COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application of Kentucky Power Company For Approval of an Amended Environmental Compliance Plan and a Revised Environmental Surcharge	))))	Case No. 2019-00389

DIRECT TESTIMONY OF

DEBRA L. OSBORNE

ON BEHALF OF KENTUCKY POWER COMPANY

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I. INTRODUCTION AND BACKGROUND

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is Debra L. Osborne. My business address is 500 Lee Street East, Charleston, WV, 25301. I am Vice President of Generating Assets for Appalachian Power Company ("Appalachian Power") and Kentucky Power Company ("Kentucky Power" or "Company"). Appalachian Power and Kentucky Power are wholly-owned subsidiaries of American Electric Power Company, Inc. ("AEP").

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I earned a Bachelor of Science degree in Electrical Engineering from West Virginia University and have completed both a Leadership Development program at The Ohio State University Fisher College of Business and a Utility Management Certification from Willamette University. I joined Ohio Power Company in 1987 as a performance engineer at Gavin Plant, progressing to various positions until I transferred to Appalachian Power's Philip Sporn Plant as Energy Production Manager. Since 2005, I have been Plant Manager at four of Appalachian Power's coal-fired plants and the AEP Simulator Learning Center. I assumed my current position as Vice President Generating Assets for Appalachian Power and Kentucky Power in January 2017.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AND RESPONSIBILITIES AS VICE PRESIDENT OF GENERATING ASSETS FOR APPALACHIAN POWER AND KENTUCKY POWER.

A. I am responsible for the safe, reliable, and economic operation of the fossil-fueled generating assets owned or operated by Kentucky Power, Appalachian Power, and Wheeling Power. Specifically, I plan, organize, coordinate, direct, and control plant activities, including the operations, maintenance, engineering, and construction of the plant facilities. I also oversee plant budgets and interface with other AEP functional groups such as accounting, regulatory, and commercial operations to ensure the needs of the generating plants are met. Additionally, I am responsible for the decommissioning, demolition, and disposition of generating assets owned or operated by Kentucky Power, Appalachian Power, and Wheeling Power.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE WITH SELECTIVE CATALYTIC REDUCTION SYSTEMS ("SCRS").

A. In addition to currently being responsible for the operation of more than 5,000 megawatts ("MW") of generation with SCR technology installed, I previously worked at two AEP coal plants operating with SCRs, including serving as Plant Manager for the 1,320 MW Mountaineer Plant. I am familiar with the activities, consumables, costs, and maintenance required to operate an SCR.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes, I testified and submitted testimony before the Kentucky Public Service Commission in Case No. 2017-00179. Most importantly for this application, I testified in that case concerning the reasonableness and cost-effectiveness of the

Rockport Unit 1 SCR and its inclusion in the Company's 2017 Environmental Compliance Plan. I have also submitted testimony before the Public Service Commission of West Virginia in Docket Nos. 18-0646-E-42T, 18-0645-E-D, and 19-0063-E-PC.

II. PURPOSE OF DIRECT TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to support the reasonableness and cost-effectiveness of the Rockport Unit 2 SCR as part of the Company's 2019 Environmental Compliance Plan.

III. THE 2019 ENVIRONMENTAL COMPLIANCE PLAN

Q. WHAT CAPITAL PROJECT IS BEING PROPOSED FOR INCLUSION IN THE COMPANY'S 2019 ENVIRONMENTAL COMPLIANCE PLAN?

A. As described by Company Witness Scott, the Company is proposing to include Project 21, the Rockport Unit 2 SCR, in its 2019 Environmental Compliance Plan. As described by Company Witness Spitznogle, the SCR installation is required for compliance with the Federal Clean Air Act and the related 2007 New Source Review Consent Decree as modified (the "2007 Consent Decree").

Q. PLEASE BRIEFLY DESCRIBE THE ROCKPORT UNIT 2 SCR PROJECT.

A. An SCR is advanced clean coal technology designed to reduce nitrogen oxide ("NO_X") emissions associated with the combustion of coal. Construction of the Rockport Unit 2 SCR is currently in progress. The following key pieces of equipment will be installed as part of the SCR at Rockport Unit 2:

- Ammonia storage and injection systems
- Reactor modules with catalyst layers
- Tie-in ductwork
- Reconfigured air heater baskets with multimedia cleaning devices
- Equipment to supply electrical needs of the SCR technology
- Ammonia slip monitoring equipment
- Balance of plant equipment for the SCR

Q. WHEN WILL THE ROCKPORT UNIT 2 SCR GO INTO SERVICE?

A. The SCR is forecasted to go into service in May 2020.

Q. WILL THE ROCKPORT UNIT 2 SCR REDUCE AIRBORNE EMISSIONS OF NO_X?

A. Yes, the Unit 2 SCR will directly reduce NO_X emissions. The SCR technology uses ammonia as a reagent. Ammonia is injected into the flue gas stream, and then passes over a catalyst. The ammonia and NO_X react on the catalyst surface to form nitrogen gas and water vapor, thereby reducing NO_X in the flue gas stream.

Q. WHAT ARE THE IMPACTS OF NO_X EMISSIONS TO THE ATMOSPHERE?

A. NO_X can react with hydrocarbons in the presence of sunlight to form ground level ozone. The Federal Environmental Protection Agency ("EPA") has established National Ambient Air Quality Standards for ozone, as Company witness Spitznogle also discusses.

Q. ARE THERE ANY FEDERAL ENVIRONMENTAL MANDATES THAT CURRENTLY REQUIRE THE PROPOSED SCR RETROFIT AT THE ROCKPORT PLANT?

A. Yes. As part of the 2007 Consent Decree, which is described in further detail by Company witness Spitznogle, installation of SCR technology on Rockport Unit 2 is required by June 1, 2020[1].

Q. COULD ROCKPORT UNIT 2 CONTINUE TO OPERATE PAST JUNE 1, 2020 WITHOUT INSTALLING SCR TECHNOLOGY?

A. No, under the 2007 Consent Decree, Rockport Unit 2 cannot operate past this date without the SCR system being installed and operating on the Unit.

Q. WILL THE INSTALLATION OF AN SCR AFFECT THE GENERATING CAPACITY OF ROCKPORT UNIT 2?

A. No, it will not.

Q. WHAT IS THE ESTIMATED TOTAL COST OF THE ROCKPORT UNIT 2 SCR PROJECT?

A. The current estimated total cost for the Rockport Unit 2 SCR project is $233.5 million, excluding Allowance for Funds Used During Construction. This cost estimate includes the installation of the SCR, associated upgrades to existing plant equipment, and allocated costs for support of the project. As supported by Company witness Scott, Kentucky Power's share of that cost under the Unit Power Agreement, to which it is a party, is $35.0 million.

[1] The 2007 Consent Decree originally called for I&M and co-owner American Electric Power Generating Company to install SCR technology at Rockport Unit 2 by December 31, 2019, but the United States District Court for the Southern District of Ohio granted a request to extend this deadline to June 1, 2020.

Q. ASIDE FROM THE INITIAL CAPITAL COST OF THE PROJECT, ARE THERE ANY RELATED COSTS THAT WILL BE INCURRED OVER THE LIFE OF THE ROCKPORT UNIT 2 SCR?

A. Yes. There will be intermittent capital costs associated with replacing depleted catalyst layers. In addition, there will be fixed and variable O&M costs associated with the operation of the Rockport Unit 2 SCR. The fixed O&M costs will be associated with maintenance that must be performed to maintain the operability of the SCR. The variable O&M costs consist of the purchase of ammonia, which is injected into the flue gas stream as part of the SCR's operation.

Q. DOES AEP HAVE EXPERIENCE IN EXECUTING MAJOR PROJECTS SUCH AS THE ROCKPORT UNIT 2 SCR PROJECT?

A. Yes, AEP has significant experience executing major projects, including SCR projects. SCR technology is a proven, reliable technology used throughout the electric utility industry to reduce NO_X emissions. Prior to 2004, AEP installed in excess of 7,800 MWs with SCR technology, gaining valuable knowledge and experience with a goal of continuous improvement. Since 2004, AEP has implemented a phased approach in the installation of an additional 7,210 MWs with SCR technology, including the installation at Rockport Unit 1, as well as retrofitting approximately 8,400 MWs with Flue Gas Desulfurization ("FGD") technology systems. At the height of construction activity in 2007, Engineering News-Record identified AEP's overall construction program as the largest in the utility industry and the second largest in the nation, based on capital invested. The Rockport Unit 2 SCR project will positively benefit from years of valuable lessons learned and best practices, while simultaneously leveraging knowledge gained from the recent

Rockport Unit 1 SCR installation. This combination of knowledge and previous experience provides significant benefit to the customers of Kentucky Power.

Q. WHAT STEPS WERE TAKEN TO ENSURE THAT THE ROCKPORT UNIT 2 SCR PROJECT IS REASONABLE AND COST-EFFECTIVE?

A. American Electric Power Service Company ("AEPSC"), on behalf of Indiana Michigan Power Company ("I&M"), a sister company of Kentucky Power, is executing the Rockport Unit 2 SCR project using the same three-phased approach that has been successfully employed by AEPSC on many past projects, including those previously mentioned. The three-phase approach provides structured control of the project scope and costs by providing a minimum of three specific decision points where engineering, design, cost, and schedule are reviewed.

- Phase I consists primarily of a feasibility study in which technical options and costs are evaluated and technology selection is made.
- Phases IIa and IIb are the preliminary and detailed engineering and design stages, respectively, which aid in refining costs, particularly with procurement and contracting. In addition, participation by the construction team in the design phases assure that the equipment layout and modularization allow for optimized constructability and provide a smooth transition into the major construction phase of the project.
- Full-scale construction, startup, and commissioning are undertaken in Phase III. Beginning major construction activities and contracting when detailed design is substantially complete allows for construction to proceed, in many cases, on a fixed or target price basis. This practice serves to mitigate cost risks by identifying and remedying many of the design changes that might otherwise result in additional work.

Throughout the Rockport Unit 2 SCR project planning and execution, AEPSC has used and will use these same prudent project and construction

management practices to ensure that the project is accomplished in a safe, professional, and cost-effective manner.

Q. DID AEPSC EMPLOY ANY METHODS TO MITIGATE THE RISK OF COST ESCALATION FOR THE ROCKPORT UNIT 2 SCR PROJECT?

A. Yes. AEPSC's strategies of being first to market, locking in queues in production facilities, entering into procurement arrangements such as Discount Cooperative Agreements with major equipment vendors, and procuring materials and commodities in bulk at fixed prices served to mitigate the risk of market price spikes.

Q. IS IT YOUR OPINION THAT THE ROCKPORT UNIT 2 SCR PROJECT IS REASONABLE AND COST-EFFECTIVE?

A. Yes. By being both a highly effective and least-cost alternative, the Rockport Unit 2 SCR retrofit is a reasonable and cost-effective means for the Rockport Plant to comply with its environmental requirements. Additionally, as part of its application to the Indiana Utility Regulatory Commission ("IURC") for a Certificate of Public Convenience and Necessity for the Rockport Unit 2 SCR, I&M demonstrated that installing the SCR on Unit 2 was the least-cost alternative when compared to retiring the unit (as would be required under the 2007 Consent Decree) and replacing it with another generation option or with market purchases. In its final Order, the IURC found that "[s]ubstantial evidence shows that the installation of SCR technology at Unit 2 is a reasonable least-cost alternative to meeting I&M's capacity and energy obligations"[2] and that "[t]he SCR is a cost-effective option for

[2] Order of the Commission, *Verified Petition Of Indiana Michigan Power Comp Any (I&M), An Indiana Corporation, For Approval Of A Clean Energy Project And Qualified Pollution Control Property And For*

customers and ensures the availability of necessary capacity and energy through at least December 2022.[3]

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

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 at 32, Cause No. 44871 (Ind. U.R.C., March 26, 2018).

[3] *Id.* at 27.

VERIFICATION

The undersigned, Debra L. Osborne, being duly sworn, deposes and says she is the Vice President of Generating Assets for Appalachian Power Company and Kentucky Power Company, that she has personal knowledge of the matters set forth in the foregoing testimony, and the answers contained therein are true and correct to the best of her information, knowledge, and belief.

Debra L. Osborne

DEBRA L. OSBORNE

STATE OF West Virginia)
) **SS**
COUNTY OF Kanawha)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Debra L. Osborne this the 18 day of November, 2019.

Maisha T. Staples

Notary Public

My Commission Expires:
November 23, 2021 (SEAL)

OFFICIAL SEAL
NOTARY PUBLIC
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My Commission Expires November 23, 2021