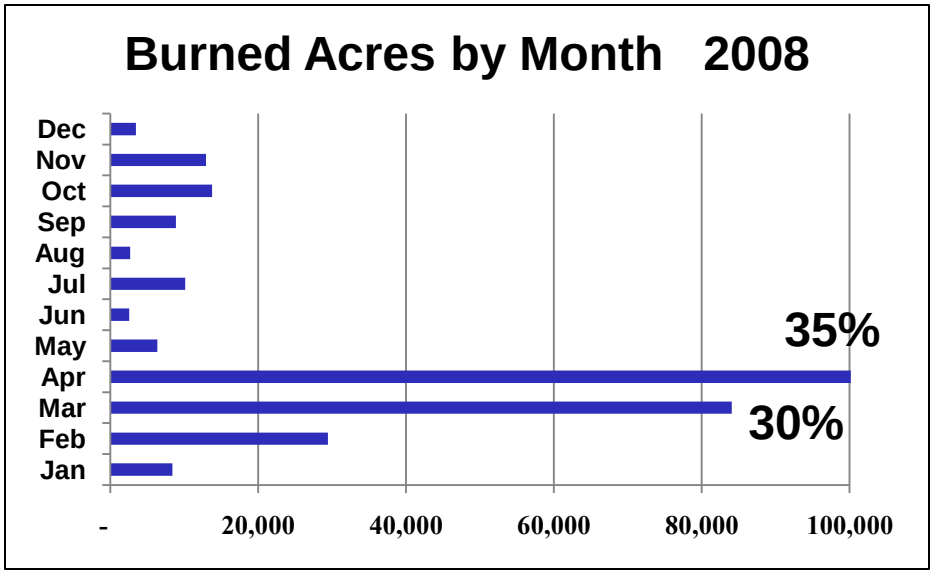


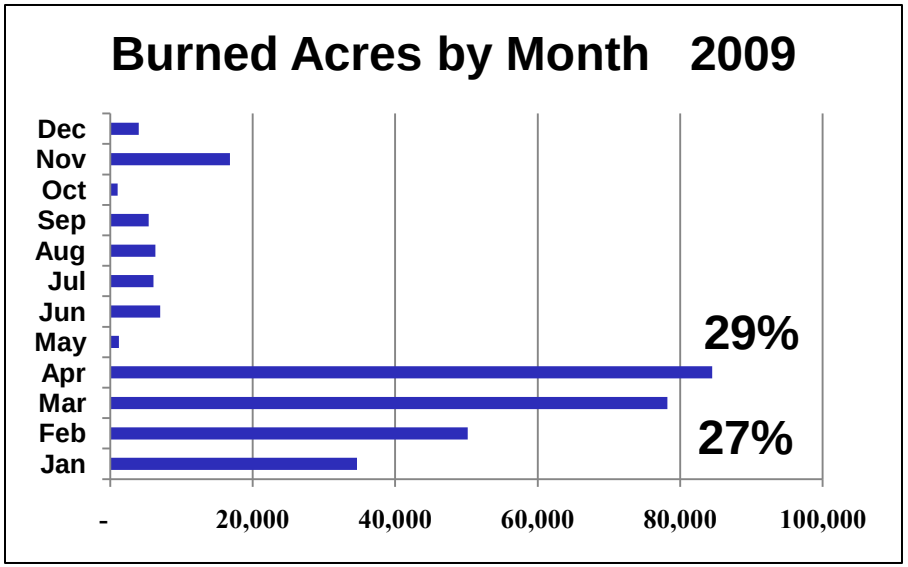


NUMBER of Burns

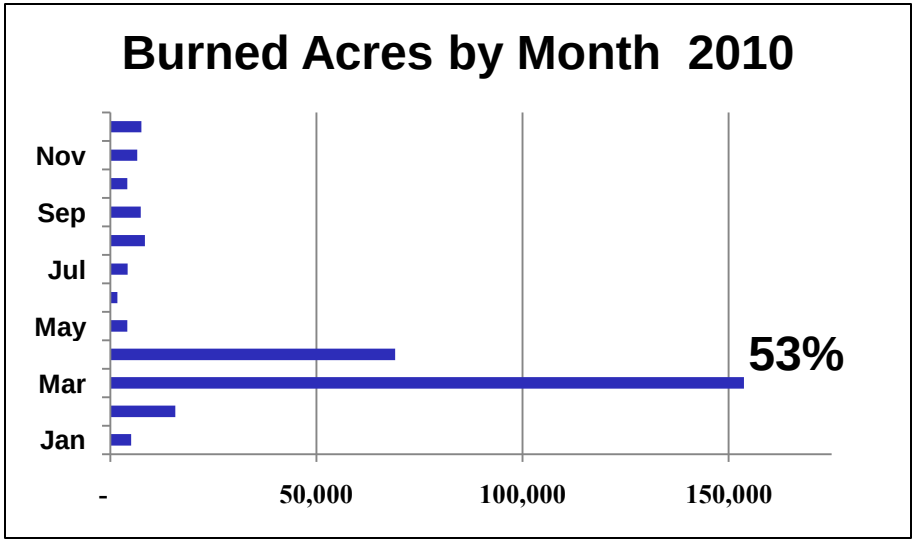


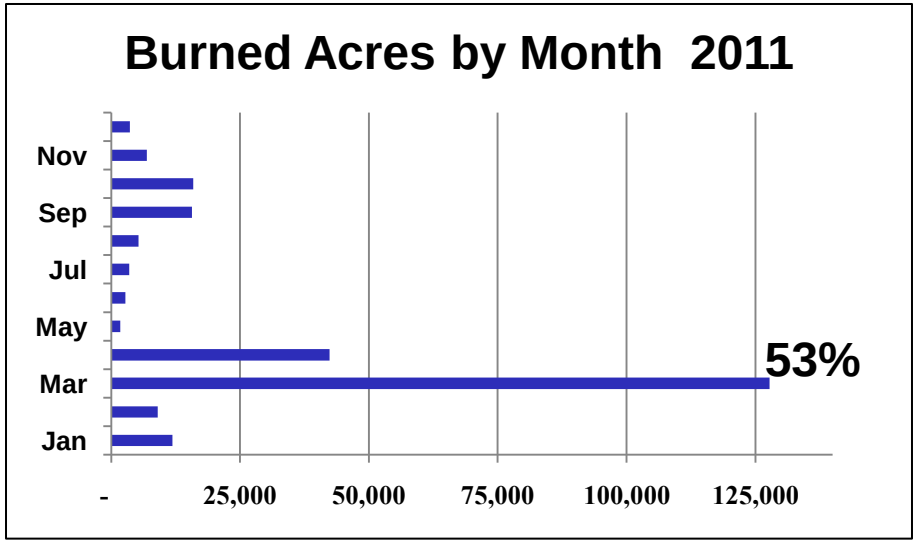


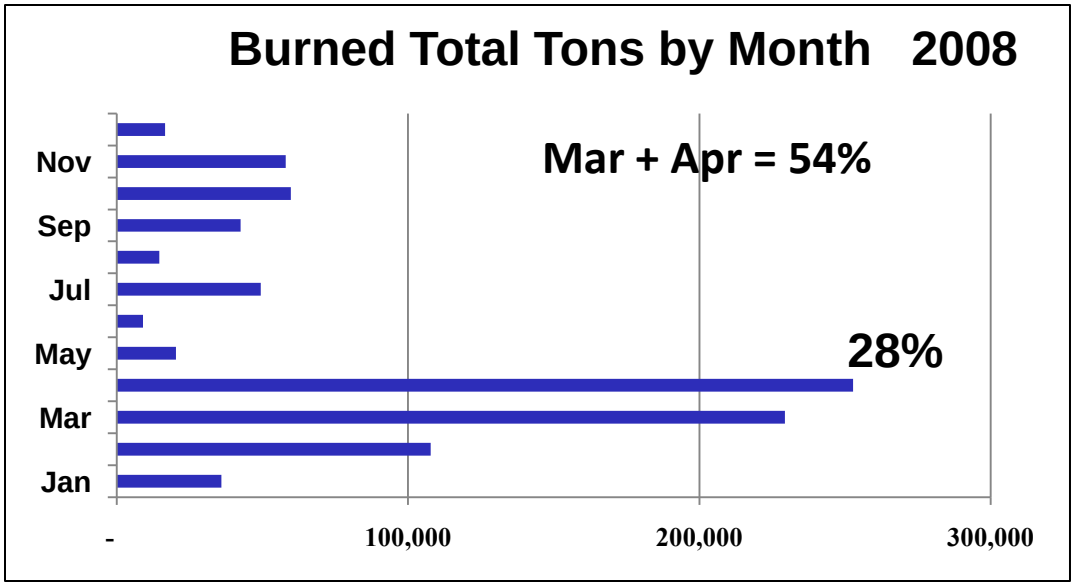




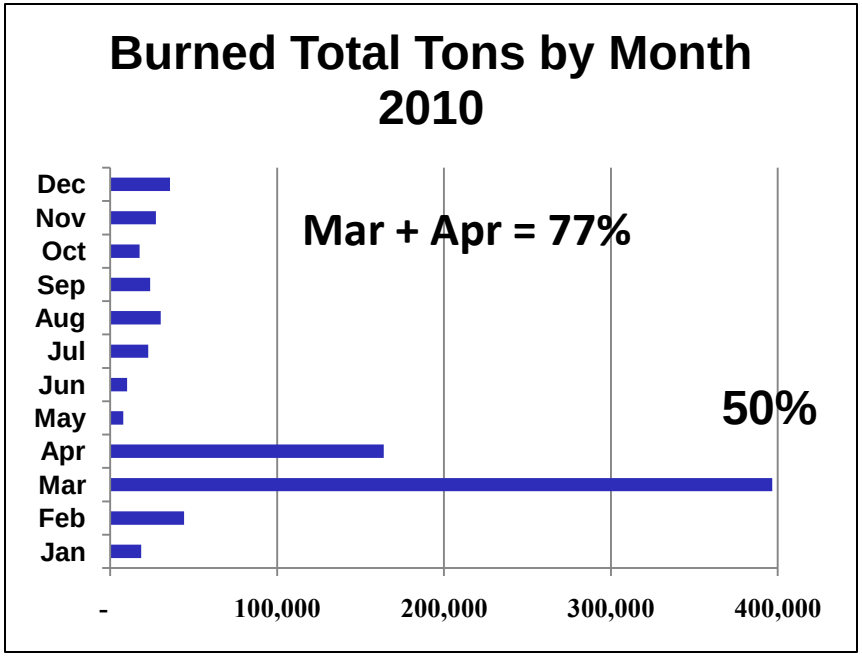
ACRES Burned

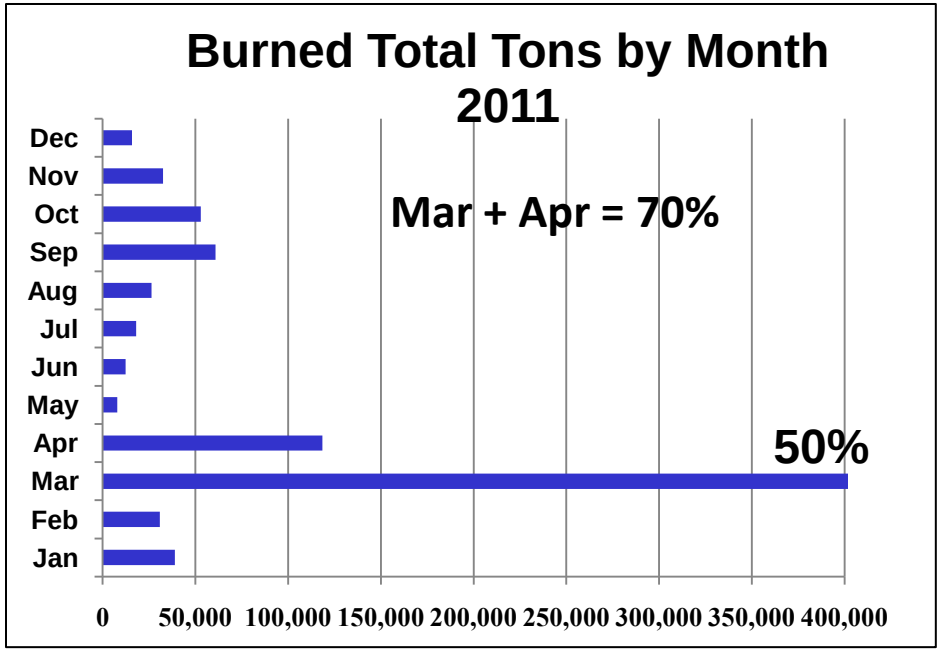




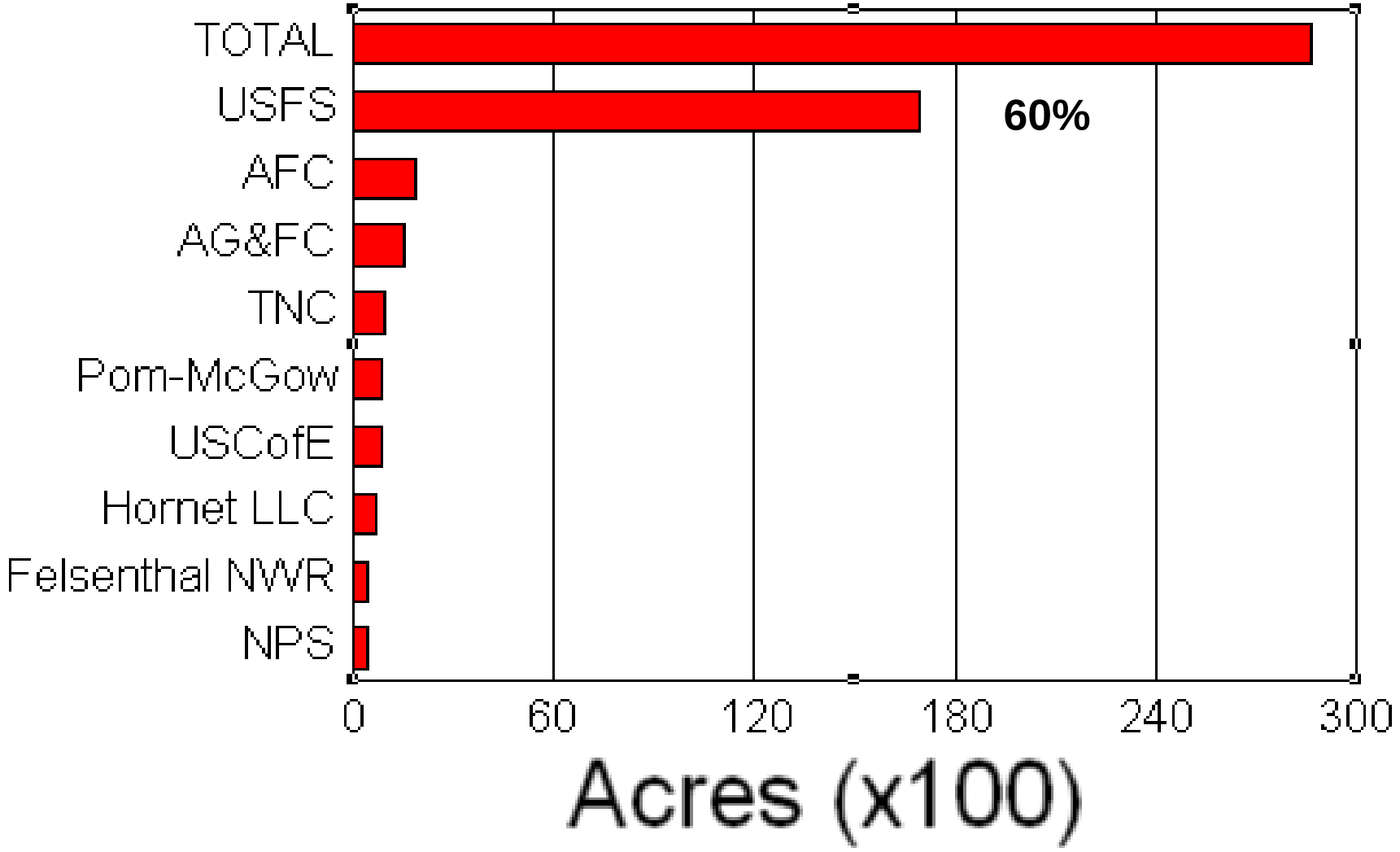


Prescribed Burn Total Available Tons of Fuel by Month

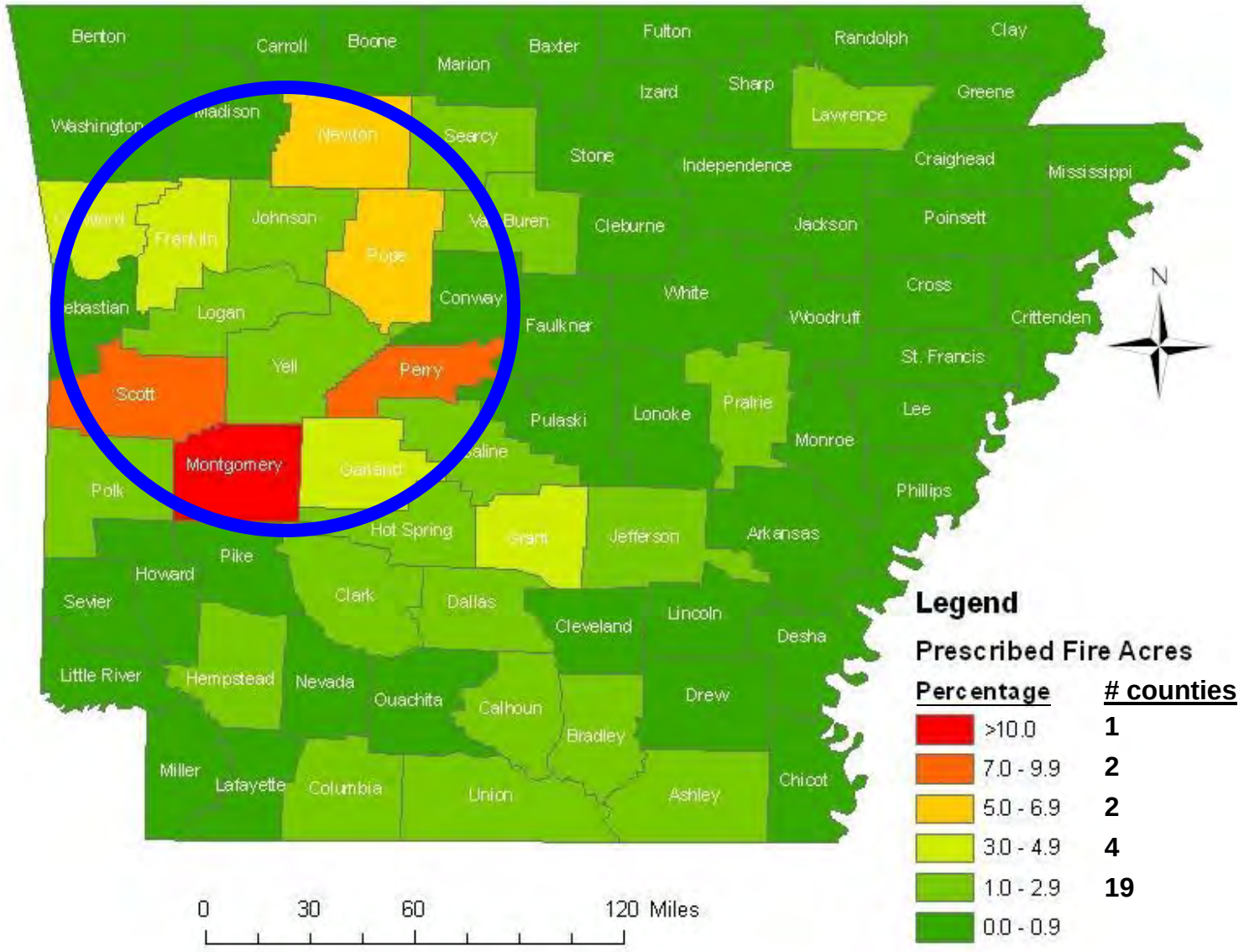




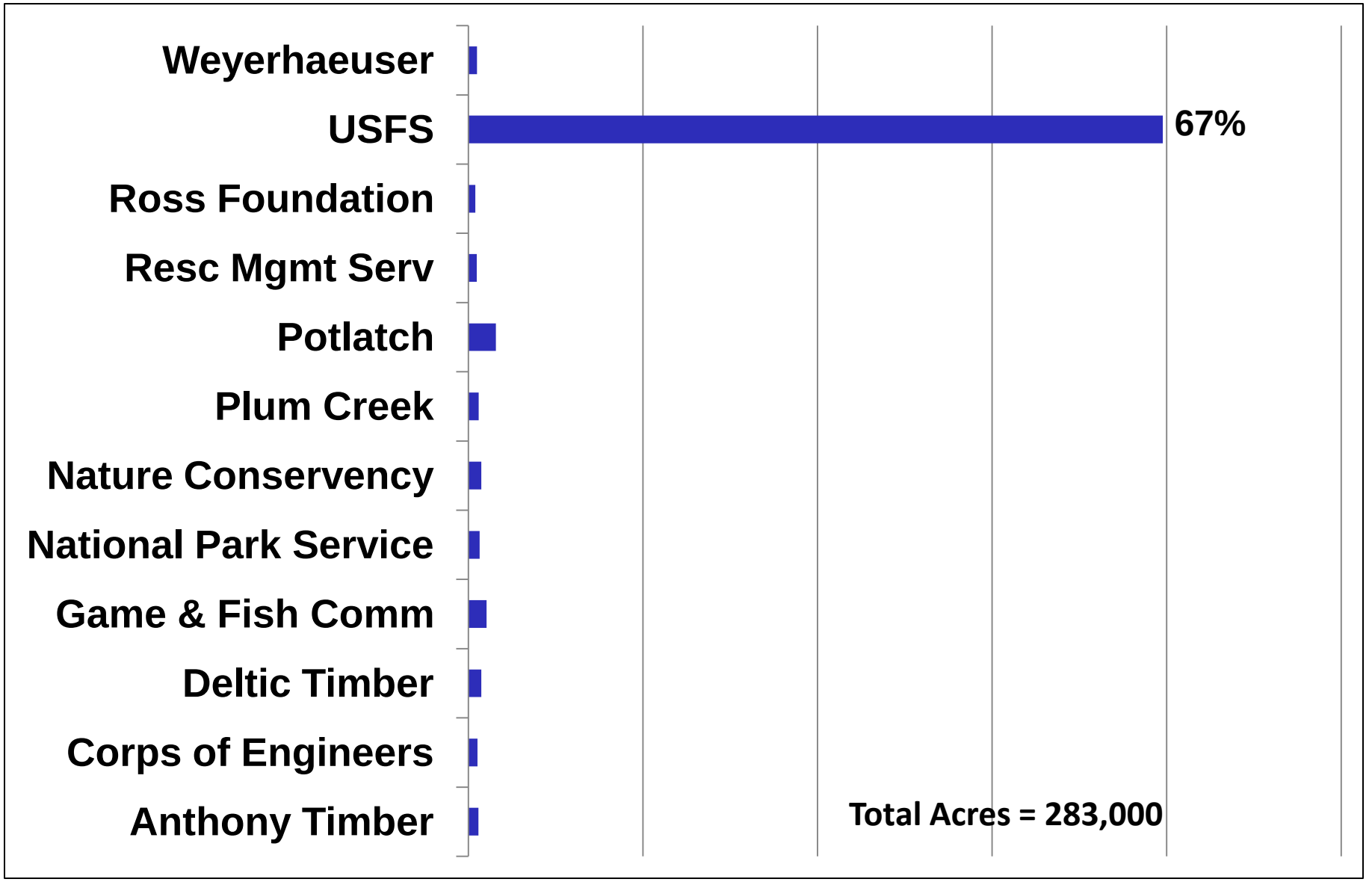
Arkansas Prescribed Fire Burners by Acres, 2006



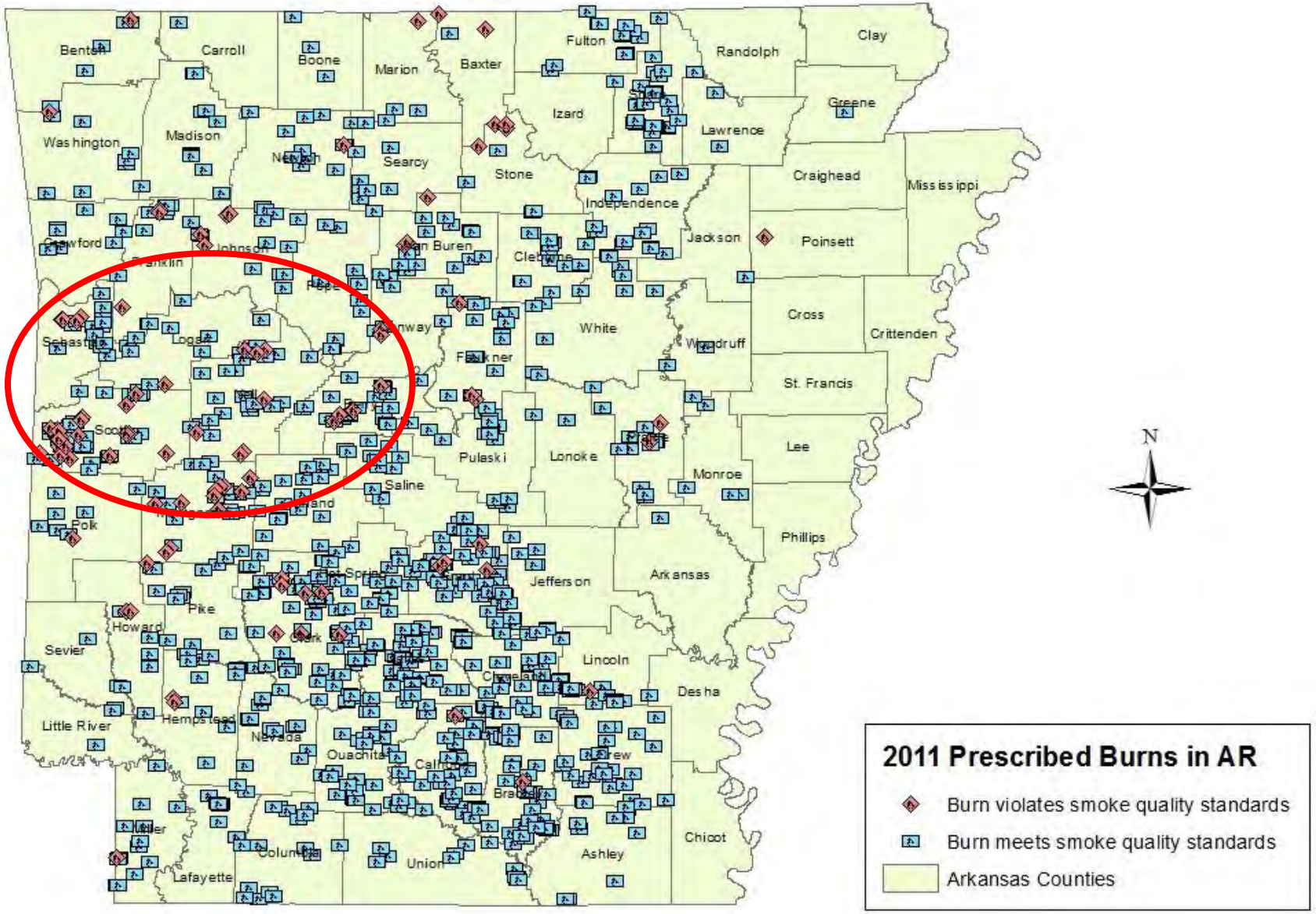
Percentage Prescribed Fire Acres, By County 2006



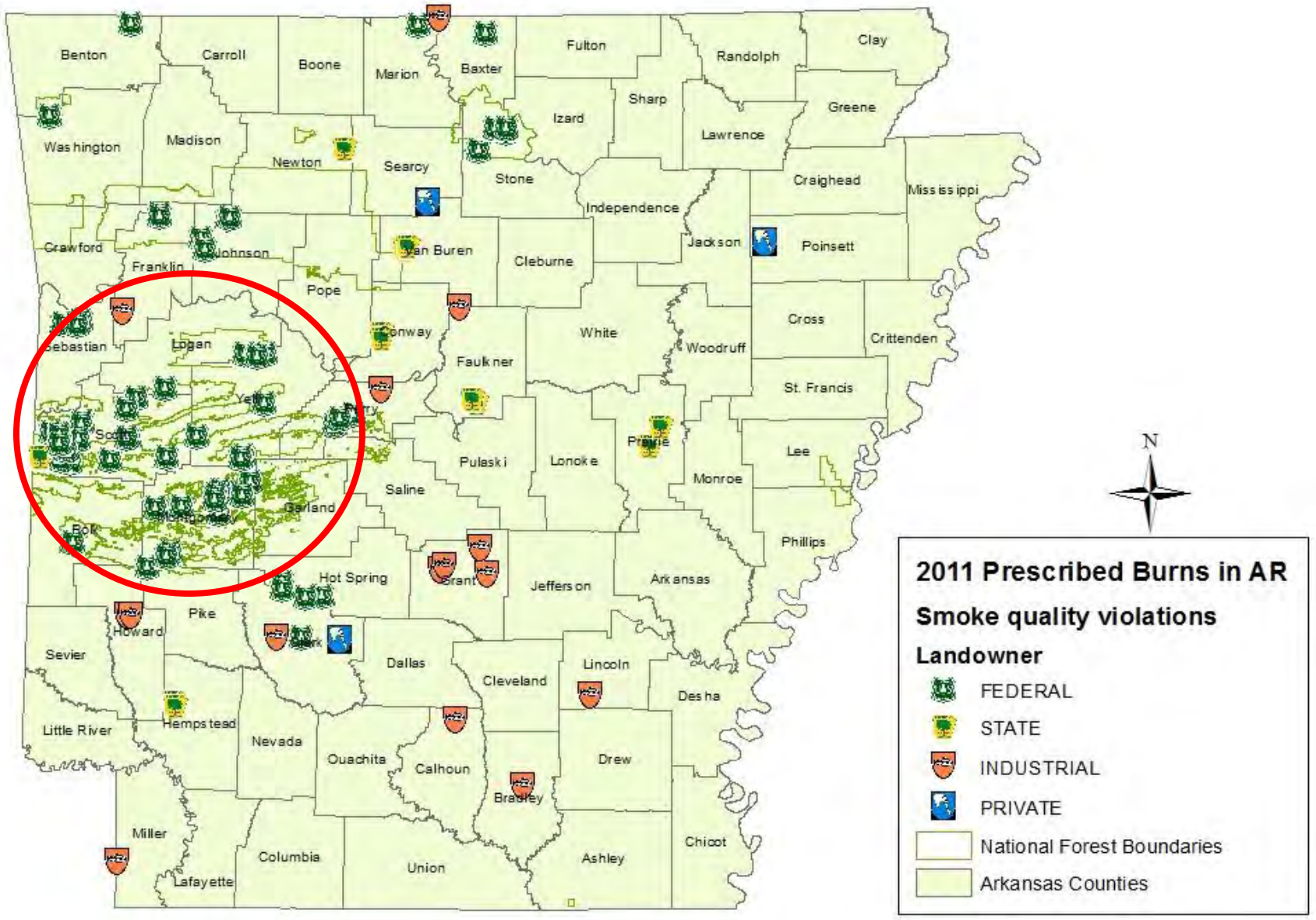
Top Arkansas Burners by Acres 2008



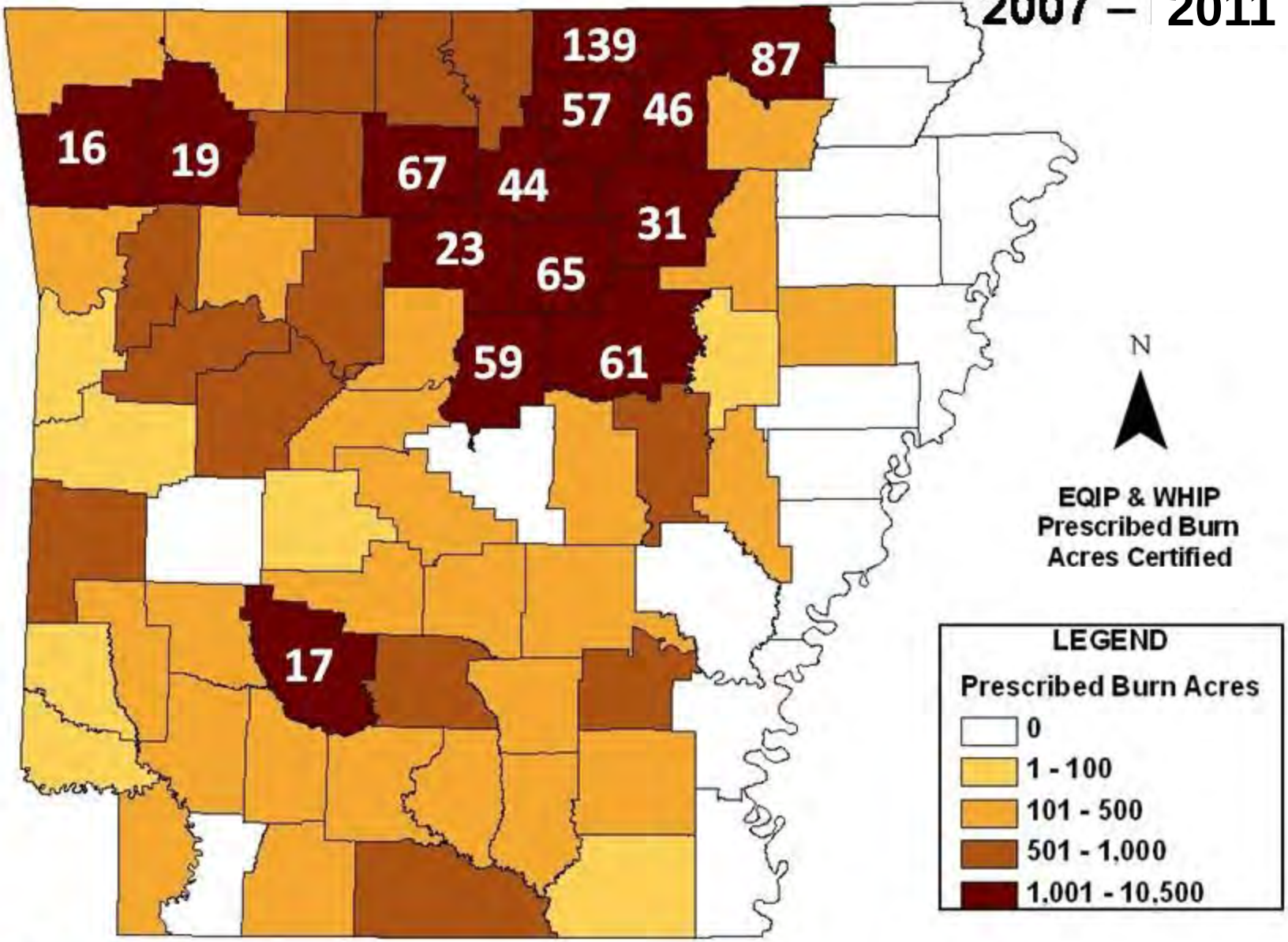
2011 Prescribed burns –
Exceeding smoke mgmt standards vs. not



2011 Prescribed burns – Exceeding smoke mgmt standards by landowner class



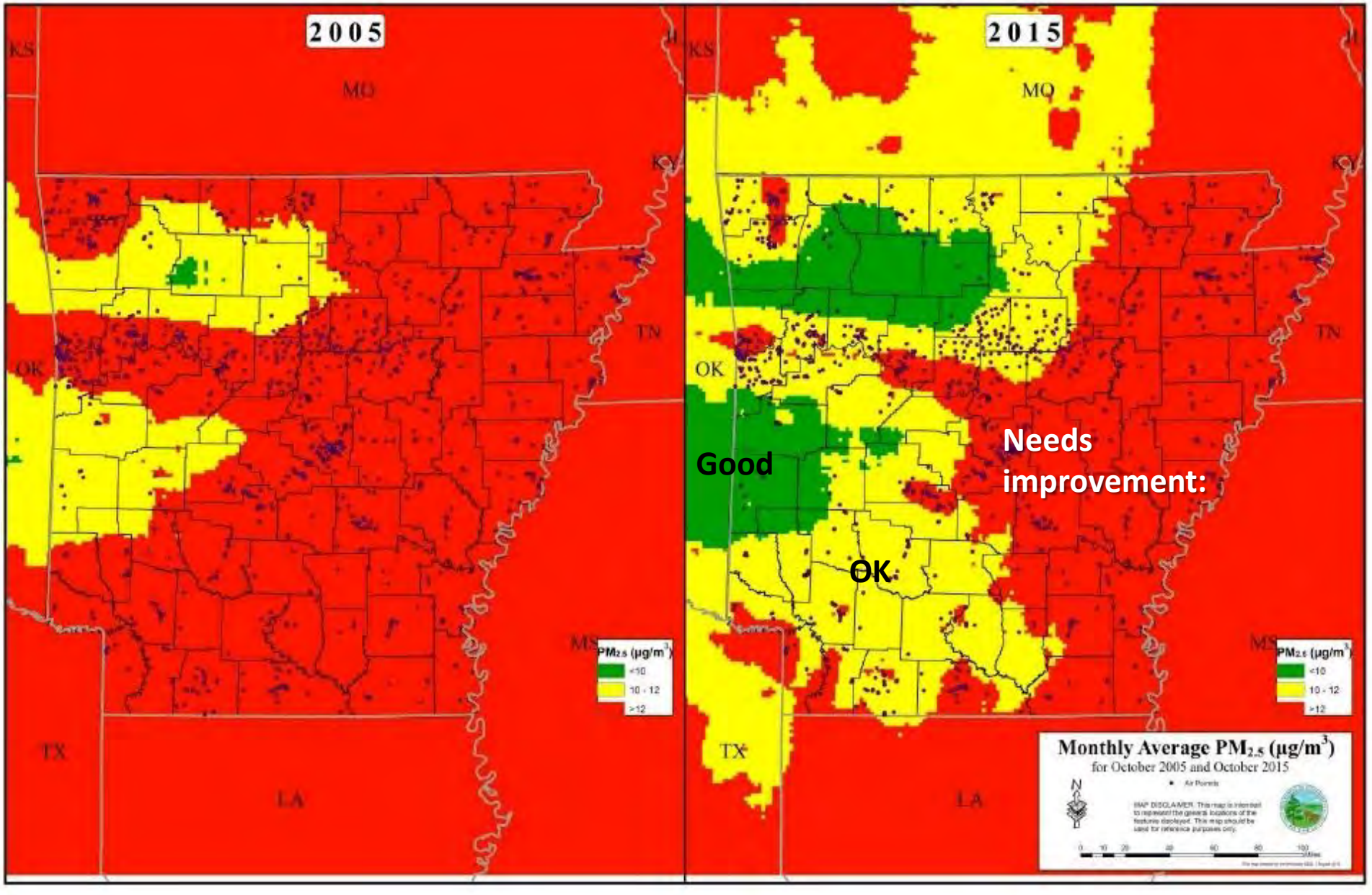
NRCS EQIP & WHIP Prescribed Burn Acres Completed, 2007 – 2011



NRCS Natural Resources Conservation Service

August 2011

Improved particulate matter air quality in Arkansas in October, 2005 vs. 2015



Domtar
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Tel. : (715) 886-7785
annabeth.reitter@domtar.com

Domtar

July 6, 2015

Mr. Guy Donaldson
Chief, Air Planning Section (6PD-L)
United States Environmental Protection Agency
1445 Ross Avenue #700
Dallas, TX 75202-2733

SUBJECT:
Request for Limited Extension of Public Comment Period – Docket ID No. EPA-R06-OAR-2015-0189

Dear Mr. Donaldson:

Domtar A.W. LLC's Ashdown Mill is preparing comments on U.S. EPA's proposed Federal Implementation Plan ("FIP") for the mill. The Ashdown Mill requests a limited extension of the comment period for an additional 45 days for the purpose of allowing it to complete modeling work to determine if the imposition of the BART FIP is justified as the assumed visibility improvements appear to be within the CALPUFF margin of error as defined by the United States Court of Appeals for the Ninth Circuit in *Nat'l Parks Conservation Ass'n v. U.S. EPA*, No. 12-73710 (9th Cir. June 9, 2015).

The requested extension is limited in scope to comments addressing the CALPUFF model for the Ashdown Mill. Other comments on the proposed FIP will be submitted by July 15, 2015.

On June 9, 2015, the Ninth Circuit Court of Appeals in *Nat'l Parks Conservation Ass'n* rejected the BART FIP for the Colstrip 1 and 2 facilities in Montana. One of the basis for the decision was the margin of error of the CALPUFF model and the lack of substantial assurance of any improvements in visibility. The Ashdown Mill is currently conducting its own detailed analysis showing that, like the Colstrip 1 and 2 facilities, the model predicted visibility improvement associated with the proposed Ashdown Mill BART FIP is in the margin of error of the CALPUF model. Since the *Nat'l Parks Conservation Ass'n* decision was issued late in the comment period (June 9, 2015), the Ashdown Mill needs this limited and focused extension in order to complete all of the modeling work and submit it to the Agency.

The requested extension is of limited scope and is for the purpose of submitting to U.S. EPA essential information on a significant aspect of the proposed BART FIP for the Ashdown Mill. Based on the initial modeling work, we anticipate showing that the BART FIP for the Ashdown Mill will not lead to any reasonably anticipated visibility improvements as the purported improvement is beyond CALPUFF's ability to predict with confidence. Not allowing the limited extension will arbitrarily prevent the

Exhibit 4

Ashdown Mill from submitting full and complete comments on the proposed BART FIP and not allow the Agency to fully address all issues associated with the proposed BART FIP for the Ashdown Mill.

If you have any questions, please contact me at *Annabeth.Reitter@domtar.com* or 715-459-9257.

Sincerely,

Annabeth Reitter
Corporate Manager, Environmental Regulation

cc: Kelley Crouch
Bob Grygotis

Domtar