COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN EXAMINATION OF THE APPLICATION OF THE FUEL ADJUSTMENT CLAUSE OF KENTUCKY POWER COMPANY FROM NOVEMBER 1, 2013 THROUGH APRIL 30, 2014	))))	CASE NO. 2014-00225

KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC. AND THE ATTORNEY GENERAL OF THE COMMONWEALTH OF KENTUCKY'S RESPONSE TO COMMISSION STAFF'S INITIAL REQUEST FOR INFORMATION

1. Refer to page 6 of the Direct Testimony of Lane Kollen ("Kollen Testimony"), lines 2-12, wherein Mr. Kollen recommends that $12.648 million in excessive fuel costs be refunded over a six-month period, plus interest of $.864 million calculated at Kentucky Power's weighted average cost of capital. Mr. Kollen also recommends that Kentucky Power be required to modify its fuel cost allocation by adopting the methodology used by East Kentucky Power Cooperative, Inc. ("East Kentucky").

a. Explain why Intervenors are recommending that refunds be made over six months and not over a shorter or longer period.
b. Provide the calculation of the weighted average cost of capital as well as the $.864 million in interest.
c. Explain why Intervernors are recommending that Kentucky Power follow East Kentucky's methodology rather than that of another jurisdictional utility. Include in the response Mr. Kollen's understanding of how East Kentucky's methodology differs from that of the other jurisdictional utilities, excepting Big Rivers Electric Corporation.

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RESPONSE 1:

a. This was a matter of judgment based on the six month review period and the magnitude of the refund. I would not recommend a refund period longer than six months, but a shorter period could be appropriate.

b. The weighted cost of capital was obtained from the Sheet 2 of the Attachment to the Company's response to Staff 3-9. The computation of the interest on the refund is provided in Excel spreadsheet "KIUC_AG_response_to_Staff_1-1.xlsx."

c. The East Kentucky methodology correctly assigns the lowest cost generation in each hour to the native load customers for FAC purposes. Like Kentucky Power, East Kentucky is also a member of PJM. The East Kentucky methodology allocates costs between native load and off-system sales based on a stacked resource cost basis. It does not assign all minimum segment generation and costs or the so-called "no-load" cost to native load customers. It assumes that all generation is available both to native load and off-system sales and allocates all minimum segment costs to both native load and off-system sales.

There may not be much difference in the methodologies used by the other jurisdictional utilities because the description of each of the utilities' methodologies contain certain similarities

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to the EKPC method. The reason that the EKPC method was chosen is that EKPC's response to PSC Request 29 in PSC Case No. 2014-00226 provides the clearest discussion of any of utilities' methodologies for allocating fuel costs in describing the fact that minimum segment costs, including no-load fuel costs, are allocated to both native load and off-system sales. While these costs are allocated to both, the EKPC response also clearly states that the highest cost resource(s) are allocated to off-system sales, and the EKPC response states that native load customers are protected "from having no-load cost assigned inappropriately."

Duke Energy Kentucky provides a similar answer in its response to Staff DR 1-29 in Case No. 2014-00229, in which it states that it performs an after-the-fact stacking process in which it allocates the lowest cost resources to native load first. It states that its method allocates fuel costs, including no-load costs, to both native load and off-system sales based on its stacking process.

The KU/LG&E responses to Staff's data request in their FAC proceedings (Case No. 2014-00227 for KU and Case No. 2014-00228 for LG&E) discuss their fuel cost allocation procedures, and state that all fuel costs are allocated to either native load or off-system sales, and do not state that some fuel costs are parceled out and only allocated to native load. One difference in the KU/LGE fuel cost allocation procedure compared to the EKPC approach has to do with the joint dispatch and cost sharing approach that occurs between KU and LG&E. Another difference between EKPC and KU/LGE is that EKPC addresses its interaction with the PJM market in its discussion of its FAC, while KU/LGE are not members of any regional transmission organizations.

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2. Refer to page 7 of the Kollen Testimony, lines 16-18. Define "minimum segment costs" as used in Mr. Kollen's Testimony.

RESPONSE 2:

The "minimum segment cost" of a generating unit, as used in Mr. Kollen's Testimony, is the fuel cost required to operate a generating unit at its operating economic minimum capacity level. The economic minimum capacity segment fuel cost includes a no load fuel cost component and a non-no load fuel cost component. In part, Mr. Kollen relied on the Company's response to KIUC 2-1, KIUC 2-2, and PSC 2-4 for his understanding of "minimum segment costs."

According to the PJM Cost Development Guidelines, PJM Manual 15 at page 3, supplied by the Company in response to KIUC 2-1, the "Economic Minimum is the lowest level of energy in MW the unit can produce and maintain a stable level of operation under normal operation," though in emergency conditions units can operate below this capacity level down to the emergency minimum capacity level.

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The Company's response to KIUC 2-2 provides an example of the calculation of the minimum segment fuel cost. The example demonstrates the calculation of the no-load and non-no load costs associated with the Company's generating units' minimum capacity segments. The example demonstrates that while a portion of the minimum segment energy is sold off-system, all of the no load minimum segment costs are fully assigned to native load customers, which KIUC believes is unreasonable.

Finally, .Mr. Kollen is aware that there are other costs besides fuel costs that are considered part of minimum segment costs that are used for other purposes besides developing costs that are allocated to native load customers as part of the FAC process. These include fuel handling costs, chemicals/consumables, emissions allowances and variable operation and maintenance expenses.

When Mr. Kollen discussed minimum segment costs in his testimony on page 7, lines 16 – 18, he did not consider those costs being included for fuel adjustment clause purposes.

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3. Refer to page 9 of the Kollen Testimony, lines 11-12, which state that "[t]he minimum segment cost per kWh is greater than the cost of incremental generation." Provide the location of this information in the record.

RESPONSE 3:

Based on Mr. Kollen's experience, the average cost of operating a generating unit is greatest when operating the unit at its minimum capacity segment. The incremental cost of operating a unit above minimum over the next segment is normally lower than the average cost of operating the unit at minimum. As an example, the following is a sample input /output equation for a unit:

$$\text{MBTU} = 399.3 + 8.0528\,x + .00179\,x^2$$

Assume that the fuel cost for this unit is \$2/MBTU, and the unit is dispatched to its minimum capacity level of 100 MW in an hour. Compare that cost to the added cost to operate the unit at 200 MW in the hour.

The cost to operate the unit is:

At 100 MW = $2 * (399.3 + 8.0528 * 100 + .00179 * 100^2) = \$2{,}445$

At 200 MW = $2 * (399.3 + 8.0528 * 200 + .00179 * 200^2) = \$4{,}163$

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In this example, the average cost to operate at 100 MW is $2,445/100 = $24.45/MWH, and the added cost to operate at the next 100 MW is (4,163 – 2,445) / 100 = $17.18/MWH. Thus, the minimum segment cost per MWH is greater than the cost of incremental generation on a $/MWH basis.

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4. Refer to the Direct Testimony of Philip Hayet ("Hayet Testimony"). Explain why Intervenors did not use the $13.15 million of "no load costs" that would have been allocated to off-system sales if "no load costs" had followed the allocation of all other fuel costs (obtained by totaling the "Off-System No Load Fuel Allocation" column for January-April 2014 in Kentucky Power Company's response to Item 4.b.(3) of Commission Staff's Second Information Request, Attachment 3) as the amount it recommends be refunded to customers.

RESPONSE 4:

The Company's response to Staff's data request (see file KPSC_2_4_Attachment3.xls) contained an allocation of "no load costs" that was derived by apportioning the total no load costs between native load and off-system sales in rough proportion to the way that generation energy was allocated between native load and off-system sales. This would not be an unreasonable approach for allocating just no load costs between native load and off-system sales if those were the only costs that had to be allocated. However, besides no load costs, non-no load fuel costs and purchase power costs are included in the fuel clause and need to be allocated as well. KIUC/AG allocated all fuel and purchase power costs using the EKPC method.

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5. Refer to page 13 of the Hayet Testimony, lines 11-13, which state that "the fuel cost results that the Company provided included the allocation of fuel costs to retail native load customers and did not include fuel costs or loads associated with the wholesale requirements customers (Vanceburg and Olive Hill)." Explain whether the absence of the fuel costs and loads associated with the wholesale requirements customers in Mr. Hayet's analysis affects the accuracy of his calculations.

RESPONSE 5:

No it does not. The City of Vanceburg and City of Olive Hill have full requirements contracts with Kentucky Power that are FERC regulated cost based formula rate agreements. While the Company refers to these customers as native load (see Kentucky Power response to KIUC 1-1), sales to these customers are still FERC regulated and the costs are allocated to these customers based on FERC formula rates. The purpose of Mr. Hayet's Testimony on page 13, lines 11-13, was to explain that Kentucky Power's results were based on an allocation of fuel costs to off-system sales and native load customers, but this excluded the full requirements customers. Mr.

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Hayet's fuel cost allocation method allocated the same costs, but using a different allocation approach. The absence of the full requirements customers did not affect the accuracy of Mr. Hayet's analysis.

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6. Refer to page 16 of the Hayet Testimony, the table at the bottom of the page. Explain why the total fuel costs for January-April differ between the top of the table and the bottom of the table.

RESPONSE 6:

The results at the top of the table on page 16 of Mr. Hayet's Testimony were supplied in response to PSC 1-29 Attachment 1[1], and represent the Company's fuel and purchase power costs as provided by the Company, stated on a monthly basis, and allocated to native load and off-system sales. The results at the bottom of the table were developed based on an analysis that the KIUC/AG performed using hourly data that the Company used in its cost reconstruction process.

The data was also requested in order to obtain all hourly input data and output results, and live model calculations to recreate the Company's post-dispatch reconstruction process.[2] In performing its analyses, the KIUC/AG determined that the hourly data that the Company

[1] PSC 1-29 attachment 1 yields the same $/MWh as data provided in KIUC 1-5. These files were used interchangeably as the company's monthly summary of fuel cost allocation.

[2] The Company's response to KIUC 1-20 contains a list of some of the DR responses that contained hourly information that was used. Also, note the Company only offered to demonstrate its reconstruction process, if parties traveled to Columbus, Ohio (See the Company's response to KIUC 2-15).

provided in the hourly files such as KIUC 1-12 did not match the monthly results provided in PSC 1-29. The following table contains essentially the same data as found in the table on page 16 of Mr. Hayet's Testimony, but just includes Kentucky Power's fuel costs, in other words, it excludes purchased power costs. These costs represent most of the total costs allocated in the fuel clause.

Kentucky Power Total Fuel Costs

	KPCO Results Supplied Monthly	KPCO Results Supplied Hourly	KIUC/AG Hourly Results Using EKPC Method
Period	**PSC 1-29 Attachment 1**	**KIUC 1-12**	**BASED ON KIUC 1-12**
Jan 2014	36,263,240	35,527,610	35,527,610
Feb 2014	31,450,620	31,546,188	31,546,188
Mar 2014	27,427,520	28,565,102	28,565,102
Apr 2014	29,143,310	28,580,069	28,580,069
TOTAL JAN - APR	**124,284,690**	**124,218,969**	**124,218,969**

These costs are the sum of total fuel costs including costs that are allocated to native load and to off-system sales. Note that the Company's own monthly results as supplied in PSC 1-29, and its

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hourly results as summed in KIUC_1_12_Attachment3_CONFIDENTIAL.xls do not equal each other. KIUC/AG's allocation of fuel costs was based on the Company's hourly data, and the sum of the fuel costs allocated between native load and off-system sales match the Company's hourly results identically. We are not able to explain why the Company's own monthly and hourly results do not match, however, the difference in results over the period of Jan – Apr 2014 is very small, only $65,721, or just a difference of .005%. Furthermore, this difference, $65,721 is the same exact difference between the top and bottom of Mr. Hayet's table on page 16 of his testimony. Also see the Company's responses to KIUC 2-6 and 2-14, which provide additional information the Company supplied in an attempt to reconcile some of the differences that the KIUC/AG noticed.[3]

[3] Mr. Hayet made reference to problems encountered on page 12 of his testimony in which he noted "We initially encountered problems dealing with inconsistencies in the data that prevented us from being able to line up data that were associated with the same hours." Mr. Hayet goes on to state that the Company helped to improve the problem through responses to additional data requests, but nevertheless, problems still persisted. These issues likely would have been rectified had the Company supplied its actual reconstruction models as requested, which it would not do.

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7. Provide all spreadsheets developed by Mr. Hayet in his analysis in Excel format with the formulas intact and unprotected and with all columns and rows accessible.

RESPONSE 7:

Please see the file attached to AG/KIUC Response to staff request 1-1 for the EKPC allocation analysis. Additionally, please see attached workpapers a – h, as summarized below for the analyses and workpapers supporting Mr. Hayet and Mr. Kollen's testimony.

File Name	Analysis Description
KIUC_AG_response_to_Staff_1-1.xlsx	EKPC Allocation Method Hourly, Interest Calculation, Hours NL less than minimum
KIUC_AG_response_to_Staff_1-7_Att_a.xlsx	Hayet testimony page 8
KIUC_AG_response_to_Staff_1-7_Att_b.xlsx	Exhibit LK-3
KIUC_AG_response_to_Staff_1-7_Att_c.xlsx	Exhibit LK- 7
KIUC_AG_response_to_Staff_1-7_Att_d.xlsx	Exhibit LK-8
KIUC_AG_response_to_Staff_1-7_Att_e.xlsx	Kollen table on page 14
KIUC_AG_response_to_Staff_1-7_Att_f.xlsx	Kollen Testimony
KIUC_AG_response_to_Staff_1-7_Att_g.ppt	Research,
KIUC_AG_response_to_Staff_1-7_Att_h.pdf	Research, emails