

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>ELECTRONIC INVESTIGATION OF</b>	)	
<b>LOUISVILLE GAS AND ELECTRIC</b>	)	
<b>COMPANY AND KENTUCKY</b>	)	<b>CASE NO. 2023-00422</b>
<b>UTILITIES COMPANY SERVICE</b>	)	
<b>RELATED TO WINTER STORM</b>	)	
<b>ELLIOTT</b>	)	

**RESPONSE OF**  
**LOUISVILLE GAS AND ELECTRIC COMPANY**  
**AND**  
**KENTUCKY UTILITIES COMPANY**  
**TO**  
**THE SIERRA CLUB'S SUPPLEMENTAL REQUEST FOR INFORMATION**

**DATED MARCH 1, 2024**

**FILED: March 15, 2024**

VERIFICATION

COMMONWEALTH OF KENTUCKY )  
 )  
COUNTY OF JEFFERSON )

The undersigned, **Lonnie E. Bellar**, being duly sworn, deposes and says that he is Senior Vice President Engineering and Construction for PPL Corporation and he provides services to Louisville Gas and Electric Company and Kentucky Utilities 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.

  
\_\_\_\_\_  
**Lonnie E. Bellar**

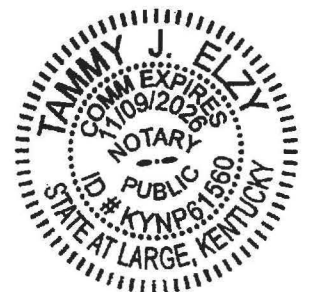
Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13<sup>th</sup> day of March 2024.

  
\_\_\_\_\_  
Notary Public

Notary Public ID No. KYNP61560

My Commission Expires:

November 9, 2026



VERIFICATION

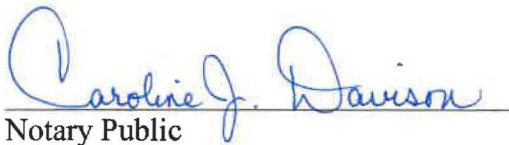
COMMONWEALTH OF KENTUCKY )  
 )  
COUNTY OF JEFFERSON )

The undersigned, **Charles R. Schram**, being duly sworn, deposes and says that he is Director – Power Supply for Kentucky Utilities Company and Louisville Gas and Electric 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.



Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State this 13<sup>th</sup> day of March 2024.

  
Notary Public

Notary Public ID No. KYNP 63286

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**

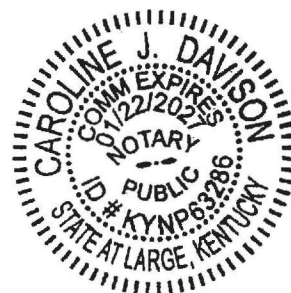
Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13<sup>th</sup> day of March 2024.

*Caroline J. Davison*  
\_\_\_\_\_  
Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027



**VERIFICATION**

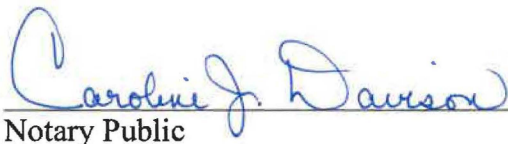
**COMMONWEALTH OF KENTUCKY )**  
**)**  
**COUNTY OF JEFFERSON )**

The undersigned, **Stuart A. Wilson**, being duly sworn, deposes and says that he is Director, Energy Planning, Analysis & Forecasting for Kentucky Utilities Company 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.



**Stuart A. Wilson**

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13<sup>th</sup> day of March 2024.



Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027



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

**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.1**

**Responding Witness: Lonnie E. Bellar**

Q-2.1. Refer to LG&E/KU's response to Sierra Club's initial request for information 1.33.

- a. Please describe with specificity how the Companies account for "increasing outage rates" in "units with planned and assumed near-term retirements."
- b. Specifically, for what units with planned and assumed near-term retirements are the Companies assuming "increasing outage rates"?
  - i. For each unit, what is the assumed outage rate currently, and how does it change over time?
- c. How do the Companies account for this assumption in their planning?
- d. Please provide any and all projections and any and all documents, analyses, and workpapers regarding "increasing outage rates" in "units with planned assumed near-term retirements."

A-2.1.

- a. The Companies account for increasing outage rates in units with planned and assumed near-term retirements through gradual, incremental increases from historical levels in annual planned outage rates. Specificity is provided in response to part (b).
- b. The Companies are currently assuming increasing outage rates for Mill Creek 1 and 2 based on their respective planned retirements in 2024 and 2027 and Brown 3 based on its assumed retirement in 2030.
  - i. The Companies' current planning assumption for Mill Creek 1 is for a forced outage rate of 5.0 percent in 2024. The Companies' current planning assumption for Mill Creek 2 is for a forced outage rate of 4.25 percent in 2024, 4.75 percent in 2025, 5.5 percent in 2026, and 6.25 percent in 2027. The Companies' current planning assumption for

Brown 3 is for a forced outage rate of 5.8 percent in 2024, 6.1 percent in 2025, 6.6 percent in 2026, and 7.3 percent in 2027 through 2030. Outage rates for the Companies' other generating units are not assumed to change over time and are listed in the response to SC 1-42(a).

- c. The Companies account for this assumption in their planning by updating forced outage rates in planning models, such as PROSYM.
- d. See the response to part (b). The Companies did not perform any formal analysis regarding the nature of increasing outage rates as a unit approaches retirement, but assumed a gradual, incremental increase from historical levels was reasonable given decreased planned capital investments in units slated for retirement.

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**Response to Sierra Club's Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.2**

**Responding Witness: Charles R. Schram**

- Q-2.2. Refer to LG&E/KU's response to Sierra Club's initial request for information 1.36.
- a. List all current gas supply contracts. For each, provide a link to the contract on the Commission's website.
  - b. List all current gas transportation contracts. For each, provide a link to the contract on the Commission's website.
- A-2.2.
- a. All current gas supply contracts are available on the Commission's website at <https://psc.ky.gov/WebNet/FuelContracts>.
  - b. All current gas transportation contracts are available on the Commission's website at <https://psc.ky.gov/WebNet/FuelContracts>.



**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.3**

**Responding Witness: Lonnie E. Bellar**

- Q-2.3. Refer to LG&E/KU's response to the Attorney General's initial request for information 1.10.
- a. For each derate or instance of "MW not available" provided, please state whether the event was weather-related or not weather-related.
  - b. Please describe the nature of the "planned outage" at Clifty Creek that resulted in 198 MW not being available.
- A-2.3. The referenced AG 1-10 request asked for information related to status of the construction of the new NGCC. The Companies assume the reference is to the response to KCA 1-10.
- a. For Clifty Creek 1, see the response to part (b). Kyger Creek ID fan trip started on 12/21/22 and Kyger Creek 4 drain valve repair started 12/22/22, both prior to the cold weather. The Companies have no further insight into the other outages and derates listed in the response to KCA 1-10.
  - b. Clifty Creek 1 was on a planned outage for items including Boiler & Turbine Maintenance, Insurance Inspection, Set Safety Valves, Turbine Inspection-HP, Turbine Valves, JBR Inspection, MATS Designated Outage, and Boiler Chemistry Cleaning. Note that the referenced 198 MW is for the total unit, not the Companies' 8.13% share.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.4**

**Responding Witness: Lonnie E. Bellar**

- Q-2.4. Refer to LG&E/KU's response to the Attorney General's initial request for information 1.2, attachment. Refer specifically to the deleted graph on page 2 and the new graph provided on page 3. Does LG&E/KU plan to update the state legislature and the public on this new graph and these new findings?
- A-2.4. The Companies publicly provided the cited information in this proceeding. Any interested person, whether a member of the General Assembly or otherwise, may obtain that information via the Commission's website. Nothing in the corrected information provided in response to AG 1-2 fundamentally alters the Companies' analyses or conclusions regarding Winter Storm Elliott.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.5**

**Responding Witness: Lonnie E. Bellar**

- Q-2.5. Refer to LG&E/KU's response to the Attorney General's initial request for information 1.16 and to LG&E/KU's response to the Attorney General's initial request for information 1.2, attachment.
- a. Please refer specifically to page 2 of the attachment in response to AG 1.2, which states, "Cold weather derates unrelated to Texas Gas supply ranged from 64MW to 454MW." Please refer to the response to AG 1.16, which states, in response to "Confirm whether the Companies still believe that the derates unrelated to Texas Gas supply ranged from 45 MW – 361 MW," "confirmed." Which set of figures is accurate?
  - b. In light of the answer to part (a) of this response and in light of the Companies' response to AG 1.2 (attachment), is the following portion of the Companies' response to AG 1.16 accurate? That response states, "Regarding the second part of the request, none. If the total derates had been limited solely to those unrelated to the Texas Gas low-pressure issue, the Companies would have had sufficient capacity to meet all customers' energy demands and meet reserve requirements." If not, please state the accurate response to AG 1.16.
- A-2.5.
- a. The updated attachment in response to AG 1.2 is accurate.
  - b. Yes, if the total derates had been limited solely to those unrelated to the Texas Gas low-pressure issue, the Companies would have had sufficient capacity to meet all customers' energy demands.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.6**

**Responding Witness: Lonnie E. Bellar**

Q-2.6. Do LG&E/KU and the LG&E/KU Balancing Authority share office space?

A-2.6. See the response to PSC 1-1. As previously explained, the staff performing the operating functions for the LG&E/KU BA are employees of LG&E and KU Services Company. LG&E and KU Services Company employees also perform other services for LG&E and KU. While it is still not clear what is meant by "share office space," assuming the question is asking whether individuals performing tasks on behalf of either company may do so in the same building as individuals performing BA function tasks then, yes. However, as indicated in response to SC 1-27, in accordance with the FERC standards of conduct, LG&E and KU Services Company employees who are considered market function employees (MFEs), function independently from LG&E and KU Services Company employees considered transmission function employees (TFEs). In addition, such MFEs cannot access locations where non-public transmission function information is present and/or where transmission functions are conducted. For example, employees performing functions for the LG&E/KU LSE are located primarily at the LG&E Center in Louisville and do not have access to locations where the LG&E/KU Balancing Authority operations are conducted at the Transmission Control Center in Simpsonville.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.7**

**Responding Witness: Lonnie E. Bellar**

- Q-2.7. Refer to LG&E/KU's response to Commission Staff 1.8. Did any LSE in LG&E/KU's BA footprint besides LG&E/KU have generation outages? If so, please describe in detail.
- A-2.7. See the response to PSC 1-8.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.8**

**Responding Witness: Lonnie E. Bellar**

- Q-2.8. Refer to LG&E/KU's response to Commission Staff 1.10. Did any LSE in LG&E/KU's BA footprint besides LG&E/KU have generation outages? If so, please describe in detail.
- A-2.8. While LG&E and KU have the majority of generation in the BA area, none of the LSEs besides the LG&E/KU LSE had any derates or outages from 12/23/22 through 12/25/22. See also the response to PSC 1-8.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.9**

**Responding Witness: Lonnie E. Bellar**

Q-2.9. Refer to LG&E/KU's response to Commission Staff 1.23 and 1.24. LG&E/KU states in response to Commission Staff 1.23, "The Companies' data do not indicate any statistically significant correlation between unit outages or derates and temperature." If this is the case, why does "the LG&E/KU BA ha[ve] two operating procedures used during extreme winter weather events," including a cold weather preparedness plan, as stated in response to Commission Staff 1.24?

A-2.9. These two procedures were developed in accordance with NERC Reliability Standards, good utility practice for maintaining reliability, and safe work practices. NERC Reliability Standard EOP-011-2 requires Transmission Operators to "develop, maintain, and implement one or more Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies in its Transmission Operator Area." The LG&E/KU System Alerts and Conservative Operations procedure was established for the purpose of issuing proactive alerts to help protect people, equipment, system reliability and continuity of operations during various operating conditions.

While the Companies' data do not indicate any statistically significant correlation between unit outages or derates and temperature, the Companies prepare for potential unit outages and derates, as well as other conditions that could impact operations (during extreme winter weather or any system conditions) in accordance with industry standards and good utility practice. The responses to PSC 1-23 and 1-24 illustrate the old adage that "correlation is not causation." The Companies recognize that cold weather can impact the functioning of equipment and therefore take steps necessary to allow for such equipment to reliably operate in cold weather. Thus, by taking the actions described in PSC 1-24, the lack of correlation described in PSC 1-23 is the result.

Even while there may not be significant correlation between unit outages or derates and temperature, a unit outage or derate can potentially be more impactful if it occurs during high system load conditions resulting from extreme winter weather.

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club’s Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.10**

**Responding Witness: Lonnie E. Bellar**

Q-2.10. Refer to LG&E/KU’s response to Commission Staff 1.27. What are the “key insights” that emerged from the GridEx VII tabletop exercise?

A-2.10. Key insights from the GridEx VII tabletop exercise related to the simulated load shed event include:

- Identified a need to develop training for Distribution Control Center (“DCC”) operators to better understand when and why Transmission Control Center (“TCC”) operators may request DCC to shed load. This has been completed.
- Identified benefit in updating the Transmission level load shed displays to automatically calculate and display the cumulative amount of load (in MW) as load shed is occurring (versus manual tabulation and updates). This has been completed.
- Identified benefit in adding trend lines to track the amount of load being shed throughout the event. This has been completed.
- Identified benefit in re-creating the DCC Load Shed Display in Transmission Operator Training Simulator (“OTS”) to better simulate rotational load shed and impacts to ACE during testing and training. This is in progress.



**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.11**

**Responding Witness: Lonnie E. Bellar / Charles R. Schram**

Q-2.11. Refer to LG&E/KU's response to Commission Staff 1.36.

- a. Please state whether the OVEC units experienced any outages or derates in January or February 2023, December 2023, or January 2024, or otherwise in December 2022.
  - i. If so, please identify each such outage or derate by generating unit, date, length, cause, and the size in MW if a derate.

A-2.11.

- a. Yes.
  - i. See attachment being provided in a separate file.

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

**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.12**

**Responding Witness: Stuart A. Wilson**

- Q-2.12. Please see the Companies' response to Sierra Club 1.3. In quantifying the capacity contribution of generators other than limited-duration resources, have the Companies accounted for the impact of correlated outages or derates on those resources? If so, please provide that quantification and related assumptions. If not, why not?
- A-2.12. No. The Companies computed capacity contribution only for limited-duration resources. See the response to PSC 1-23.

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

**Response to Sierra Club's Supplemental Request for Information  
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**Case No. 2023-00422**

**Question No. 2.13**

**Responding Witness: Lonnie E. Bellar / David S. Sinclair**

Q-2.13. Please refer to LG&E/KU's response to Commission Staff 1.23. and Sierra Club 1.5. In light of those responses, do the Companies consider the term "correlated outages" to include each of the following types of occurrences? For each type of occurrence, please explain why the Companies consider it to be a correlated outage, or why they do not consider it to be a correlated outage.

- i. Multiple units experiencing forced outages or derates concurrently
- ii. Multiple units experiencing forced outages or derates concurrently due to weather factors other than temperature
- iii. Multiple units experiencing forced outages or derates concurrently due to gas supply constraints at least partially attributable to low temperatures in gas supply fields causing wellheads to freeze
- iv. Multiple units experiencing forced outages or derates concurrently due to gas supply or pipeline constraints at least partially due to regionally high demand for gas
- v. Multiple units experiencing forced outages or derates concurrently due to a reduction in gas pipeline pressure due to compressor station failures or other pipeline equipment failures
- vi. Multiple units experiencing forced outages or derates concurrently due to a reduction in gas pipeline pressure due to compressor station failures or other pipeline equipment failures

A-2.13. The Companies generally find the use of the term "correlated outages" to be much too broad and not useful for planning, maintaining, and operating a utility system. Planning, maintaining, and operating a utility system requires focusing on root causes and responding appropriately to reduce the risk of failure in the future. Calculating correlation coefficients does not address root causes.

- i. If these outages or derates were due to different root causes, the Companies would not consider them to be correlated, but if the root cause was exactly the same thing at the same time, then statistically they could be considered “correlated.”
- ii. See the response to (i).
- iii. See the response to (i).
- iv. See the response to (i).
- v. See the response to (i).
- vi. See the response to (i).

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

**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.14**

**Responding Witness: Lonnie E. Bellar**

- Q-2.14. Please see the Companies' response to Sierra Club 1.37. Do the Companies assert that the reduction in gas pressure they experienced during Winter Storm Elliott was entirely due to equipment issues at the Texas Gas Transmission Slaughters compressor station, and not in any way due to a gas supply and demand imbalance on the Texas Gas Transmission system? Please explain.
- A-2.14. Yes. See TGT letter in attachment to PSC 1-58 in Case No. 2022-00402, which states, "During Winter Storm Elliott, Texas Gas experienced issues at its Slaughters Compressor Station that affected our ability to deliver gas to KU's electric generation plants at contractual pressures when a control unit on a valve failed due to icing. The component failure did not prevent Texas Gas' ability to source 1.62 billion cubic feet per day of storage capacity from storage fields in Kentucky and Indiana to replace lost supply on the north end of our system."

**LOUISVILLE GAS AND ELECTRIC COMPANY  
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**Response to Sierra Club's Supplemental Request for Information  
Dated March 1, 2024**

**Case No. 2023-00422**

**Question No. 2.15**

**Responding Witness: David S. Sinclair / Stuart A. Wilson**

- Q-2.15. Please see the Companies' statement in response to Sierra Club 1.42.c that "The Companies do not make any weather-related derate assumptions." Are the Companies asserting that assumptions about ambient temperatures during summer and winter peak demand periods are already factored into calculations of resources' capacity contribution? If so, what ambient temperature is assumed when calculating summer capacity ratings? If not, please explain why the Companies do not believe it is necessary to make any weather-related derate assumptions.
- A-2.15. The Companies develop seasonal unit ratings to reflect a unit's output that can be expected at the time of the seasonal peaks, which implicitly includes the impact of seasonal peak temperatures. The Companies would only assign a derate if a unit is unable to reach its seasonal rating. Capacity contribution is computed for limited-duration resources and is used to model these resources' contribution to minimum reserve margin targets in resource screening analyses.