

**VERIFICATION**

The undersigned, G. Scott Fisher being duly sworn, deposes and says he is the Manager for Resource Planning for American Electric Power, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge and belief



G. Scott Fisher

STATE OF OHIO

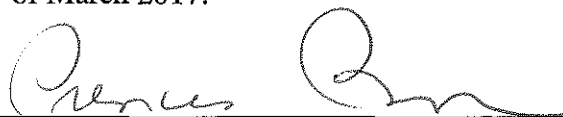
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) Case No. 2016-00413

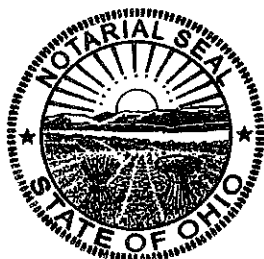
COUNTY OF FRANKLIN

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Subscribed and sworn to before me, a Notary Public in and before said County and State, by (Insert Name), this the 3 day of March 2017.



Notary Public



Princess M. Brown  
Notary Public, State of Ohio  
My Commission Expires 04-19-2020

My Commission Expires: 4/19/2020

**VERIFICATION**

The undersigned, Randy E. Holliday, being duly sworn, deposes and says he is an Economic Forecast Analyst, for American Electric Power, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge and belief

Randy E. Holliday  
Randy E. Holliday

STATE OF OHIO

)

) Case No. 2016-00413

COUNTY OF FRANKLIN

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Subscribed and sworn to before me, a Notary Public in and before said County and State, by Randy E. Holliday, this the 3 day of March, 2017.

Princess Brown  
Notary Public



Princess M. Brown  
Notary Public, State of Ohio  
My Commission Expires 04-19-2020

My Commission Expires: 4/19/2020





**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 1**  
**Page 1 of 2**  
**Witness: John F. Torpey**

- Q - 1** Refer to page 14 of the IRP. With regards to the Rockport Plant UPA:
- a. Explain why the IRP assumes that the UPA will be renewed and continue through the planning period;
  - b. Explain why the IRP does not model any scenarios in which the UPA is not renewed beyond its current end of 2022 expiration;
  - c. Identify the time frame in which the decision whether to renew or extend the UPA will be made;
  - d. State whether the Company intends to seek Commission approval before making a final decision whether to renew or extend the UPA. If not, explain why not;
  - e. Produce any analyses the Company has produced or reviewed regarding whether to renew or extend the UPA beyond the end of 2022, including any workpapers or other documents regarding such analyses;
  - f. Produce any analysis the Company has produced or reviewed regarding the economics of continued operation versus retirement in any year through 2031 of either or both of the Rockport units;
  - g. Produce a copy of the UPA; and h. Identify the cost of the UPA per year.
- A - 1**
- a. & b. Kentucky Power is bound by the Rockport UPA through December 7, 2022. At this time, The Company anticipates addressing an extension of the Rockport UPA coincident with the filing of the Company's 2019 Integrated Resource Plan. In addition, there is uncertainty associated with planning criteria such as load growth, carbon regulations, and commodity prices that would require continual updates to the results of any evaluation of an alternative to the UPA as new information became available. This uncertainty makes reliance on the current UPA more reasonable for modeling purposes in connection with the 2016 Integrated Resource Plan.
  - c. Refer to the Company's response to KPSC 1-1.
  - d. The Company anticipates seeking Commission approval, as required by KRS 278.300, if it extends or renews the UPA for a term of more than two years.
  - e. For reasons stated in (a.) above, the Company has not performed any analysis to renew or extend the UPA.
  - f. Kentucky Power has not performed any analysis associated with the continued

operation of the Rockport units through 2031.

g. Refer to the Company's response to AG 1-5.

h. For the years 2014, 2015 and 2016, payments made by Kentucky Power under the UPA were \$115,001,400.62, \$99,474,845.00, and \$97,940,612.00, respectively.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 2**  
**Page 1 of 1**  
**Witness: John F. Torpey**

- Q - 2** Refer to page 16 of the IRP. With regards to the elements of the Preferred Plan listed in the 9 bullet points on that page:
- a. Identify whether each such element was selected by the Plexos modeling discussed on page 15 of the IRP;
  - b. For each element that was not selected by the Plexos modeling, explain the basis upon which it was decided to include the element in the Preferred Plan; and
  - c. Explain why Big Sandy Unit 1 ceases operation after 2030 in the Preferred Plan.
- A - 2**
- a. Refer to Table 19 in Section 5.2.2.1 which identifies the optimal resources selected by the Plexos modeling under each of the commodity pricing scenarios considered by the Company.
  - b. Refer to pages 137 -138 of 1497 which identifies the basis for changes from the optimal plan to create the Preferred Plan.
  - c. Please refer to part (g) of the Company's response to AG 1-2.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 3**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 3** Refer to Table 1 on page 32 of the IRP. Explain why the 2016 forecasted capacity prices are lower than the 2013 forecasted capacity prices for each year of 2020 through 2031.

**A - 3** Capacity prices are a discrete output of the AuroraXMP model. Differences in capacity prices arise from differing assumptions in the forecasts. The primary difference in forecast assumptions used in 2013 as compared to 2016 is the approach taken to potential CO2 mitigation policy. The 2013 Fundamentals Forecast utilized a \$15/metric ton CO2 dispatch burden on all (new and existing) fossil fuel-fired generation units commencing in 2022. The 2016 Fundamentals Forecast employed a delayed implementation (2024 vs. 2022) CO2 dispatch burden on all existing fossil fuel-fired generating units in order to achieve national mass-based emission targets similar to those proposed in the suspended (“stayed”) Clean Power Plan.



**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 4**  
**Page 1 of 1**  
**Witness: Gordon S. Fisher**

**Q - 4** Refer to page 33 of the IRP. Explain why the forecasted level of distributed generation dropped from 48 MW by 2028 in the 2013 IRP to 1 MW in the 2016 IRP.

**A - 4** Please refer to the Company's response to KPSC 1-8.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 5**  
**Page 1 of 1**  
**Witness: Randy E. Holliday**

- Q - 5** Refer to pages 41 to 42 of the IRP.
- a. Identify what percent of the Company's total load and energy demand was for coal mining in 2010 and in 2015; and
  - b. Identify what percent of load and energy demand in the Company's load forecast is for coal mining in each of the years 2017 through 2031.
- A - 5** Please see KPCO\_R\_SC\_1\_5\_Attachment1.pdf for the requested information.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 6**  
**Page 1 of 1**  
**Witness: John F. Torpey**

- Q - 6** Refer to page 67 of the IRP. With regards to ELG compliance at the Mitchell Plant:
- a. Identify each of the “necessary plant modifications” that you anticipate will need to be carried out to bring the Mitchell Plant into compliance with the ELG Rule;
  - b. Identify the estimated capital cost of each of the “necessary plant modifications” identified in response to subpart a above; and
  - c. Explain how ELG compliance costs at the Mitchell Plant were incorporated into the Plexos modeling discussed in this IRP, including the date of compliance assumed in that modeling.
- A - 6**
- a. and b. Please refer to the Company’s response to KPSC 1-30.
  - c. For IRP modeling, the Company assumed the capital cost of ELG compliance projects would be incurred over the period of 2018 through 2022.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 7**  
**Page 1 of 1**  
**Witness: John F. Torpey**

- Q - 7** Refer to page 67 of the IRP. With regards to ELG compliance at the Rockport Plant:
- a. Identify each plant modifications that you anticipate will need to be carried out to bring the Rockport Plant into compliance with the ELG Rule;
  - b. Identify the estimated capital cost of each of the modifications identified in response to subpart a above; and
  - c. Explain how ELG compliance costs at the Rockport Plant were incorporated into the Plexos modeling discussed in this IRP, including the date of compliance assumed in that modeling.
- A - 7**
- a. and b. Please refer to the Company's response to KPSC 1-30.
  - c. The costs associated with the ELG rule were included as a component of on-going capital expenses. Rockport ELG related capital costs were projected through 2019.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 8**  
**Page 1 of 1**  
**Witness: Gordon S. Fisher**

**Q - 8** Refer to pages 73 to 79 of the IRP. For each of the years 2017 through 2031, identify the level of demand (in MWs) and energy (in MWhs) savings embedded in the Company's load forecast from:

- a. the Company's previously approved DSM programs;
- b. existing codes and standards;
- c. future codes and standards;
- d. existing demand response programs; and
- e. existing energy efficiency programs.

**A - 8** a. - e. The impact of the Company's previously approved DSM programs, existing codes and standards, existing demand response programs and existing energy efficiency programs are included in the load forecast. Figure 29, page 139 of the IRP identifies the impact of existing DSM, incremental DSM programs and codes and standards separately. The impact of existing demand response programs and existing and future codes and standards are included in the Non-DSM Energy Efficiency category. The source data for Figure 29 is provided in attachment KPCO\_R\_SC\_1\_8\_Attachment1.xls.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 9**  
**Page 1 of 1**  
**Witness: Ranie K. Wohnhas**

**Q - 9** Refer to page 83 of the IRP. Identify and describe any efforts by the Company to recruit CHP customers or otherwise encourage the implementation of CHP programs within its service territory, and explain the results of such efforts.

**A - 9** Kentucky Power has not received any inquiries from customers about implementation of CHP technologies. Nor has the Company affirmatively recruited customers to implement CHP technologies at their facilities.

The Company was an active participant, along with the Commission, other utilities, industrial customers, and the Kentucky Association of Manufacturers (KAM), in KAM's CHP working group.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 10**  
**Page 1 of 1**  
**Witness: Ranie K. Wohnhas**

**Q - 10**

Refer to page 89 of the IRP.

- a. Explain why the IRP assumes that the Company will continue to be a Fixed Resource Requirement participant in the PJM capacity market; and
- b. Produce the most recent analysis that the Company carried out or reviewed of whether to continue to be a Fixed Resource Requirement participant.

**A - 10**

a. The assumption that the Company will continue to be a FRR participant is consistent with past elections. However, this decision is reviewed annually at the time of the election.

b. Kentucky Power objects to this data request to the extent it requires the production of attorney-client privileged communications or documents protected by the attorney work product doctrine. Kentucky Power is filing a privilege log identifying the documents with respect to which the privilege and doctrine are being asserted.

Without waiving the privilege or doctrine, please see the Company's response to AG 1-11.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 11**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 11** Refer to page 101 of the IRP. Produce a complete copy of the AEP Fundamentals Analysis completed in October 2016.

**A - 11** Please refer to attachments KPCO\_R\_SC\_1\_11\_Attachment1.xlsx through KPCO\_R\_SC\_1\_11\_Attachment4.xlsx.



**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 12**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 12**

Refer to page 107 of the IRP. With regards to the forecasted capacity prices identified in Figure 23:

- a. Explain how you developed the capacity price forecasts set forth in Figure 23 and identify any assumptions that went into those forecasts.
- b. Explain why the forecasted capacity price drops to \$25/MW-day in 2021 and, depending on the scenario, stays at that level for two to five years.
- c. Explain what “\*Prices constrained to greater than \$25/MW-day” refers to and means.
- d. Confirm that your forecasted capacity prices do not approach the PJM Cost of New Entry (“CONE”) or Net CONE in any of the forecasted scenarios in any year of the forecast.
  - d.i. If confirmed, explain why the forecasted prices do not approach CONE or Net CONE.
  - d.ii. If not confirmed, explain why not.

**A - 12**

- a. Capacity Values are a discrete output of the AuroraXMP model. The Capacity Values created by the AuroraXMP model generally reflect the compensation for capacity necessary to keep generating units available for dispatch that are required to maintain reserve margin but are unable to survive economically on energy-sales revenue alone. The Company's model-driven projections of capacity prices and energy prices are inextricably linked. Energy price assumptions are driven by fuel prices, and other assumptions. See also SC 1-11.
- b. See response to (a). Capacity prices are low when adequate capacity exists in PJM.
- c. This means that capacity prices have a floor of \$25/MW-day. Prices cannot be lower than \$25/MW-day.
- d. Not confirmed. The forecasted capacity values combined with energy values may approach the costs for the model to build new generation.
  - d.ii. The model does not consider PJM's Cost of New Entry, however it does consider the cost of new generation resources.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 13**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 13** Refer to page 108 of the IRP. Explain the basis for the assumption that wind resources will be valued at only 5% of nameplate capacity rating under PJM's Capacity Performance Rule. Identify and produce any document supporting that 5% assumption.

**A - 13** Please refer to the Company's response to KPSC 1-35.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 14**  
**Page 1 of 1**  
**Witness: Gordon S. Fisher**

**Q - 14** Refer to page 108 of the IRP. Explain how your reasoning for not developing or modeling industrial energy efficiency programs is consistent with the results of the efficiency potential for the industrial sector identified in Table 12 on page 88 of the IRP.

**A - 14** As discussed in Section 4.5.1, page 108, the Company assumed for this IRP that industrial customers will self-invest in EE measures based upon customer-specific economic evaluation regardless of the existence of utility-sponsored energy efficiency programs. The Company terminated its industrial DSM program because of a lack of customer participation. The Company has not received any requests to reinstate the program.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 15**  
**Page 1 of 1**  
**Witness: Gordon S. Fisher**

**Q - 15** Refer to page 123 of the IRP. Produce the BNEF solar pricing forecast referenced therein. Identify the date of that forecast.

**A - 15** Kentucky Power objects to the request to produce “the BNEF solar pricing forecast.” The requested information is the proprietary and confidential property of Bloomberg Finance L.P. Kentucky Power, through its affiliate, American Electric Power Service Corporation, licensed the use of the requested information. Kentucky Power’s license does not extend to providing the requested information to third parties. Kentucky Power has agreed to maintain the confidentiality of this information, and public disclosure of the requested information will expose the Company to a multiple risks, including possible litigation for breaching the agreement, as well as the inability to license the use in the future of similar information from Bloomberg Finance L.P. and other publishers.

To facilitate a response to the request to the extent legally possible, Kentucky Power contacted Bloomberg Finance L.P. to seek permission to produce the requested information. Bloomberg Finance L.P. agreed to the production of the requested information on a limited basis and subject to the receiving party’s execution of an appropriate non-disclosure agreement. Without waiving its objection, Kentucky Power will produce the relevant portions of Bloomberg New Energy Finance publications containing the requested information on CD as KPCO\_R\_SC\_1\_15\_Attachment1\_Confidential.pdf and KPCO\_R\_SC\_1\_15\_Attachment2\_Confidential.pdf. The CD, which will be provided to those parties executing a non-disclosure agreement, is subject to the accompanying petition for confidential treatment.

The publication dates of the requested information were June 6, 2016 and June 7, 2016.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 16**  
**Page 1 of 1**  
**Witness: Gordon S. Fisher**

**Q - 16** Refer to Figure 28 on page 127 of the IRP. Explain why the forecasted LCOE for wind resources increases from just over \$50/MWh for a 2022 year of commercial operation to more than \$70/MWh for a 2024 year of commercial operation.

**A - 16** The increase in the Levelized Cost of Electricity (LCOE) for wind resources from 2022 to 2024 is due to the declining value of the Production Tax Credit (PTC).

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 17**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 17** Refer to pages 141-142 of the IRP. Identify each environmental control on the Rockport units included in Table 22, and the Company's share of the cost of each of those controls.

**A - 17** Please refer to KPCO\_R\_SC\_1\_17\_Attachment1\_Confidential.xlsx.  
Confidential treatment is being sought for portions of the attachment.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 18**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 18** Refer to Table 24 on page 145 of the IRP. For each correlation between coal, gas, power, and CO2 prices, explain the basis for the identified correlation, and produce any studies, analyses, or other documents supporting such correlation.

**A - 18** The correlation between coal, gas and power prices is derived by analyzing the historical fluctuations in annual prices relative to one another. Due to the historically inelastic nature of CO2 prices relative to the other commodity prices, correlations between CO2 prices to other commodity prices were analyzed by calculating the forecasted variation of gas prices to CO2 prices, coal prices to CO2 prices, and power prices to CO2 prices provided in the base, high and no CO2 Fundamental Analysis pricing scenarios.

Please see KPCO\_R\_SC\_1\_18\_Attachment1.xls and KPCO\_R\_SC\_1\_18\_Attachment2.xlsx for the requested information.

**Case No. 2016-00413**  
**Sierra Club's First Set of Data Requests**  
**Item No. 19**  
**Page 1 of 1**  
**Witness: John F. Torpey**

**Q - 19** Refer to pages 134 to 135 of the IRP. Produce the workpapers, modeling input and output files, and revenue requirement results for the Plexos modeling of each of the six scenarios listed in Table 18 and for the Preferred Plan and the Do-Nothing Plan.

**A - 19** Please refer to KPCO\_R\_SC\_1\_19\_Attachment1\_Part1.zip through KPCO\_R\_SC\_1\_19\_Attachment1\_Part5\_Confidential.xlsx for modeling inputs and KPCO\_R\_SC\_1\_19\_Attachment2.xlsx and KPCO\_R\_SC\_1\_19\_Attachment3.xlsx for modeling outputs. Confidential treatment is being sought for portions of the response.