

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

| | | |
|---|---|----------------------------|
| ELECTRONIC TARIFF FILING OF KENTUCKY |) | |
| UTILITIES COMPANY FOR APPROVAL OF AN |) | |
| ECONOMIC DEVELOPMENT RIDER SPECIAL |) | CASE NO. 2022-00371 |
| CONTRACT WITH BITIKI-KY, LLC |) | |

RESPONSE OF
KENTUCKY UTILITIES COMPANY
TO
COMMISSION STAFF'S POST-HEARING REQUEST FOR INFORMATION
DATED JUNE 2, 2023

FILED: JUNE 14, 2023

VERIFICATION

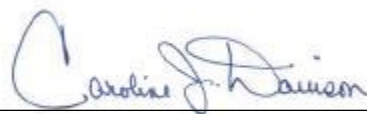
COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Michael E. Hornung**, being duly sworn, deposes and says that he is Manager – Pricing/Tariffs for Kentucky Utilities Company, and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.



Michael E. Hornung

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 12th day of June 2023.



Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

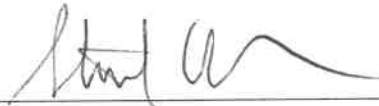
January 22, 2027



VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Stuart A. Wilson**, being duly sworn, deposes and says that he is Director – Energy Planning, Analysis & Forecasting for Kentucky Utilities Company, an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.



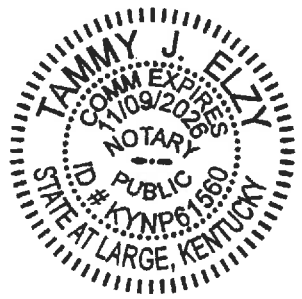
Stuart A. Wilson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 9th day of June 2023.



Notary Public

Notary Public ID No. KYNP61560



My Commission Expires:

November 9, 2026

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Post-Hearing Request for Information Dated June 2, 2023

Case No. 2022-00371

Question No. 1

Responding Witness: Michael E. Hornung / Stuart A. Wilson

Q-1. For each marginal demand cost calculation shown in KU's Rebuttal Testimony Exhibits SAW-1 through SAW-4 filed on February 21, 2023, provide a monthly billing comparison for the discount period in the same format as KU's response to Commission Staff's Second Request for Information, Item 4.

- a. Using these monthly billing comparisons, provide the break-even energy price for each year of the discount period for each scenario.
- b. Explain how the Fuel Adjustment Clause (FAC) would affect the margins during the discount period.

A-1.

- a. See attachments being provided in Excel format. The calculation of Bitiki-KY revenues has been updated to include FAC and ECR charges in addition to RTS base energy charges. Furthermore, marginal demand costs reflect coincident peak values (versus non-coincident peak values), and all marginal costs have been grossed up for transmission losses. As noted in Mr. Wilson's rebuttal testimony, the sum of base energy and FAC charges will approximate whatever actual fuel and variable O&M costs turn out to be for RTS customers. Therefore, any differences in the attachments between projected energy revenues and marginal energy costs can be ignored (because the FAC mechanism should cause them to approximately equate over time).

For the same reasons, there is no "break-even" energy price for Bitiki-KY in any of the scenarios modeled. The RTS base energy and FAC charges will account for the extent actual fuel and variable O&M costs turn out to be higher or lower than the forecasted marginal energy cost. KU has nonetheless provided the requested calculations.

- b. FAC revenues should be added to base energy charge revenues for an accurate comparison to short-term energy production marginal cost during the discount period. See the responses to part (a) and Question No. 3. KU's EDR discounts apply only to demand charges. Therefore, the FAC will have no impact on Bitiki-KY's contributions to fixed costs because RTS energy and FAC charges fully account for RTS customers' marginal energy costs.

The attachments are
being provided in
separate files in Excel
format.

KENTUCKY UTILITIES COMPANY

**Response to Commission Staff's Post-Hearing Request for Information
Dated June 2, 2023**

Case No. 2022-00371

Question No. 2

Responding Witness: Michael E. Hornung

- Q-2. Confirm that the FAC would at least partially recover energy rates in excess of the base rate amount.
- A-2. Partially confirmed. KU's FAC is negative when KU's actual fuel costs are less than the amount recovered through the fuel cost component of base rates. The FAC is currently positive. Whether positive or negative, the purpose of the FAC is to recover actual fuel costs net of the fuel cost component of base energy rates.

KENTUCKY UTILITIES COMPANY

**Response to Commission Staff's Post-Hearing Request for Information
Dated June 2, 2023**

Case No. 2022-00371

Question No. 3

Responding Witness: Michael E. Hornung

- Q-3. Explain why it is reasonable to compare the base energy rate and total marginal variable costs of energy, including amounts that will be recovered through the FAC.
- A-3. As stated in response to Question No. 1, FAC should be added to the energy charges in comparison to the total marginal variable costs of energy. These costs are not part of the EDR discounted values and directly contribute to covering short-term marginal energy cost.

KENTUCKY UTILITIES COMPANY

**Response to Commission Staff’s Post-Hearing Request for Information
Dated June 2, 2023**

Case No. 2022-00371

Question No. 4

Responding Witness: Stuart A. Wilson

- Q-4. Refer to the Rebuttal Testimony of Stuart Wilson, page 6. Also refer to KU’s planned for generation retirements and replacement units in Case Nos. 2022-00402 and 2023-00122.¹ Provide the forecasted reserve margins for the discount period assuming that no generation is retired, and no capacity additions are acquired.
- A-4. See the table below, which provides forecasted summer and winter reserve margins for the discount period based on the load forecast assumed in this filing and no retirements or capacity replacements.² As seen in the table, reserve margins exceed the Companies’ minimum targets (17% summer, 24% winter) throughout the discount period.

| Year | Reserve Margin | |
|------|----------------|--------|
| | Summer | Winter |
| 2023 | 22.2% | 37.9% |
| 2024 | 22.5% | 38.2% |
| 2025 | 20.5% | 35.9% |
| 2026 | 18.9% | 33.5% |
| 2027 | 19.0% | 33.6% |

Bitiki-KY’s 13 MVA load has a reserve margin impact of less than 0.23% in both seasons over the five-year EDR discount period. It will therefore have no impact on the Companies’ resource plan.

¹ Case No. 2022-00402, *Electronic Joint Application of Kentucky Utilities Company and Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Site Compatibility Certificates and Approval of a Demand Side Management Plan and Approval of Fossil Fuel-Fired Generating Unit Retirements* (Ky. PSC Dec. 15, 2022); and Case No 2023-00122, *Electronic Joint Application of Kentucky Utilities Company and Louisville Gas and Electric Company for Approval of Fossil Fuel-Fired Generating Unit Retirements* (Ky. PSC May 10, 2023).

² Projected summer reserve margins reflect the reduction in available capacity resulting from the inability to operate Mill Creek 1 and 2 simultaneously during ozone season due to NO_x limits.

KENTUCKY UTILITIES COMPANY

**Response to Commission Staff's Post-Hearing Request for Information
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Case No. 2022-00371

Question No. 5

Responding Witness: Stuart A. Wilson

- Q-5. Refer to KU's response to Joint Intervenor's First Request for Information, Item 13.
- a. In Excel spreadsheet format, with all formulas, columns, and rows unprotected and fully accessible, provide the reserve margin analysis, with generation itemized by unit. Include projected retirements, additions, and any expected changes in capacity (e.g., modifications to existing facilities that increase or decrease capacity).
 - b. Explain what the high load and low load scenario represent in regard to the base load scenario.
- A-5.
- a. See attachment being provided in Excel format, which includes reserve margin calculations assuming retirements and capacity replacements consistent with Case Nos. 2022-00402 and 2023-00122. As noted in the response to Question No. 4, Bitiki's 13 MVA load will have no impact on the Companies' resource plan. Please note that the provided file is not an adequate or reasonable tool for resource optimization or generation planning, which require consideration of numerous other factors. Using it to target a particular reserve margin would overlook other vital considerations, including units' performance capabilities and how they coincide with energy requirements, revenue requirements impacts, and environmental compliance.
 - b. The high and low load scenarios in the attachment to the referenced response were taken from the 2021 IRP.³ In the hearing for this case, Mr. Wilson thought these forecasts had been included in the Companies' most recent Admin No. 387 filing, but he was mistaken. The cited high and low load scenarios do not correlate with the Companies' current load forecast (for example, neither includes any amount of Blue Oval SK load) and were inadvertently included in the cited spreadsheet. KU did not use the high or low load values for any purpose in this proceeding.

³ Case No. 2021-00393: Vol. I, pages 5-34 through 5-39; more specifically, Table 5-14 on page 5-37.

The attachment is being provided in a separate file in Excel format.

KENTUCKY UTILITIES COMPANY

**Response to Commission Staff's Post-Hearing Request for Information
Dated June 2, 2023**

Case No. 2022-00371

Question No. 6

Responding Witness: Stuart A. Wilson

Q-6. Provide the equivalent Loss of Load Expectation of KU's minimum reserve margin target.

A-6. See the table below. The Companies' minimum reserve margin targets are 17% in the summer and 24% in the winter, but portfolios with the same reserve margins can have very different LOLEs depending on the composition of resources in the portfolios (i.e., the proportions of fully dispatchable, limited-duration, and intermittent resources). The Companies' analysis in Case No. 2022-00402 that is summarized in Section 5.2 of the 2022 Reserve Margin Analysis demonstrates this fact.⁴ In that analysis, the Companies evaluated four portfolios with identical reserve margins (17.9% summer; 26.0% winter) but markedly different LOLEs ranging from 3.57 for the SCCT portfolio ("Reference + SCCT") to 15.14 for the dispatchable DSM portfolio ("Reference + Disp. DSM").⁵ To compute the LOLE in the table below for a portfolio with reserve margins precisely equal to 17% in the summer and 24% in the winter, the Companies' updated the SCCT portfolio in this analysis to include less SCCT capacity. As expected, the LOLE for the updated portfolio is greater than 3.57.

| LOLE (days/10 years) | | |
|-----------------------------|----------------------------------|------------------|
| Summer (Jun-Aug) | Winter (Jan-Feb, Dec) | Full Year |
| 3.16 | 1.32 | 4.80 |

⁴ See Case No. 2022-00402, May 2023 Update to Exhibit SAW-1, Appendix D (May 4, 2023) beginning at page D-23.

⁵ *Id.* at D-24, Table 15.

KENTUCKY UTILITIES COMPANY

**Response to Commission Staff's Post-Hearing Request for Information
Dated June 2, 2023**

Case No. 2022-00371

Question No. 7

Responding Witness: Stuart A. Wilson

Q-7. Provide the dollar per megawatt cost of a natural gas combined cycle unit with carbon capture.

A-7. The National Renewable Energy Laboratory (“NREL”) in their 2022 Annual Technology Baseline Mid-Year Update⁶ provides a range of overnight capital costs for a natural gas combined cycle unit (“NGCC”) with carbon capture of \$1,649,000 to \$1,860,000 per megawatt in real 2020 dollars, depending on the NGCC and carbon capture technology, for a 2028 installation. These figures do not include capital costs for CO₂ transportation and storage.

Importantly, there is no current or proposed law or regulation that would require carbon capture and sequestration for the NGCCs the Companies are proposing to build. The New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units (“GHG NSPS”) and Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units that were published in the Federal Register on May 23, 2023 support the Companies’ proposed resource plan in Case No. 2022-00402. Under the proposed GHG NSPS, the earliest a new or existing NGCC unit would have to achieve emissions consistent with wither hydrogen co-firing or having CCS would be years *after* the five-year EDR discount period, and it might never have to do so depending on its capacity factor.⁷ Moreover, U.S. Environmental Protection Agency’s (“EPA”) own modeling of the impact of its own proposed GHG standards on the LG&E-KU generating fleet shows no additions of CCS to any gas-fired unit through the end of the modeling period, 2055.⁸ Therefore, it would be inappropriate and

⁶ See the “Natural Gas_FE” tab of NREL’s 2022 v3 *Annual Technology Baseline Workbook Mid-year Update 2-15-2023* at:

<https://data.openei.org/files/5716/2022%20v3%20Annual%20Technology%20Baseline%20Workbook%20Mid-year%20Update%202-15-2023.xlsx>.

⁷ See, e.g., slides 8 and 13 of EPA’s presentation, “Overview Presentation: Clean Air Act Section 111 Regulation of Greenhouse Gas Emissions from Fossil Fuel-Fired Electric Generating Units,” available at https://www.epa.gov/system/files/documents/2023-05/111%20Power%20Plants%20Stakeholder%20Presentation2_4.pdf (accessed June 3, 2023).

⁸ See “S_C_KY” tab of the “Proposal_RegionalSummary” Excel file in the zip file available at <https://www.epa.gov/system/files/other-files/2023-04/Proposal.zip>. (accessed June 3, 2023).

unreasonable to use the cost of a hypothetical NGCC with CCS to determine the marginal production demand cost for serving Bitiki-KY during the five-year EDR discount period.