STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF INDIANA MICHIGAN POWER COMPANY (I&M), AN INDIANA CORPORATION, FOR APPROVAL OF A CLEAN ENERGY PROJECT AND QUALIFIED POLLUTION CONTROL PROPERTY AND FOR ISSUANCE OF CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR USE OF CLEAN COAL TECHNOLOGY; FOR ONGOING REVIEW; FOR APPROVAL OF ACCOUNTING AND RATEMAKING, INCLUDING THE TIMELY RECOVERY OF COSTS INCURRED DURING CONSTRUCTION AND OPERATION OF SUCH PROJECT THROUGH I&M'S CLEAN COAL TECHNOLOGY RIDER; FOR APPROVAL OF DEPRECIATION PROPOSAL FOR SUCH PROJECT; AND FOR AUTHORITY TO DEFER COSTS INCURRED DURING CONSTRUCTION AND OPERATION, INCLUDING CARRYING COSTS, DEPRECIATION, TAXES, OPERATION AND MAINTENANCE AND ALLOCATED COSTS, UNTIL SUCH COSTS ARE REFLECTED IN THE CLEAN COAL TECHNOLOGY RIDER OR OTHERWISE REFLECTED IN I&M'S BASIC RATES AND CHARGES.	)	**CAUSE NO. 44871**

INDIANA MICHIGAN POWER COMPANY'S SUBMISSION OF ADDITIONAL INFORMATION CONCERNING ROCKPORT UNIT 2 LEASE

Indiana Michigan Power Company ("I&M"), by counsel hereby submits information regarding a Supplemental Motion in Support of Fifth Modification of Consent Decree in response to a recent opinion by the Sixth Circuit Court of Appeals in unrelated litigation.

I&M remains committed to informing the Commission and stakeholders of further developments in this matter.

Respectfully submitted,

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Attorneys for Indiana Michigan Power Company

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing was served upon the following via electronic email, hand delivery or First Class, United States Mail, postage prepaid this 9th day of January, 2018 to:

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IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
EASTERN DIVISION

UNITED STATES OF AMERICA Plaintiff, and STATE OF NEW YORK, ET AL., Plaintiff-Intervenors, v. AMERICAN ELECTRIC POWER SERVICE CORP., ET AL., Defendants.	Consolidated Cases: Civil Action No. C2-99-1182 Civil Action No. C2-99-1250 JUDGE EDMUND A. SARGUS, JR. Magistrate Judge Kimberly A. Jolson
OHIO CITIZEN ACTION, ET AL., Plaintiffs, v. AMERICAN ELECTRIC POWER SERVICE CORP., ET AL., Defendants.	Civil Action No. C2-04-1098 JUDGE EDMUND A. SARGUS, JR. Magistrate Judge Kimberly A. Jolson
UNITED STATES OF AMERICA Plaintiff, v. AMERICAN ELECTRIC POWER SERVICE CORP., ET AL., Defendants.	Civil Action No. C2-05-360 JUDGE EDMUND A. SARGUS, JR. Magistrate Judge Kimberly A. Jolson

DEFENDANTS' SUPPLEMENTAL MOTION AND MEMORANDUM IN SUPPORT OF FIFTH MODIFICATION OF CONSENT DECREE

INTRODUCTION

On July 21, 2017, AEP[1] filed a motion with this Court to modify the Consent Decree entered in this action. Doc. 555. That motion sought tailored relief to address uncertainty caused by the recent decision of the Sixth Circuit Court of Appeals in unrelated litigation with the lessors of Rockport Unit 2.[2] Plaintiffs have filed their responses,[3] and AEP and Plaintiffs have engaged in settlement negotiations, but have been unable to agree on terms that would fully resolve this matter.

Although AEP continues to believe that it will prevail on the merits in the lease litigation, AEP faces the prospect of extended litigation that could potentially result in substantial and unforeseen negative consequences for the company under the Lease.[4] At the same time, if AEP fails to take timely action to install controls at Rockport Unit 2, it could potentially be found liable for a violation of the modified Consent Decree.

Throughout this period, AEP has tirelessly investigated alternative approaches that would allow AEP to remove from the Consent Decree the obligations at Rockport Unit 2 that the Sixth Circuit (assuming as true the allegations in the Lease litigation complaint) has found may have exceeded AEP's authority under the Lease, while revising AEP's obligations in other respects to preserve—and actually exceed—the environmental benefits the Consent Decree was designed to achieve. This Court has twice issued orders to toll the deadline for installation of the nitrogen

[1] The AEP Defendants include American Electric Power Service Corp., AEP Generation Resources Inc. (successor to Ohio Power Company and Columbus Southern Power Company), Appalachian Power Company, Cardinal Operating Company, Indiana Michigan Power Company, and Kentucky Power Company (collectively, "AEP").
[2] *Wilmington Trust Co. v. AEP Generating Co.*, 859 F.3d 365 (6th Cir. 2017).
[3] The United States' Opposition was filed as Doc. 571 in Case No. C2-99-1182. The Citizens Plaintiffs' Opposition was filed as Doc. 405 in Case No. C2-99-1250, and the States' Opposition was filed as Doc. 572 in Case No. C2-99-1182.
[4] AEP strongly denies several facts alleged in the Lessors' complaint, including facts critical to the Sixth Circuit's decision allowing the lessors' claims to go forward in that litigation. Nothing in the current motion should be construed as an admission by AEP that it breached the Lease.

oxide ("NOx") controls at Rockport Unit 2, pending resolution of this motion. However, without timely assistance from the Court, AEP believes that the opportunity to obtain and implement the necessary modified terms that preserve the environmental benefits of the Consent Decree will be lost.

FACTUAL BACKGROUND

A detailed factual background of this case, the Consent Decree, and the Rockport Unit 2 Lease was presented in AEP's original motion, and is incorporated herein by reference. Doc. 555, at 2-11. The summary includes a description of the *Wilmington Trust* litigation and the pertinent portions of the Sixth Circuit's decision. *Id.* at 8. The majority of the facts related to these matters are reflected in the records of cases pending before this Court, and therefore subject to judicial notice. Plaintiffs do not dispute the basic factual underpinnings of AEP's motion.

Instead, the Plaintiffs assert that these facts do not represent a substantial change in law or facts sufficient to support AEP's request, and that substituting emission reductions at other facilities fails to adequately preserve the benefits that would be achieved through additional future emission reductions at Rockport Plant. AEP therefore began to investigate whether there are methods that would allow it to achieve equivalent emission reductions at Rockport within the limited time remaining prior to expiration of the initial term of the Rockport Lease.

Recent testing at Rockport Unit 1 has demonstrated that SO_2 emission reductions equivalent to those currently required under the Rockport Plant-Wide Annual Tonnage Limitation in 2029 can be achieved by 2021, by completing the selective catalytic reduction ("SCR") system installation on Rockport Unit 2 and reconfiguring the existing SO_2 controls on both units to inject the sorbent before their SCRs by December 31, 2020. Achieving these results requires installation of SCR on both units, and relocating the sorbent injection lances ahead of

the SCR reactors. Work on Unit 2 would be scheduled during the planned SCR tie-in outage and completed before June 1, 2020, and work on Unit 1 would be completed in the fall of 2020. Installation of controls that meet the design specification and emission rate requirements in the definition of "Retrofit" added as part of the Third Joint Modification would require site-specific engineering and design development, permitting, other regulatory approvals, procurement, and construction activities that would span at least four to five years, but would provide no additional environmental benefit. Durner Declaration ¶ 5. The availability and capabilities of this alternative technology is a changed circumstance that allows for modification of the plant-wide obligations at both Rockport Units.

AEP's REVISED PROPOSAL

Based on the Sixth Circuit's decision and the new information received during the recent testing, AEP proposes an alternative set of modifications that would allow it to achieve all of the required emission reductions and/or control equipment installations at both Rockport Units beginning in 2021, and secure the same or greater emission reductions across the AEP system, sooner than otherwise required by the Consent Decree as modified through the Third Joint Modification. Specifically, AEP proposes the following modifications to individual paragraphs of the Consent Decree:

1. Modify Paragraph 67 to reduce the AEP Eastern System-Wide Annual Tonnage Limitation for NOx to 62,000 tons per year beginning in 2018, to 52,000 tons per year in 2021, and to 49,000 tons per year in 2029 and thereafter, and include a proviso that the cap would be reduced by 5,000 tons per year if one Rockport Unit is permanently retired;

2. Add a new Paragraph 68A to require Rockport Units 1 and 2 to comply with a Plant-Wide Annual Tonnage Limitation for NOx of 10,000 tons per year, and a Plant-Wide Ozone Season Tonnage Limitation for NOx of 5,000 tons per year, beginning in 2021, and include a proviso that these Limitations would be reduced by one-half if one Rockport Unit is permanently retired;

3. Modify Paragraph 86 to reduce the AEP Eastern System-Wide Annual Tonnage Limitation for SO_2 to 100,000 tons per year for the period from 2021-2028, and to 94,000 tons per year for the period 2029 and thereafter, and include a proviso that the cap would be reduced by 5,000 tons per year if one Rockport Unit is permanently retired;

4. Modify Paragraph 87 to require AEP to install and continuously operate enhanced SO_2 controls on Rockport Units 1 and 2 by December 31, 2020, and remove the RRRR obligations in 2025 and 2028; and

5. Modify the table in Paragraph 89A to accelerate achievement of the 10,000 ton per year Plant-Wide Annual Tonnage Limitation for SO_2 at the Rockport Plant beginning in calendar year 2021, and include a proviso that this Limitation would be reduced by one-half if one Rockport Unit is permanently retired.

LAW AND ARGUMENT

I. The Court has inherent authority to modify its consent decree as the circumstances warrant.

AEP hereby incorporates Section IV(A) of its Motion for Fifth Modification of Consent Decree, Doc. 555, and its Reply, Doc. 574, as if fully set forth herein. The Sixth Circuit's decision calls into question AEP's ability to make commitments for future control installations at Rockport Unit 2, and gives rise to substantial uncertainty that, without further relief from this Court, the associated environmental benefits will ever be fully realized. There is no evidence that AEP or any other party to this case anticipated that Lessors would object to the terms of the Third Joint Modification.

Recent testing at the Rockport Plant has demonstrated that SO_2 emission reductions equivalent to those required under the Rockport Plant-Wide Annual Tonnage Limitation in 2029 can be achieved beginning in 2021, if the SCR installations are completed on both Rockport Units, and the existing SO_2 controls are enhanced to allow injection of the dry sorbent before the SCRs, producing much lower SO_2 emissions. This information was not available prior to the Third Joint Modification, and justifies removing the design specifications and emission rate

restrictions in the definition of "Retrofit" while retaining and accelerating achievement of the final Rockport Plant-Wide Annual Tonnage Limitation in the Consent Decree.

As the Sixth Circuit has previously held, consent decrees "are designed to be a flexible remedy, easily modifiable when the facts or law as to the parties change." *Whitlock v. FSL Mgmt., LLC*, 843 F.3d 1084, 1094 (6th Cir. 2016). The more narrowly tailored changes set forth in the balance of this motion address those changed circumstances and will achieve greater emission reductions sooner than required under the Third Joint Modification.

II. AEP's Revised Proposal is more narrowly tailored to the changed circumstances.

In response to the filings of the other parties and its own further investigation of available measures to achieve the emission reductions currently required at the Rockport Units, AEP has developed a more narrowly drawn proposal to address the uncertainty presented by the Sixth Circuit's decision. The revised proposal retains the current obligation to install SCRs at both Rockport Units, and allows AEP to accelerate SO_2 emission reductions at the Rockport Plant and achieve the final Plant-Wide Tonnage Limitation for SO_2 at Rockport a full 8 years earlier than currently required. There is no need for any offsetting reductions elsewhere on the AEP system.

By completing the SCR installation on Rockport Unit 2 and making further SO_2 reductions at both units, AEP will be able, within the initial Lease term, to fulfill the obligation to install NOx controls imposed by the original Consent Decree and achieve actual SO_2 emission reductions consistent with the final Plant-Wide Tonnage Limitation in the Third Joint Modification. However, the SO_2 benefits can only be achieved during the specified time frame by enhancing the existing SO_2 controls. Durner Declaration ¶ 6. Because these changes achieve the final Tonnage Limitation beginning in 2021, the obligation to "Retrofit, Retire, Repower or Refuel" (RRRR) the units in 2025 and 2028 is no longer necessary, and the SO_2 removal

efficiency and emission rate conditions applicable to the Rockport Units in the definition of "Retrofit" can be removed.

AEP conducted preliminary testing of the proposed enhancements to the SO_2 control system at Rockport Unit 1 during November of 2017. Durner Declaration ¶ 7. The SCR equipment recently installed at that Unit underwent commissioning and testing, and AEP requested Babcock Power to undertake specialized modeling to test the impact of relocating the injection lances ahead of the SCR reactors. Durner Declaration ¶ 8. A schematic diagram of the reconfiguration is attached to the Declaration of Mr. Durner as Attachment A. This location is directly in front of a proprietary system of mixing plates that distributes ammonia throughout the SCR. This system likewise will distribute the fine particles of sorbent throughout the ductwork and SCR reactors, eventually leading to the electrostatic precipitator ("ESP") that collects the particulates and discharges the cleaned flue gas through the common stack for Rockport Units 1 and 2. Durner Declaration ¶ 9. AEP believed that better distribution of the sorbent and the additional residence time in the flue gas path could allow greater reactivity of the sorbent with the SO_2 in the flue gas, producing greater emission reductions. The modeling confirmed that complete particle/gas mixing was achievable. Durner Declaration ¶ 10.

During testing, this configuration achieved SO_2 emission rates of 0.06 to 0.20 pounds per million British thermal units (#/mmBtu), an approximate 50 percent reduction or more from the range of current emission rates achieved using the DSI system. Durner Declaration ¶ 11. These values are at the low to mid-range of SO_2 emission rates for other 1300 MW units in the AEP system using wet flue gas desulfurization ("FGD") technology. McManus Declaration ¶ 12. They are also at or below the alternative SO_2 emission limitation established by EPA in the Maximum Achievable Control Technology ("MACT") standards for coal-fired electric

generating units using wet flue gas desulfurization ("FGD") technology as a means of demonstrating compliance with the limits on emissions of acid gases. Since these limitations are intended to reflect the application of MACT, they are certainly a reliable indication of the installation and operation of efficient FGD technology. McManus Declaration ¶ 13.

Because the reagent unloading, storage, collection, disposal and other systems are already installed at the plant, the remaining unit-specific engineering, design, procurement, and pre-construction activities can be completed in time to install the reconfigured system during the SCR tie-in outage for Rockport Unit 2 in 2020. Durner Declaration ¶ 12. A similar system can be installed on Rockport Unit 1 in the fall of 2020, which would allow the Rockport Plant to achieve and maintain compliance with a 10,000 ton per year Annual Tonnage Limitation on SO_2 emissions beginning in calendar year 2021, a full eight years before that limitation would otherwise take effect. Durner Declaration ¶ 13.

III. All of the other obligations of the Third Joint Modification have been satisfied.

As noted in the responsive filing by the United States, most of the commitments made by AEP in the Third Joint Modification have already been fulfilled: the DSI installations were completed at both Rockport Units in 2015; SO_2 emissions have been maintained below the new tonnage caps at Rockport Plant; SO_2 emissions from the AEP Eastern System have remained below new lower caps; three additional units, not otherwise required to, were retired; additional renewable energy resources were placed in service in Indiana; and additional mitigation funding was provided to the States and Citizen Plaintiffs. Doc. 571 at 3-4; McManus Declaration ¶ 6. The only remaining obligations under the Consent Decree and the Third Joint Modification are to (1) complete the SCR installation on Rockport Unit 2, and (2) make additional SO_2 emission reductions at both the Rockport Units. McManus Declaration ¶ 7.

IV. AEP's revised proposal is consistent with the structure and implementation of the Consent Decree

In their opposition, Plaintiffs complained that the terms originally offered by AEP (additional unit retirements not otherwise required by the Consent Decree and offsetting reductions in the AEP System caps) were not sufficiently tailored nor equivalent to the benefits of implementing the existing requirements at Rockport. The United States claimed that the SCR requirement at Rockport Unit 2 was not addressed by the *Wilmington Trust* decision, and that, if the offsetting emission reductions were made at a different facility, there could be adverse consequences both in the local communities near Rockport and in other, more remote downwind areas. Doc. 571 at 12-13. Citizen Plaintiffs complained that allowing Rockport Unit 2 to operate without either an SCR or additional SO_2 controls would expose local residents to far greater rates of emissions from that unit, and that the proffered reductions were both later in time and far removed from the area. Doc. 405 at 22-26. The area where the Rockport Plant is located already complies with all applicable national ambient air quality standards, which must be set at a level sufficient to protect the public health with an adequate margin of safety. Achieving additional reductions at Rockport will merely increase that margin of safety. McManus Declaration ¶ 8. Nevertheless, AEP's revised proposal addresses both of these concerns.

The SCR requirement imposed by the modified Consent Decree will be met through completion of the SCR installations at both Rockport Units. Unit 1 has already commenced continuous operation of its NOx controls, and Unit 2 can do so by the tolled compliance deadline agreed to by the parties, June 1, 2020.[5] McManus Declaration ¶10. To assure Plaintiffs that the SCR controls installed are well-functioning, consistent with the approach in the Third Joint

[5] Timely completion of the SCR installation on Unit 2 is contingent upon issuance of a final certificate from the Indiana Utility Regulatory Commission in Cause No. 48871. McManus Declaration ¶ 10.

Modification, AEP also has proposed to include a Plant-Wide Annual Tonnage Limitation for NOx at Rockport of 10,000 tons per year, and a Plant-Wide Ozone Season Limitation of 5,000 tons[6] during the period from May 1 – September 30 each year, beginning in 2021 for the two Rockport Units combined. These commitments provide an equivalent level of assurance as the other Plant-Wide Limitations that were included in the original Consent Decree, and the SO_2 Plant-Wide Tonnage Limitation created in the Third Joint Modification. McManus Declaration ¶ 11.

AEP's proposed changes to the SO_2 reduction requirements are also narrowly tailored. They will provide emission reductions consistent with the Third Joint Modification, but earlier in time than currently required, taking advantage of the technological developments that have occurred. Rockport's current SO_2 emissions are capped by a 26,000 ton per year Plant-Wide Tonnage Limitation, which would have declined to 22,000 tons per year in 2020, 18,000 tons per year in 2026, and 10,000 tons per year in 2029. The definition of "Retrofit" was changed in the Third Joint Modification to require highly efficient scrubbers (a vendor guarantee of a 98% design removal efficiency and short term emission rates based on fuel quality), but this definition is coupled with the Plant-Wide Tonnage Limitation. AEP agreed to design specifications for the Rockport Units that were intended to apply to controls installed in 2025 and 2028, but these levels cannot be achieved within the period before the initial term of the Lease expires in 2022. Durner Declaration ¶ 6.

[6] During the ozone season each year, sunlight and emissions of volatile organic compounds combine with NOx emissions to form ozone, which can be transported for significant distances. On multiple occasions, EPA has reviewed and made the ozone standard more stringent, most recently in 2015. While several urban centers in the Northeast have historically had difficulty attaining and maintaining the ozone air quality standard, EPA now projects that no areas outside of California will have nonattainment or maintenance problems with respect to the 2008 ozone NAAQS by 2023. EPA has not yet assigned designations to all areas of the country for the 2015 ozone standard. McManus Declaration ¶9.

At the time the parties were negotiating the Third Joint Modification, AEP was unaware of the potential that the equipment included in the SCR design at Rockport that enhances distribution of the ammonia reagent, could also be utilized to enhance the distribution of sorbents used to reduce SO_2 emissions. Had AEP been aware of this opportunity to achieve additional significant SO_2 reductions at a much lower cost, it would not have made this agreement. McManus Declaration ¶ 14.

The net environmental impact of the revised proposal is more beneficial than implementation of the modified Consent Decree as it stands today. The revised proposal imposes reasonable requirements at Rockport Unit 2 that can be achieved before expiration of the initial Lease term, and incorporated into permits issued for the Rockport Plant under existing provisions of the Consent Decree. It achieves all of the environmental benefits more quickly than required under the Third Joint Modification at the specific facility assigned to achieve those benefits.

V. AEP's revised proposal allows it to fulfill the Consent Decree obligations during the initial Lease term at Rockport

The revised proposal is also narrowly tailored to allow AEP to fulfill its Consent Decree obligations at Rockport Unit 2 during the initial Lease term. It is uncertain whether, and if so, under what terms AEP would continue to receive energy from Rockport Unit 2 after the Lease expires in 2022. AEP has committed to review those options with its regulators at the Indiana Utility Regulatory Commission before making any commitments, and AEP will seek to engage Lessors in discussing those future options. However, modifying the Consent Decree to include only terms that can be fulfilled during the initial Lease term, and that impose consistent obligations on both Rockport Units, minimizes the potential for protracted litigation with the Lessors.

Lessors did not file suit following the entry of the original Consent Decree, which imposed both SO_2 and NOx control obligations on Rockport Unit 2 that would have been fully satisfied by December 31, 2019. By revising the terms of the Consent Decree to include commitments that will be fully implemented by December 31, 2020, AEP believes that the claims presented in the *Wilmington Trust* case would likely be substantially narrowed or eliminated.

The alternative presented herein is the most precisely tailored set of terms that achieves the combined goal of satisfying the Consent Decree obligations at the Rockport Units and resolving the uncertainty caused by the Sixth Circuit's decision, at the most reasonable cost to customers, consistent with AEP's public utility obligations. Accordingly, AEP respectfully requests that the Court enter an order approving the modifications requested herein, and allowing the parties to file a fully conformed copy of the Consent Decree, as modified, within thirty (30) days of the Court's order.

CONCLUSION

The Sixth Circuit's recent opinion has unexpectedly undermined the Parties' basic assumptions in modifying the Consent Decree. The revised proposal presented here is the most narrowly tailored solution and will achieve the benefits of the Third Joint Modification sooner than currently required by making targeted adjustments to the obligations at the Rockport Plant. Accordingly, the Court should exercise its equitable powers to modify the Consent Decree in recognition of these changed circumstances, and order the requested modifications in order to maintain and enhance the environmental benefits the Consent Decree was designed to achieve.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on January 8, 2018, I electronically filed the foregoing with the Clerk of the Court, using the CM/ECF system, which will send a notice of electronic filing to all counsel of record.

/s/ James B. Hadden
James B. Hadden

DECLARATION OF MICHAEL W. DURNER
IN SUPPORT OF SUPPLEMENTAL MEMORANDUM IN SUPPORT
OF DEFENDANTS' MOTION TO MODIFY THE CONSENT DECREE

I, Michael W. Durner, make the following declaration based on personal knowledge, information and belief:

1. My name is Michael W. Durner. I am employed by American Electric Power Service Corporation as Director of the Mechanical Engineering & Design Department. American Electric Power Service Corporation ("AEPSC") provides business management, technical, and other services to the utility operating companies in the American Electric Power ("AEP") System, including the AEP companies that are defendants in this action. My business address is 1 Riverside Plaza, Columbus, Ohio 43215.
2. I earned a Bachelor of Science Degree in Mechanical Engineering from Rensselaer Polytechnic Institute in 1982 and a Master's Degree in 1985. I joined AEPSC's Engineering Division in 1984. After holding various positions in the engineering division over the years, I was appointed as Manager, Applications Engineering and Balance of Plant Mechanical Equipment in 2006 and remained in that position until 2010. I was appointed to my current position in 2011. I am also a registered professional engineer in the State of Ohio.
3. I am responsible for oversight of mechanical engineering support/equipment design basis technical guidance for all generation facilities owned by AEP operating companies through five specialized sections of technical experts: Turbine Systems Engineering and Mechanical Design; Steam Generator Equipment Engineering; Piping Systems Engineering and Welding; Integrated Emissions Control and Chemical Engineering; and Applications and Balance of Plant Equipment.

4. Since the entry of the Consent Decree, I have supported emissions control equipment installations at the AEP facilities required by the Consent Decree, and provided ongoing technical support for their operation.

5. I have reviewed *Defendants' Motion for Fifth Modification of Consent Decree*, Doc. 555, the *United States' Opposition to Defendants' Unilateral Motion for Fifth Modification of Consent Decree*, Doc. 571, the *Citizen Plaintiffs' Memorandum in Opposition to Defendants' Motion for Fifth Modification of Consent Decree*, Doc. 405, and the *Plaintiff States' Opposition to Defendants' Motion for Fifth Modification of Consent Decree*, Doc. 572, as well as *Defendants' Reply*, Doc. 574, filed in this action, and make this declaration in support of *AEP's Supplemental Motion and Memorandum in Support of Fifth Modification of Consent Decree* in this case.

6. AEP has installed wet and dry flue gas desulfurization ("FGD") systems at multiple units subject to the Consent Decree, and at other AEP units. Installation of controls that meet the design specification and emission rate requirements in the definition of "Retrofit" added as part of the Third Joint Modification would require site-specific engineering and design development, permitting, other regulatory approvals, procurement, and construction activities. Typically, such activities would span at least four to five years.

7. Recent investigations and testing conducted at Rockport Unit 1 during November 2017 have demonstrated that enhancing the existing sorbent injection systems at both Rockport Units can achieve the final Plant-Wide Annual Tonnage Limitation for SO_2 of 10,000 tons per year within the next three years.

8. The selective catalytic reduction ("SCR") equipment recently installed at Rockport Unit 1 underwent commissioning and testing in the fall of 2017. AEP requested Babcock Power

to undertake specialized modeling to test the impact of relocating the sorbent injection lances ahead of the SCR reactors. A schematic diagram of the reconfiguration is attached to this Declaration as Attachment A.

9. This new injection location is coincident with a proprietary system of mixing plates that distributes ammonia throughout the SCR. This system likewise will distribute the fine particles of sorbent throughout the ductwork and SCR reactors, eventually leading to the electrostatic precipitator ("ESP") that collects the particulates and discharges the cleaned flue gas through the common stack for Rockport Units 1 and 2.

10. Better distribution of the sorbent and the additional residence time in the flue gas path allows for greater reactivity of the sorbent with the SO_2 in the flue gas. AEP believed that this in turn would produce greater emission reductions. The modeling performed by Babcock Power confirmed that complete particle/gas mixing was achievable. The results of the modeling are presented as color-coded representations of the velocity of particles and the "% rms," or relative uniformity of distribution throughout the flue gas path. As shown on slides 3-5 of the presentation attached as Attachment B, the SCR reactor's design slows the velocity of the sorbent particles by a factor of 4-5, providing significant additional reaction time. Three injection configurations were evaluated using the computation flow model, and the two that showed the greatest promise were subsequently tested at Rockport Unit 1.

11. During testing, this configuration achieved SO_2 emission rates of 0.06 to 0.20 pounds per million British thermal units (#/mmBtu), an approximate 50 percent reduction or more from the range of current emission rates achieved using the current DSI system. A summary of the test results is provided in Attachment C.

12. Because the reagent unloading, storage, collection, disposal and other systems to support the sorbent injection operations are already installed at the plant, the remaining unit-specific engineering, design, procurement, and pre-construction activities can be completed in time to install the reconfigured system during the SCR tie-in outage for Rockport Unit 2 in 2020.

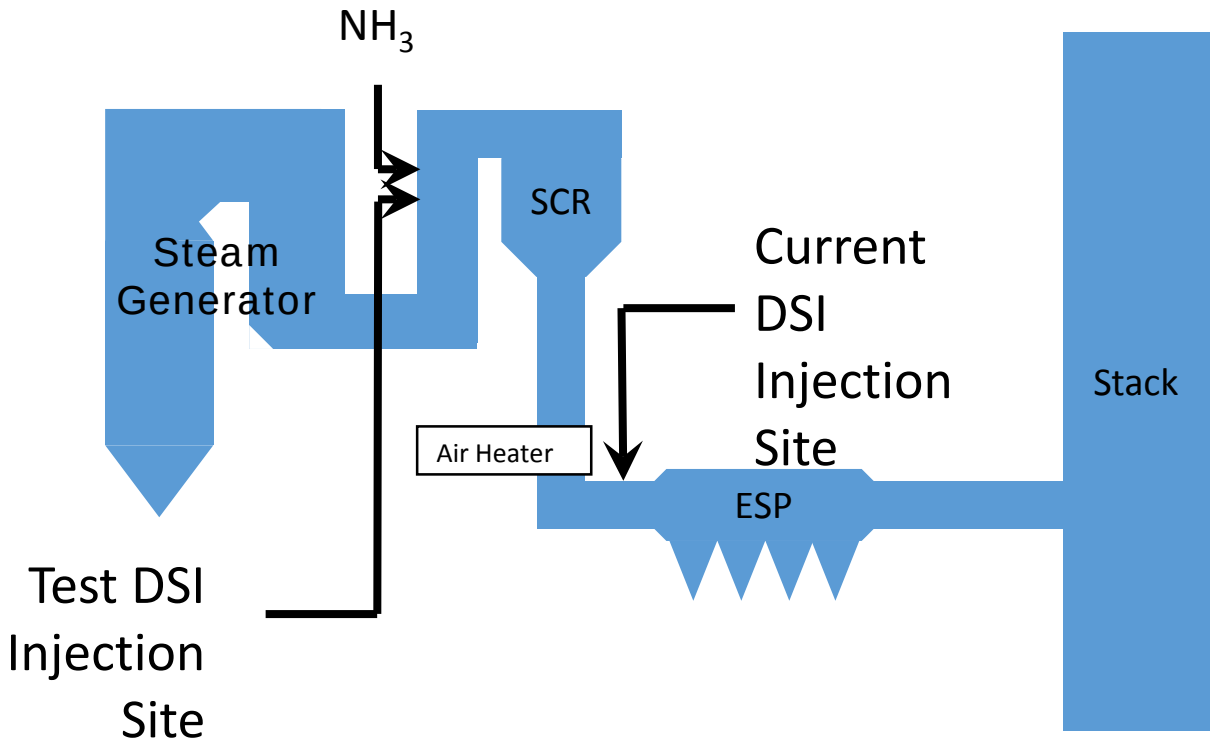
13. A similar system can be installed on Rockport Unit 1 in the fall of 2020, which would allow the Rockport Plant to achieve and maintain compliance with a 10,000 ton per year annual tonnage limitation on SO_2 emissions beginning in calendar year 2021, a full eight years before that limitation would otherwise take effect.

I declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge and belief.

Executed January 8, 2018

Michael W. Durner

ATTACHMENT A


NH_3
Steam Generator
SCR
Current DSI Injection Site
Air Heater
ESP
Stack
Test DSI Injection Site

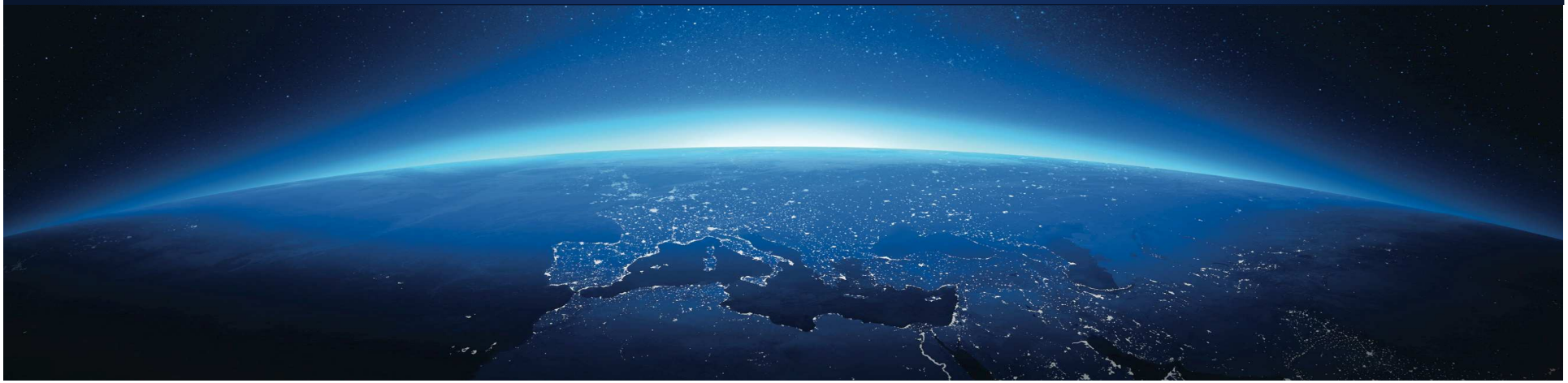
ATTACHMENT B

Babcock Power®

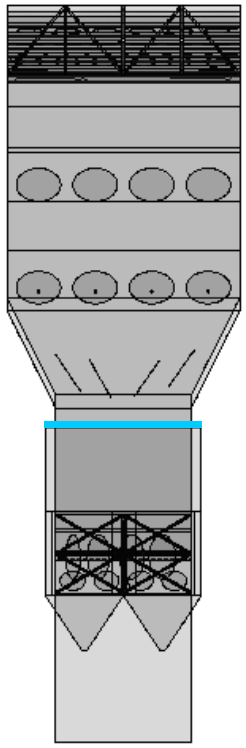
CFD Modeling Results of Sorbent Injection for AEP Rockport SCR Unit #1

November 2017

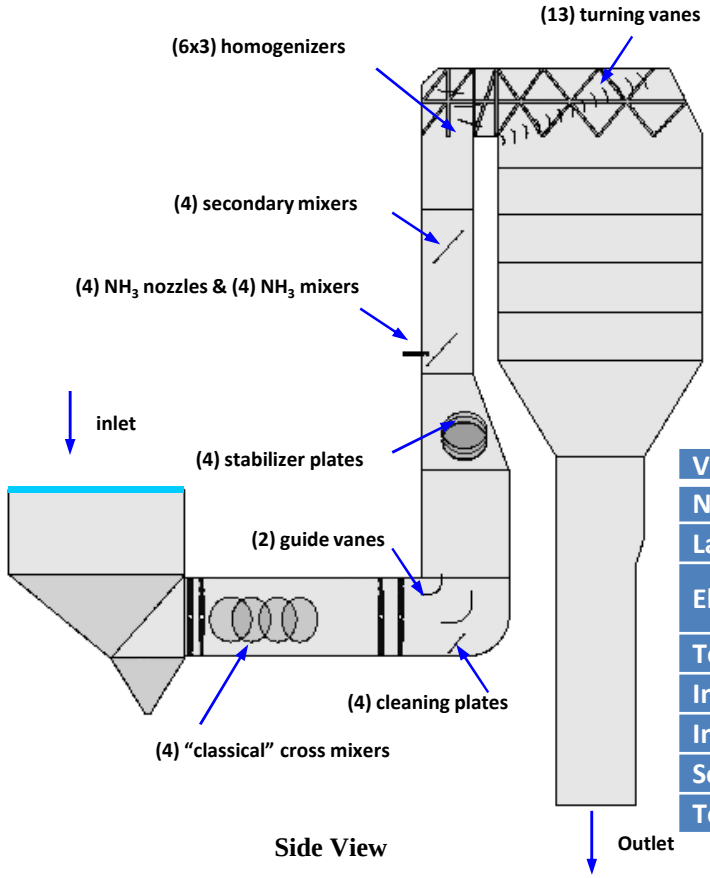
Vogt Power • Babcock Power Environmental • Babcock Power Services • Thermal Engineering International (USA) Inc.
Riley Power • Boiler Tube Company of America • TEiC Construction Services • TEiC Heat Exchanger Services • Struthers Wells



CFD Model – Sorbent Injection Settings



Front View

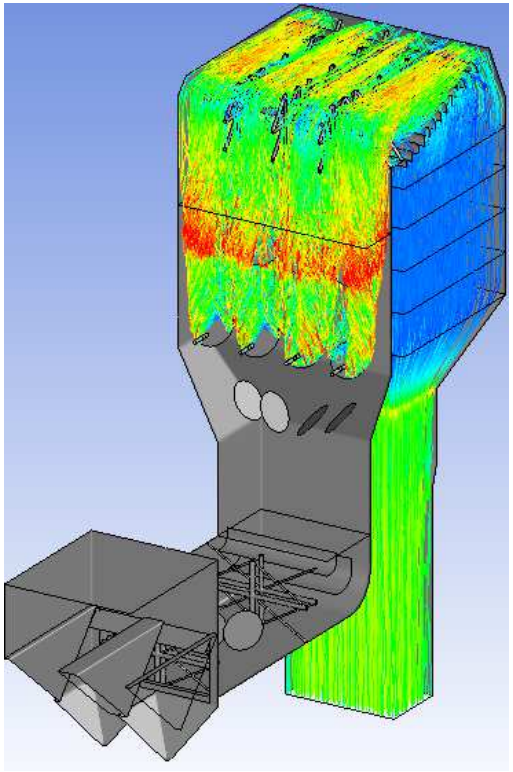


Side View

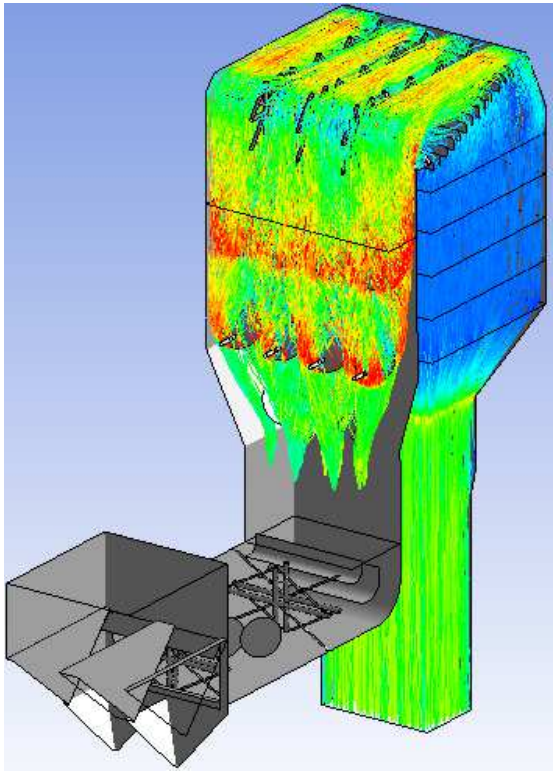
Variable	Case 1	Case 2	Case 3
Number of Lances	Four (4)	Eight (8)	Eight (8)
Lance Arrangement	Inline	Scattered	Inline
Elevation	282' – 7 1/8"	245' – 8 3/4" 247' – 8 3/4"	282' – 7 1/8"
Temperature	100 °F	100 °F	100 °F
Injection Velocity	91.6 ft/s	70.7 ft/s	70.7 ft/s
Injection Nozzle ID	3.068 in.	2.469 in.	2.469 in.
Sorbent Density	131.1 lb/ft^3	131.1 lb/ft^3	131.1 lb/ft^3
Total Flow Rate	5,333 lb/hr	5,333 lb/hr	5,333 lb/hr

CFD Results – Sorbent Particle Traces Colored by Particle Velocity Magnitude (ft/s)

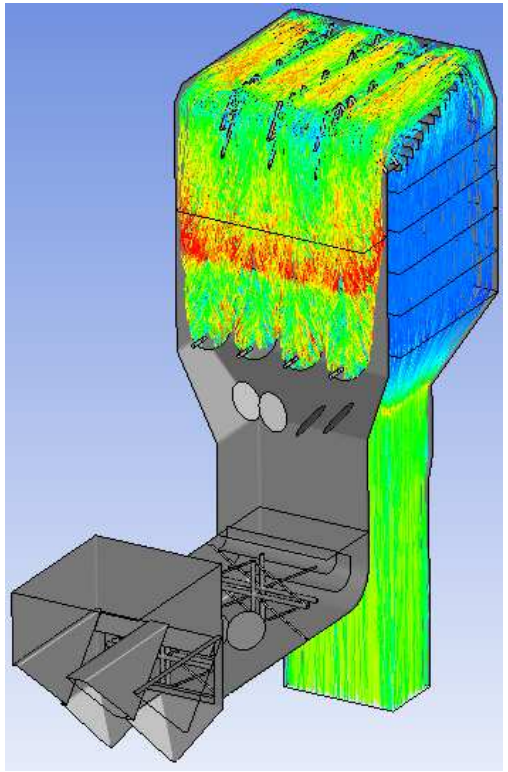
Case 1: Four (4) Inline Injection Lances at EL. 282' -7 1/8"

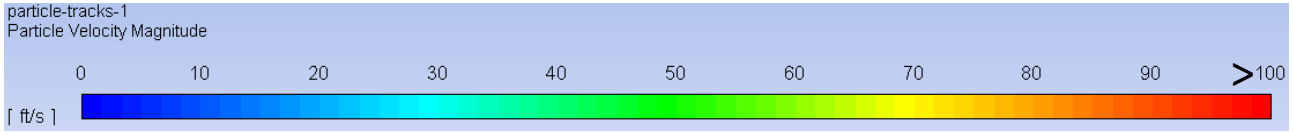


Case 2: Eight (8) Scattered Injection Lances at EL. 245' -8 3/4" & EL. 247' -8 3/4"



Case 3: Eight (8) Inline Injection Lances at EL. 282' -7 1/8"





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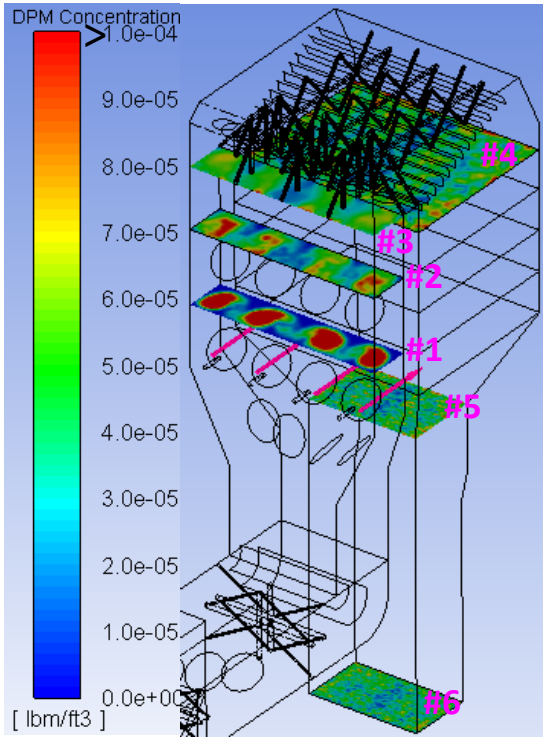
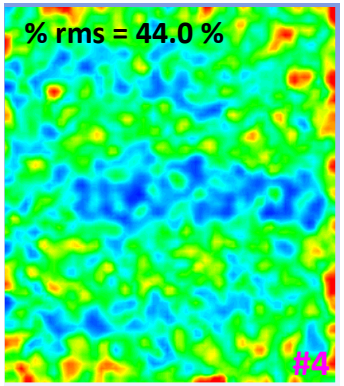
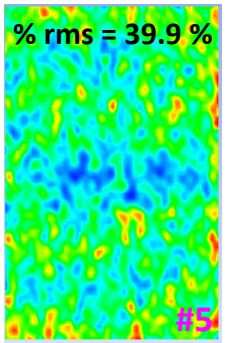
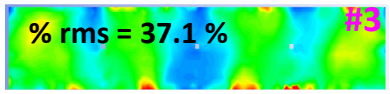
CFD Results – Sorbent Particle Concentration (lbs/ft^3)

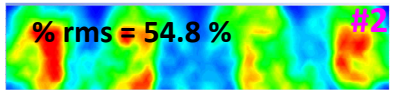
Case 1: Four (4) Inline
Injection Lances at EL. 282' -7 1/8"

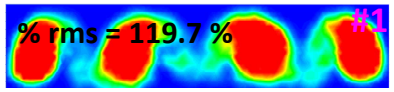


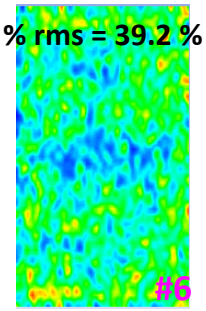




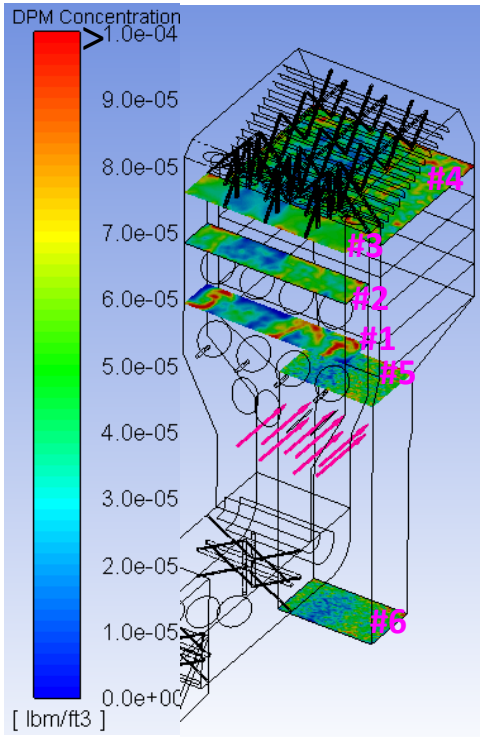


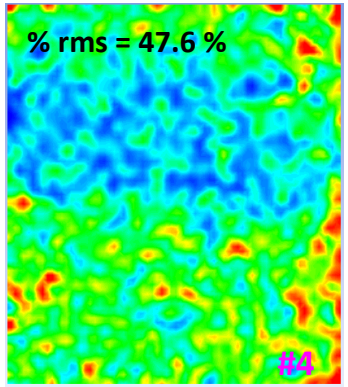


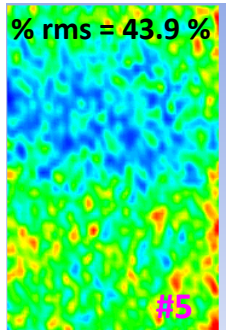


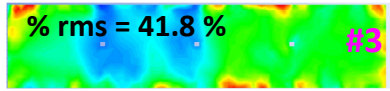


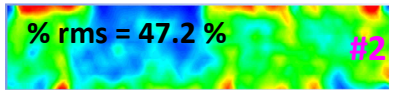
Case 2: Eight (8) Scattered
Injection Lances at EL. 245' -8 3/4" & EL. 247' -8 3/4"

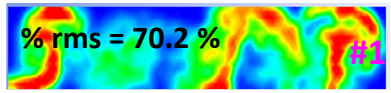


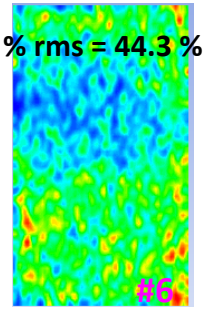












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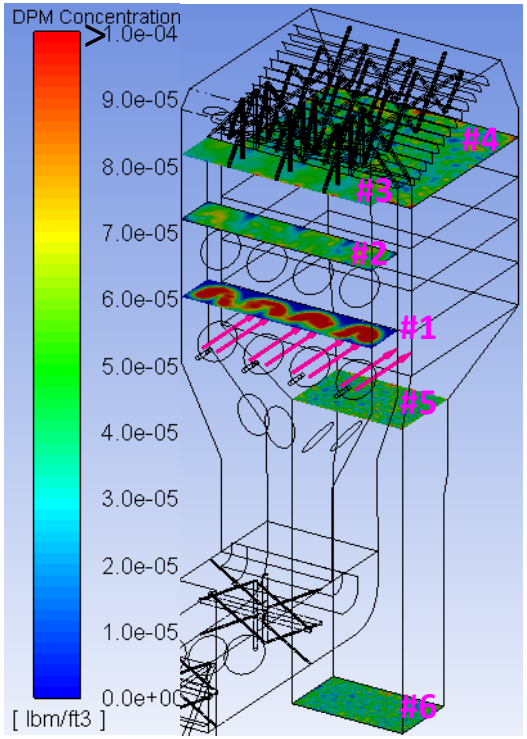
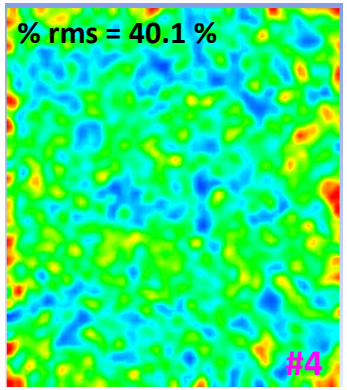
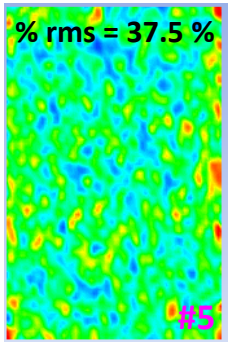
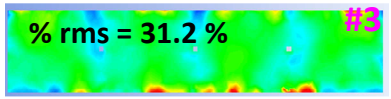
CFD Results – Sorbent Particle Concentration (lbs/ft^3)

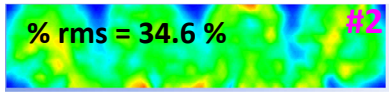
Case 3: Eight (8) Inline
Injection Lances at EL. 282' -7 1/8"

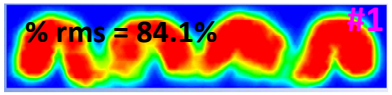


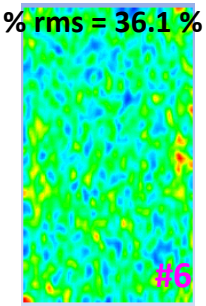












ATTACHMENT C

Rockport Unit 1 Environmental Performance Test Data

	Stack SO2 (lb/mmBtu)					Unit 1 Load (net MW)					Sorbent Injection Rate (TPH)					Stack NOX (lb/mmBtu)					Opacity (%)				
	Average	Median	Min	Max	Count	Average	Median	Min	Max	Count	Average	Median	Min	Max	Count	Average	Median	Min	Max	Count	Average	Median	Min	Max	Count
100% PRB Test Data	0.02	0.02	0.00	0.03	11	533	519	506	612	17	3.5	3.1	3.0	7.6	17	0.14	0.14	0.14	0.17	17	1.5	1.5	1.3	1.8	17
	0.05	0.03	0.01	0.13	10	893	916	753	992	10	6.0	6.7	3.1	8.3	10	0.18	0.19	0.15	0.22	10	1.8	2.0	1.1	2.3	10
	0.08	0.08	0.03	0.15	10	1064	1065	1034	1091	10	6.6	6.7	3.4	8.0	10	0.19	0.19	0.18	0.24	10	1.9	1.9	1.2	2.3	10
	0.08	0.07	0.03	0.22	93	1150	1148	1137	1181	96	7.9	8.0	3.7	10.2	96	0.21	0.21	0.18	0.24	56	2.0	2.1	1.1	2.6	96
	0.14	0.14	0.13	0.14	9	1247	1247	1241	1250	9	7.1	7.1	6.8	7.3	9	0.21	0.21	0.20	0.22	9	1.8	1.8	1.7	1.9	9
Eastern Bituminous & PRB Blend Test Data	0.18	0.20	0.02	0.30	23	517	513	511	590	25	3.6	3.3	2.8	8.2	25	0.09	0.08	0.08	0.09	23	1.6	1.6	1.2	2.0	25
	0.03	0.01	0.00	0.23	13	681	693	604	758	14	7.0	7.5	3.4	8.0	14	0.09	0.09	0.09	0.09	2	1.3	1.3	1.1	1.8	14
	0.07	0.08	0.05	0.11	6	968	981	924	997	6	8.2	8.0	7.7	8.9	6	0.11	0.11	0.11	0.11	1	1.2	1.2	1.0	1.4	6
	0.11	0.10	0.06	0.14	7	1060	1070	1012	1110	7	7.9	8.0	7.4	8.3	7		No Data			0	1.2	1.1	1.0	1.6	7
	0.12	0.11	0.09	0.17	30	1155	1155	1147	1165	30	9.5	9.6	7.1	10.2	30	0.13	0.13	0.12	0.14	4	1.3	1.3	1.1	1.6	30
	0.18	0.17	0.12	0.25	24	1229	1237	1181	1274	24	8.5	8.2	7.3	10.6	24	0.13	0.13	0.13	0.15	7	1.3	1.3	1.0	1.7	24
	0.19	0.19	0.16	0.21	25	1318	1319	1304	1322	25	9.6	9.6	9.0	10.4	25	0.15	0.15	0.15	0.16	25	1.7	1.6	1.4	2.0	25

Notes:

1) All values presented above represent data collected on 30 second intervals, compiled into 30 minute average values, then sorted and grouped by unit load
2) Raw values from the plant data historian have been filtered to eliminate extraneous data, calibration periods, and periods of time when the transmitter was out of service
3) The "Count" column indicates the number of half hour average values of the parameter at the respective load range
4) Testing for SCR inlet sorbent injection with 100% PRB took place during the following: 11/23 10:00-11/25 08:30; 11/27 10:30-11/27 20:30; 11/28 10:00-11/28 18:00; 11/29 14:00-11/29 20:00.
5) Testing for sorbent injection at the SCR inlet with a blend of eastern bituminous and PRB fuel took place from 11/29 20:00-12/2 17:00.
6) Ammonia injection at all three reactors of the Unit 1 SCR inlet for NOX control was initiated on 11/29 16:00.

DECLARATION OF JOHN M. McMANUS
IN SUPPORT OF AEP'S SUPPLEMENTAL MEMORANDUM IN SUPPORT
OF DEFENDANTS' MOTION TO MODIFY THE CONSENT DECREE

I, John M. McManus, make the following declaration based on personal knowledge, information and belief:

1. My name is John M. McManus. I am employed by American Electric Power Service Corporation as Vice President - Environmental Services. American Electric Power Service Corporation ("AEPSC") provides business management, technical, and other services to the utility operating companies in the American Electric Power ("AEP") System, including the AEP companies that are defendants in this action. My business address is 1 Riverside Plaza, Columbus, Ohio 43215.
2. I earned a Bachelor of Science Degree in Environmental Engineering from Rensselaer Polytechnic Institute in 1976 and undertook graduate studies there from 1976-77. I joined AEPSC's Environmental Engineering Division in September 1977. After holding various positions in the environmental division over the years, I was appointed as Manager, Environmental Services in December 2002 and remained in that position until April 2003. I was appointed to my current position as Vice President - Environmental Services in April 2003. I am also a registered professional engineer in the State of Ohio.
3. I am responsible for oversight of environmental support for all generation and energy delivery facilities owned by AEP operating companies. Environmental Services provides permitting and compliance support, guidance, procedures, recommendations and training for AEP's operating companies in order to maintain and improve their environmental programs and enhance compliance with environmental laws, regulations, and policies. As part of this effort, Environmental Services is also involved in the development process

for environmental regulations and coordinating with operating company staffs to support AEP's corporate strategies and values concerning the environment.

4. I was engaged in the negotiations that led to the entry of the Consent Decree in December 2007. Since the entry of the Consent Decree, I have directed the preparation of and certified the annual reports submitted by the AEP Defendants, and submitted other required notices and information to the parties.

5. I have reviewed *Defendants' Motion for Fifth Modification of Consent Decree*, Doc. 555, the *United States' Opposition to Defendants' Unilateral Motion for Fifth Modification of Consent Decree*, Doc. 571, the *Citizen Plaintiffs' Memorandum in Opposition to Defendants' Motion for Fifth Modification of Consent Decree*, Doc. 405, and the *Plaintiff States' Opposition to Defendants' Motion for Fifth Modification of Consent Decree*, Doc. 572, as well as *Defendants' Reply*, Doc. 574, filed in this action, and make this declaration in support of *AEP's Supplemental Motion and Memorandum in Support of Fifth Modification of Consent Decree* in this case.

6. In May of 2013, the parties agreed and the Court entered an order to modify the Consent Decree to extend the deadline for installation of highly efficient SO_2 controls at Rockport Units 1 and 2. Doc. 548. To allow for this extension, AEP assumed several additional obligations, including obligations to:

    a. Install and commence operation of dry sorbent injection systems on both Rockport Units by April 16, 2015;

    b. Maintain compliance with a new declining Plant-Wide Annual Tonnage Limitation for SO_2 at Rockport beginning in 2016;

c. Maintain compliance with new, lower caps on AEP system-wide SO_2 emissions beginning in 2016;

d. Refuel or Retire Big Sandy Unit 2, Muskingum River Unit 5, and Tanners Creek Unit 4 in 2015;

e. Secure energy from 200 MW of new wind generation capacity for Indiana Michigan Power customers;

f. Provide $2.5 million in mitigation funding for Citizen Plaintiffs and $6 million in additional mitigation funding for the States.

These obligations have been fulfilled, and AEP retired all three of the additional coal units named in the modification.

7. The only remaining obligations under the Third Joint Modification are to complete the installation of the selective catalytic reduction ("SCR") system on Rockport Unit 2, and to achieve additional SO_2 emission reductions at both Rockport Units.

8. The Rockport Plant is located in an area that is currently in compliance with all national ambient air quality standards (NAAQS). Each primary NAAQS must be set at a level that is sufficient to protect public health with an adequate margin of safety. 42 U.S.C. §7409(b)(1). Completing the control equipment installations and enhancements proposed in AEP's motion will increase the "adequate margin of safety" provided by compliance with the NAAQS in the area surrounding the Rockport Plant.

9. Nitrogen oxides can combine with emissions of volatile organic compounds in the presence of sunlight and form ozone, which can be transported for significant distances. EPA has revised the ozone standard several times in recent years, and states are currently implementing the 2008 ozone NAAQS. While some urban areas in the Northeast have

struggled to attain the ozone standard, EPA recently released modeling data that projects that no areas outside California will have nonattainment problems with respect to the 2008 ozone standard. See *Supplemental Information on the Interstate Transport State Implementation Plan Submissions for the 2008 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I),* Memorandum from Stephen D. Page to Region Air Directors, Regions 1-10, October 27, 2017. EPA has not yet completed the process of designating nonattainment areas for the 2015 ozone NAAQS.

10. Installation of the SCR system at Rockport Unit 1 was completed in 2017. These controls are currently operating in compliance with the requirements of the Consent Decree. Installation of the SCR on Rockport Unit 2 can be completed by June 1, 2020, assuming that the Indiana Utility Regulatory Commission issues the requested certificate in Cause No. 44871 and no Force Majeure Events occur during construction.

11. AEP has also proposed to include a Plant-Wide Annual Tonnage Limitation for NOx at Rockport of 10,000 tons per year. This is similar to the Plant-Wide Tonnage Limitation for SO_2 at Rockport that was included in the Third Joint Modification to provide ongoing assurance of good operation and maintenance of the DSI system, and is similar to limitations included for the Kammer and Clinch River Plants in the original NSR Consent Decree. A 5,000 ton cap is also proposed for NOx emissions from the Rockport Plant during the ozone season (May 1 – September 30). Although electricity demand usually peaks during the summer months, those are also the months during which the conditions for formation of ozone are most prevalent, and most exceedances of the ozone NAAQS occur. This limitation will provide additional assurance that the SCRs will be utilized to reduce emissions throughout this period.

12. As described in the declaration of Michael Durner, AEP recently conducted testing at Rockport Unit 1 to test a reconfiguration of the SO_2 controls. The test data showed SO_2 emission rates (on a short term basis) of 0.20 #/mmBtu or less over a wide range of operating conditions and unit loads. This rate is at approximately the mid-point of other 1300 MW units on the AEP system that are equipped with FGD technology, and reduces the current SO_2 emission rate at the Rockport Units by an additional 50%.

13. EPA itself established an alternative SO_2 emission limitation equivalent to 0.20 #/mmBtu as a compliance mechanism for units equipped with wet FGD that desire to use their existing SO_2 continuous emission monitoring systems to demonstrate compliance with the limitation for acid gases in the Section 112 "Maximum Achievable Control Technology" (MACT) standards for coal-fired electric generating units. 40 CFR 63.9991 and Table 2. Since these limitations are intended to reflect application of MACT, they are certainly a reliable indication of the installation and operation of efficient FGD technology.

14. At the time the parties were negotiating the Third Joint Modification, AEP was unaware of the potential that the equipment included in the SCR design at Rockport that enhances distribution of the ammonia reagent, could also be utilized to enhance the distribution of the sorbents used to reduce SO_2 emissions. Had AEP been aware of this opportunity to achieve significant additional SO_2 reductions at a much lower cost, it would not have agreed to the design specification included in the definition of "Retrofit" in the Third Joint Modification. Nevertheless, AEP can achieve the final rate of the Annual Tonnage Limitation of SO_2 at Rockport by taking advantage of these developments and enhancing the existing SO_2 controls at the Rockport Units by the end of 2020, and deliver all of the

environmental benefits a full eight years earlier than required if its motion to modify the Consent Decree is granted.

I declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge and belief.

Executed January 8, 2018

John M. McManus