COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC 2024 JOINT INTEGRATED RESOURCE PLAN OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY	**)** **)** **)** **)**	**CASE NO. 2024-00326**

RESPONSE OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY TO THE SIERRA CLUB'S POST HEARING REQUESTS FOR INFORMATION DATED MAY 19, 2025

FILED: JUNE 6, 2025

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Vice President, State Regulation and Rates, for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, 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.

Robert M. Conroy

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 4th day of June 2025.

Notary Public

Notary Public ID No. KYNP61560

My Commission Expires:

November 9, 2026

TAMMY J. ELZY
COMM EXPIRES 11/09/2026
NOTARY PUBLIC
ID # KYNP61560
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Philip A. Imber**, being duly sworn, deposes and says that he is Director – Environmental Compliance for PPL Services Corporation and he provides services to Louisville Gas and Electric Company and Kentucky Utilities Company, 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.

Philip A. Imber

Philip A. Imber

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 2nd day of June 2025.

Caroline J. Davison

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Elizabeth J. McFarland**, being duly sworn, deposes and says that she is Vice President, Transmission for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, 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.

Elizabeth J. McFarland

Elizabeth J. McFarland

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 3rd day of June 2025.

Caroline J. Davison

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY
COMM EXPIRES 01/22/2027

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Charles R. Schram**, 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 is an employee of LG&E and KU Services Company, 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

Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State this 2nd day of June 2025.

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, **David L. Tummonds**, being duly sworn, deposes and says that he is Senior Director - Project Engineering for Kentucky Utilities Company and Louisville Gas and Electric Company and is an employee of LG&E and KU Services Company, 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 L. Tummonds

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 4th day of June 2025.

Venita Michelle DeFreeze
Notary Public

Notary Public, ID No. KYNP 4577

My Commission Expires:

April 1, 2028

VENITA MICHELLE DEFREEZE
NOTARY PUBLIC
Commonwealth of Kentucky
Commission # KYNP4577
My Commission Expires 4/1/2028

LOUISVILLE GAS AND ELECTRIC COMPANY
AND
KENTUCKY UTILITIES COMPANY

Response to Sierra Club's Post Hearing Requests for Information
Dated May 19, 2025

Case No. 2024-00326

Question No. 3-1

Responding Witness: Charles R. Schram

Q-3-1. Please explain whether the potential data centers' electricity load will fluctuate, and to what extent. Please specify both in terms of speed of fluctuations and the amount of electricity used. If the answer depends on the type of business the data center serves (e.g., artificial intelligence, crypto currency, other, etc.) please provide the answer for each type of data center that the Companies expect may locate in its service territory during the IRP time period.

A-3-1. See the response to Question Nos. 3-2 and 3-3. Data centers have high load factors, effectively ruling out significant, ongoing fluctuations. The total amounts of electricity used by a data center (or other load) can be calculated by the size in MW multiplied by time and load factor.

LOUISVILLE GAS AND ELECTRIC COMPANY
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KENTUCKY UTILITIES COMPANY

Response to Sierra Club's Post Hearing Requests for Information
Dated May 19, 2025

Case No. 2024-00326

Question No. 3-2

Responding Witness: Robert M. Conroy / Elizabeth J. McFarland

Q-3-2. Do the fluctuations identified in response to Question 3-1, above, pose a risk to the grid? If so, please explain the nature of the risk and the Companies' assessment of the likelihood of such a risk occurring.

A-3-2. The Transmission Service Request applications submitted for potential data centers thus far have not indicated any type of large load fluctuations when describing the nature of the load and operating characteristics. If additional information becomes available at a later time that there may be large load fluctuations, then LG&E/KU Transmission would perform the necessary studies to ensure there is no risk to the grid.

The Companies also have retail tariff provisions requiring customers to take all necessary measures—at the customer's expense—to ensure their use of the Companies' service does not adversely impact the Companies' ability to serve or service quality.[1]

[1] *See, e.g.,* Standard Rate Rider IL, Intermittent Loads Rider, Kentucky Utilities Company, P.S.C. No. 20, Original Sheet Nos. 65 – 65.1; Standard Rate Rider IL, Intermittent Loads Rider, Louisville Gas and Electric Company, P.S.C. Electric No. 13, Original Sheet Nos. 65 – 65.1; Terms and Conditions: Customer Responsibilities, Power Factor, Kentucky Utilities Company, P.S.C. No. 20, Original Sheet No. 97.2; Terms and Conditions: Customer Responsibilities, Power Factor, Louisville Gas and Electric Company, P.S.C. Electric No. 13, Original Sheet No. 97.2.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Response to Sierra Club's Post Hearing Requests for Information
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Question No. 3-3

Responding Witness: Charles R. Schram

Q-3-3. How do the ramp rates for data centers compare to the ramp rates for the Companies' existing customers?

A-3-3. Arc furnaces on the Companies' system routinely ramp approximately 160 MW nearly instantaneously. The Companies' system as a whole routinely experiences and serves similar system changes to those of the arc furnaces. The Companies have an existing crypto mining customer whose hourly and 15-minute load data show an approximate 94% load factor and low volatility as measured by their load's standard deviation divided by the mean of their load, so the existing customer most similar to a data center on the Companies' system today does not experience large fluctuations.

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Response to Sierra Club's Post Hearing Requests for Information
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Question No. 3-4

Responding Witness: Charles R. Schram

Q-3-4. Are the Companies aware of whether any fossil fueled resource can match anticipated ramp rates for data centers?

A-3-4. The Companies' Cane Run 7 NGCC is capable of 30 MW/minute ramp rate. Brown 12, Mill Creek 5, and Mill Creek 6 are expected to have ramp rates of greater than 70 MW/minute. The Companies are not aware of any data center power ramp rate requirements that are more rapid than these levels.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Response to Sierra Club's Post Hearing Requests for Information
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Question No. 3-5

Responding Witness: Robert M. Conroy

Q-3-5. Will the Companies impose any limit on the ramp rate for data centers that operate in its Kentucky service territories?

A-3-5. No. See the responses to Question Nos. 3-1 and 3-3.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Response to Sierra Club's Post Hearing Requests for Information
Dated May 19 2025

Case No. 2024-00326

Question No. 3-6

Responding Witness: Philip A. Imber / David L. Tummonds

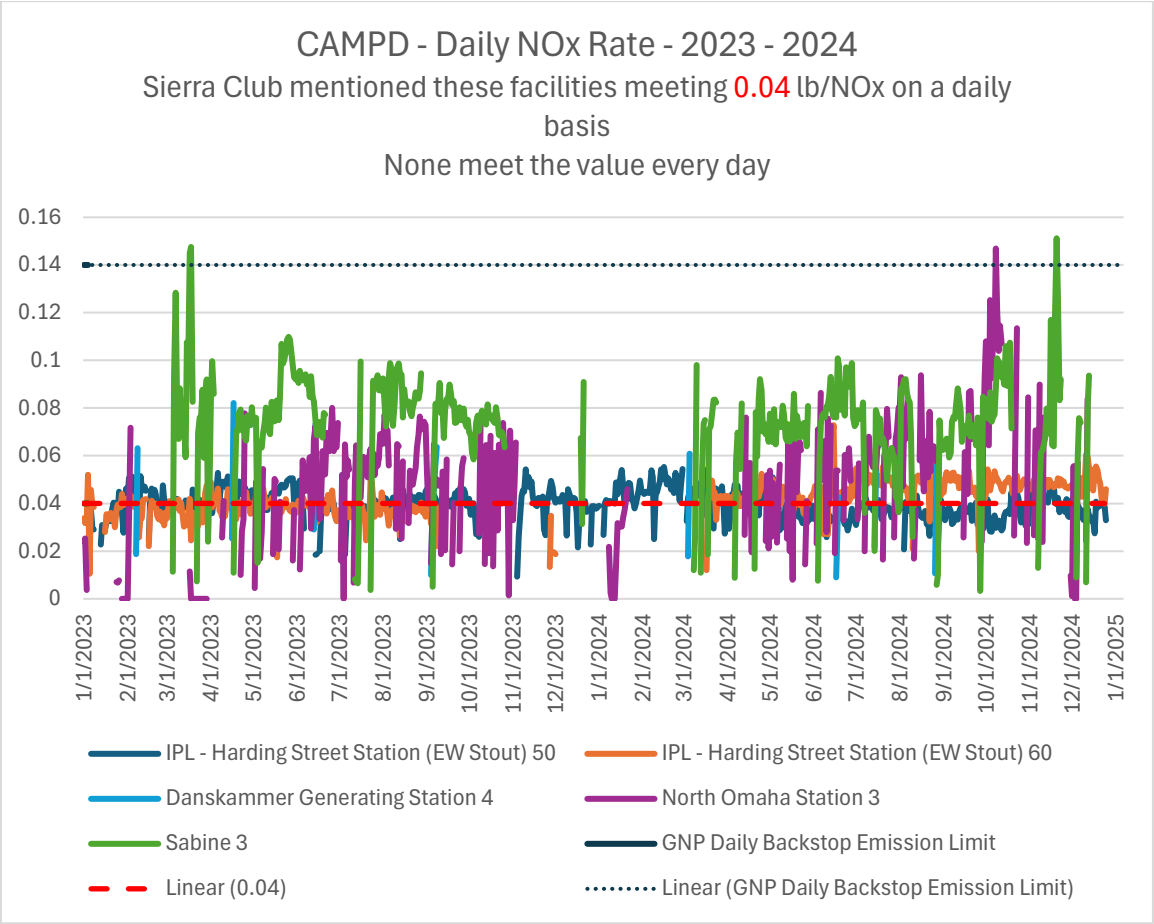
Q-3-6. The Companies believe that if Ghent 2 were converted to a gas plant that it could not achieve an emission rate of 0.04 lb/MMBtu based on an analysis/study that was completed. Please produce that analysis/study.

A-3-6. See attachment being provided in a separate file. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

Beyond this report, the Companies have evaluated NOx controls and their implementation within the electric generating industry. The Companies have attended conferences, engaged with the Electric Power Research Institute, communicated with engineering firms, communicated with original equipment manufacturers, evaluated EPA databases, and performed due diligence with peers. The Companies stand firm with their assessment that natural gas conversion units need post combustion controls to achieve the Good Neighbor Plan level Reasonably Achievable Control Technology emission rate of 0.04 lbs./MMBtu for new controls. The EPA National Electric Energy Data System (NEEDS) identifies several of the units referenced in the EFG report either have controls or are not designed to achieve the noted emissions levels:

Unit	Controls	Emission Rate
Harding Street Units 50	Low NOx Burner, Overfired Air, SNCR	0.035
Harding Street Unit 60	Low NOx Burner, Overfired Air, SNCR	0.036
North Omaha Station Unit 3	N/A	N/A
North Omaha Station Unit 4	N/A	0.15
North Omaha Station Unit 5	N/A	0.15
Sabine Unit 3	N/A	N/A
Sabine Unit 5	Low NOx Burner Technology w/ Closed-coupled OFA	0.864
Danskammer Unit 4	Low NOx Burner Technology w/ Closed-coupled/Separated OFA	0.1
Gulf Clean Energy Units 4	Low NOx Burner Technology	0.4
Gulf Clean Energy Unit 5	Low NOx Burner Technology	0.37
Cherokee Unit 4	N/A	N/A
Jim Bridger Unit 71	Low NOx Burner Technology w/ Closed-coupled OFA	0.19
McMeekin Units 1	Low NOx Burner with Separate Over Fire Air	0.07
McMeekin Units 2	Low NOx Burner with Separate Over Fire Air	0.08
Muskogee Unit 4	Low NOx Burner Technology w/ Closed-coupled/Separated OFA	0.1
Naughton Unit 3	Low NOx Burner with Separate Over Fire Air	0.058
Yates Units 6	Low NOx Burner with Separate Over Fire Air + Other	0.075
Yates Unit 7	Low NOx Burner with Separate Over Fire Air + Other	0.069

Further, Clean Air Markets Program Data also supports the Companies' position that these various units do not continuously achieve the Good Neighbor Plan level Reasonably Achievable Control Technology emission rate of 0.04 lbs./MMBtu for new controls.


CAMPD - Daily NOx Rate - 2023 - 2024
Sierra Club mentioned these facilities meeting 0.04 lb/NOx on a daily basis
None meet the value every day
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1/1/2023
2/1/2023
3/1/2023
4/1/2023
5/1/2023
6/1/2023
7/1/2023
8/1/2023
9/1/2023
10/1/2023
11/1/2023
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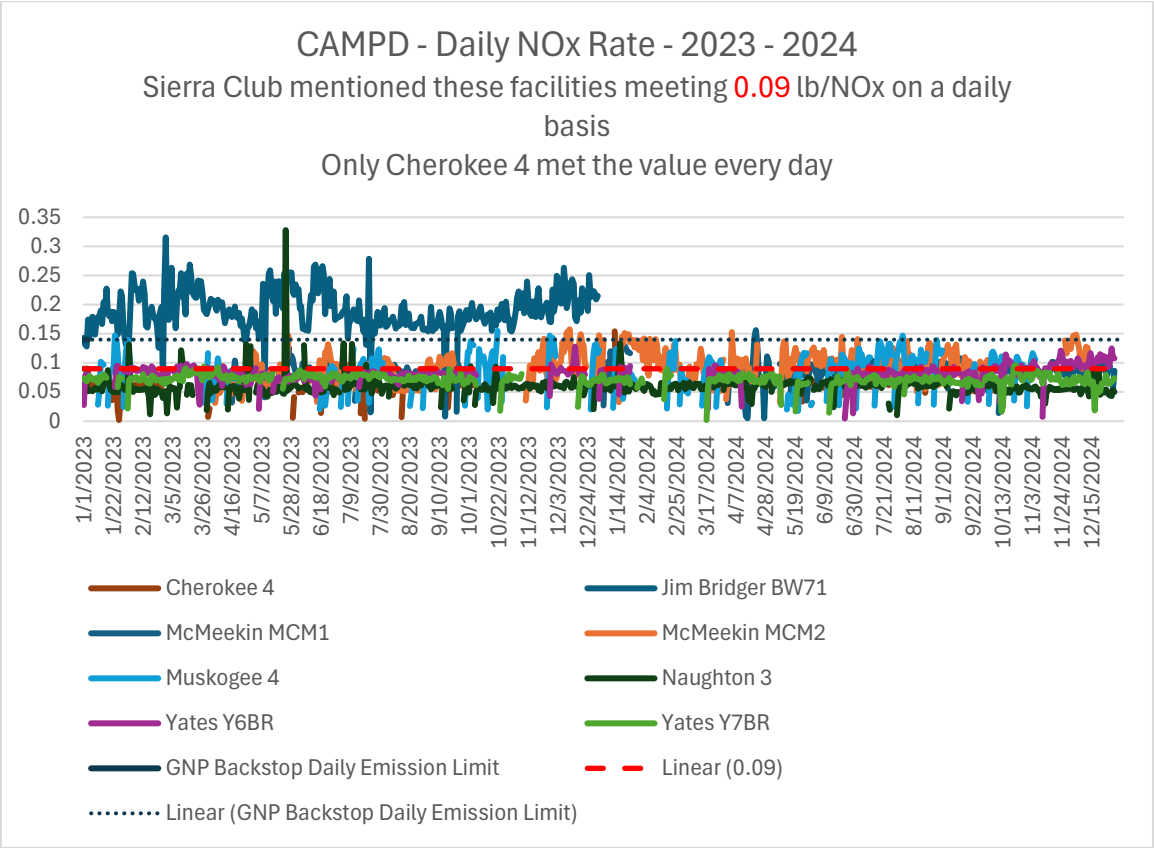
3/1/2024
4/1/2024
5/1/2024
6/1/2024
7/1/2024
8/1/2024
9/1/2024
10/1/2024
11/1/2024
12/1/2024
1/1/2025
IPL - Harding Street Station (EW Stout) 50
IPL - Harding Street Station (EW Stout) 60
Danskammer Generating Station 4
North Omaha Station 3
Sabine 3
GNP Daily Backstop Emission Limit
Linear (0.04)
Linear (GNP Daily Backstop Emission Limit)


CAMPD - Daily NOx Rate - 2023 - 2024
Sierra Club mentioned these facilities meeting 0.09 lb/NOx on a daily basis
Only Cherokee 4 met the value every day
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1/1/2023
1/22/2023
2/12/2023
3/5/2023
3/26/2023
4/16/2023
5/7/2023
5/28/2023
6/18/2023
7/9/2023
7/30/2023
8/20/2023
9/10/2023
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3/17/2024
4/7/2024
4/28/2024
5/19/2024
6/9/2024
6/30/2024
7/21/2024
8/11/2024
9/1/2024
9/22/2024
10/13/2024
11/3/2024
11/24/2024
12/15/2024
Cherokee 4
Jim Bridger BW71
McMeekin MCM1
McMeekin MCM2
Muskogee 4
Naughton 3
Yates Y6BR
Yates Y7BR
GNP Backstop Daily Emission Limit
Linear (0.09)
Linear (GNP Backstop Daily Emission Limit)