VERIFICATION

The undersigned, Daniel L. Moyer, being duly sworn, deposes and says he is the Plant Manager-Kammer/Mitchell for Kentucky Power Company, 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

Daniel L. Moyer

STATE OF WEST VIRGINIA)
) Case No. 2016-00230
COUNTY OF MARSHALL)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Daniel L. Moyer this the 29 day of September 2016.

Notary Public

My Commission Expires: Feb 10, 2021

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Rita Kramer
AEP Kammer-Mitchell Plant
P.O. Box K
Moundsville, WV 26041
My Commission Expires Feb. 10, 2021

VERIFICATION

The undersigned, John A. Rogness III, being duly sworn, deposes and says he is the Director Regulatory Services for Kentucky 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/her information, knowledge and belief.

John A. ~~Rogness III~~

COMMONWEALTH OF KENTUCKY)
) Case No. 2016-00230
COUNTY OF FRANKLIN)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by John A. Rogness III, this the 4th day of October 2016.

Notary Public 481393

My Commission Expires: January 23, 2017

Kentucky Power Company

REQUEST

Refer to Kentucky Power's response to the Commission's August 12, 2016 Request for Information ("August 12, 2016 Request"), Item 25. Confirm that, for the review period, copies of the following have been filed with the Commission. If an item has not been filed, explain why it has not been filed and provide a copy.

a. Long-term purchase contracts for coal, natural gas, or fuel oil;

b. Spot or short-term purchase contracts for coal, natural gas, or fuel oil;

c. Master agreements for coal, natural gas, or fuel oil;

d. Purchase confirmations relating to the master agreements for coal, natural gas, or fuel oil. (For voluminous natural gas purchases, if the utility filed documentation such as monthly invoices or a listing of transactions showing date, quantity purchased, and price in lieu of filing the purchase confirmations, confirm that such documentation was filed.)

e. Copies of all natural gas transportation agreements;

f. Copies of all transportation agreements relating to barging, trucking, rail, etc.

RESPONSE

a-f. All contracts with costs presented for recovery through the FAC have been filed with the Commission in accordance with 807 KAR 5:056, Section 1(7).

The Company also procured natural gas for use in connection with the testing of Big Sandy Unit 1 following its conversion, but prior to the unit being placed in service. Kentucky Power is not seeking to recover those costs through the FAC, and the contracts associated with the gas procured for testing were not filed with the Commission.

WITNESS: John A Rogness

Kentucky Power Company

REQUEST

Refer to Kentucky Power's response to the August 12, 2016 Request, Item 26.

a. Confirm that the May 2, 2002 and October 3, 2002 Orders in Case No. 2000-00495-B[1] pertained to the recovery of non-economy power purchases through the fuel adjustment clause ("FAC") and did not address forced outage situations.

(1) If this can be confirmed, explain in detail why Kentucky Power believes that the "peaking unit equivalent" is applicable during a forced outage situation.

(2) If this cannot be confirmed, provide the basis for Kentucky Power's belief that the Orders in Case No. 2000-00495-B relate to forced outages.

b. Refer to KPCO_R_PSC_1_26_Attachment1_Redacted.xls, tab 01-2016, row 29.

(1) Confirm that this row shows that Mitchell Unit 2 suffered a forced outage totaling 395 MW, but only 287 MW of purchased power was used in the determination of the amount to be excluded for recovery through the FAC related to the forced outage because Kentucky Power was able to generate additional power to make up the difference.

(a) If this cannot be confirmed, explain how the 287 MW was calculated.

(b) If this can be confirmed, explain why Kentucky did not use the entire 395 MW in the calculation of the total substitute cost of the forced outage; 287 MW being replacement purchased power and 108 MW being replacement power generated from its own generation resources.

(2) Confirm that, when calculating the amount to be excluded for recovery through the FAC, if Kentucky Power had used the lesser of the assigned cost ($23.531/MWh) versus the substitute cost ($28.15/MWh) for recovery through the FAC, $1,322.64 would have been excluded for recovery rather than the $456.55 excluded by Kentucky Power.

[1] Case No. 2000-00495-B, An Examination by the Public Service Commission of the Fuel Adjustment Clause of American Electric Power Company from May 1, 2001 to October 31, 2001 (Ky. PSC May 2, 2002, and Oct. 3, 2002).

(3) By month for the review period, recalculate the amount that would have been excluded for recovery through the FAC using both replacement generation and replacement power in the calculation of total substitute cost compared to the assigned cost of the unit suffering a forced outage. (The peaking unit equivalent rate should not be used in the calculation.) Include in the response the supporting calculations in Excel spreadsheet format with the formulas intact and unprotected. For each month, compare the revised amount with the amount Kentucky Power excluded for recovery.

c. Explain in detail how the generation cost ($/MWh) of the unit suffering a forced outage is calculated. Include in the response the time period over which the data is collected.

RESPONSE

a. **(1 & 2)** Kentucky Power Company confirms that the Commission's May 2, 2002 and October 3, 2002 Orders in Case No. 2000-00495-B in part pertained to the "recovery of non-economy purchases through the fuel adjustment clause through the fuel adjustment clause…." Kentucky Power cannot confirm that it understands the Orders as being inapplicable to "forced outage situations."

The Commission's May 2, 2002 Order describes the scope of the proceeding as follows:

> During this proceeding, the Commission examined the appropriate treatment under 807 KAR 5:056 for purchased power costs incurred to serve native load. More specifically, we inquired about the types of power purchases that qualify as "economy power purchases" and the treatment of power purchases that are not considered "economy power purchases." [2]

The May 2 Order continued by defining economy energy purchases:

> Based upon our review of Administrative Regulation 807 KAR 5:056 and in recognition of recent changes in the wholesale energy market, we find that some clarification of the regulation's treatment of economy energy purchases and non-economy energy purchases is necessary. Economy energy is "energy produced and supplied from a

[2] Order, *In the Matter of: An Examination By The Public Service Commission Of The Application Of The Fuel Adjustment Clause Of American Electric Power From May 1, 2001 Through October 31, 2001*, Case No. 2000-00495-B at 2 (Ky. P.S.C. May 2, 2002) ("May 2002 Order").

> more economical source in one system, substituted for that being produced by a less economical source in another system…. Economy energy sales occur when utilities purchase energy from other utilities that can generate the energy at lower cost…. We view "economy energy purchases" that are recoverable through an electric utility's FAC as purchases that an electric utility makes to serve native load, that displaces its higher cost of generation, and that have an energy cost less than the avoided variable generation cost of the utility's highest cost generating unit available to serve native load during that FAC expense month. [3]

The May 2 Order also defined non-economy purchases recoverable through Kentucky Power's fuel adjustment clause as:

> Purchases made to serve native load that have an energy cost greater than the avoided variable cost of the utility's highest cost generating unit available to serve native load during that FAC expense month…. We interpret 807 KAR 5:056 as permitting an electric utility to recover through its FAC only the lower of the actual energy cost of the non-economy purchased energy or the fuel cost of its highest cost generating unit available to be dispatched to serve native load during the reporting expense month. Costs for non-economy energy purchases that are not recoverable through an electric utility's FAC are considered "non-FAC expenses" and, if reasonably incurred, are otherwise eligible for recovery through base rates. *Id*. at 4-5.

Nothing in the Commission's May 2, 2002 Order indicated that energy purchases made to off-set forced outages were to be excluded from the economy/non-economy purchase dichotomy set out in the Order. To the contrary, the Commission admonished Kentucky Power: "[w]e place AEP on notice that this interpretation shall be applied to ***all energy purchases*** made after April 30, 2002." [4]

The Commission's October 3, 2002 Order in Case No. 2000-00495-B approved the use of the peaking unit equivalent as a "proxy" generation unit as part of the determination of the Company's highest cost generating unit available in connection with the economy/non-economy dichotomy. [5]

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[3] *Id*. at 3-4 (internal citations omitted).

[4] *Id*. at 5 (emphasis supplied).

[5] Order, *In the Matter of: An Examination By The Public Service Commission Of The Application Of The Fuel Adjustment Clause Of American Electric Power From May 1, 2001 Through October 31, 2001*, Case No. 2000-00495-B at 3,4 (Ky. P.S.C. October 3, 2002) ("October 2002 Order").

Nothing in the Commission's October 2002 Order indicated that the peaking unit equivalent, or its use as part of the economy/non-economy purchase dichotomy set out in the May 2002 Order, was not applicable to purchases made in response to a forced outage. In the October 2002 Order, the Commission also reminded Kentucky Power that in its May 2002 Order it had placed the Company on notice the Commission "would apply this interpretation to all energy purchases occurring after April 30, 2002."[6]

Kentucky Power has applied the economy energy purchase/non-economy energy purchase dichotomy appropriately, including the peaking unit equivalent calculation, to its purchases to cover forced outages in its fuel adjustment clause filings**.**

b(1). The Company confirms that there was a forced outage of the Mitchell Unit 2 during the hour represented in Row 29. The Company cannot confirm that the 287 MW shown in Column 9 ("Purchases Due to FO Deficiency") represents the difference between the Mitchell Unit 2's name plate capacity of 395 MW and additional generation from the Company's own generation resources.

The 287 MW was calculated by subtracting the Company's net available generation resources of 520 MW (Column 6) during the hour represented by Row 29 from the Company's internal load of 807 MW (Column 7) during the hour represented in Row 29. During the hour represented in Row 29, the PJM market did not select the Company's additional 112 MW generation (520 MW minus 408MW) because Company-supplied generation was not economical in that hour. As required by PJM, all available Company generation had already been offered into the market. During that same hour the amount of economic energy generated and dispatched by the Company's generation resources was 408 MW (Column 5(a)). The Company purchased additional power to satisfy the balance of the internal demand because doing so was the least cost option.

The Company also confirms that 385 MW (Column 3) were purchased to make up the difference, of which 287 MW (Column 9) were purchased to satisfy internal demand due to the forced outage. Total purchases (385 MW), plus dispatched Company-owned generation (408 MW), plus transmission losses (14 MW) equals internal demand (807 MW) during the hour.

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[6] *Id*. at 1. *See also*, Order, *In the Matter of: An Examination Of The Application Of The Fuel Adjustment Clause Of East Kentucky Power Cooperative, Inc. From November 1, 2013 Through April 20, 2014*, Case No. 2014-00226 at 7-8 (Ky. P.S.C. January 30, 2015) ("If a purchase does not meet the definition of an 'economy energy purchase,' then it must be considered a 'non-economy energy purchase,' which is limited for recovery through the FAC…. The Commission believes it important to maintain the limitation for recovery through the FAC of "non-economy energy purchases" in order to incentivize utilities to keep outages to a minimum and to have sufficient capacity to meet load.")

More generally, the amount of power that may be required to be purchased in any given hour to satisfy internal demand depends on the amount of power that is being generated and dispatched into the market and not a unit's nameplate capacity. Unit capacity is a measure of the energy potential that a unit may produce, not what is, or could be, produced and dispatched in a given hour. For example, and all else being equal, a hypothetical unit may be capacity rated at 500 MW but only dispatch 400 MWh of energy in a single hour at the time of a forced outage. Because the Company cannot bring the additional 100 MWh of energy potential to market in that single hour, or because the Company's generation is "out of money" during that hour, Kentucky Power will be required to purchase the energy lost due to the forced outage from the market.

Please see the response to Items 3b and c of the Commission Staff's request for information concerning non-economic and non-demand related reasons why a unit may produce less than its rated capacity in any particular hour.

b(2). Although the Company disagrees with the methodology described in the question, it confirms that as a matter of mathematical computation the amount to be excluded from the FAC equals $1,326.17 if Mitchell Unit 2's average generation cost of $23.531 /MWh is used in the same calculation. The Company properly used $26.56 /MWh as the highest cost generation to determine that portion of purchased power costs ($456.55) to be excluded from the FAC.

b(3). Please see KPCO_R_PSC_2_2_Attachment1_Confidential.xls for the requested analysis. Kentucky Power respectfully disagrees with the methodology implicit in the calculation.

The Company utilized purchased power to replace the energy lost due to the forced outage. Kentucky Power is required to nominate (day ahead) and offer into the PJM market all available generation. In any given hour, PJM determines the sources of least cost generation to satisfy market demand. If the units are accepted to run, and if some reason, the Company does not deliver that power into the market, the Company is required to purchase power to make up the difference. In any given hour, the actual amount of generation available to the market is reflected in column 6 (Net Available Generation Resources) of the 01-2016 tab of KPCO_R_PSC_2_2_Attachment1.xls. In any given hour (including during a forced outage), any economic generation that KPCO supplies to the market will be reflected in column 5a (Dispatched Generation). The replacement power purchased from the

market to offset the forced outage is reflected in column 8 (Purchases Due to FO Deficiency).

c. Please refer to KPCO_R_PSC_2_2_Attachment1_Confidential.xlsx, tab 01-16 Hourly Purch Alloc, column P for the requested calculation. The generation cost ($/MWh) of a unit is the monthly average cost and is calculated by dividing the total MW generated in the month by the total fuel cost for the month. For example the cost of Rockport Unit 1 is calculated by dividing 61,414 MW (Cell P3) by $1,631,315 (Cell P5) equals $26.563 /MWh. This cost represents the highest cost generation threshold used to determine the amount of cost of a non-economy purchase that must be excluded from recovery through the FAC.

WITNESS: John A Rogness

Kentucky Power Company

REQUEST

Refer to Kentucky Power's response to the August 12, 2016 Request, Item 28.

a. Refer to KPCO_R_PSC_1_28_Attachment1_Redactecl.xls, tab Janl6Act, and KPCO_R_PSC_1_28_Attachment1_Confidential.xls, tab Janl6Act.

   Explain why the Grand Totals in cells T750 differ between the two spreadsheets.

b. Explain why the Generation Cost $/MWh varies between Mitchell units 1 and 2 each month.

c. Explain why the Generation Cost $/MWh sometimes varies widely for the same unit from one month to the next month.

RESPONSE

3a. An error was inadvertently made during the redaction process. Please refer to KPCO_R_PSC_2_3_Attachment1_Redacted.xls for the corrected spreadsheet.

3b. There are multiple factors that can affect a unit's generation efficiency, which in turn affects an individual unit's generation cost, and result in varying generation costs ($/MWh) between Mitchell Unit 1 and Mitchell Unit 2 in a single month. For example, the number of unit outages, startups, and run time will affect an individual unit's cost and, all else being equal, result in a higher unit cost for one Mitchell Unit compared to the other. Auxiliary power (aux power) which is used to run the auxiliary equipment required to operate a unit (fans, pumps, motors, etc.), also differs from between Unit 1 and Unit 2. Aux power is typically 10% of total generation for unit 1 and 7% for unit 2. The Mitchell Unit 1 aux power requirement is higher than Mitchell Unit 2 aux power requirement due to the length of Unit 1 duct work and the required induced draft fan loading.

3c. See the response to 3b. The heat rate for a single unit (and hence generation costs) will vary on a month-to-month basis due to monthly differences in the load on the unit, coal quality, and ambient weather conditions. Additional factors that may affect unit efficiency, and hence cause month-to-month variances in costs, include, but are not limited to, coal pile survey adjustments, and boiler tube leaks. Similarly, equipment and mechanical problems (failures or problems causing equipment to operate at less than optimal levels but not requiring a shutdown), and aging equipment not operating at peak efficiency, can cause a unit's operating efficiency to decline and costs to vary from month to month.

WITNESS: John A Rogness