

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC JOINT APPLICATION OF)	
KENTUCKY UTILITIES COMPANY AND)	
LOUISVILLE GAS AND ELECTRIC)	
COMPANY FOR CERTIFICATES OF PUBLIC)	CASE NO. 2020-00402
CONVENIENCE AND NECESSITY AND)	
APPROVAL OF A DEMAND SIDE)	
MANAGEMENT PLAN AND APPROVAL OF)	
FOSSIL FUEL-FIRED GENERATING UNIT)	
RETIREMENTS)	

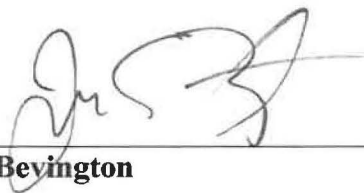
RESPONSE OF
KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY
TO
RESPONSE TO POST-HEARING DATA REQUEST OF JOINT INTERVENORS
METROPOLITAN HOUSING COALITION, KENTUCKIANS FOR THE
COMMONWEALTH, KENTUCKY SOLAR ENERGY SOCIETY AND
MOUNTAIN ASSOCIATION
DATED SEPTEMBER 1, 2023

FILED: SEPTEMBER 15, 2023

VERIFICATION

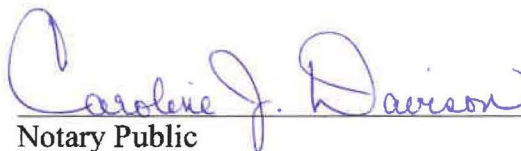
COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **John Bevington**, being duly sworn, deposes and says that he is Director – Business and Economic Development for LG&E and KU Services Company, 220 West Main Street, Louisville, KY, 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.



John Bevington

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13th day of September 2023.

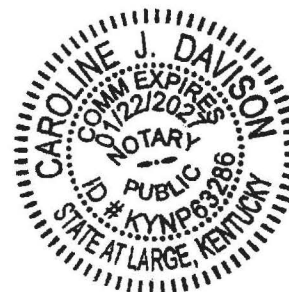


Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027



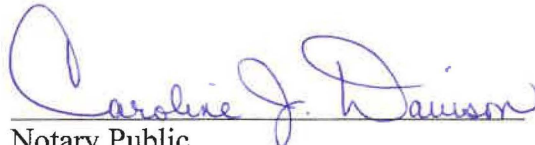
VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Lana Isaacson**, being duly sworn, deposes and says that she is Manager – Emerging Business Planning and Development for Louisville Gas and Electric Company and Kentucky Utilities Company, 220 West Main Street, Louisville, KY 40202, and that she has personal knowledge of the matters set forth in the responses for which she is identified as the witness, and the answers contained therein are true and correct to the best of her information, knowledge, and belief.


Lana Isaacson

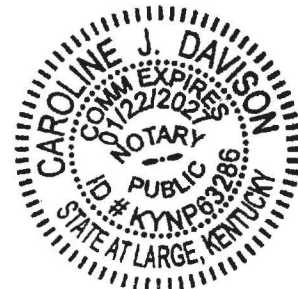
Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13th day of September 2023.


Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027



VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **David S. Sinclair**, being duly sworn, deposes and says that he is Vice President, Energy Supply and Analysis for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, 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.

David S. Sinclair

David S. Sinclair

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 14th day of September 2023.

Caroline J. Davison

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027



CONFIDENTIAL INFORMATION REDACTED

**KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY**

Response to Post-Hearing Data Request of Joint Intervenors Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Mountain Association

Dated September 1, 2023

Case No. 2020-00402

Question No. 4.1

Responding Witness: Lonnie E. Bellar

- Q-4.1. Please refer to Joint Intervenors' cross-examination of the Companies' Witness Bellar, from approximately 4:16 p.m. to 4:24 p.m. on August 22, 2023.
- a. Please provide a copy of any responses received to the EPC contractor RFP.
 - b. Please provide a copy of any documents that the Companies provided to potential respondents to the EPC contractor RFP.
 - c. Please provide a copy of the "base bid" that Mr. Bellar referenced in his testimony.
- A-4.1. Certain information responsive to this request is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.
- a. See Attachment 1, which contains summary price information sheets and related correspondence from the engineering, procurement, and construction ("EPC") vendors. The vendors object to the production of supporting engineering and technical data supporting the technical aspects of the equipment on the ground that such information contains trade secret information that is extremely sensitive and highly competitive in nature. Further, such information is not relevant to the issues in this proceeding.

The lowest of the initial EPC bids in Attachment 1 for the Mill Creek and Brown NGCC units (Mill Creek 5 and Brown 12) indicate a total capital cost of [REDACTED]¹ [REDACTED]

¹ The bids received are for 645 MW units rather than the 621 MW assumed in the Companies' analyses. The cost per kW is based on updated total project costs of [REDACTED] for Mill Creek 5 and [REDACTED] for Brown 12, which reflect the lowest initial EPC bid values and reductions in project contingency estimates.

CONFIDENTIAL INFORMATION REDACTED

[REDACTED].²
 These updated capital cost estimates impact only PVRR.³ They have no impact on reliability, resilience, or reserve margin analyses in this proceeding.

It is important to note that these are initial bid amounts, *not* final prices. The Companies will negotiate aggressively with the bidders to reduce cost and arrive at the most favorable pricing and terms consistent with obtaining high-quality, reliable facilities to serve customers at the lowest reasonable cost.

Although these initial bid amounts reduce the current calculations of net benefits of the Companies' proposed resource portfolio, *they do not eliminate them*. For example, adding the PVRR effects of these NGCC bid amounts to the incremental PVRR amounts in Table 8 of Exhibit SB4-1 results in a total average NPVRR benefit of the mid coal-to-gas ("CTG") ratio cases of [REDACTED]. It also results in net benefits in the other CTG ratios ranging from [REDACTED], with an average of [REDACTED]. Even excluding all non-fossil-fuel-fired supply-side resources (i.e., Portfolio 5 in Exhibit SB4-1 Table 8) results in an NPVRR benefit of [REDACTED] for the average of mid-CTG ratio cases.

Notably, these NPVRR benefits assume *zero* net cost of carbon. Assuming a non-zero cost of carbon both enhances the benefits of the Companies' proposed portfolio and is reasonable following the issuance of the EPA's proposed greenhouse gas rules for new and existing electric generating units. Moreover, assuming carbon costs of at least \$15/ton is consistent with the avoided carbon cost component calculated by the Commission's orders for the Companies' NMS-2 rates.⁴

Finally, the Companies note that the increase in NGCC capital cost shown in the bids the Companies received demonstrates the vital importance of proceeding with these units *now*. [REDACTED]

[REDACTED] The enormous movement toward these units nationally and internationally means that prices will only go up if the Companies are not able to move forward now. Moreover, as shown in the

² [REDACTED].

³ Assuming a 40-year service life for a new NGCC, these higher capital cost estimates translate into a [REDACTED] increase in the PVRR for scenarios using Mill Creek 5 and a [REDACTED] increase for scenarios using Brown 12.

⁴ See, e.g., *Electronic Application of Louisville Gas and Electric Company for an Adjustment of Its Electric and Gas Rates, a Certificate of Public Convenience and Necessity to Deploy Advanced Meter Infrastructure, Approval of Certain Regulatory and Accounting Treatments, and Establishment of a One-Year Surcredit*, Case No. 2020-00350, Order at 56 (Ky. PSC Sept. 24, 2021); Case No. 2020-00350, LG&E Response to PSC 8-21 Attachment (Aug. 13, 2021)(showing nominal carbon prices increasing from \$17.00 per ton in 2026 to \$48.56 per ton in 2046).

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letters from the RFP respondents in Attachment 2, the bids the Companies have received are valid only [REDACTED]

[REDACTED]. And any delay will undermine the current environmental permitting of the units. It is also important to act now to ensure the Companies can obtain the firm gas transportation service they will need for the units, which might not be available in the near future due to increasing demands on existing pipeline systems and the long lead times to add significant capacity to those pipeline systems.⁵ Thus, failing to act now to secure the proposed NGCC units and the required firm gas transportation service could seriously imperil the Companies' ability to provide reliable and lowest reasonable cost service.

- b. The EPC request for proposals ("RFP") issued to the original equipment manufacturers was provided in the June 29, 2023 supplemental response to KCA 2-51(b). See attached for all documents that the Companies provided to potential respondents to the EPC contractor RFP.
- c. See the response to part (a).

⁵ See, e.g., Aug. 23, 2023 H.V.T. at [13:06:40-13:07:45](#) (Bellar); Aug. 24, 2023 H.V.T. at [16:21:10-16:22:01](#), [16:43:35-16:44:21](#), and [17:54:42-17:56:21](#) (Schram).

**KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY**

Response to Post-Hearing Data Request of Joint Intervenors Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Mountain Association

Dated September 1, 2023

Case No. 2020-00402

Question No. 4.2

Responding Witness: David S. Sinclair

- Q-4.2. Please refer to Joint Intervenors' cross-examination of the Companies' Witness Sinclair, beginning at approximately 1:50 p.m. on August 28, 2023.
- a. Please identify the number of times that Trimble County Unit 5 started in calendar year 2022.
 - b. Please identify Trimble County Unit 5's capacity factor in calendar year 2022.
 - c. Please identify the number of times that Brown Unit 5 started in calendar year 2022.
 - d. Please identify Brown Unit 5's capacity factor in calendar year 2022.
 - e. Please refer to Rebuttal Exhibit DSS-2, Table 6, page 3 of 10.
 - i. Please identify any steps that the Companies took to validate the capacity factors and/or the number of starts of the units dispatched in the PROSYM modeling runs for the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2.
 - ii. Please identify, by folder and file name, any workpapers previously provided by the Companies that show the capacity factors and/or the number of starts for each of the Companies' units in the PROSYM modeling runs for the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2.
 - iii. Please identify, for each of the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2, the number of starts for Trimble County Unit 5 found in the PROSYM modeling run results for the year 2028.

- iv. Please identify, for each of the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2, the capacity factor for Trimble County Unit 5 found in the PROSYM modeling run results for the year 2028.
- v. Please identify, for each of the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2, the number of starts for Brown Unit 5 found in the PROSYM modeling run results for the year 2028.
- vi. Please identify, for each of the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2, the capacity factor for Brown Unit 5 found in the PROSYM modeling run results for the year 2028.
- vii. Please identify, for each of the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2, the capacity factor for the Brown BESS found in the PROSYM modeling run results for the year 2028.
- viii. Please identify, for each of the two portfolios described in Table 6 of Rebuttal Exhibit DSS-2, the number of starts for the Brown BESS found in the PROSYM modeling run results for the year 2028.

A-4.2. Note that while Power Supply requests unit commitment and de-commitment, the Trimble County and Brown plants make the decision as to which specific simple cycle combustion turbines (“SCCT”) to start and stop based on optimizing starts and run hours to manage overall maintenance timing and costs. On the other hand, the PROSYM model commits units with the same operating characteristics based on the unit number, (e.g., Trimble County Units 5 through 10 are the same make and model, have the same minimum and maximum capacities, utilize the same heat rate curves, and have the same fuel costs; when PROSYM needs one Trimble County SCCT, it commits Trimble County Unit 5 first and commits Trimble County Unit 10 last) so it is not reasonable to compare actual with modeled starts and energy for individual SCCTs. To develop a more appropriate comparison, the Companies typically average units of the same make and model at the same station and evaluate as a set, so Trimble County Unit 5 would be averaged with Trimble County Units 6 through 10, and Brown 5 would be averaged with Brown Units 8 through 11. In addition, SCCT utilization can vary significantly by year depending upon weather, relative fuel costs, and availability of coal and NGCC units, so the Companies typically evaluate these station averages against a longer period, such as a five-year average.

- a. Trimble County Unit 5 started 99 times in 2022. However, Trimble County Units 5 through 10 averaged 87 starts per year between 2018 and 2022, with a range of 56 to 110 average annual starts.

- b. Trimble County Unit 5 had a capacity factor of 19.2 percent in 2022. However, Trimble County Units 5 through 10 averaged an annual capacity factor of 11.8 percent between 2018 and 2022, with a range of 6.2 percent to 22.3 percent average annual capacity factor.
- c. Brown Unit 5 started 43 times in 2022. However, Brown Units 5 and 8 through 11 averaged 33 starts per year between 2018 and 2022, with a range of 18 to 50 average annual starts.
- d. Brown Unit 5 had a capacity factor of 2.0 percent in 2022. However, Brown Units 5 and 8 through 11 averaged an annual capacity factor of 2.6 percent between 2018 and 2022, with a range of 0.9 percent to 4.5 percent average annual capacity factor.
- e.
 - i. To understand whether the capacity factors of the units in these PROSYM modeling runs are reasonable, one must first understand the underlying portfolios and load characteristics. The first portfolio is the Companies' proposed CPCN portfolio, which contains much higher penetrations of intermittent solar energy than the Companies have today. The second portfolio is the KCA's implied portfolio based on a "do nothing" recommendation, under which Ghent Unit 2 and Mill Creek Unit 2 are unavailable to serve load in the ozone season, Mill Creek Unit 1 is assumed to be unavailable due to environmental regulations, and no NGCC, solar, or batteries are added. In 2028, both portfolios have significantly higher load than recent history due to the expected addition of BOSK and would be operating at lower fully-dispatchable reserve margins than the Companies have experienced in recent history.⁶ Both portfolios in this modeling exercise – along with all PLEXOS and PROSYM modeling runs for the CPCN – assume no access to the wholesale market (an "island" mode) to avoid planning for a future based on off-system sales or purchases which might not materialize. The Companies' proposed CPCN portfolio has sufficient energy and capacity to meet load, but the KCA's implied portfolio would be expected to be insufficient and result in unserved energy, despite a greater reliance on SCCT generation. The Companies reviewed the capacity factors of the units in these PROSYM modeling runs and identified them as within acceptable ranges given these conditions. The Companies did not explicitly evaluate unit starts for these modeling runs, as the purpose of these modeling runs was to identify unserved energy risk and unit starts were not particularly relevant.

⁶ See the response to PSC 1-53(f).

- ii. Capacity factors and starts for both portfolios are available within the following workpapers:

“\CONFIDENTIAL_KCA\CONFIDENTIAL_PROSYM\
out_unityr.csv” in Rebuttal Exhibit DSS-6

“\CONFIDENTIAL_KCA\CONFIDENTIAL_PROSYM\CaseFolders\E
00\BL\MGMC\C000\2022RFPE00BLMGMC000.yr” in Rebuttal
Exhibit DSS-6

“\CONFIDENTIAL_KCA\CONFIDENTIAL_PROSYM\CaseFolders\E
01\BL\MGMC\C000\2022RFPE01BLMGMC000.yr” in Rebuttal
Exhibit DSS-6

- iii. Trimble County Unit 5 had 296 and 254 starts in 2028 in the modeling runs for the CPCN portfolio and KCA implied portfolio, respectively. However, Trimble County Units 5 through 10 averaged 217 and 209 starts, respectively. The Companies have observed that absolute starts in PROSYM for the Trimble County SCCTs are higher in “island” mode, but that relative starts between portfolios remains a useful tool to measure incremental wear and tear on SCCTs. In this instance, Trimble County SCCTs are running at higher capacity factors but with fewer unit starts in the KCA implied portfolio, which would result in slightly reduced wear and tear on the SCCTs given that their maintenance is based on unit starts.
- iv. Trimble County Unit 5 had capacity factors of 13.7 percent and 34.5 percent in 2028 in the modeling runs for the CPCN portfolio and KCA implied portfolio, respectively. However, Trimble County Units 5 through 10 averaged capacity factors of 8.5 percent and 21.2 percent, respectively.
- v. Brown Unit 5 had 62 and 82 starts in 2028 in the modeling runs for the CPCN portfolio and KCA implied portfolio, respectively. However, Brown Units 5 and 8 through 11 averaged 34 and 58 starts, respectively.
- vi. Brown Unit 5 had capacity factors of 2.5 percent and 5.1 percent in 2028 in the modeling runs for the CPCN portfolio and KCA implied portfolio, respectively. However, Brown Units 5 and 8 through 11 averaged capacity factors of 1.6 percent and 2.5 percent, respectively.
- vii. Brown BESS had a capacity factor of 1.3 percent in 2028 in the modeling run for the CPCN portfolio. Brown BESS was not active in the KCA implied portfolio.

- viii. Brown BESS had 72 starts in 2028 in the modeling run for the CPCN portfolio. Brown BESS was not active in the KCA implied portfolio.

**KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY**

Response to Post-Hearing Data Request of Joint Intervenors Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Mountain Association

Dated September 1, 2023

Case No. 2020-00402

Question No. 4.3

Responding Witness: John Bevington / Lana Isaacson

- Q-4.3. With reference to the Joint Intervenors' cross-examination of Ms. Isaacson, please identify the individual or individuals with the Kentucky Energy and Environment Cabinet with whom the Companies have communicated regarding adoption of a "pay as you save" (PAYS)-type program where the upfront costs to install energy-efficient equipment in a home is funded by the utility and the costs for these upgrades through a fixed monthly charge added to the utility customers' bill.
- a. Provide any documentation indicating that the state was considering proposing such a utility-financed energy efficiency program; and
 - b. Verify that the conversation was concerning a PAYS program, and not a Property Assessed Clean Energy Program (PACE) where the up-front costs to install energy-efficient equipment in a home is funded not by the utility but by government and the repayment occurs through property assessment rather than utility bill.
- A-4.3. Kenya Stump, Executive Director of the Office of Energy Policy within the Kentucky Energy and Environment Cabinet indicated that the state would be considering the establishment of financing program(s) for energy efficiency investments.
- a. The Companies do not possess any written documentation of the conversations with the Kentucky Energy and Environment Cabinet. The Companies did however request that Ms. Stump express the state's interest in evaluating financing programs with some of the Joint Intervenors. The Companies and Ms. Stump participated in a call that included Chris Woolery of the Mountain Association on November 8, 2022.
 - b. The conversation was about the state's interest in using funding from the IRA program to start an energy efficiency financing program which would offset

the need for a utility sponsored PAYS-type program. Property Assessed Clean Energy Program (“PACE”) was also discussed on the call.