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May 11, 2012

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MAY 11 2012

PUBLIC SERVICE
COMMISSION

RE: Case No. 2011-00401

Dear Mr. Derouen:

Enclosed please find and accept for filing the original and twelve copies of Kentucky Power Company's Post-Hearing Brief in the above matter.

The Company anticipates filing the original transcript of the proceedings with the Commission some time next week.

If you have any questions please do not hesitate to contact me.

Very truly yours,

STITES & HARBISON, PLLC

Mark R. Overstreet

MRO

cc: Counsel of Record (with enclosure)

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In The Matter Of:

APPLICATION OF KENTUCKY POWER COMPANY FOR APPROVAL OF ITS 2011 ENVIRONMENTAL COMPLIANCE PLAN, FOR APPROVAL OF ITS AMENDED ENVIRONMENTAL COST RECOVERY SURCHARGE TARIFF, AND FOR THE GRANTING OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION AND ACQUISITION OF RELATED FACILITIES

CASE NO. 2011-00401

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COMMISSION

PETITION FOR CONFIDENTIAL TREATMENT

Kentucky Power Company (“Kentucky Power”) moves the Commission pursuant to 807 KAR 5:001, Section 7, for an Order granting confidential treatment for page 14 of Kentucky Power’s Post-Hearing Brief. The confidential information at issue pertains to is the subject of a non-disclosure agreement between American Electric Power Service Corporation and LS Equity Advisors, LLC.

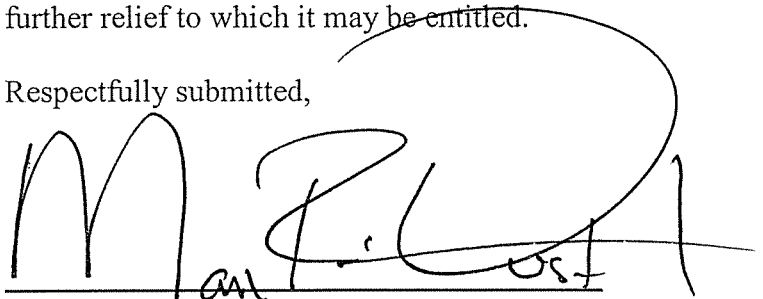
Kentucky Power sought confidential treatment of the information contained in these responses in a petition filed with the Commission on January 27, 2012. In support of this petition, Kentucky Power incorporates the previously-filed petition by reference. The confidential information at issue has been treated as confidential by the parties and the Commission throughout this proceeding, including at the hearing held on April 30, 2012 through May 2, 2012.

Pursuant to 807 KAR 5:001, Kentucky Power is filing one original copy of the confidential portions of the Post-Hearing Brief under seal, along with twelve redacted copies.

Wherefore, Kentucky Power Company respectfully requests the Commission to enter an Order:

1. According confidential status to and withholding from public inspection the identified information; and
2. Granting Kentucky Power all further relief to which it may be entitled.

Respectfully submitted,

A large, stylized handwritten signature in black ink, appearing to read 'Mark R. Overstreet', is written over a horizontal line. The signature is highly cursive and occupies a significant portion of the right side of the page.

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served by e-mail transmission and first class mail upon the following parties of record on this 11th day of May, 2012.

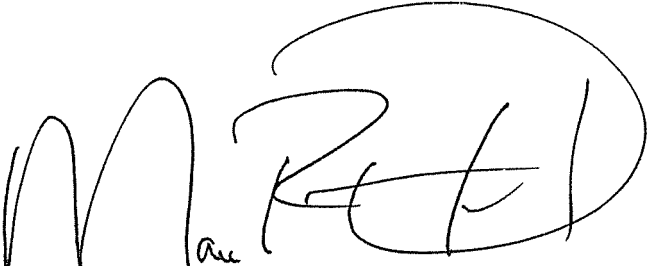
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Counsel for Kentucky Power Company

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

**APPLICATION OF KENTUCKY POWER)
COMPANY FOR APPROVAL OF ITS 2011)
ENVIRONMENTAL COMPLIANCE PLAN,)
FOR APPROVAL OF ITS AMENDED)
ENVIRONMENTAL COST RECOVERY)
SURCHARGE TARIFF, AND FOR THE)
GRANT OF A CERTIFICATE OF PUBLIC)
CONVENIENCE AND NECESSITY FOR)
THE CONSTRUCTION AND ACQUISITION)
OF RELATED FACILITIES)**

CASE NO. 2011-00401

**KENTUCKY POWER COMPANY'S
POST-HEARING BRIEF**

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MAY 11 2012

**PUBLIC SERVICE
COMMISSION**

TABLE OF CONTENTS

Introduction	1-5
Argument.....	5-61
A. The Public Convenience And Necessity Require The Grant Of A Certificate Authorizing Kentucky Power To Construct The Big Sandy Unit 2 DFGD And To Acquire The Related Facilities	5-46
1. The Decision To Build The Big Sandy Unit 2 DFGD.....	5-7
2. The Statutory Standard.....	7-9
3. Kentucky Power Has Demonstrated The Need For The Scrubber	10
4. The Environmental Projects Will Not Result In Wasteful Duplication.....	12-46
(a) The Scrubber At Big Sandy Unit 2 Is The Least-Cost Option For Complying With Applicable Environmental Requirements	12-45
(i) The Company Evaluated The Full Range of Reasonable, Real-World Alternatives	12-17
(ii) The Company’s Modeling Confirms That Retrofitting Big Sandy Unit 2 Is The Least-Cost, Least-Risk Option For The Company’s Customers.....	17-20
(iii) The Company Appropriately Modeled The Useful Life Of Big Sandy Unit 2 As Retrofitted With The Scrubber To Extend Through 2040	20-23
(iv) Considering The Expected Useful Life Of Big Sandy Unit 2, The Company Appropriately Modeled The Entire Planning Period.....	23-25
(v) Kentucky Power Relied Upon Reasonable Natural Gas And CO ₂ Cost Forecasts Included In Its Economic Analysis Of The Available Environmental Compliance Options	25-32

a.	Natural Gas	25-27
b.	CO ₂	27-32
(vi)	The Sierra Club’s Criticisms Of The Company’s Economic Modeling Are Fundamentally Flawed And Should Be Rejected By The Commission.....	32-45
a.	The Company Properly Treated Off-System Sales In Its Modeling.....	34-35
b.	Kentucky Power Correctly Modeled The Post-Study Period Capital Costs Of The Five Options.....	36-37
c.	The Company Correctly Modeled The Installed Capital Costs And Carrying Charges For Each Of The Five Options	37-39
d.	The Big Sandy Retrofit O&M Costs Were Consistently Modeled	39-40
e.	The Sierra Club’s Criticism That Kentucky Power Failed To Account For Claimed Increased O&M Costs Resulting From Curtailment Lacks Merit.....	40-41
f.	Kentucky Power’s Use of The Aurora ^{xmp} Model Was Appropriate	41-45
(b)	Conclusion	46
B.	The Company’s 2011 Environmental Compliance Plan Satisfies The Requirements of KRS 278.183	46-54
1.	The Big Sandy Unit 2 Environmental Projects Contained In The 2011 Environmental Compliance Are Reasonable And Cost-Effective Means Of Complying With Applicable Environmental Requirements.....	47-49
2.	The Preliminary Investigation Costs Are Properly Included In The Company’s 2011 Environmental Compliance Plan.....	49-52

3. The Ohio Power Company And Indiana Michigan Power Company Environmental Projects Contained In The 2011 Environmental Compliance Are Reasonable And Cost-Effective Means Of Complying With Applicable Environmental Requirements	52-53
4. The CSARP Allowance Costs Are Property Recovered Through The Company’s Environmental Compliance Plan	54
C. The Separate Proceeding Approach Advocated By KIUC Should Be Rejected By The Commission	54-59
D. The Company’s Proposed Return On Equity Is Reasonable, Fully Supported By The Record, And Yields Fair, Just and Reasonable Rates.....	59-61
Conclusion.....	62

Introduction

This Commission faces, as Kentucky Power Company ("Kentucky Power" or the "Company") has over the past eight years, a difficult decision not of its making: how to comply with significant and evolving federal legal and regulatory requirements in a way that allows the Company to continue to provide reliable service to its 173,400 in a least-cost, low-risk manner. During the eight years preceding the Company's Application, Kentucky Power worked to find the most economic solution to the ever-changing environmental requirements facing it, It did so against a background that included some of the most significant economic challenges the American financial system, the government of this Commonwealth, and this Commission have faced in the past 80 years. The proposed retrofit of Big Sandy Unit 2 is just such an economic solution: it is the least-cost, least-risk real world alternative available to the Company and its customers.

In proposing the retrofit, the Company met these challenges with an open mind. It examined (and re-examined) all real world options. The five options the Company evaluated – the retrofit of Big Sandy Unit 2, the re-powering of Big Sandy Unit 1 with a combined cycle unit, the construction of a new combined cycle unit, and the two options for going to market followed by the construction of a new combined cycle unit – are the only realistic alternatives available to the Company. There is no evidence that wind, solar, or nuclear generation, or

increased demand-side-management, can replace the nearly 1100 MW of capacity the Company is faced with replacing; certainly it can not do so at a price Kentucky Power's customers could afford, or that this Commission could stomach. Indeed, the Commission need look no further than its 2010 decision in Case No. 2009-00545 denying the Company authority to enter a power purchase agreement for 100 MW of wind power to recognize the significant costs any such options pose for the Company's customers.

When the facts changed, the Company re-examined the options before it in light of the new facts. Thus, it suspended work on the "wet scrubber" in 2006 when developments in the coal market and the cost of the project made proceeding with the scrubber no longer economic. Likewise, Kentucky Power proposed the retrofit option in this Application when it determined that, based upon more detailed, independently produced cost-estimates the previously announced re-powering of Big Sandy Unit 1 was no longer the least-cost alternative. While seeking to demonize the Company for shifting course in light of this new and more complete cost information, the Intervenors have not introduced any evidence suggesting that the cost estimates were anything but fully credible and reliable.

The Intervenors point to the significant impact the proposed project will have on Kentucky Power's customers. Kentucky Power shares that concern. Kentucky Power has been a part of Eastern Kentucky for nearly 100 years and

recognizes that its service territory includes some of the poorest counties in the Commonwealth. The majority of the Company's employees live and work in Kentucky Power's service territory. The Company is open to reasonable means of addressing the economic costs being imposed on its customers by the federal environmental requirements. Thus, Mr. Wohnhas indicated the Company had no objection to earning a return on CWIP for the costs related to the proposed construction in an effort to slightly reduce and spread out the rate impact resulting from the federal requirements.

But neither Kentucky Power, as sole entity charged with operating responsibility for "keeping the lights on" for its 173,400 customers, nor this Commission, have the luxury of doing nothing in the face of the federal environmental requirements or the costs they impose. If controls planned for the Big Sandy Plant are not implemented, the Company will be faced with replacing nearly 1100 MW of generation by no later than December 31, 2015. The proposed Dry Flue Gas Desulfurization system ("DFGD" or "Scrubber" or "Dry Scrubber") not only satisfies 800 MW of that burden, but is the least-cost, least-risk alternative for doing so.

Delay in hopes the uncertainty in Ohio will resolve, or that speculative commercial transactions will come to fruition likewise is not an option. Certainly, a delay of any appreciable length runs the significant risk of narrowing the

alternatives available to the Company and its customers by taking the retrofit option off the table. Nor is there any reason to believe that even if the current uncertainties are resolved they will not be replaced by others that were as unforeseeable as the convergence of the cost of low-sulfur and high-sulfur coal in 2006 that led to the suspension of work on the "wet scrubber," or the financial crisis that began in 2007, or the 2011 regulatory developments in Ohio.

During the hearing the Commission expressed frustration with what Kentucky Power understood to be the Commission's belief the Company delayed proposing a solution to the ever-changing environmental regulation, and that the Company failed to keep the Commission apprised of its ongoing work on the issue. The Company regrets any such frustration and apologizes for not making clearer that the Company has been actively engaged in addressing the environmental issues surrounding Big Sandy by prudently allowing regulatory developments to unfold while investigating all real world options that might address those changing requirements. The Company also welcomes the opportunity for better and more regular communications with the Commission and its staff concerning the issues facing the Company.

At bottom, this case turns on what is the least-cost alternative for meeting the federal environmental requirements. The record is clear that the retrofit of Big Sandy Unit 2 with a Dry Scrubber is that alternative. The Intervenors, who enjoy

the luxury of hindsight, and who are not charged with providing electric service to Kentucky Power's customers, mounted a spirited attack on the Company's modeling and its proposal to retrofit Big Sandy Unit 2. The record nevertheless shows that those challenges were either erroneous -- for example Dr. Fisher's abandonment on the morning of his appearance before the Commission of substantial portions of his testimony --, or would not, even if valid, materially change the economic ranking of the alternatives.

Kentucky Power respectfully requests that the Commission grant its Application to construct the Big Sandy Unit 2 DFGD and related projects, and approve its 2011 Environmental Compliance Plan.

Argument

- A. The Public Convenience And Necessity Require The Grant Of A Certificate Authorizing Kentucky Power To Construct The Big Sandy Unit 2 DFGD And To Acquire The Related Facilities.
 1. The Decision To Build The Big Sandy Unit 2 DFGD.

Kentucky Power's decision to retrofit Big Sandy Unit 2 with a Scrubber followed a rigorous analysis of real-world environmental compliance options. This analysis established that the installation of the Scrubber is reasonable and will

allow the Company to continue to serve its customers in a least-cost, low risk manner.

Kentucky Power initially considered the installation of a wet flue gas desulfurization system (“WFGD” or “Wet Scrubber”) in preliminary feasibility studies carried out between 2004 and 2006. The Company suspended its review of this alternative for two reasons: (1) increased cost estimates; and (2) a decrease in the projected price spread between low and high sulfur coal that effectively eliminated potential fuel savings associated with using a higher-sulfur coal.¹

On June 9, 2011, Kentucky Power announced that it would retire Big Sandy Units 1 and 2 in favor of repowering Big Sandy Unit 1 with a combined cycle unit.² This announcement was based upon a preliminary economic analysis that indicated repowering Big Sandy Unit 1 would be the least-cost alternative for continuing to serve the Company’s customers while meeting the applicable environmental requirements.³ However, a comprehensive, independent economic analysis carried out by Sargent & Lundy, LLC and Kiewit Industrial Company showed that the costs of a natural gas solution would be significantly greater than initially anticipated by the Company.⁴

¹ Walton Direct Testimony at 22.

² Wohnhas Direct Testimony at 9.

³ *Id.*

⁴ Walton Hearing Testimony at 492-493; Walton Direct Testimony at 24-25.

The increased cost estimates associated with a natural gas solution led Kentucky Power to revisit the alternative of installing a Scrubber at Big Sandy Unit 2. On August 17, 2011, a meeting was held to consider the environmental compliance options available to the Company.⁵ The comprehensive analysis of all available alternatives led to a consensus that installing the Scrubber at Big Sandy Unit 2 was the most appropriate action to pursue.⁶ On August 22, 2011, Greg Pauley, Kentucky Power's President and Chief Operating Officer, made the recommendation to move forward with the Scrubber project before the Commission in this proceeding.⁷ This recommendation was made following a comprehensive analysis of all reasonable alternatives. It was vetted by management of American Electric Power Company, Inc. ("AEP"), Kentucky Power's parent, and ultimately approved.⁸

2. The Statutory Standard.

Prior to beginning construction of the environmental projects that are the subject of the Company's Application, Kentucky Power must obtain a Certificate of Public Convenience. Specifically, KRS 278.020(1) provides:

No person, partnership, public or private corporation, or combination thereof shall commence providing utility service to or for the public or begin the construction of any plant, equipment, property, or facility

⁵ Kentucky Power's Response to KIUC Data Request 1-28, Attachment 1 at 21 of 25.

⁶ *Id.*

⁷ *Id.*

⁸ Thomas Hearing Testimony at 270, 282-284.

for furnishing to the public any of the services enumerated in KRS 278.010 . . . until that person has obtained from the Public Service Commission a certificate that public convenience and necessity require the service or construction.

“Public convenience and necessity” requires a showing that there be a need for the proposed facility, and that the facility will not create a wasteful duplication.⁹

The first part of the test, “need” for the additional facilities, is established by a showing of a “substantial inadequacy of existing service.”¹⁰ It may be a current deficiency or a deficiency expected well into the future “in view of the long range planning necessary in the public utility field.”¹¹ Kentucky Power unambiguously has demonstrated a need for the Scrubber at Big Sandy Unit 2.¹² Current and pending environmental requirements make it impossible for Kentucky Power to continue operating Big Sandy Units 1 and 2 in their present conditions.

Under the second part of the test, “wasteful duplication” involves both “an excess of capacity over need” and “an excessive investment in relation to productivity or efficiency, and an unnecessary multiplicity of physical properties.”¹³ The Commission historically has required an applicant to demonstrate that a thorough review of all reasonable alternatives has been

⁹ *Kentucky Utilities Co. v. Public Service Commission*, 252 S.W.2d 885, 890 (Ky. 1952).

¹⁰ *Id.*

¹¹ *Kentucky Utilities Co. v. Public Service Commission*, 390 S.W.2d 168, 171 (Ky. 1965).

¹² *See*, McManus Direct Testimony at 6-16, 24.

¹³ *Kentucky Utilities Co.*, 252 S.W.2d at 890.

performed.¹⁴ The concept of “least-cost” is embedded in the Commission’s analysis of whether a project proposed by a utility is more favorable than other alternatives.¹⁵ However, cost is not the only factor to be considered and a proposal that ultimately costs more than an alternative does not necessarily result in “wasteful duplication.”¹⁶ All relevant factors should be balanced by the Commission,¹⁷ including the General Assembly’s policy of fostering and encouraging the use of Kentucky coal by utilities that serve the Commonwealth.¹⁸ Kentucky Power has shown that there is no “wasteful duplication” with the installation of the Scrubber because it involves the least-cost and least risk of any of the environmental compliance options reasonably available to the Company.¹⁹

¹⁴ *Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for a Certificate of Public Convenience and Necessity for the Construction of Transmission Facilities in Jefferson, Bullitt, Meade, and Hardin Counties*, Case No. 2005-00142 (September 8, 2005).

¹⁵ *Application of Kentucky Power Company for Approval of Renewable Energy Purchase Agreement for Wind Energy Resources Between Kentucky Power Company and FPL Illinois Wind, LLC*, Case No. 2009-00545 (June 28, 2010).

¹⁶ *Kentucky Utilities Co.*, 390 S.W.2d at 175.

¹⁷ *Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for the Construction of a 138 kV Electric Transmission Line in Rowan County, Kentucky*, Case No. 2005-00089 (August 19, 2005).

¹⁸ See KRS 278.020(1) (“The Commission, when considering an application for a certificate to construct a base load generating facility, may consider the policy of the General Assembly to foster and encourage use of Kentucky coal by electric utilities serving the Commonwealth.”). If Kentucky Power’s Application in this proceeding is denied then the Company will be precluded from operating its coal-fired generating facilities at the Big Sandy Plant and will likely be forced to pursue environmental compliance strategies that do not involve coal.

¹⁹ The Attorney General argues that the Commission should also consider the economic feasibility of the proposed Scrubber in considering whether to issue the Certificate. This argument should be rejected for a number of reasons: (1) the need for Kentucky Power to take some action with respect to environmental compliance is clear because it is undisputed that the Company will not be able to continue operating Big Sandy Units 1 and 2 into the future in their present condition; (2) all environmental compliance options available to Kentucky Power involve significant costs that will ultimately be shouldered in large part by the Company’s customers; and (3) the Scrubber proposal set forth by Kentucky Power is the least-cost environmental compliance option available. While the installation of the Scrubber will result in higher rates for electricity, it is the best alternative for the Company’s customers. The authority relied upon by the Attorney General, *In the Matter of: The Application of Kentucky-American*

3. Kentucky Power Has Demonstrated The Need For The Scrubber.

The Intervenors do not dispute that the legal and environmental obligations facing Kentucky Power mandate the installation of the proposed Scrubber if Kentucky Power is to operate Big Sandy Unit 2.²⁰ These requirements include the Cross-State Air Pollution Rules (“CSAPR”), the Mercury and Air Toxics Standards (“MATS”), and the New Source Review Consent Decree²¹ (“Consent Decree”). Nor is there any dispute that it will not be economic to make the necessary modifications to Big Sandy Unit 1 to permit it to operate past the regulatory and legal deadlines. In addition, if retro-fitted with the proposed Scrubber, and absent any significant changes in applicable law, the undisputed testimony is that Big Sandy Unit 2 could physically continue to provide reliable capacity and energy to the Company’s customers until at least 2040.²² Finally, none of the Intervenors challenged the Company’s testimony that installing the

Water Company for a Certificate of Public Convenience and Necessity Authorizing the Construction of Kentucky River Station II, Associated Facilities and Transmission Main, Case No. 2007-00134 (April 25, 2008), does not suggest otherwise. That decision should have no bearing on this proceeding because it did not involve a construction project undertaken pursuant to environmental requirements that would render the utility’s existing facilities inoperable.

²⁰ McManus Direct Testimony at 14. The Compliance date of December 31, 2015 is driven by the requirements of the 2007 Consent Decree and the anticipated issuance of a one-year MATS compliance date extension from the Kentucky Division for Air Quality (“KDAQ”). Weaver Hearing Testimony at 403-404. If the retrofit project is not in progress, it is unlikely that KDAQ would grant the one year extension and the Company would be required to shut down the unit in April 2015. *Id.* at 406.

²¹ McManus Direct Testimony at 8.

²² Weaver Hearing Testimony at 528.

Scrubber on the Big Sandy Unit 2 will allow it to meet its obligations under the Consent Decree and comply with CSAPR and MATS.²³

While the Company understood at the time of the 2007 Consent Decree that a decision on the disposition of Big Sandy Unit 2 would be necessary, the regulatory uncertainty at the time made waiting prudent before making a decision about the future of the Big Sandy plant and how to best comply with both the consent decree and the then-expected environmental regulatory scheme. In 2008, the Court of Appeals for the D.C. Circuit remanded the Clean Air Interstate Rule (“CAIR”) and vacated the Clean Air Mercury Rule (“CAMR”), putting two of the key regulatory programs impacting coal-fired power plants into flux.²⁴ The Company prudently waited until 2011, when the requirements likely to be imposed under CSAPR and MATS became better defined, to make a decision on the ultimate disposition of Big Sandy Unit 2. As Mr. McManus testified:

I don’t want to suggest we were going to wait indefinitely. What I was trying to convey is with the -- sort of regulatory upset of the CAIR program and the mercury program, the expectation that -- that the EPA would engage and develop new programs, we wanted to get some sense of what those programs would look like.

Not for full certainty, but at least directionally what -- what pollutants would be regulated, maybe some sense of the control that -- to allow us to make more informed technology decisions that would also meet the NSR Consent Decree.

²³ McManus Direct Testimony at 23.

²⁴ McManus Hearing Testimony, at 427-429.

Timingwise, you know, that, obviously, we're not quite where we want to be, 'cause the current project sche -- schedule extends into 2016 before the unit would come back into service with the controls, but -- and that was really our objective. It was not to wait. It was to try to make the -- the best informed decision.²⁵

By making the Big Sandy unit disposition decision when it did, the Company used the best available information to select an alternative that is the least-cost real-world alternative, while minimizing the financial risk facing its customers.

Kentucky Power has demonstrated the need for the Scrubber.

4. The Environmental Projects Will Not Result In Wasteful Duplication.

- (a) The Scrubber At Big Sandy Unit 2 Is The Least-Cost Option For Complying With Applicable Environmental Requirements.

As set out in detail in Mr. Weaver's direct and rebuttal testimony, the Big Sandy Unit 2 DFGD is the least-cost, least-risk real-world option for addressing the environmental regulations facing Kentucky Power and its customers.

- (i) The Company Evaluated The Full Range Of Reasonable, Real-World Alternatives.

To determine the least-cost alternative, Kentucky Power performed a comprehensive unit dispatch analysis of the compliance options available to meet

²⁵ McManus Hearing Testimony at 430.

the applicable environmental requirements. Specifically, the Company evaluated the following five unit disposition options:

Option 1 – Retrofit Big Sandy Unit 2 with DFGD technology and retire Big Sandy Unit 1;

Option 2 – Retire Big Sandy Units 1 & 2 and replace with a new natural gas combined-cycle facility;

Option 3 – Retire Big Sandy Unit 2 and repower Big Sandy Unit 1 with a natural gas combined-cycle facility;

Option 4A – Retire Big Sandy Units 1 & 2 and replace with purchased capacity and energy from PJM for five years until a new natural gas combined-cycle facility is constructed; and

Option 4B – Retire Big Sandy Units 1 & 2 and replace with purchased capacity and energy from PJM for ten years until a new natural gas combined-cycle facility is constructed.²⁶

The Intervenors argue that the Company’s analysis is incomplete and that additional alternatives should have been considered.²⁷ However, Kentucky Power has established that it examined all practical, real-world solutions and that the “alternatives” suggested by the Intervenors are unreasonable or imprudent.²⁸ The

²⁶ Weaver Direct Testimony at 11 – 12, Table 1.

²⁷ Fisher Hearing Testimony at 371-75. The Sierra Club maintains that the Company limited its economic analysis to certain options it selected, rather than allowing its economic modeling software to consider all potential options and select the one determined to be most appropriate. However, the Sierra Club has failed to present any results from its preferred modeling approach that would suggest some option other than the one chosen by the Company is the most appropriate.

²⁸ Weaver Hearing Testimony at 667-668. Mr. Weaver testified that building a new coal facility is not an available option because of federal environmental laws and that a nuclear energy solution is not reasonable because of the cost. Moreover, KRS 278.605 plainly prohibits the construction of nuclear power facilities in the Commonwealth. He further testified that a compliance strategy founded upon renewable resources is not reasonable because of the significant amount of capacity and base load energy required by the Company. Kentucky Power’s decision not to consider a renewable energy alternative finds further support in the Commission’s recent denial of its application to recover the costs of a wind power agreement

options evaluated by the Company represent a comprehensive set of the reasonable, real-world alternatives to address the requirements of actual and expected environmental obligations imposed on its generation facilities. Certain “alternatives” simply aren’t available to Kentucky Power.

One alternative posed by the Intervenors involves Kentucky Power purchasing the [REDACTED]. Through the testimony of Toby Thomas, Managing Director of Kentucky Power Gas Turbine and Wind Generation for AEPSC, the Company established that the decision not to move forward with a purchase of the facility was reasonable and prudent.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]³⁰

Similarly without basis is the Intervenors’ argument that Kentucky Power should have issued an RFP to develop additional options for replacing the capacity and energy from the currently-configured Big Sandy Units. The Company

that would have supplied the Company with a small amount of renewable capacity. *See Application of Kentucky Power Company for Approval of Renewable Energy Purchase Agreement for Wind Energy Resources Between Kentucky Power Company and FPL Illinois Wind, LLC*, Case No. 2009-00545 (June 28, 2010).

²⁹ Thomas Hearing Testimony at 271-273.

³⁰ *Id.* at 289-290.

considered the merits of this approach.³¹ However, as described in testimony offered during the hearing, issuing a general RFP would not have added useful information to the Company's analysis of available alternatives. First, due to the amount of capacity and energy required to be replaced and the nature of the PJM market, any fair response to a firm RFP would be priced at the cost to build a new combined cycle facility.³² Option 2 serves as a proxy for such a response. In addition, because the request would not be a firm solicitation, it was unlikely in the opinion of the Company's commercial experts that any responses would represent the final price for that capacity and energy.³³ Accordingly, Kentucky Power reasonably believed that relying on the results of a capacity and energy RFP would provide little value to the process and would subject the Company's customers to unnecessary risk.³⁴

Similarly flawed is the Sierra Club's suggestion that Kentucky Power should have issued an RFP for the purchase of existing natural gas generating facilities. The Commission should reject the Sierra Club's position for at least three reasons: (1) it would be atypical to issue an RFP to the owner of an existing natural gas facility and doing so would likely open the bidding to all market participants;³⁵ (2)

³¹ Weaver Hearing Testimony at 510.

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ Thomas Hearing Testimony at 259-260.

the fact that generating facilities might have power available on the PJM market is not evidence that the owners would be willing to sell the facilities;³⁶ and (3) the opportunities for purchasing natural gas generating facilities at reasonable prices are much more limited than in previous years because those facilities have become more valuable.³⁷

Finally, the Intervenors find significance in a now-withdrawn FERC filing that called for Ohio Power Company to transfer 20% of its interest in its Mitchell Units 1 and 2 to Kentucky Power at net book value.³⁸ Some suggestion has been made that Kentucky Power could have requested the transfer of additional facilities at net book value. There is no basis in the record to support this claim.

First, the question of whether Ohio Power Company is authorized to transfer the interest in Mitchell Units 1 and 2 is pending before the Ohio Public Utilities Commission and it is uncertain whether the transfer will be approved.³⁹

Second, there is no reason to believe that Kentucky Power could have requested additional transfers at net book value or that Ohio Power Company, or any AEP affiliate company, would be willing to make such transfers.⁴⁰ The undisputed testimony of Ranie Wohnhas, Kentucky Power's Managing Director,

³⁶ *Id.* at 260-261.

³⁷ *Id.* at 262-263 and 278-279.

³⁸ The FERC filing has been withdrawn although it remains possible that 20% of the Mitchell Units will be transferred from Ohio Power Company to Kentucky Power. This possibility was raised in a recent filing with the Ohio Public Service Commission. *See* Sierra Club Exhibit 15.

³⁹ Wohnhas Hearing Testimony at 90, 116.

⁴⁰ *Id.* at 517-518 and 685-686.

Regulatory and Finance, is that the Company has no reason to believe “that beyond the 312 megawatts of . . . Mitchell that was discussed in the now-withdrawn FERC filing that Ohio Power would be willing to sell capacity—or any part of its facilities at book value.”⁴¹ The notion of Kentucky Power addressing its environmental compliance issues through purchases of facilities owned by affiliate companies at net book value is not a real-world solution. It is unreasonable to expect any utility to rely upon unlimited generating capacity from a sister utility to comply with its environmental requirements.

- (ii) The Company’s Modeling Confirms That Retrofitting Big Sandy Unit 2 Is The Least-Cost, Least-Risk Option For The Company’s Customers.

The Company evaluated the various unit disposition options described above with a proprietary, long-term resource optimization tool known as STRATEGIST. Using the STRATEGIST model, the Company was able to determine the relative cumulative present worth of the various options. The Company ran five sets of modeling runs for each of the alternatives being considered: one for what its fundamentals analysis group considered the base case for long-term commodity pricing, one each for high and low commodity pricing, one for a scenario where CO₂ pricing is implemented earlier than the base case, and one with no carbon pricing. Over these five runs, the Strategist model showed that, on a relative

⁴¹ Wohnhas Hearing Testimony at 187.

cumulative present worth basis, Options 1 and 4B were “a wash” and that all other Options were significantly more costly.⁴²

In addition to the STRATEGIST modeling, the Company performed stochastic risk modeling on each of the unit disposition options. This modeling was performed using the Aurora^{xmp} program and showed which option presented the greatest Revenue Requirement at Risk (“RRaR”). The Aurora^{xmp} stochastic risk modeling provided 100 unique calculations of the cumulative present worth for each unit disposition option. As described in Company witness Weaver’s testimony, RRaR is determined by examining the difference between the cumulative present worth of the median (50th percentile) case and the 95th percentile case.⁴³ RRaR represents a measure of the uncertainty or customer risk for each option, and the larger the RRaR, the greater the risk that the Company’s customers could be subject to a materially higher revenue requirement (and significantly higher rates).⁴⁴

The stochastic modeling showed, without question, that Option 4B, where the Company would purchase capacity and energy from the PJM market for ten years and then build a combined cycle gas unit, presents the greatest risk to the Company’s customers. This stochastic modeling confirms the Company’s position

⁴² Weaver Direct Testimony at 37; Exhibit SCW-4.

⁴³ The 95th percentile represents a level of revenue required that will only be exceeded 5% of the time.

⁴⁴ Weaver Direct Testimony at 46-47.

that selecting Option 4B would subject its customers to unreasonably high market risk. This price and performance risk comes from the following factors:

- the lack of pricing certainty in the PJM Reliability Pricing Model (RPM) capacity market construct because of that market's relative immaturity;
- forecasted capacity values remain well below even the PJM-RPM "baseline" of Net Cost of New Entry (Net CONE), thereby potentially negating any Strategist-modeled cost advantage of Option 4B should *actual* capacity values ultimately clear at prices that would approach or exceed Net CONE;
- the fact that the PJM-RPM construct currently clears on a *single* incremental planning year basis, with no assurances as to the sustainability of prices from year-to-year; and certainly not over a 10-year period; and finally,
- PJM "price taker" risk would also be applicable to the market *energy* that would be required under a 10-year market-solution offered under Option 4B.⁴⁵

Option 4B simply exposes the Company's customers to too much risk. The rigorous analyses performed by the Company demonstrate that retrofitting Big Sandy Unit 2 with a DFGD is the reasonable and least-cost alternative – one that protects its customers from market risks.⁴⁶

⁴⁵ Weaver Rebuttal Testimony at 7 (emphasis in original).

⁴⁶ Additionally, at the hearing before the Commission in this proceeding, the Sierra Club and KIUC made an issue of Kentucky Power's alleged non-compliance with certain information requests. It appears the Sierra Club and KIUC would have the Commission find that they were somehow deprived of a full and fair opportunity to examine Kentucky Power's economic analysis of available environmental compliance options. Such a finding would be inconsistent with the record of this proceeding. The Company made a good faith effort to comply with all information requests issued in this proceeding. It also worked with the Intervenor to address any discovery concerns. In addition, the Commission extended the procedural schedule for two weeks by Order dated March 1, 2012. This issue was resolved almost two months before the hearing and should have no bearing on the Commission's ruling in this proceeding. A subsequent e-mail from counsel for the Sierra Club confirmed that all discovery issues had been resolved.

Moreover, the Commission has consistently expressed concern that reliance upon “a volatile wholesale market was not in the best interests of Kentucky customers.”⁴⁷ To this end the Commission has favored utilities addressing long-term resource needs by adding new capacity and has stated “serious concerns about AEP-KY’s [previous] plan to rely on market-priced wholesale power to meet a large portion of its system demand . . .”⁴⁸ The proposed construction of the Scrubber and related facilities meets that end. Installation of the Scrubber at Big Sandy Unit 2 will ensure the Company’s ability to continue serving its base load customers with electricity at the lowest possible costs while exposing them to the least amount of risk.

- (iii) The Company Appropriately Modeled The Useful Life Of Big Sandy Unit 2 As Retrofitted With The Scrubber To Extend Through 2040.

Testimony offered by Kentucky Power’s witnesses establishes that the Company has a reasonable expectation that Big Sandy Unit 2 will have a useful life that extends through 2040 following the installation of the Scrubber.⁴⁹ This expectation is properly reflected in the Company’s analysis of the available environmental compliance alternatives.⁵⁰ Indeed, Kentucky Power’s economic analysis establishes that the Company anticipates ongoing capital expenditures for

⁴⁷ *In the Matter of: A review of the Adequacy of Kentucky’s Generation Capacity and Transmission System*, Administrative Case No. 387 (May 10, 2004).

⁴⁸ *Id.* (December 20, 2001).

⁴⁹ Weaver Hearing Testimony at 528.

⁵⁰ Wohnhas Hearing Testimony at 120; Weaver Hearing Testimony at 522.

Big Sandy Unit 2 extending through 2040.⁵¹ The Intervenors' suggestions and allegations to the contrary are unsupported by any credible evidence in the record.

The Intervenors suggest that Kentucky Power's proposal to depreciate the Scrubber over a 15-year period reflects the Company's actual expectation concerning the useful life of Big Sandy Unit 2.⁵² The Intervenors' argument fails to account for the distinction between the useful life of the Scrubber and the economic life of the Scrubber.⁵³ The Company expects Big Sandy Unit 2 to have a useful life that extends through 2040 following the installation of the Scrubber. Accordingly, it would be unreasonable for the Company to rely upon an economic analysis that assumed the retirement of the Unit after 15 years.⁵⁴ Conversely, the Company's depreciation proposal is based upon the anticipated economic life of the Scrubber and the perceived "medium risk" that future environmental regulations will cause the continued operation of Big Sandy Unit 2 to become economically infeasible.⁵⁵ It does not reflect the Company's expectation of the

⁵¹ Weaver Hearing Testimony at 527-528.

⁵² Hearing Transcript at 624. In the course of his cross-examination of Mr. Weaver, counsel for KIUC asks: "You're aware that—Kentucky Power has proposed a 15-year depreciation because the risk that the environmental rules may cause premature retirement of the unit. Are you aware of that?"

⁵³ The Intervenors' argument further fails to account for the fact that depreciation is simply a return of Kentucky Power's costs associated with the Scrubber and does not include a profit component. The 15-year depreciation will result in higher initial rates for the Company's customers, but the overall rate impact will be reduced from depreciation over the useful life of the Scrubber because the costs will be recovered over a shorter period of time. In this respect, Kentucky Power's proposal is similar to a homeowner electing to finance the purchase of a house with a 15-year mortgage instead of a 30-year mortgage.

⁵⁴ Weaver Hearing Testimony at 673.

⁵⁵ Wohnhas Direct Testimony at 14-15; Wohnhas Hearing Testimony at 121-122 and Sierra Club Hearing Exhibit 3.

Unit's useful life.

Although it conducted a sensitivity analysis to test the effects of retiring Big Sandy Unit 2 after 15 years on the modeled alternatives,⁵⁶ the Company never considered retiring the Unit after 15 years as an alternative.⁵⁷ Indeed, the Company first became aware of the 15-year retirement sensitivity analysis that was admitted as KIUC-11 on the first day of the hearing.⁵⁸ It promptly produced the sensitivity analysis on May 1, 2012 and Messrs. Weaver, Bletzacker, and Becker were available to be cross-examined with respect to it.

Given the provenance and nature of the 15-year sensitivity analysis it cannot serve as a reasonable basis for the Commission's decision. Even if the Commission was to consider the sensitivity analysis, it remains reasonable and prudent for Kentucky Power to install the Scrubber instead of pursuing any of the other available environmental compliance alternatives. Installation of the Scrubber would still be a lower cost compliance option than either of the natural gas alternatives available to the Company as reflected in Options 2 and 3.⁵⁹ It would also involve substantially less risk of higher costs than the Company's customers

⁵⁶ KIUC Hearing Exhibit 11.

⁵⁷ Weaver Hearing Testimony at 527-528, 558-559, 622.

⁵⁸ Mr. Weaver testified that he was unaware of the existence of this sensitivity study prior to April 30, 2012 and that he did not know what assumptions or inputs were included in the sensitivity study. Weaver Hearing Testimony at 678.

⁵⁹ KIUC Hearing Exhibit 11.

would have to bear.⁶⁰ Additionally, the installation of the Scrubber would protect Kentucky Power's customers from the significant market risk inherent in Options 4a and 4b.⁶¹

- (iv) Considering The Expected Useful Life Of Big Sandy Unit 2, The Company Appropriately Modeled The Entire Planning Period.

KIUC witness Lane Kollen testified that the Commission should evaluate the relative costs to the Company's customers of Options 1 and 4B in the near term (2016-2025). According to Mr. Kollen, this limited analysis shows that selecting Option 4B (relying on the market for ten years *then* constructing a new natural gas combined cycle facility) over retrofitting Big Sandy Unit 2 would save customers hundreds of millions of dollars between 2016 and 2025.⁶² Mr. Kollen's extraction exercise, however, does nothing to change the conclusion that retrofitting Big Sandy Unit 2 is a reasonable, least-cost option for the Company over any reasonable planning horizon.

By limiting his analysis to the first ten years, Mr. Kollen ignores the fact that, under Option 4B, the Company will be forced to provide long-term capacity

⁶⁰ See Sec. I.B.2, *supra*.

⁶¹ *Id.*

⁶² Because Mr. Kollen presents his alleged "savings" in nominal dollar amounts, he overstates the comparative savings with the costs described in the Strategist model. Had Mr. Kollen used present value dollars as is typical for long-term forecasting analysis, his alleged savings would have been approximately half what he asserts. See Weaver Rebuttal Testimony at 12-14. Interestingly, if one were to use nominal dollars as Mr. Kollen does but compare costs throughout the entire modeling period, Option 4B is over \$1.1 billion dollars more costly than retrofitting Big Sandy Unit 2. *Id.*

and energy to its customers in the out years (2026-2040) through the construction and operation of a new natural gas combined cycle facility. As shown in Company witness Weaver's rebuttal testimony, the construction of the combined cycle facility reduces the savings from Option 4B each year starting in 2025.⁶³ Mr. Kollen's testimony also overlooks the fact that the Strategist modeling performed by the Company was predicated on a full 30 year study period. It was not intended to represent a "cost of service" perspective.⁶⁴ Most importantly, Mr. Kollen ignores the fact that the Big Sandy Scrubber retrofit and his preferred Option 4B are a "wash."⁶⁵ Thus, for the same approximate price of "steel in the ground," and its benefits to the Eastern Kentucky region, Mr. Kollen would have this Commission subject Kentucky Power's customers to the market risks inherent in a market-only solution for ten years.⁶⁶ Mr. Kollen's preferred solution would also require the Company's customers to bear the greatest risk of being subject to a materially higher revenue requirement (and significantly higher rates).⁶⁷ Mr. Kollen's proposal thus places the risk of such significantly higher rates on the backs of Kentucky Power's post-2030 customers, while providing most of the

⁶³ Weaver Rebuttal Testimony at 13, Table 1.

⁶⁴ Weaver Rebuttal Testimony at 11.

⁶⁵ Weaver Hearing Testimony at 559, 572.

⁶⁶ Weaver Rebuttal Testimony at 7.

⁶⁷ Weaver Rebuttal Testimony, Exhibits SCW-5R and SCW-6R

benefits to those persons receiving service from Kentucky Power between 2016 and 2030.

Mr. Kollen's flawed criticisms do not change the fact that retrofitting Big Sandy Unit 2 is the reasonable, least-cost alternative that best protects the Company's customers from market risk.

(v) Kentucky Power Relied Upon Reasonable Natural Gas and CO₂ Cost Forecasts Included In Its Economic Analysis Of The Available Environmental Compliance Options.

The Intervenors maintain that certain of Kentucky Power's cost forecasts were unreasonable and resulted in Option 1—the installation of the Scrubber at Big Sandy Unit 2—appearing more attractive than it would if other cost forecasts had been considered. The Intervenors' argument on this issue focuses primarily upon the Company's cost forecasts for natural gas and CO₂ compliance. Testimony offered by Kentucky Power in this proceeding establishes that the Intervenors' arguments are without merit and that the Company's forecasts were reasonable and prudent.

a. Natural Gas

The natural gas cost data relied upon by Kentucky Power in its analysis of environmental compliance alternatives is based upon supply and demand fundamentals and constitutes a reasonable forecast for the time period from 2016-2040. Unlike the flawed Energy Information Administration ("EIA") Annual

Energy Outlook (“AEO”) forecasts relied upon by KIUC, the Company’s forecast accounts for reasonably known and emerging regulations. As Karl Bletzacker, Director-Fundamentals Analysis for American Electric Power Service Corporation, testified:

[T]he AEP Fundamental Analysis group’s most recent suite of natural gas price forecasts (“Fleet Transition”) reflects prudent demand-induced price responses to the impending regulations that are not captured by the EIA. For example, AEP takes into consideration the recently-finalized MATS rules, as well as subsequent emerging EPA rulemaking addressing Coal Combustion Residuals, the Clean Water Act rule 316(b) later this decade, and the prospect of a future carbon tax. It is well understood that none of these laws and regulations are factored in the EIA-AEO projections.⁶⁸

Accordingly, the EIA-AEO projections relied upon by KIUC should be rejected by the Commission. The Company’s forecast is based on a more thorough and comprehensive analysis of factors that impact natural gas prices.

Mr. Bletzacker’s testimony clearly establishes that Kentucky Power’s natural gas cost forecasts are in line with other industry expectations that properly anticipate current and emerging environmental rulemaking.⁶⁹ This is particularly important in light of the fact that in this case the relevant forecast is that for the long-term future. As explained by Mr. Weaver in his rebuttal testimony:

Although the Strategist® analysis encompassed a 30-year study period (2011-2040), the applicable period for purposes of the comparative unit disposition analyses is, in fact, the 2016-2040, or 25-

⁶⁸ Bletzacker Rebuttal Testimony at 4-5.

⁶⁹ Bletzacker Rebuttal Testimony at 4-6.

year timeframe given that the Strategist® results for the preceding years 2011 through 2015 would be the same (or nearly the same in the case of the year 2015) under all options evaluated.⁷⁰

The Company's fundamentals forecast for this period is reasonable. Accordingly, the Commission should reject the argument by KIUC and the Attorney General that Kentucky Power's economic analysis should have discounted natural gas cost projections.

b. CO₂

Similarly deficient is the argument posed by the Sierra Club that Kentucky Power's forecasts for CO₂ prices fail to capture the potential cost of yet to be implemented federal greenhouse gas legislation on the continuing operation of Big Sandy Unit 2.⁷¹ Kentucky Power's economic analysis includes a reasonable proxy for potential CO₂ costs.⁷² The higher CO₂ costs included in the out-dated study relied upon by the Sierra Club are imprudent. They do "not represent the current consensus view of carbon pricing but rather a range of outcomes for CO₂ pricing under a single legislative regime, cap-and-trade, that might have resulted from past legislative proposals that did NOT pass into law."⁷³ Mr. Bletzacker's testimony establishes that the Sierra Club's forecasts are unrealistic for at least three reasons:

⁷⁰ Weaver Rebuttal Testimony at 6, fn 1.

⁷¹ *Id.* at 8-9.

⁷² *Id.* The price used by Kentucky Power adds approximately \$81,000,000 to the variable costs of Big Sandy Unit 2 in 2022, which represents a substantial cost increase and not a "token" price that has little impact on the Company's analysis of environmental compliance options.

⁷³ *Id.* at 10 (emphasis in original.)

1) near-term action on cap and trade legislation is highly unlikely, 2) in order for any federal cap and trade legislation to ultimately pass, the effective price will have to be moderate at least for the early years of the program, and 3) actions to regulate CO₂ from electric generation will be more likely to take other forms that won't necessarily put a price on carbon—such as through further energy efficiency standards, or renewable or clean-energy standards for utility generation.⁷⁴

For the same reasons, projections made by other electric utilities that include CO₂ costs being implemented earlier than 2022 and increasing significantly over time are imprudent or otherwise unreasonable.⁷⁵

In addition, and most fundamentally, the Sierra Club did not correctly apply its erroneous CO₂ projections in connection with its STRATEGIST modeling of the Current Present Worth of Options 1, 2, and 4B.⁷⁶ It is basic economics that the prices of the fundamentals modeled by Sierra Club in its STRATEGIST CO₂ run are correlated so that a higher CO₂ cost will raise the cost of coal-fired generation and depress the cost of coal while exerting upward pressure on natural gas prices.⁷⁷

As Mr. Bletzacker explained:

Without question, the creation of a Long-Term Forecast which considers a range of CO₂ costs MUST include the correlative changes to other input drivers. It is imprudent to ignore: 1) the effect of coal

⁷⁴ *Id.* at 9.

⁷⁵ *Id.* at 7-9; Bletzacker Hearing Testimony at 719-722. In addition, by failing to account for free allocations under the cap-and-trade system it models, and thereby applying its unreasonable CO₂ prices to every ton of CO₂ produced, the Sierra Club overstated the actual costs even if its projected prices were accurate. Bletzacker Rebuttal Testimony at 11.

⁷⁶ Dr. Fisher indicated at the hearing that the heading “4A” in Table 4 of his testimony should have been “4B.” Fisher Hearing Testimony at 350.

⁷⁷ *Id.* at 11-12 (“In its simplest form, the imposition of “high” CO₂ prices would necessitate a “high” gas price in reaction to increased gas demand – which creates an inconsistency in Mr. [sic] Fisher’s conclusions. High CO₂ values coupled with “low” gas prices is misleading as one or the other is incorrect.”)

plant dispatch costs on coal prices due to the changes in coal-fired generation demand, 2) changes in gas-fired plant utilization and the effect on natural gas prices, 3) changes in plant retirement and new-build profiles, or 4) the price elasticity of residential, commercial and industrial demand, for example. These feedback loops (iterations) are critically necessary to create a prudent set of long-term forecasts to be used as the foundation for the comparison of KPCo's power supply options.⁷⁸

The Sierra Club's model ignores these relationships and changed only the price of CO₂ before running its re-analysis.⁷⁹ As a consequence, the results presented in JIF-3E in Dr. Fisher's Revised Supplement testimony are "erroneous and should be ignored."⁸⁰

The magnitude of Sierra Club's error in failing to adjust the price of coal, natural gas, and on-peak and off-peak energy when running its CO₂ re-analysis is illustrated by the tables displayed at page 2 of Exhibit SCW-2 to Mr. Weaver's Direct Testimony. The far left-hand column of each table displays the price of the identified commodity under the Company's base case; that is, with a \$15 per metric ton carbon tax beginning in 2022. The far right column, labeled "No Carbon" displays the price of the same commodity assuming there is no carbon tax. The difference between the two columns reasonably quantifies the correlative effect of a carbon tax on the identified commodity. For example, in

⁷⁸ *Id.*

⁷⁹ Fisher Hearing Testimony at 351.

⁸⁰ Bletzacker Rebuttal Testimony at 12.

2022,⁸¹ the year the carbon tax is “imposed,” the price of natural gas at the Henry Hub is projected to be \$7.07/MMBtu under the base (carbon tax) case, while it is \$6.68 under the “No Carbon” case.⁸² This \$0.39 spread increases to \$0.47 over the remaining years displayed.⁸³

Off-Peak Energy and On-Peak Energy show a similar correlative relationship. Thus, while the difference between the Base Case and the No Carbon Case for on-peak energy in 2021 (the year before the “imposition” of the carbon tax) is \$0.36, it increases to \$8.48 the next year with carbon tax.⁸⁴ With off-peak energy the difference between the Base and No Carbon increases from \$0.54 in 2021 to \$9.71 in the next year.⁸⁵ By 2030 the differences have increased to \$10.39⁸⁶ for on-peak energy (or 13.1% of the No Carbon Case amount used by the Sierra Club in its CO₂ re-analysis), and \$10.84⁸⁷ for off-peak energy (or 19.1% of the No Carbon Case amount used by the Sierra Club in its CO₂ re-analysis.)

The prices forecasted for Central Appalachian (CAPP) coal and Northern Appalachian (NAPP) coal are also correlatively (but inversely) related to CO₂ prices. For 2021 the prices for CAPP coal are the same under both the Base Case

⁸¹ Prior to 2022 the prices between the two cases are identical until 2021, when they diverge slightly.

⁸² Exhibit SCW-2.

⁸³ *Id.* The table ends at 2030.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

and the No Carbon Case.⁸⁸ With the imposition of a carbon tax in 2022 the prices diverge by \$2.29, with the carbon tax not unexpectedly placing downward pressure on the price of coal.⁸⁹ By 2030, the price for CAPP coal is \$2.68 lower under the No Carbon Case than the Base Case. Similarly, NAPP coal prices are lower under the Base Case beginning in 2022 with the “imposition” of the carbon tax than under the No Carbon Case: \$1.77 in 2022 and 2.09 in 2030.

The carbon price modeled by Sierra Club is more than twice the \$15.00 a ton price modeled by Kentucky Power and would logically be expected to exert a proportionately greater correlative effect on coal, natural gas and energy prices. Yet the Sierra Club did not adjust these prices from those modeled by Kentucky Power when running its re-analysis.⁹⁰ The result, not surprisingly, was to distort systematically the results presented in its re-analysis, to render its study erroneous, and to require that the study be ignored.⁹¹

Mr. Bletzacker’s pre-filed rebuttal testimony and testimony at the hearing establish that Kentucky Power reasonably and prudently factored potential natural gas and CO₂ costs into its economic analysis of the available environmental compliance alternatives. By the same token, the Sierra Club’s flawed and skewed

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ Nor is it an answer to argue that the relationships are different than modeled by Kentucky, or that the correlations do not exist. Even if that could be demonstrated, and Sierra Club does not do so, Sierra Club used Kentucky Power’s forecasts in its re-analysis and it would have been required to modify or remove the relationships if it were to use Kentucky Power’s values.

⁹¹ Bletzacker Rebuttal Testimony at 12.

CO₂ “re-analysis” does not provide a reasonable basis for decision. Indeed, given the relative direction of these long-term commodity pricing errors, it would naturally skew the results against a higher-CO₂ emitting coal solution versus a natural gas or market solution.

(vi) The Sierra Club’s Criticisms Of The Company’s Economic Modeling Are Fundamentally Flawed And Should be Rejected By The Commission.

The Sierra Club’s criticisms⁹² of the manner in which the Company modeled the five options presented in Mr. Weaver’s testimony were presented through the testimony of Ms. Wilson, Dr. Fisher, and Mr. Hornby. Specifically, the Sierra Club witnesses challenged: (a) the manner in which the Company modeled off-system sales;⁹³ (b) the manner in which the Company modeled post-study period capital costs;⁹⁴ (c) the manner in which Kentucky Power modeled the installed capital costs for the five options;⁹⁵ (d) the manner in which the Company modeled the Big Sandy Unit 2 retrofit (Option 1) O&M costs;⁹⁶ (e) the absence in the Company’s modeling of Option 1 of any increased O&M costs that might result

⁹² Certain other Sierra Club criticisms are discussed elsewhere in this brief. These include the Company’s selection of the five alternatives modeled (Brief at 13-17) and the prices assigned for CO₂ (Brief at 22-34).

⁹³ Fisher Direct Testimony at 14-17. Dr. Fisher filed three versions of his direct testimony. The first version was filed on May 13, 2012. It will be referred to as “Fisher Direct Testimony.” Subsequently, Dr. Fisher filed his revised direct testimony on April 12, 2012. It will be referred to as “Fisher Revised Testimony.” Finally, Dr. Fisher filed yet a third version on the morning of May 1, 2012 (the day of his testimony before the Commission.) It will be referred to as “Fisher Revised – Supplemental Testimony.”

⁹⁴ Wilson Direct Testimony at 7-8.

⁹⁵ Fisher Revised Testimony at 17-26.

⁹⁶ Fisher Revised – Supplemental Testimony at 27-28.

from the curtailment of Big Sandy Unit 2 prior to the in-service date of the DFGD;⁹⁷ and (f) Kentucky Power's use of the Aurora Model;⁹⁸

The Sierra Club errs in each respect.

- a. The Company Properly Treated Off-System Sales In Its Modeling.

Early in this proceeding Dr. Fisher criticized the Company for failing to allocate “40% of OSS revenues to shareholders.”⁹⁹ In his direct testimony, Dr. Fisher defined OSS revenues as “gross market sales.”¹⁰⁰ He subsequently corrected that testimony to reflect the fact that the Company's Tariff SSC employs “net revenues” and not “gross market sales.”¹⁰¹ With this correction, retrofitting Big Sandy Unit 2 with a DFGD was the least-cost alternative among the five options studied, except for Option 4B, which Dr. Fisher indicated would be a relatively modest \$81 million less expensive.¹⁰² In sum, the relative economics of the five options did not appreciably change.¹⁰³

⁹⁷ Wilson Direct Testimony at 8-9.

⁹⁸ Fisher Revised – Supplemental Testimony at 40-66.

⁹⁹ Fisher Direct Testimony at 14.

¹⁰⁰ *Id.* at 15.

¹⁰¹ Rebuttal Exhibit SCW-2R at ¶ 1.

¹⁰² Fisher Revised-Supplemental Testimony at 18 (Table 1).

¹⁰³ Weaver Rebuttal Testimony at 15. *See also, Id.* at 18, Table 2 (further adjusting Dr. Fisher's calculations for other errors.).

Although this correction substantially altered Dr. Fisher's testimony,¹⁰⁴ it failed to remedy two fundamental flaws in his analysis. Indeed, even in his Revised - Supplemental Testimony Dr. Fisher still fails to incorporate the manner in which the Company's System Sales Clause operates. The 40%/60% allocation between the Company and the ratepayers is not calculated on net off-system sales revenues as Dr. Fisher defines the term.¹⁰⁵ Rather, as Tariff SSC plainly provides,¹⁰⁶ and as Mr. Weaver testified on rebuttal,¹⁰⁷ only the difference (or margin) between net off-system sales revenues and the base monthly revenue amount set forth in paragraph 3 of the tariff is allocated between the Company and its customers. Because it is these off-system sales *margins*, and not simply *net revenues* as defined and modeled by Dr. Fisher in his revised – supplemental testimony, that is allocated, Dr. Fisher's revised – supplemental testimony

¹⁰⁴ This single correction increased the net benefit (CPW) of Option 1 over Option 2 and Option 3 by 41.6% and 51.8% respectively even under Sierra Club's analysis. Similarly, Dr. Fisher's claimed net benefit (CPW) of Option 4A over Option 1 reversed and became a net benefit in favor of retrofit in the amount of \$49 million. Even under Option 4B the previously calculated net benefit in favor of Option 4B decreased from \$173 million to \$81 million or by 46.8%. See, Fisher Revised Testimony at 17, Table 1; Fisher Direct Testimony at 17, Table 1.

¹⁰⁵ Fisher Revised-Supplemental Testimony at 16 ("***I deducted 40% of the market sales (net of the variable cost of production) from the KPCo system on an annual basis,*** and, following the Company's method for calculating the total cumulative present worth (CPW), subtracted the remaining revenues from the stream of costs and calculated a new CPW.") (emphasis supplied).

¹⁰⁶ "When the monthly net revenues from system sales are above or below the ***monthly base revenues*** from system sales, ***as provided in paragraph 3,***" Rebuttal Exhibit SCW-2R at ¶ 1 (emphasis supplied). Tariff SSC also mathematically defines the System Sales Adjustment factors as equal to $(.6[T_m - T_b]/S_m)$ [sic]. Weaver Rebuttal Exhibit SCW-2R at ¶ 1. The tariff further defines "T" as the Company's "monthly net revenues from system sales", "m" as the "current month" and "b" as the current base period. *Id.* The current base period amount is set out in paragraph 3.

¹⁰⁷ Weaver Rebuttal Testimony at 15-16.

erroneously calculates the amount of off-system sales revenues received by the Company.¹⁰⁸

Second, Dr. Fisher's analysis further fails to account for the fact that \$15.29 million dollars of off-system margins are "built into" base rates.¹⁰⁹ Indeed, it is the monthly apportionment of the \$15.29 million base rate amount that is used to calculate the base monthly net revenue amounts set forth in paragraph 3 of Tariff SSC that in turn is employed to calculate the margins to be allocated.¹¹⁰ Because the off-system sales margins are calculated on a monthly and not an annual basis, there is no annual "true-up" of the monthly allocation of "margins" to the \$15.29 million dollars of off-system margins that are "built into" base rates. As a result, customers can not only receive the benefit of more than 60% of the net system sales margins in a twelve-month period, but in some cases, they can receive more than the Company's net off-system sales net revenues in the same period.

The Company appropriately modeled off-system sales.

¹⁰⁸ *Id.*

¹⁰⁹ Rebuttal Exhibit SCW-2R at ¶ 3; Weaver Rebuttal Testimony at 16. Moreover, Dr. Fisher fails to recognize that net off-system sales revenues are further adjusted in the calculation of the off-system sales margins by "netting out from KPCo's OSS Margin, monthly environmental costs allocated to non-associated utilities as part of the Company's Environmental Surcharge Report." Weaver Rebuttal Testimony at 16. As a result, the Company's net off-system sales revenues are likely either to "approach, or not materially exceed this ... [monthly base revenue amount set out in paragraph 3 of the Company's Tariff SSC]; hence, no OSS 'sharing adjustment' was deemed necessary.

¹¹⁰ Weaver Rebuttal Exhibit SCW-2R at ¶ 3. Indeed, paragraph 3 of the Tariff SSC sets out a different amount (varying from as little as \$335,167 in February to as much as \$2,136,652 in August) for each month. These sums total, as shown in paragraph 3, \$15,290,363.

b. Kentucky Power Correctly Modeled The Post-Study Period Capital Costs Of The Five Options.

Ms. Wilson’s criticism of the manner in which the Company modeled post-study period capital costs is equally flawed. Ms. Wilson argues that “KPCo’s inclusion of on-going capital for certain units – using an end effects calculation for certain variables but not others – is flawed, and does not represent the true operating costs of the unit...”¹¹¹ But, as Ms. Wilson notes, the Company explained that it elected not to model the post-study period costs for the retrofit option because “the planning period of 2011 to 2040 is sufficiently long to cover the life of the FGD retrofits and the majority of the life of the gas replacement options. In addition, KPCo expects that the relative cost impacts after 2040 would be very small due to the discounting of costs [to CPW.]”¹¹² For example, a \$10 million difference in costs between two options in 2040 would equate to less than \$1 million difference when discounted to 2011. By 2050, a \$10 million difference in cost between two options would affect the 2011 CPW by less than \$500,000.

Ms. Wilson never challenges either explanation. In particular, the Sierra Club failed to produce any STRATEGIST runs or other analyses indicating that Ms. Wilson’s preferred method would result in any material change to the Company’s analysis, much less that it would affect the relative economic ordering

¹¹¹ Wilson Direct at 8.

¹¹² *Id.*

of the five options. The Sierra Club's failure to do so, particularly in light of its offering in evidence other alternative STRATEGIST runs, goes a long way to confirm that it would have no material effect.

Even more untenable is Ms. Wilson's more specific criticism that the Company should have modeled post-2040 CO₂ costs for the Scrubber retrofit option¹¹³ even though the unit's expected life ends in 2040.¹¹⁴ Ms. Wilson never explains why a retired unit is likely to incur CO₂ costs. Such non-real world criticism of the Company's modeling does not merit consideration.

c. The Company Correctly Modeled The Installed Capital Costs And Carrying Charges For Each Of The Five Options.

Despite devoting a substantial portion of his direct and revised direct testimony to criticisms of the manner in which Kentucky Power modeled the installed capital costs for the five options,¹¹⁵ Dr. Fisher withdrew,¹¹⁶ based upon his reading (apparently at the eleventh hour)¹¹⁷ of Mr. Becker's rebuttal testimony that

¹¹³ *Id.* In fact, post-2040 CO₂ costs were the only post-study period variable identified by Ms. Wilson in her testimony that she suggests should have been modeled for the retrofit. *Id.*

¹¹⁴ Sierra Club 1-39; Weaver Hearing Testimony at 527-528, 624.

¹¹⁵ Fisher Revised Testimony at 17-26.

¹¹⁶ Fisher Hearing Testimony at 335; Sierra Club - 12.

¹¹⁷ Dr. Fisher's efforts to blame the Company for his eleventh-hour abandonment of substantial portions of his revised testimony, as well as his and Ms. Wilson's criticisms of the manner in which the Company responded to discovery requests, will not stand scrutiny. In the initial round of discovery, the Company received 240 data requests (not counting the multiple sub-parts contained in many of the requests. Sierra Club itself propounded 69 data requests in the first round. Counting subparts, the Company responded to over 190 separate Sierra Club initial Data Requests.) The Company had only 14 days to prepare and serve its Responses. Kentucky Power responded in good faith, and used its best efforts to provide timely and complete responses. To the extent its responses were incomplete or otherwise in error, the Company worked diligently to supplement its responses as soon as the issue was brought to its attention. In the case of the Sierra Club, the Company went the extra mile by making its Frankfort office personnel available

was filed and served two weeks before Dr. Fisher took the stand,¹¹⁸ substantial portions of his testimony on the morning he appeared before the Commission.

Specifically, Dr. Fisher withdrew that portion of his testimony in which he argued the Company “depressed” the capital expenses and carrying costs of the retrofit option by 11%; that it inflated the capital costs and carrying expenses for the

to discuss the responses with Sierra Club representatives. When questions about the operation of the STRATEGIST model were raised, the Company made Mr. Becker available by telephone to discuss Sierra Club’s identified concerns. For Sierra Club to complain now that Mr. Becker declined to discuss topics beyond the topics agreed-upon by counsel seems niggling at best. In addition, on February 22, 2012, more than two months prior to the hearing, Kentucky Power supplemented its production with “live” spreadsheets linking the STRATEGIST outputs to Mr. Weaver’s Exhibits SCW 4-A, SCW-4B, SCW 4-C, SCW 4-D, SCW 4-E.

Also noteworthy is that, despite Kentucky Power having made its personnel available to address discovery concerns on two prior occasions, Sierra Club never followed-up with counsel for Kentucky Power to see if Mr. Becker or other appropriate personnel would be made available to address any claimed additional concerns. As it did with Staff, and counsel for KIUC and the Attorney General, the Company stood ready to address all discovery concerns. Only the Sierra Club failed to avail itself fully of the opportunity.

Further, Dr. Fisher and Ms. Wilson overlook the fact that Sierra Club had an additional round of data requests to address any questions it had about the Company’s first set of responses. Likewise, Sierra Club was granted a two-week extension (not opposed by the Company if commensurate changes in its obligations were made) to file its testimony based upon its complaints that the Company’s full compliance had been delayed. Indeed, when asked by Staff on April 16, 2012, Sierra Club conceded its concerns had been satisfied.

Most telling is Sierra Club’s decision not to provide counsel for the parties or the Commission with Dr. Fisher’s Revised – Supplemental Testimony until less than 30 minutes before he took the stand on May 1, 2012. This last minute change of field is particularly egregious in light of the fact Dr. Fisher testified that the need to abandon significant portions of his testimony became clear when the Company filed its rebuttal two weeks earlier on April 16, 2012. Dr. Fisher’s efforts to blame Kentucky Power for his errors are more akin to condemning the mote while ignoring the log, than any good faith explanation of his need to abandon substantial portions of his testimony on the day of cross-examination.

¹¹⁸ In an unsuccessful effort to rehabilitate Dr. Fisher, Sierra Club on cross-examination of Mr. Becker attacked the Company’s use of Excel spreadsheets to calculate a leveled carrying charge as a proxy for the in-service year and later capital expenditures, which were then included as part of fixed O&M, instead of using the STRATEGIST Capital Expenditure and Recovery (“CER”) module. *See*, Becker Hearing Testimony at 785-789. Sierra Club’s new-found fealty to using the STRATEGIST model, in lieu of modeling certain costs outside the model, is particularly surprising in light of its decision not to use the STRATEGIST model to compute the required annualized carrying charges for capital costs in Dr. Fisher’s revised testimony. Fisher Revised testimony at 24 n.23. Instead, Dr. Fisher used the Excel PMT function. *Id.* (“Levelized carrying charge estimates using Excel PMT function on capital costs (including AFUDC, as shown in figure 3) over the Company-assumed book life at 8.64% ROE [*sic*].”) Unlike the Company’s use of Excel in lieu of the CER module, which appropriately modeled the in-service year and later costs, Dr. Fisher’s use of the PMT function significantly understated the Company’s annualized carrying charges because the PMT function does not calculate the investment’s “depreciation cost, Federal Income Tax (FIT), property taxes and General & Administrative (G&A) Expenses....” Becker Rebuttal Testimony at 15.

replacement combined cycle in Options 2, 4A, and 4B by approximately 43%; and that it inflated the capital cost for Option 3 by approximately 33%.¹¹⁹ Thus, like the Sierra Club's other criticisms, its challenge to the manner in which the Company modeled the installed capital costs and carrying charges is without merit.

d. The Big Sandy Retrofit O&M Costs Were Consistently Modeled.

Dr. Fisher also complains that “[t]he stream of fixed O&M costs in Option 1 (the retrofit case) drops markedly from 2030 by about \$36 million per year (nominal, or \$27 M 2010 \$) and maintains this lower value through the remainder of the analysis period.”¹²⁰ Dr. Fisher's criticism ignores the fact that the O&M costs for the first 15 years (2016-2030) included a levelized amount used to proxy the in-service year and later annual capital carrying charges.¹²¹ Once those amount were assumed to be fully amortized for modeling purposes (in 2030), the ongoing fixed O&M costs declined by an equal amount. Thus, the amount of fixed O&M costs for Option 1 decreased beginning in 2031 for the same reasons that led Dr. Fisher to abandon on the morning of his testimony his criticisms of the Company's

¹¹⁹ Fisher Revised Direct Testimony at 17-26; Fisher Revised – Supplemental Testimony at 18-27. Ms. Wilson, whose testimony is the basis for much of Dr. Fisher's testimony, similarly criticized the way the Company modeled the installed capital costs and carrying charges for the five options. Wilson Direct Testimony at 6-7, 10. Although Ms. Wilson did not withdraw any of her testimony, her testimony on this topic – which is only a higher level version of the testimony of Dr. Fisher on these topics (to whom she defers) – can not stand in the face of Dr. Fisher's abandonment of the same arguments.

¹²⁰ Fisher Revised – Supplemental Testimony at 27.

¹²¹ Becker Rebuttal Testimony at 23.

modeling of capital costs.¹²² That he did not do so in his Revised – Supplemental Testimony with respect to his criticism of the Company’s modeling of the Big Sandy Unit 2 retrofit O&M costs does not make that criticism any more supportable than his related – but now abandoned – criticisms of the manner in which the Company modeled the installed capital costs for the five options.¹²³

- e. The Sierra Club’s Criticism That Kentucky Power Failed To Account For Claimed Increased O&M Costs Resulting From Curtailments Lacks Merit.

A further invalid criticism offered by the Sierra Club through Ms. Wilson is her claim the Company failed to model increased O&M costs for Big Sandy Unit 2 that might result from having to curtail the unit periodically between 2011-2016 to meet CSPAR Phase 1 and Phase 2 requirements.¹²⁴ What Ms. Wilson apparently fails to recognize is that under each of the options Big Sandy Unit 2 is modeled as operating in 2011-2015 in an identical fashion.¹²⁵ Thus, the increased operating costs suggested by Ms. Wilson, who has no apparent or claimed expertise in power

¹²² *Id.*

¹²³ *See also, id.*

¹²⁴ Wilson Direct Testimony at 8-9.

¹²⁵ Weaver Rebuttal Testimony at 6 n. 1 (“Although the Strategist® analysis encompassed a 30-year study period (2011-2040), the applicable period for purposes of the comparative unit disposition analyses is, in fact, the 2016-2040, or 25-year timeframe given that the Strategist® results for the preceding years 2011 through 2015 would be the same (or nearly the same in the case of the year 2015) under all options evaluated.”); Weaver Direct Testimony at 11-12, Table 1 (indicating that none of the options were modeled with an in-service date prior to January 1, 2016);

plant operation or maintenance, in no way affect the relative economics of the options for the period 2011-2015.

Second, even for the five month period of 2016, when Big Sandy Unit 2 is shut down for tie-in and in compliance with the Consent Decree,¹²⁶ there is no difference in the modeling of the operation of Big Sandy Unit 2 among the five options. In each Big Sandy is not operating.

Finally, Ms. Wilson nowhere attempts to quantify the increased O&M costs, if any, under Option 1 she claims may result from any curtailment of Big Sandy Unit 2. More fundamentally, Sierra Club nowhere offers a STRATEGIST run incorporating the claimed – but yet to be quantified – increased O&M costs, or offers any other evidence hinting that the claimed O&M costs would materially affect the economic ordering of the options.

Ms. Wilson's criticism is both speculative and immaterial.

f. Kentucky Power's Use Of The Aurora^{xmp} Model Was Appropriate.

Dr. Fisher criticizes the Company for using the Aurora^{xmp} model to provide an assessment of the relative risk¹²⁷ that each of the options will result in a higher generation/cost of service revenue requirement.¹²⁸ As explained by Mr. Weaver,

¹²⁶ See, Walton Direct Testimony, Exhibit RLW-1.

¹²⁷ Weaver Direct Testimony at 46-48.

¹²⁸ Neither Mr. Hornby nor Dr. Fisher challenge Kentucky Power's use of Aurora^{xmp} to model the risks associated with each option. Hornby Direct Testimony at 23; Fisher Revised-Supplemental Testimony at 41-42. Rather, their criticisms center on the manner in which the Company implemented the model.

and set out in Exhibit SCW-5, the retrofit of Big Sandy Unit 2 as proposed by the Company is less risky than Options 2 (combined cycle replacement), 3 (repowering of Big Sandy Unit 1 with a combined cycle) and Option 4B (market until 2025 and then construct a combined cycle).¹²⁹ More importantly, the results of the Aurora^{xmp} modeling “empirically confirm[] the previous notion identified in this testimony that described the attendant “price taker” risk associated with a market solution (Option #4) would not be in the best interest of KPCo’s customers.”¹³⁰

Dr. Fisher first criticizes the Company’s use of the Aurora^{xmp} model because of its claimed non-transparency.¹³¹ By non-transparent Dr. Fisher principally means that his employer and the Sierra Club’s consultant, Synapse Energy Economics, has chosen not to license the model.¹³² Dr. Fisher nowhere suggests that the Aurora^{xmp} model is not commercially available, that Synapse Energy Economics could not have licensed the model, or that Kentucky Power should have furnished the information he claims he lacks in violation of Aurora^{xmp} license agreement. Nor can (or does) Dr. Fisher suggest that the Company employed the Aurora^{xmp} Model in an effort to deprive Sierra Club of the opportunity to test the Company’s modeling. The Aurora^{xmp} modeling was performed prior to the date

¹²⁹ *Id.* at 46-48; Exhibit SCW-5.

¹³⁰ Weaver Direct Testimony at 48.

¹³¹ Fisher Revised – Supplemental Testimony at 51-52.

¹³² Weaver Rebuttal Testimony at 40-43.

the Company filed its Application and supporting testimony, and substantially before the Company knew the Sierra Club would intervene, or that Synapse Energy Economics would be its consultant.

No more substantial is Dr. Fisher's challenge to the correlations used in the Aurora^{xmp} modeling. As Mr. Weaver makes clear in his rebuttal testimony, and without conceding the validity of Dr. Fisher's suggested correlations, even when the alternative correlations advocated by Dr. Fisher¹³³ (as well as no correlations as also urged by Dr. Fisher) are used in the Aurora modeling, "the Big Sandy Retrofit option offers the relative less risk exposure of all options evaluated."¹³⁴

Finally, Dr. Fisher mounts two inconsistent but equally erroneous arguments. On the one hand he chides the Company for using the Aurora^{xmp} model inappropriately by comparing the absolute results of the Aurora^{xmp} model to determine which option was the least cost¹³⁵ (it did not), while on the other he condemns the Company's Aurora^{xmp} modeling because its absolute values do not correspond with the results modeled by the Company using the STRATEGIST model.¹³⁶

¹³³ Fisher Revised – Supplemental Testimony at 65, Table 10.

¹³⁴ Weaver Rebuttal Testimony at 37; Weaver Rebuttal Exhibit SCW-7R.)

¹³⁵ Fisher Hearing Testimony at 347-349; Fisher Revised – Supplemental Testimony at 41.

¹³⁶ Fisher Revised – Supplemental Testimony at 44-51.

Dr. Fisher premises the first part of this argument by selectively harvesting words and phrases from Mr. Weaver’s direct testimony.¹³⁷ Whatever Dr. Fisher’s understanding of Mr. Weaver’s direct testimony, Mr. Weaver – who understands far better what he intended than Dr. Fisher – conclusively put to rest in his rebuttal testimony any suggestion the Company was relying on the absolute results of the Aurora^{xmp} modeling:

In no way did the body of my direct testimony focus on the “absolute” outcomes from the [Aurora] model. (In fact, as later discussed in this rebuttal testimony it is Dr. Fisher who is centered on such absolute Aurora^{xmp} modeled results.) Rather, my *only* focus in that section of my direct testimony was to describe and discuss the relative simulated results as represented by measuring customer RRaR. Nowhere in my direct testimony explanations do I address the absolute 50th CPW percentile” results from Aurora^{xmp} modeling as having any bearing on the Company’s interpretation of the results, let alone point it out as a basis for decision-making.¹³⁸

Even less supportable is Dr. Fisher’s claims that the Company’s Aurora^{xmp} modeling must be rejected¹³⁹ because they do not correspond with the STRATEGIST-modeled results for the corresponding option.¹⁴⁰ In particular, Dr. Fisher’s efforts to reconcile the two sets of results is another effort by the Sierra Club to force the camel through the eye of the needle:

¹³⁷ Fisher Hearing Testimony at 347-349.

¹³⁸ Weaver Rebuttal Testimony at 20 (emphasis in the original.)

¹³⁹ Fisher Revised – Supplemental Testimony at 67.

¹⁴⁰ Fisher Revised – Supplemental Testimony at 44-51.

- Dr. Fisher’s efforts to compare the STRATEGIST and Aurora^{xmp} models results is an exercise in comparing apples and oranges. The results of the two models are not directly comparable.¹⁴¹
- “[T]he two models [also] are indeed unique in terms of their respective approach to developing a long-term cost profile.”¹⁴² That is, they use fundamentally different modeling processes to calculate their results.¹⁴³
- The STRATEGIST model “utilizes discrete, non-risk adjusted input variables” and then “performs a production costing/dispatch algorithm based upon a singular, non-varying set of input parameters...”¹⁴⁴
- The Aurora model, by contrast, performs stochastic or random variable (Monte Carlo) analyses.¹⁴⁵ As used by the Company, the Aurora model performed 100 risk simulations using randomly selected values for six independent variables.¹⁴⁶
- As a result, and because of the differing purposes of the models, the STRATEGIST model and the Aurora^{xmp} function utilized by Kentucky Power yield non-comparable results. “[O]ne cannot take a specific iterated result from Aurora^{xmp} modeling – even one at the median or 50th (CPW) percentile result of the 100 simulations, as Dr. Fisher has done in his figure 6 and 7 comparisons – and assume it would result in an apples-to-apples comparison with a “base” pricing scenario case result from STRATEGIST.”¹⁴⁷

Both the Company’s choice, as well as its use, of the Aurora^{xmp} model was appropriate and supports the determination that the retrofit of Big Sandy Unit 2 with the DFGD is the least-cost, least risk alternative.

¹⁴¹ Weaver Rebuttal Testimony at 24.

¹⁴² *Id.* at 26.

¹⁴³ *Id.* at 25-26.

¹⁴⁴ *Id.* at 25.

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at 25-26.

¹⁴⁷ *Id.* at 26.

(b) Conclusion.

Federal environmental requirements compel Kentucky Power to replace nearly 1100 MW of generation no later than December 31, 2015. The installation of a Scrubber at Big Sandy Unit 2 is the least-cost, least risk alternative available to the Company. Kentucky Power did not arrive at this conclusion hastily, capriciously, and certainly did not skew its analysis to favor the Scrubber option. Rather, the Company conducted a thorough and unbiased analysis of real world alternatives. That analysis showed that the least cost alternative was the installation of the Scrubber.

The Commission should grant the Company's application for a Certificate of Public Convenience and Necessity.

B. The Company's 2011 Environmental Compliance Plan Satisfies The Requirements Of KRS 278.183.

KRS 278.183 authorizes a utility to recover certain environmental compliance costs associated with coal combustion wastes and by-products. The statute reflects the Kentucky General Assembly's intent "to promote the use of high sulfur Kentucky coal by permitting utilities to surcharge their customers for the cost of a scrubber which is part of a power plant that cleans high sulfur coal . . ."¹⁴⁸ Section 1 provides in pertinent part:

¹⁴⁸ *Kentucky Industrial Utility Customers, Inc. v. Kentucky Utilities Co.*, 983 S.W.2d 493, 496 (Ky. 1998).

[A] utility shall be entitled to the current recovery of its costs of complying with the Federal Clean Air Act as amended and those federal, state, or local environmental requirements which apply to coal combustion wastes and by-products from facilities utilized for production of energy from coal in accordance with the utility's compliance plan . . .¹⁴⁹

Section 2 authorizes a utility to recover these environmental compliance costs through a surcharge upon a showing that the costs are “reasonable and cost-effective for compliance with the applicable environmental requirements . . .”¹⁵⁰

The testimony and documentary evidence introduced in this proceeding establishes that the costs included in Kentucky Power's Environmental Compliance Plan arise from reasonable and cost-effective environmental compliance measures.

1. The Big Sandy Unit 2 Environmental Projects Contained In The 2011 Environmental Compliance Are Reasonable and Cost-Effective Means Of Complying With Applicable Environmental Requirements.

Kentucky Power seeks the Commission's approval of its 2011 Environmental Compliance Plan and Environmental Cost Recovery Surcharge Tariff (“Environmental Compliance Plan”). The Environmental Compliance Plan seeks recovery of the costs of projects required for compliance with the Federal Clean Air Act, as amended, and those federal, state, or local environmental

¹⁴⁹ KRS 278.183(1). Section 1 further provides: “These costs shall include a reasonable rate of return on construction and other capital expenditures and reasonable operating expenses for any plant, equipment, property, facility, or other action to be used to comply with applicable environmental requirements set forth in this section. Operating expenses include all costs of operating and maintaining environmental facilities, income taxes, property taxes, other applicable taxes, and depreciation expenses as these expenses relate to compliance with the environmental requirements set forth in this section.”

¹⁵⁰ KRS 278.183(2).

requirements which apply to coal combustion wastes and by-products from facilities utilized for the production of energy from coal. At issue are two categories of environmental compliance projects: (1) the Scrubber and related facilities planned for Kentucky Power's Big Sandy Unit 2; and (2) Kentucky Power's share of environmental compliance project costs incurred through its participation in the AEP Interconnection Agreement ("Pool Agreement") and the Rockport Unit Power Agreement ("Unit Power Agreement").¹⁵¹

The focus of this proceeding has been Kentucky Power's request for authority to install the Scrubber and related facilities at Big Sandy Unit 2. Specifically, the Scrubber installation will involve the following projects:

- (1) Dry Flue Gas Desulfurization System;
- (2) Dry Flue Gas Desulfurization System Associated Projects;
- (3) Dry Flue Gas Desulfurization System Landfill; and
- (4) Dry Flue Gas Desulfurization System Ash Haul Road.¹⁵²

The Scrubber is expected to remove 98% of Big Sandy Unit 2's SO₂ emissions and achieve compliance with the requirements of CSAPR, MATS, and the NSR Consent Decree.¹⁵³ The Scrubber is a reasonable means of complying with

¹⁵¹ Application, Exhibit 3. The 2011 Environmental Compliance Plan also includes the environmental compliance costs approved by the Commission in Kentucky Power's previous Environmental Compliance Plan filings. These costs are not at issue directly in this proceeding.

¹⁵² *Id.* These projects are described in the McManus Direct Testimony at pages 20-22. The specific equipment that will be installed as a part of the DFGD system is identified in the Walton Direct Testimony at pages 17 and 18.

¹⁵³ McManus Direct Testimony at 20-21.

applicable environmental requirements¹⁵⁴ and that it is cost-effective as compared to other available solutions.¹⁵⁵ In particular:

- the Scrubber is expected to be approximately \$180 Million to \$274 Million less expensive than Option 2 (new-build natural gas combined cycle unit);
- the Scrubber is expected to be approximately \$190 Million to \$290 Million less expensive than Option 3 (repower Big Sandy Unit 1 as a natural gas combined cycle unit);
- the Scrubber is expected to be approximately \$20 Million to \$116 Million less expensive than Option 4A (rely upon market purchases for 5 years before constructing a natural gas combined cycle unit); and
- the Scrubber is a “wash” in terms of cost with Option 4B (rely upon market purchases for 10 years before constructing a natural gas combined cycle unit).¹⁵⁶

Moreover, the Scrubber presents the least risk of materially higher rates as measured by RRaR in the Company’s Aurora^{xmp} modeling.¹⁵⁷

2. The Preliminary Investigation Costs Are Properly Included In The Company’s 2011 Environmental Compliance Plan.

In addition to the costs associated with the current implementation and installation of the Scrubber system included in the 2011 Environmental Compliance Plan, Kentucky Power seeks to recover the costs it incurred from April of 2004 through April of 2006 in connection with a preliminary investigation into the feasibility of installing a wet flue gas desulfurization system (“WFGD”) and

¹⁵⁴ Brief at 10-12.

¹⁵⁵ Brief at 12-47.

¹⁵⁶ Weaver Direct Testimony, Exhibit SCW-4.

¹⁵⁷ Weaver Rebuttal Testimony, Exhibit SCW-R5.

landfill at Big Sandy Unit 2.¹⁵⁸ The Company incurred these costs in connection with its Clean Air Interstate Rule (“CAIR”) compliance strategy.¹⁵⁹ The preliminary investigation was suspended when it became clear that because of changes in prices, both for the system itself and the prices of low-sulfur and high-sulfur coal, the wet scrubber system was no longer cost-effective.¹⁶⁰ These costs arose from reasonable and prudent efforts by the Company to address existing environmental requirements.¹⁶¹ Moreover, it is important to recognize that contrary to the suggestion of the Intervenors, work on a compliance plan for Big Sandy Unit 2 was not “abandoned” in 2006.

Moreover, the majority of the costs incurred during the preliminary investigation were associated with work that carried forward to the current Scrubber project and led to reduced current costs.¹⁶² As explained at the hearing by Robert Walton, Managing Director of Projects and Controls for AEPSC, “a majority, if not all of [the preliminary] work does carry forward into the—into the project that we’re—we’re undertaking now.” Specifically, Mr. Walton identified studies performed by the Company to determine whether the current stack at Big

¹⁵⁸ Wohnhas Direct Testimony at 13-14.

¹⁵⁹ Walton Direct Testimony at 22.

¹⁶⁰ *Id.* Mr. Walton further explains that the project also became less attractive for Kentucky Power because a decrease in the projected price spread between higher and lower sulfur coals effectively eliminated any fuel savings the Company might have recognized by using higher sulfur coals.

¹⁶¹ Wohnhas Direct Testimony at 13-14.

¹⁶² Walton Hearing Testimony at 37.

Sandy Unit 2 can be used following the installation of the Scrubber, studies addressing the coal blending facility, and landfill work as projects that carried forward from the preliminary investigation.

KIUC maintains that the Commission should deny the Company's request to recover its preliminary investigative costs.¹⁶³ In support of this argument, KIUC relies upon two decisions in which the Commission purportedly denied recovery of unauthorized deferrals on the basis that they constituted retroactive ratemaking—*In the Matter of: Application of Duke Energy Kentucky, Inc. for an Order Approving the Establishment of a Regulatory Asset Related to Voluntary Opportunity and other Post-Retirement Expenses*¹⁶⁴ and *In the Matter of: Application of Big Rivers Electric Corporation for a General Adjustment of Rates*.¹⁶⁵ The Voluntary Opportunity Severance Plan and Midwest Office Consolidation expenses at issue in *Duke Energy Kentucky, Inc.*, as well as the Midwest ISO regulatory proceeding costs litigated in *Big Rivers*, involved expenses associated with a discrete event occurring over what appears to be a relatively limited period. The preliminary investigation costs challenged by KIUC were the initial costs incurred by the Company in connection with a now eight-year ongoing investigation of regulatory compliance measures for Big Sandy Unit 2. Moreover, neither decisions involved

¹⁶³ Kollen Direct Testimony at 47-48.

¹⁶⁴ Case No. 2010-00523 (July 14, 2011).

¹⁶⁵ Case No. 2011-00036 (November 17, 2011).

planning costs incurred in connection with the planned construction of a capital asset. In this instance, the preliminary investigation expenses are appropriately added to the cost of the Scrubber. Accordingly, recovery of these expenses should be authorized.

3. The Ohio Power Company And Indiana Michigan Power Company Environmental Projects Contained In The 2011 Environmental Compliance Are Reasonable And Cost-Effective Means Of Complying With Applicable Environmental Requirements.

Kentucky Power's 2011 Environmental Compliance Plan also includes the Company's share of environmental compliance costs incurred through the Pool Agreement and Rockport Unit Power Agreement. These agreements have been approved by the Federal Energy Regulatory Commission ("FERC").¹⁶⁶ The costs arise from four projects undertaken at the John Amos Plant in West Virginia, of which Ohio Power Company ("Ohio Power") owns a portion, and one project each from Indiana & Michigan Power Company's ("I&M") Rockport and Tanners Creek plants in Indiana. The projects at issue are:

- (1) Dry Fly Ash Disposal Conversion – Ohio Power;
- (2) Ash Pond Discharge Diffuser – Ohio Power;
- (3) Flue Gas Desulfurization Mercury Waste Water Treatment – Ohio Power;

¹⁶⁶ Munsey Direct Testimony at 8. Ms. Munsey provides a detailed analysis of the Pool Agreement, Unit Power Agreement, and how the Company's share of costs for environmental projects incurred at other facilities flow through those agreements at pages 16-21 of her Direct Testimony.

- (4) Mercury In-Pond Chemical Treatment – Ohio Power;
- (5) Activated Carbon Injection – I&M (Rockport); and
- (6) Selective Non-Catalytic Reduction – I&M (Tanners Creek).

As a deficit company under the interconnection agreement,¹⁶⁷ and pursuant to the terms of the Rockport Agreement,¹⁶⁸ Kentucky Power is responsible under the Federal Energy Regulatory Commission approved AEP Interconnection Agreement and the Rockport Agreement for its contractual share of the Ohio Power and I&M environmental compliance costs set out above.¹⁶⁹ The Company's Application,¹⁷⁰ and the applicable law¹⁷¹ establish that these expenses are reasonable environmental compliance costs.

The projects are also cost-effective.¹⁷² Indeed, the Intervenors have not challenged the cost-effectiveness of any of the new Ohio Power or I&M projects included in the Company's 2011 Environmental Compliance Plan.

¹⁶⁷ Munsey Direct Testimony at 17-18.

¹⁶⁸ *Id.* at 21.

¹⁶⁹ *Id.* at 17-18, 21.

¹⁷⁰ Application at 28..

¹⁷¹ *See, Order, In the Matter of: The Application of Kentucky Power Company For Approval Of An Amended Compliance Plan For Purposes Of Recovering Additional Costs Of Pollution Control Facilities And To Amend Its Environmental Cost Recovery Surcharge Tariff, Case No. 2006-00307 at 11-12.*

¹⁷² Application at ¶ 28.

4. The CSAPR Allowance Costs Are Properly Recovered Through The Company's Environmental Compliance Plan.

Finally, the 2011 Environmental Compliance Plan includes costs associated with the SO₂ and NO_x allowances required by CSAPR.¹⁷³ Kentucky Power will recover the costs for the CSAPR allowances in the same manner it has accounted for the Title IV SO₂ allowances under the Clean Air Act as well as the SO₂ and NO_x allowances under CAIR.¹⁷⁴ It is reasonable and cost effective for the Company to include these allowances in its 2011 Environmental Compliance Plan just as it previously included allowances under Title IV of the Clean Air Act and CAIR.¹⁷⁵ Indeed, the CSAPR allowances are, in part, are simply a replacement for CAIR and the costs the Company currently is recovering.¹⁷⁶

The Company's 2011 Environmental Compliance Plan should be approved in full.

C. The Separate Proceeding Approach Advocated By KIUC Should Be Rejected By The Commission.

Kentucky Power initiated this proceeding by requesting an order from the Commission approving its Environmental Compliance Plan and granting it a Certificate of Public Convenience and Necessity for the construction of the Scrubber on Big Sandy Unit 2. The scope of this proceeding necessarily is limited

¹⁷³ Wohnhas Direct Testimony at 15-16.

¹⁷⁴ Wohnhas Direct Testimony at 15-16.

¹⁷⁵ *Id.*, at 16.

¹⁷⁶ *Id.*

to whether Kentucky Power has met its burden of proof under KRS 278.183 and KRS 278.020(1). If Kentucky Power has shown that its 2011 Environmental Compliance Plan is reasonable and cost effective, as it has, then the Commission should approve it. If Kentucky Power has shown that public convenience and necessity require the installation of the Scrubber on Big Sandy Unit 2, as it has, then the Commission should grant the Certificate.

KIUC attempts to expand the scope of this proceeding by inviting the Commission to undertake a comprehensive review outside of the IRP process of the Company's "entire generation and purchased power resource portfolio."¹⁷⁷ KIUC envisions this review taking place within the context of a separate proceeding initiated by the Commission.¹⁷⁸ In such a proceeding, KIUC believes that "it would be appropriate to form a working group comprised of representatives of the Company and all intervenors in this proceeding to develop a consensus resource portfolio that will be least cost to customers."¹⁷⁹ The Commission should reject KIUC's invitation.

KIUC's proposal would deprive Kentucky Power of its right – and responsibility subject to Commission review – to engage in independent resource planning, and instead would distribute that authority among the Intervenors in this

¹⁷⁷ Kollen Testimony at 24.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

proceeding. Such action is unsupported by statutory authority and should be rejected as a matter of law. In fact, KRS 278.183 seemingly requires the Commission to act within six months of the filing of the Application. Adopting KIUC's proposal would have the effect of staying this proceeding beyond the six-month period, while meeting the statutory requirement in form only.¹⁸⁰

Moreover, KIUC's proposal is unworkable as a practical matter, unnecessary, and likely to result in increased costs for Kentucky Power's customers. KIUC's proposal necessitates the creation of a "working group" that will include representatives of Kentucky Power, KIUC, the Attorney General, and the Sierra Club.¹⁸¹ It is unlikely such a group will develop the "consensus resource portfolio" envisioned by KIUC. Neither the Attorney General nor the Sierra Club have indicated any support on the record for the creation of this working group, and no party to this proceeding has made a commitment to follow any recommendations the working group might offer.

More fundamentally the Sierra Club's "Beyond Coal"¹⁸² and "Beyond Natural Gas" campaigns would have the effect of imprudently restricting the

¹⁸⁰ Indeed, Vice Chairman Gardner recognized the constraints imposed by the statutory six-month limitation at the hearing. *See* Hearing Transcript at 850.

¹⁸¹ *Id.*

¹⁸² As described by its Deputy Conservation Director, The Sierra Club's "Beyond Coal Campaign tackles the pressing problems of global warming, air pollution, and other threats to the environment and public health associated with coal. The "Beyond Coal" Campaign also promotes the use of clean energy sources by encouraging utilities and power companies nationwide to retire existing coal-fired plants and switch to cleaner energy sources." Declaration of Bruce Nilles, at ¶ 2) The Beyond Coal Campaign, from 2007 through 2010 received "\$26 million in contributions from entities or individuals associated with Chesapeake Energy, a

resource planning options available to the Company by likely taking all coal¹⁸³ and natural gas¹⁸⁴ options off the table.

As grounds for the Commission to initiate the separate resource planning proceeding, KIUC argues that Kentucky Power failed to consider the impact of the Company's acquisition of 20% of Mitchell Units 1 and 2 and did not model the impact of historically low natural gas prices continuing indefinitely.¹⁸⁵ Neither of these factors should have any impact on the analysis set forth by Kentucky Power in this proceeding.

First, the Federal Energy Regulatory Commission filing to achieve Kentucky Power's acquisition of the 20% interest was filed and then subsequently withdrawn nearly two months after this Application was filed with the Commission. Moreover, in this proceeding the Company has established that the acquisition of 20% of Mitchell Units 1 and 2 will serve only as a replacement for the retirement

natural gas company." *Id.*, at 3. Natural gas, as an energy source, is a direct competitor to Kentucky Power's electric operations.

¹⁸³ In fact, the Beyond Coal website makes clear that its purpose is to shut down all coal-fired electric generation without regard to the significant additional costs likely to be imposed on utility customers. See, <http://www.beyondcoal.org/act-now> ("But with 500 coal-fired power plants still operating, spewing out deadly pollution, we have our work cut out for us as we create the citizen movement that will shut down coal and create a clean energy future."); <http://www.beyondcoal.org/> ("Coal-Burning Power Plant Count Down ... 109 retired, 413 to go.")

¹⁸⁴ See <http://content.sierraclub.org/naturalgas/> ("Natural gas drillers exploit government loopholes, ignore decades-old environmental protections, and disregard the health of entire communities. "Fracking," a violent process that dislodges gas deposits from shale rock formations is known to contaminate drinking water, pollute the air, and cause earthquakes. ***If drillers can't extract natural gas without destroying landscapes and endangering the health of families, then we should not drill for natural gas.***") (emphasis supplied.)

¹⁸⁵ Kollen Testimony at 24-26.

of Big Sandy Unit 1.¹⁸⁶ Thus, even if Kentucky Power were able to acquire 312 MW of Mitchell capacity, it will have no impact on the economic analysis relied upon by the Company in this proceeding.¹⁸⁷

Likewise, disagreement between the parties about natural gas price forecasts does not justify KIUC's proposal. There is no basis in the record of this proceeding to assume that current natural gas prices will persist. The natural gas price forecast relied upon by the Company is based on sound supply and demand fundamentals, and nothing has changed since this case was filed to suggest the forecast should be revisited.¹⁸⁸ While Kentucky Power's forecast might be different at some undetermined time in the future, that possibility cannot serve as a basis for the Commission to deny the Company's Application and initiate a separate resource planning proceeding. It is the nature of price forecasts that they change over time as additional information is processed.

The only purpose served by KIUC's proposal will be delay. This delay will result in adverse consequences for Kentucky Power and its customers. Specifically, delay will cause Big Sandy Unit 2 to be shut down for some undetermined amount of time. This condition will expose the Company's customers to unnecessary risks from market purchases, necessitate maintenance

¹⁸⁶ Weaver Hearing Testimony at 638.

¹⁸⁷ *Id.*

¹⁸⁸ Bletzacker Hearing Testimony at 774.

costs to prevent deterioration of the facilities, and could result in complex environmental permitting issues for the Company to bring Big Sandy Unit 2 back into service.¹⁸⁹

D. The Company's Proposed Return On Equity Is Reasonable, Fully Supported By The Record, And Yields Fair, Just and Reasonable Rates.

In its application, the Company requests a rate of return on equity ("ROE"), after taxes, of 10.5%. This is the ROE currently authorized by the Commission as part of the settlement of the Company's most recent base rate case for use with the Company's environmental surcharge.¹⁹⁰ Under the terms of that settlement, which was approved by the Commission, the parties agreed that "[f]or purposes of Tariff E.S., and for accounting for allowance for funds used during construction (AFUDC), Kentucky Power shall be entitled to use a 10.5% rate of return on equity."¹⁹¹ No evidence in this proceeding shows that the market conditions and risks that justified this rate as reasonable in the Company's base rate case do not still apply today. In fact, the corrected metrics of the Company's proxy group, as identified by the Intervenors' witnesses, would actually support a higher ROE.¹⁹²

¹⁸⁹ McManus Rebuttal Testimony at 4-8; Walton Rebuttal Testimony at 4-5.

¹⁹⁰ Order, *In the Matter of Application of Kentucky Power Company for a General Adjustment of Electric Rates*, Case No. 2009-00459 (June 28, 2010)

¹⁹¹ *Id.* at Appendix A, ¶ 7.

¹⁹² Avera Rebuttal Testimony, Exhibit WEA-2.

KIUC witness Hill and Attorney General witness Woolridge each recommended a substantially lower ROE (9.2% and 9.0% respectively), but offered no credible support for such dramatically lower rates. As explained by Dr. Avera in his rebuttal testimony, and again at the hearing, a common-sense review of the data advanced by Dr. Woolridge and Mr. Hill justifies the requested 10.5% ROE. Dr. Avera's rebuttal testimony establishes that the reduced rates sought by KIUC and Attorney General are simply too low to be fair and reasonable. The methods used by Dr. Woolridge and Mr. Hill to support their reduced ROEs rely on flawed and incomplete analyses, fail to reflect current capital market conditions and will result in investors being unwilling to supply the Company with needed capital on reasonable terms.¹⁹³ This is all the more obvious when contrasted with the 10.1% ROE agreed upon and authorized by the Commission in the settlement of LG&E and KU's most recent environmental compliance plan case a few months ago.¹⁹⁴ Dr. Woolridge himself readily conceded that a 40 basis points adder over the Company's proxy group (which includes LG&E) would be appropriate in light of the Company's being a somewhat greater investment risk from the perspective of a forward-looking investor.¹⁹⁵

¹⁹³ Avera Rebuttal Testimony at 4-5. .

¹⁹⁴ *In the Matter of: Application of Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Approval of Its 2011 Compliance Plan for Recovery of Environmental Surcharge*, Case No. 2011-00162 (December 15, 2011).

¹⁹⁵ Woolridge Direct Testimony at 48.

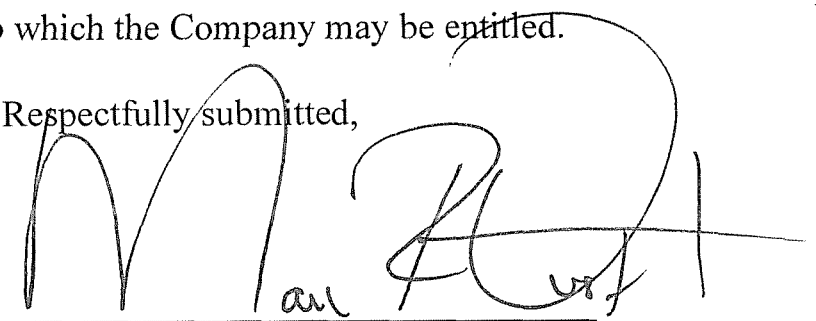
In light of the evidence, the ROE reduction recommended by Dr. Woolridge and Mr. Hill is unreasonable and should be rejected. The ROE for the Company's investment contemplated in this proceeding should be maintained at 10.5% as requested.

Conclusion

Kentucky Power's 2011 Environmental Compliance Plan is reasonable and cost effective means of complying with the applicable environmental requirements facing the Company. The installation of the Scrubber on Big Sandy Unit 2 is required by the public convenience and necessity. Accordingly, Kentucky Power requests that the Commission enter an order granting the following relief:

- (1) Granting a Certificate of Public Convenience and Necessity for the Installation of the Scrubber on Big Sandy Unit 2.
- (2) Approving the Company's 2011 Environmental Compliance Plan;
- (3) Approving the Company's Amended Environmental Cost Recovery Surcharge Tariff; and
- (4) Any and all other relief to which the Company may be entitled.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Mark R. Overstreet', is written over a horizontal line. The signature is stylized and cursive.

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CERTIFICATE OF SERVICE

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