

**UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY**

BEFORE THE ADMINISTRATOR

In the Matter of)	
)	
Proposed Clean Air Title V Operating Permit)	
Issued to Entergy Arkansas, Inc.to Operate)	Petition for Objection
Independence plant)	
)	Permit No. 0449-AOP-R8

Sierra Club hereby petitions the Administrator of the United States Environmental Protection Agency (“EPA”), through Clean Air Act Section 505(b)(2) (42 U.S.C. § 7661d(b)(2)), to object to the proposed Title V Operating Permit¹ reissued on January 21, 2015 by the Arkansas Department of Environmental Quality (“ADEQ”) for the Independence plant operated by Entergy Arkansas, Inc. (“Entergy Arkansas”).

The Administrator must object to the issuance of the Independence Title V permit because it fails to meet the requirements of the Clean Air Act, the Arkansas State Implementation Plan, and applicable regulations for at least these reasons:

- (1) ADEQ’s technical justification for the activated carbon injunction is fundamentally flawed and, contrary to ADEQ’s conclusion, particulate matter emissions are likely to increase significantly as a result of this project, which should have triggered New Source Review (“NSR”) and the application of Best Available Control Technology (“BACT”) emission limits to this source;
- (2) ADEQ failed to perform any air dispersion modeling or other analysis to demonstrate that the modified Independence plant would not violate the National Ambient Air Quality Standards (“NAAQS”) for particulate matter or other pollutants;
- (3) NSR violations, alleged by Sierra Club in an October 2010 Petition to Object, remain unaddressed and the Independence plant continues to operate without the required BACT emission limits;

¹ Proposed Independence Title V Permit, Ex. A.

- (4) The proposed Independence Permit unlawfully excludes substituted data from assessment of compliance with emission limits; and
- (5) The proposed Independence Permit fails to allow for enforcement and accountability as it does not describe the applicable Mercury and Air Toxics Standards (“MATS”) requirements for which the Independence plant intends to comply.

I. Petitioner

Sierra Club is the nation’s oldest and largest grassroots environmental organization.

Sierra Club’s mission is to explore, enjoy, and protect the wild places of the earth, and to educate and enlist humanity to protect and restore the quality of the natural and human environment.

Sierra Club has worked diligently to protect and improve air quality in the United States, limit the adverse effects of climate change, and promote clean energy.

Sierra Club members in Arkansas have a strong interest in protecting and enhancing the quality of ambient air in their state and the entire region. Sierra Club members reside, work, visit and use natural resources in the same region as the Independence plant and those members’ aesthetic, recreational, environmental, economic and health-related interests will be injured and otherwise adversely impacted if the Independence plant is allowed to continue to operate and emit air pollutants at the levels contemplated by the challenged proposed Title V permit.

II. Background

The Independence plant is a 1700 megawatt coal-fired electric generating facility located in Newark, Arkansas. The plant consists of two nearly identical units that began operation in 1983 and 1984, respectively. Entergy Arkansas operates the Independence plant.

The proposed Independence Title V permit is a renewal of the facility’s operating permit. Entergy Arkansas initiated the instant permitting proceeding by filing an application to modify the Independence plant’s Title V permit to incorporate the requirements of the “National Emissions Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam

Generating Units,” also referred to as the MATS rule (40 C.F.R. Part 63, Subpart UUUUU).²

According to ADEQ:

Compliance with MATS will result in the installation of additional emissions controls on [] Unit 1 and Unit 2. The primary emission control unit will be an activated carbon injection (ACI) system. The ACI system will use either brominated activated carbon or non-halogenated activated carbon that is injected post combustion. If non-brominated activated carbon is used by the ACI then a separate halide solution would be applied to the coal prior to combustion.³

There is no evidence in the record that ADEQ has required Entergy Arkansas to decide which type of sorbent to use in the ACI system.⁴ The Statement of Basis acknowledges that adding undefined sorbent to the combustion stream could impact particulate matter (“PM”) emissions but provides Entergy Arkansas’s conclusion that no such PM increase would occur:

Entergy anticipates the ACI will introduce additional filterable particulate matter into the exhaust prior to each unit’s electrostatic precipitator (ESP). However, Entergy anticipates no increase in filterable particulate matter as measured by EPA Reference Method 5. The presence of bromine will decrease the resistivity of the fly ash and thereby increases the collection efficiency of the ESP No increase in particulate matter from the operation of the ACI systems from either Unit 1 or Unit 2 was concluded.⁵

Relying on Entergy Arkansas’s analysis, ADEQ concluded that PM emissions would decrease by over 132 tons per year and PM₁₀ emissions would decrease by over 26 tons per year due to the installation of the ACI system.⁶ Because ADEQ found that this permit renewal did not involve an emissions increase over the previous Title V permit, ADEQ performed no evaluation of the modified Independence plant’s compliance with the NAAQS.⁷

² ADEQ Statement of Basis at 1, Ex. B.

³ ADEQ Statement of Basis at 1-2.

⁴ *Id.*

⁵ *Id.*

⁶ ADEQ Statement of Basis at Appendix A.

⁷ ADEQ Statement of Basis at 4.

On June 25, 2014, ADEQ issued a draft Title V renewal permit for Independence for public review and comment. On July 25, 2014, Sierra Club submitted comments regarding ADEQ's proposal to reissue the Title V permit for the Independence plant.⁸ After making some changes from the draft permit, ADEQ issued this proposed Title V permit on January 21, 2015. Assuming that EPA's review period began that same day,⁹ this Petition to Object is timely filed within 60 days of the conclusion of EPA's review period. *See* 42 U.S.C. § 7661d(b)(2).

III. Legal Standards

Title V of the Clean Air Act, 42 U.S.C. §§ 7661-7661f, prohibits any person from operating a major stationary air pollution source such as the Independence plant without an operating permit. A Title V operating permit must include all applicable requirements, including all applicable emission limitations and standards, and must include provisions assuring compliance with those requirements. *See* 42 U.S.C. § 7661c(a), 40 C.F.R. § 70.1(b), APCEC Reg. 26.402(4)(a) and (8)(a), (b)(iii) and (c)(iii). The federal operating permit regulations provide that “[w]hile title V does not impose substantive new requirements. . .[a]ll sources subject to these regulations shall have a permit to operate that assures compliance by the source with all applicable requirements.” 40 C.F.R. § 70.1(b).

The regulations in 40 C.F.R. Part 70, which govern state operating permit programs required under Title V of the Clean Air Act, require Title V permits to assure compliance with all “applicable requirements.” The term “applicable requirements” is defined in the federal rules as including any provision of the state implementation plan (“SIP”), any term or condition of a preconstruction permit issued pursuant to regulations approved under Title I of the Clean Air Act

⁸ Sierra Club Comments on Draft Independence Permit, Ex. C.

⁹ Sierra Club has been unable to confirm when Region VI's review period began for this permit renewal.

including under Parts C and D of the Act, any standard or requirement under Sections 111, 112, 114(a)(3), or 504 of the Act, as well as the Act's Acid Rain program requirements. 40 C.F.R. § 70.2; APCEC Reg. 26, Chapter 2 (definition of "applicable requirement").

"If any [Title V] permit contains provisions that are determined by the Administrator as not in compliance with the applicable requirements of this chapter...the Administrator shall...object to its issuance." 42 U.S.C. § 7661d(b)(1) (emphasis added). EPA "does not have discretion whether to object to draft permits once noncompliance has been demonstrated." *See N.Y. Pub. Interest Group v. Whitman*, 321 F.3d 316, 334 (2nd Cir. 2003).

IV. Grounds for Objection

A. The Technical Justification for the Activated Carbon Injunction Project and the Claim That this Project Will Not Increase PM Emissions Is Flawed and Incomplete and, In Fact, PM-10 Emissions Are Likely To Exceed the NSR Significance Levels and Trigger the Requirement to Obtain an NSR Permit and Apply BACT.

EPA must object to the issuance of the Independence Title V permit because the ADEQ's technical justification for accepting Entergy Arkansas's claims that PM emissions would not increase is flawed. Sierra Club retained an expert with extensive experience evaluating coal plant operations, Dr. Ranajit (Ron) Sahu, to evaluate Entergy Arkansas's assertion that PM emissions will decrease following the addition of ACI to its operations at the Independence plant. Both Dr. Sahu's July 2014 Technical Comments¹⁰ and his April 2015 Technical Comments¹¹ are incorporated herein.

Dr. Sahu concludes that Entergy's technical support for its ACI project is fundamentally flawed in numerous ways and is based on unreliable and insufficient technical information and

¹⁰ Sahu July 2014 Technical Comments, Ex. D.

¹¹ Sahu April 2015 Technical Comments, Ex. E.

documentation. Without significantly more reliable and comprehensive technical support for this project, ADEQ should not have accepted Entergy Arkansas's assertion that particulate matter emissions will decrease as a result of the addition of ACI. Dr. Sahu concludes that, contrary to Entergy Arkansas's assertions, the best evidence shows that PM emissions are likely to significantly increase, triggering NSR and the application of BACT emission limits.

According to Dr. Sahu, Entergy Arkansas's technical support for its claimed reduction in PM is flawed in at least four important ways:

- First, Entergy Arkansas provides no details on the basic design parameters of the electrostatic precipitators ("ESPs") at Independence Units 1 and 2. This information is critical to any review regarding the performance of the ESPs with ACI addition at the Independence Plant.¹²
- Second, Entergy Arkansas does not state how much sorbent (or which type) will be used in order to reduce mercury emissions to below the MATS levels. In fact, no mercury testing data has been provided at all. Thus, there is no data to show that a specific ACI process would lead to the necessary mercury reductions. Obviously, ACI runs that do not achieve the MATS-required mercury reductions are useless for assessing PM emissions since Entergy Arkansas must comply with the MATS requirements for mercury.¹³
- Third, perhaps most fundamentally, the ACI tests from August 2012 at Unit 2 are entirely unreliable because the tests were conducted when Unit 2 was running at a much reduced capacity. These results are thus not reliable indicators of how ACI injection might affect PM and mercury emissions during normal, full-load conditions. PM emissions would likely be significantly higher when Unit 2 is running at higher rates than at the rates of these tests.¹⁴
- Fourth, the EERC tests provided by Entergy Arkansas are not reliable because they were performed at an entirely different ESP, with different design parameters, with ash from a different facility (White Bluff), and with no showing why these results could be achieved at the Independence ESPs.¹⁵

¹² Sahu July 2014 Technical Comments at 1-2.

¹³ *Id.* at 2.

¹⁴ *Id.* at 2-3.

¹⁵ Sahu July 2014 Technical Comments at 3-5. Given all the variables involved, it is extremely unlikely that the Independence, White Bluff, and the EERC ESPs would all have the same PM

On the basis of these considerations, Dr. Sahu rejected Entergy Arkansas's conclusion that PM emissions were likely to decrease. To the contrary of Entergy Arkansas's claims, the available evidence demonstrates that the proposed ACI project will likely cause a collective increase of approximately 22.8 tons per year of emissions of filterable PM₁₀ from the Independence plant.¹⁶ This 22.8 tons per year increase triggers NSR applicability and the requirement to apply BACT to the Independence plant.¹⁷ On this basis alone, the Administrator should object to the issuance of the proposed Independence Permit. As Dr. Sahu pointed out in his report, a conservative estimate shows significant PM increases:

What is clear is that with ACI addition, the particulate loading into the ESPs will undoubtedly increase. For example, in the case of the White Bluff plant for which such data were available (and which are not available for the Independence plant as of the date of this report) the Road Emission Calculations spreadsheet provided by Entergy states that the maximum annual ACI Injection Rate (or usage) will be 2,278 tons/year for both units. Similar levels can be assumed for Independence as well, subject to the earlier caveat that none of these ACI injection rates is tied to particular levels of mercury removal. Assuming an ESP filterable PM efficiency of 99% (which is generous, given the total lack of information on ESP design, condition, and operating parameters) for each Independence ESP, the incremental emissions of filterable PM as a result of the additional ACI loading is $2,278 * (1 - 0.99) = 22.8$ tons/year. In addition, there will be additional increases in fugitive PM emissions as a result of road traffic, ash hauling, ACI transport, etc. Collectively, the expected increase in filterable PM emissions, therefore, is likely to be above 22.8 tons/year. This exceeds the PSD Significant Emissions Rate for PM₁₀, which is 15 tons/year. Thus, it is more likely than not that the addition of ACI, as proposed by Entergy for Independence Units 1 and 2, will trigger PSD review for this pollutant. This means that the application and permit are incomplete, since Entergy has not provided a BACT analysis, or any ambient air quality modeling analysis, or any of the other PSD application requirements (such as impacts to Air Quality Related Values), *etc.*¹⁸

removal efficiencies as Entergy Arkansas claims and assumes. Entergy Arkansas's claim in this regard is further evidence that their tests are not reliable.

¹⁶ Sahu July 2014 Technical Comments at 5.

¹⁷ See 40 C.F.R. § 52.21(b)(23)(i).

¹⁸ Sahu July 2014 Technical Comments at 5.

Having received these comments on the draft Independence permit, ADEQ made no changes and required no further analysis from Entergy Arkansas regarding the ACI project. Instead, in its response to comments, ADEQ asserted that Sierra Club “provides no definitive information to refute Entergy’s analysis.”¹⁹ As Dr. Sahu observes in his April 2015 Technical Comments, however, ADEQ’s response purports to reverse the burden of persuasion for this permitting proceeding.²⁰ Having itself relied on an inadequate analysis that is rife with data gaps to accept Entergy Arkansas’s conclusion, ADEQ now seeks to apply a much more rigorous standard for the concerned public, which of course lacks access to Entergy Arkansas’s operations and data.

In his April 2015 Technical Comments, Dr. Sahu refutes ADEQ’s other responses on this ACI issue:

- First, ADEQ argued that design parameters for the Independence ESPs were “irrelevant” because Entergy Arkansas provided “actual trial testing of ACI.”²¹ As demonstrated above, this “actual trial testing” occurred when the unit was running at significantly reduced load. Dr. Sahu notes that ADEQ’s statement is further undermined by Entergy Arkansas’s belated and apparently non-binding pledge to upgrade its ESP “to mitigate any risk of an increase” in PM emissions.²² Dr. Sahu asks: “Why, if it were so confident that emissions of PM would decrease as noted in its permit application (and as blindly accepted by ADEQ), would the utility propose to “mitigate any risk” of PM emissions via ESP upgrade?”²³
- Second, ADEQ argued that it was “speculative” that changes in load or ACI injection may affect emission rates and such a relationship is “not relevant” because Entergy Arkansas’s analysis was based on “the difference in emission rates with and without ACI, not any total emission rate.”²⁴ As Dr. Sahu observes, ADEQ’s response “makes no sense

¹⁹ ADEQ Response to Comments at 8, Ex. F.

²⁰ Sahu April 2015 Technical Comments at 3.

²¹ ADEQ Response to Comments at 8.

²² Sahu April 2015 Technical Comments at 2.

²³ *Id.*

²⁴ ADEQ Response to Comments at 8.

whatsoever.”²⁵ Of course changes in unit operating capacity and/or sorbent-injection rates will affect the resultant emission rates and the total mass of PM emissions from any test. The problem here is that ADEQ has relied on tests that did not occur during representative unit operating conditions.²⁶

- Third, ADEQ took issue with Dr. Sahu’s estimate of PM emissions arguing that “it is not possible to estimate an emission rate” by applying ESP efficiency to bulk activated carbon.²⁷ Dr. Sahu responds that “ESP efficiency is widely used to estimate emission rates from ESPs” and other means for estimating PM emissions were unavailable because there was no record evidence of the relationship between particle size and ESP efficiency for the specific Independence units.²⁸ To provide more refined estimates, Dr. Sahu suggests that Entergy Arkansas be required to provide “ESP/PM size versus efficiency curves for each ESP at Independence, along with underlying ESP operating parameters.”²⁹
- Fourth, ADEQ notes that Dr. Sahu had not “quantified or specified” the road emissions associated with the ACI projects.³⁰ Dr. Sahu responds that no such quantification was possible on this permitting record because ADEQ had failed to require an adequate record.³¹

In sum, Sierra Club contends that, based upon the available evidence, there was no basis for ADEQ to accept Entergy Arkansas’s assertion that particulate matter emissions will decrease due to the planned installation of ACI. In fact, that the addition of ACI will likely increase PM₁₀ emissions at the Independence plant sufficient to trigger PSD review for this pollutant. For these and all the reasons discussed in Dr. Sahu’s technical comments, the Administrator must object to the issuance of this proposed Independence permit. In doing so, the Administrator should require that Entergy Arkansas and ADEQ provide a more adequate record for assessing the impact of the ACI project on PM emissions.

²⁵ Sahu April 2015 Technical Comments at 3.

²⁶ *Id.*

²⁷ ADEQ Response to Comments at 8.

²⁸ Sahu April 2015 Technical Comments at 3.

²⁹ *Id.* at 4.

³⁰ ADEQ Response to Comments at 8.

³¹ Sahu April 2015 Technical Comments at 4.

B. The Proposed Independence Permit Cannot Lawfully Be Issued Because No Adequate Demonstration Has Been Performed, and ADEQ Has No Reasonable Basis for Concluding, That the Independence Plant and the Proposed Changes to be Made Thereto, Will Not Violate the PM NAAQS.

As explained above, the ACI project covered by the proposed Independence Permit is likely to result in an increase in PM emissions of over 22 tons per year, which is sufficient to trigger NSR applicability. This increase in PM emissions will damage the health of Arkansans and violate the federally enforceable Arkansas State Implementation Plan. Under the Arkansas SIP, without a determination by ADEQ that the modified Independence Plant will not cause a violation of a NAAQS (or any other applicable emissions limitation), the proposed Independence Permit cannot lawfully be issued. The Administrator should object to the issuance of the proposed Independence Permit on this issue as well.

Despite the analysis showing significant PM increases, neither ADEQ nor anyone else has performed any air modeling analysis or other comparable demonstration to show that the Independence Plant and the proposed modification projects covered by the Draft Independence Permit will not interfere with attainment of the NAAQS or otherwise cause air pollution that is harmful to human health. For this reason, the proposed Independence Permit cannot be lawfully issued. There are many provisions in state law, the Clean Air Act, and the Arkansas SIP that require air modeling in this situation or at least some substantive demonstration that NAAQS attainment will not be interfered with and that injurious air pollution will not result as a consequence of this permit. *See* APCEC Reg. 18.302; APCEC Reg. 19.402; APCEC Reg. 19.502; APCEC Reg. 26; Clean Air Act Section 110(a)(2)(C); 40 C.F.R. § 51.160-51.164.

Sierra Club understands that in April 2013, the Arkansas Legislature and governor enacted a new law, Act 1302, that prohibits ADEQ from requiring a permit applicant to submit air quality modeling to demonstrate compliance with the NAAQS, and from undertaking its own

modeling or even considering modeling submitted by a third-party without the applicant's consent. Sierra Club understands that ADEQ's previous practice of conducting air quality modeling for Title V permit renewals was integral to its strategy for assuring compliance with the NAAQS. Indeed, Act 1302 now requires ADEQ to develop "NAAQS state implementation plans," presumably to fill the gap left in Arkansas's plan for assuring compliance with the NAAQS once ADEQ is no longer permitted to follow its previous practices.

In its Statement of Basis for this permit, ADEQ explains that pursuant to Act 1302, no air dispersion modeling was performed, and that "criteria pollutants were not evaluated for impacts on the NAAQS."³² Combined with the flawed PSD applicability analysis submitted by Entergy Arkansas, ADEQ has not satisfied SIP requirements to ensure that the NAAQS are attained and that public health is protected. The Administrator must object to the issuance of this permit to assure that this deficiency is corrected.

C. New Source Review Violations at the Independence Plant Remain Unaddressed and Therefore the Independence Plant Continues to Operate without the Required BACT Emission Limits and Other NSR Requirements.

On October 19, 2010, EPA received Sierra Club's Petition to Object to the issuance of an earlier version of the Independence Title V permit. Sierra Club hereby incorporates the allegations of the October 2010 Petition here. In the October 2010 Petition, Sierra Club alleged that economizer replacement projects on both Independence units constituted major modifications that caused significant emissions increases and should have triggered NSR review, including the requirement to incorporate BACT emission limits into the Title V permit. Sierra Club's October 2010 Petition remains "pending" before the Administrator.³³

³² Statement of Basis at 3.

³³ See <http://yosemite1.epa.gov/r6/Apermit.nsf/AirP?OpenView#M>

The Administrator should object to the issuance of the instant Title V permit renewal for the Independence plant because this permit is deficient as the Independence plants continues to operate in violation of NSR requirements.

D. The Proposed Independence Permit Unlawfully Excludes Substituted Data From Compliance Assessment.

In response to comments from Entergy Arkansas, ADEQ revised the permit to exclude substituted data—estimates created when the continuous emissions monitors (“CEMS”) are not operating—from determining whether the Independence plant is complying with applicable emissions limits.³⁴ ADEQ provided no explanation when it accepted Entergy Arkansas’s suggestion to limit the use of substituted data in the four specified instances: Specific Conditions 9, 10, 17, and 18.³⁵

ADEQ’s acceptance of Entergy Arkansas’s suggestion is improper as it eliminates the utility’s incentive to properly operate its CEMS.³⁶ The purpose of having the substitute data requirements is to encourage a source to maintain its CEMS equipment in valid, operational conditions at all times—so that it does not have to rely on the missing data. ADEQ’s acceptance of Entergy Arkansas’s request to exclude substituted data from assessing compliance destroys this incentive. The exclusion of substituted data from use in determining compliance therefore undermines the purpose of a Title V permit: to allow for accountability and compliance with all applicable requirements. The Administrator should object to the issuance of the Independence permit based on this issue as well and reverse ADEQ’s acceptance of this relaxation in permit requirements.

³⁴ See ADEQ Response to Comments at 2-4.

³⁵ *Id.*

³⁶ See Sahu April 2015 Technical Comments at 5-6.

E. The Proposed Independence Permit Should Not Be Issued Due to a Lack of Enforceability and Specificity Concerning the Identification of the Applicable Requirements for the MATS rule.

The purpose of a Title V operating permit is, in part, to allow the public to assess a facility's compliance with all applicable requirements. *See generally* APCEC Reg. 26.402(B)(3) (e)-(h), (4), (5) and (7). The MATS standards will be applicable requirements for this facility beginning in April 2016. EPA's MATS regulation allows sources to comply in several different ways; for example, a source can choose to comply with either a limit on sulfur dioxide (SO₂) or acid gases (HCl). However, this choice cannot be an ongoing one without undermining the very purpose of Title V. *See, e.g., Sierra Club v. Johnson*, 541 F.3d 1257, 1260 (11th Cir. 2008) (Title V added "clarity and transparency" to the permitting process "to help citizens, regulators, and polluters themselves understand which clean air requirements apply to a particular source of air pollution."); *see id.* ("The goal is 'increased source accountability and better enforcement.'") (quoting "Operating Permit Program," 57 Fed. Reg. 32250, 32,251 (July 21, 1992)).

The proposed Independence permit incorporates the MATS limits in Section IV, ¶¶ 32-35, retaining the "either/or" option for the three different basic categories of MATS limits. Such a permit structure materially deprives the public of an opportunity to track the plant's compliance. Under this framework, the facility is effectively free to choose (even, perhaps, years after the fact) among the alternative compliance methods on its own without any notice to ADEQ or the public. These permit conditions are therefore unenforceable. Accordingly, the Administrator should object to the issuance of this permit and incorporate into the Independence Permit the specific MATS limits for which Entergy Arkansas intends to comply.

V. Conclusion

For the foregoing reasons, Sierra Club respectfully requests that the Administrator object to the issuance of this Title V permit.

Dated: May 5, 2015

Respectfully submitted,

/s/ Tony G. Mendoza

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**Exhibit List for Sierra Club's May 4, 2015 Petition
to EPA to Object to the Proposed Independence Title V Permit**

Exhibit	Description
A	Proposed Independence Title V Permit (Jan. 21, 2015)
B	ADEQ Statement of Basis
C	Sierra Club Comments on Draft Independence Permit (July 25, 2014)
D	Sahu July 2014 Technical Comments
E	Sahu April 2015 Technical Comments
F	ADEQ Response to Comments