



# 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/ANWS-AR-AQ

November 19, 2009

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

SUBJ: Comments on Draft Air Permit # 0263-AOP-R7 AFIN: 35-00110 for  
Entergy Arkansas, Inc. – White Bluff Plant with additional reference to  
Best Available Retrofit Technology (BART)

Dear Mr. Bates:

The U.S. Fish and Wildlife Service (FWS) appreciates the opportunity to comment during the Public Notice comment period on the subject draft air permit for Entergy Arkansas, Inc. – White Bluff Plant, Units #1 and #2. The FWS recognizes the efforts of Entergy and the Arkansas Department of Environmental Quality (ADEQ) in proposing significant SO<sub>2</sub> controls for Units #1 and #2. Flue Gas Desulfurization on these units will improve visibility at all nearby Class I areas. However, it is our conclusion that this proposed final permitting action for Prevention of Significant Deterioration does not address all of the requirements outlined in the EPA BART Guidelines.

A significant change regarding this facility appears to have been made after the Arkansas Regional Haze SIP was submitted to the U. S. Environmental Protection Agency without the Federal Land Managers, including the FWS, having adequate information to properly evaluate and comment on the proposed change. The primary change involved the selection of a dry flue gas desulfurization system with a spray dry absorber for SO<sub>2</sub> control rather than the previously-selected wet flue gas desulfurization system. Until the FWS receives and reviews the pertinent information which has not yet been supplied as described in this letter, definitive comments cannot be made. Future definitive comments made by the FWS after receipt of the information may adversely affect any actions taken in the near future by Entergy Arkansas, Inc. (Entergy), acting on any permit that might be currently issued as a result of the upcoming public hearing. Since the facility's permit is the enforcement mechanism for BART-related actions and since proper BART review is not possible at this time, we would ask that you not finalize the proposed permit as a BART decision. Nevertheless, we provide some substantive comments on the summary information that was available for review.



The FWS recently located a document entitled, "Revised BART Analysis for the White Bluff Steam Electric Station" dated August 2008 (2008 Entergy BART Determination) on the ADEQ website. The document appears to be a BART determination prepared by Entergy Arkansas, Inc. It seems to replace a document that **we** were earlier provided for review, "BART Analysis for the White Bluff Steam Electric Station" dated December 2006 (2006 Entergy BART Determination). The FWS was not provided with the required review period for the 2008 Entergy BART Determination. Further, the Arkansas Regional Haze SIP does not contain any ADEQ determinations confirming State adoption of Entergy conclusions from the 2008 Entergy BART Determination. It might be supposed that ADEQ concurs with the 2008 Entergy BART Determination, since it is proposing to issue an air permit based on that document's conclusions. The importance of the 2008 Entergy BART Determination in the draft Entergy Arkansas, Inc., permit application entitled, "Application for Permit to Construct – Entergy White Bluff Units 1 & 2 Air Pollution Control Project" dated January 2009 (Application) is that on page 2-7 of the document it states, "This action is being taken to reduce emissions of NO<sub>x</sub> and SO<sub>2</sub> in response to Best Available Retrofit Technology (BART) State Implementation Plan (SIP) requirements."

The information that was available **within** the 2008 Entergy BART Determination provided a good summary on cost and visibility, but lacked both detailed information supporting development of those costs, and visibility modeling for Caney Creek and the other visibility-impacted Class I areas. The document indicated that Entergy considers this additional information to contain Confidential Business Information (CBI), and that information will be provided at a future time under CBI safeguards. Likewise, the Application omits the missing information. Regarding cost estimates the EPA BART Guidelines state that, "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 OAQPS Control Cost Manual). In order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual, where possible."<sup>1</sup> Regarding the fifth factor of BART determinations; namely, degree of improvement in visibility, the EPA BART Guidelines detail the procedure at Section IV.D.5.STEP 5. Thus, the FLMs cannot yet make a definitive determination on the conclusions made by Entergy in the 2008 Entergy BART Determination or the draft air permit for Entergy Arkansas, Inc. – White Bluff Plant, Units #1 and #2. We ask that we be allowed to make further review and comment on these documents when the full body of information becomes available.

On the supposition that the currently unavailable background information properly justifies the conclusions arrived at by Entergy and presumably ADEQ, the FWS has substantive comments that should be considered at this time. The most significant issue is that Entergy and ADEQ imply that meeting the presumptive emission rate of 0.15 lb/MMBtu for both SO<sub>2</sub> and NO<sub>x</sub> meets the intent of BART and that permitted emission limits being set at 0.15 lb/MMBtu for each of these pollutants is BART. The EPA Guidelines define BART as, "... an emission limitation

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<sup>1</sup> See 40 CFR Part 51, Appendix Y, "Guidelines for BART Determinations Under the Regional Haze Rule," section IV.D.4.STEP 4.a.5.

based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by... [a BART-eligible source]... taking into consideration... the costs of compliance.”<sup>2</sup> The "best system" (as determined by the 5 factors) in terms of “cost” is regarded as a 'dominant control' falling on the 'least-cost' envelope.<sup>3</sup> The FLM’s conclusion from this is that if a control alternative remains to be reasonable in cost and is a "best system" (dominant control), it is BART – even if that alternative happens to provide more control than the presumptive level.

Therefore, the proposed SO<sub>2</sub> emission limits in the draft permit, which seem to have been based on a 0.15 lb/MMBtu emission rate for dry flue gas desulfurization with spray dry absorbers (dry FGD with SDA), are too lenient. Let us use information provided in the Application for Unit #1 as an example. The 2008 Entergy BART Determination states that the proposed dry FGD with SDA has a control efficiency of 92.5%. The Application states that the baseline emission rate is 0.65 lb/MMBtu. A control efficiency of 92.5% applied to 0.65 lb SO<sub>2</sub>/MMBtu would result in a *theoretical* post-control emission rate of 0.049 lb SO<sub>2</sub>/MMBtu, so consider the post-control emission rate to be 0.05 lb SO<sub>2</sub>/MMBtu. This control efficiency, applied to a baseline emission of 17,733 tons per year results in a permitted emission limit of 1,364 tons SO<sub>2</sub> per year (17,733 x .05/.65 = 1,364). This compares to the 5,880 tons of SO<sub>2</sub> per year proposed by Entergy in the Application. Converting the theoretically achievable 1,364 tons per year to an hourly rate results in an emission limit of 312 lb SO<sub>2</sub>/hour (1,364 x 2000/8760), rather than the 1,342.5 lb SO<sub>2</sub>/hour as proposed in the draft permit. In summary, the specifications for SO<sub>2</sub> shown in the Statement of Basis should be as follows:

Tons per Year	1,364 TPY SO <sub>2</sub>
Pounds per Hour	312 lb/hr SO <sub>2</sub>
Emission Rate	0.05 lb/MMBtu SO <sub>2</sub>

Using the same procedure for Unit #2 the specification for SO<sub>2</sub> shown in the Statement of Basis should be as follows:

Tons per Year	1,329 TPY SO <sub>2</sub>
Pounds per Hour	303 lb/hr SO <sub>2</sub>
Emission Rate	0.05 lb/MMBtu SO <sub>2</sub>

A review of emission rates of other large Electric Generation Units with dry FGD systems using low sulfur coal proposed that permitted emission limits be as low as 0.065 lb SO<sub>2</sub>/MMBtu, so regulatory emission limitations might be adjusted accordingly.

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<sup>2</sup> See 40 CFR Part 51, Appendix Y, "Guidelines for BART Determinations Under the Regional Haze Rule," section IV.A

<sup>3</sup> See 40 CFR Part 51, Appendix Y, "Guidelines for BART Determinations Under the Regional Haze Rule," section IV.D.4.e.2.

Mr. Bates

The 2008 Entergy BART Determination concluded that dry FGD w/SDA should be installed as BART, even though the 2006 Entergy BART Determination concluded that wet flue gas desulfurization (wet FGD) should be installed as BART. Without explanation, the annual cost for wet FGD went from approximately \$17,159,020 in the 2006 document to \$68,045,000 in the 2008 document (a 297% increase) for each of the two units, while the annual cost for dry FGD w/SDA went from approximately \$34,306,388 in 2006 to \$65,155,000 in 2008 (a 90% increase) for each of the two units. Justification of the wide disparity and uneven escalation in the cost figures is paramount in justifying which control alternative should be selected. It is interesting that due to additional H<sub>2</sub>SO<sub>4</sub> emissions under wet FGD, the analysis claims that dry FGD w/SDA will result in less visibility impairment at Caney Creek. It is reasonable to assume that the ultimate test under the regional haze program is the effect on visibility. This position would favor the selected alternative of dry FGD w/SDA. We would still like to see the visibility impact modeling and data for Caney Creek and for the other impacted Class I areas.

The baseline period values used for the 2008 Entergy BART Determination differ from those used for the Application. Since the values used in the 2008 Entergy BART Determination are primarily used for choosing between alternatives (and that one of the alternatives was in fact chosen as BART) and the Application values primarily determine permitted emission rates, it is not imperative that they be identical. However, some explanation of the differences might be in order. For your convenience the values are shown below:

<u>Baseline Emissions</u>	<u>Application</u>	<u>2008 BART Det.</u>
SO <sub>2</sub> Annual Emissions Unit 1	17,733 TPY	28,902.8 TPY
SO <sub>2</sub> Annual Emissions Unit 2	18,077 TPY	29,132.5 TPY
NO <sub>x</sub> Annual Emissions Unit 1	6,792 TPY	16,275.7 TPY
NO <sub>x</sub> Annual Emissions Unit 2	7,206 TPY	17,612.9 TPY
SO <sub>2</sub> Emission Rate Unit 1	0.65 lb/MMBtu	0.83 lb/MMBtu
SO <sub>2</sub> Emission Rate Unit 2	0.68 lb/MMBtu	0.77 lb/MMBtu
NO <sub>x</sub> Emission Rate Unit 1	0.25 lb/MMBtu	0.468 lb/MMBtu
NO <sub>x</sub> Emission Rate Unit 2	0.27 lb/MMBtu	0.463 lb/MMBtu

As discussed above for SO<sub>2</sub>, implementation of NO<sub>x</sub> controls that simply meet the NO<sub>x</sub> presumptive emission rate of 0.15 lb NO<sub>x</sub>/MMBtu (i.e., combustion controls) does not meet the intent of the EPA BART Guidelines. If post-combustion control equipment can be installed cost-effectively to achieve an emission rate below presumptive, then such equipment should be installed. Therefore, a cost analysis should have been considered for employing Selective Catalytic Reduction (SCR) and a judgment made as to its cost-effectiveness.

In our previous comments to ADEQ on the draft Regional Haze SIP in 2008, it was noted that Section 9.3 should provide a summary of the BART **determinations** for the Subject-to-BART sources. If the emission limits proposed for the White Bluff plant as outlined in the Statement of Basis are the ADEQ BART conclusions for the plant, then Section 9.3 should be amended to

include confirmation of the State's decision and an explanation as to how a proper BART five-factor analysis led to those conclusions.

If you have any questions, or if you would like to discuss these comments in more detail, please contact Meredith Bond at (303) 914-3808.

Sincerely,

A handwritten signature in cursive script that reads "Sandra V. Silva". The signature is written in black ink on a white background.

Sandra V. Silva  
Chief, Branch of Air Quality

Cc (via e-mail):

Thomas **Rheaume**, Permits Branch Manager, ADEQ  
Tony Davis, Planning & Air Quality Analysis Branch Manager, ADEQ  
Joe Kordzi, EPA Region 6  
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