

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF LOUISVILLE)	
GAS AND ELECTRIC COMPANY FOR AN)	
ADJUSTMENT OF ITS ELECTRIC RATES AND)	CASE NO. 2025-00114
APPROVAL OF CERTAIN REGULATORY AND)	
ACCOUNTING TREATMENTS)	

RESPONSE OF
LOUISVILLE GAS AND ELECTRIC COMPANY
TO
THE KENTUCKY SOLAR INDUSTRIES ASSOCIATION, INC.'S
SUPPLEMENTAL REQUEST FOR INFORMATION

DATED JULY 31, 2025

FILED: AUGUST 12, 2025

VERIFICATION

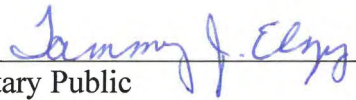
COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

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 11th day of August 2025.

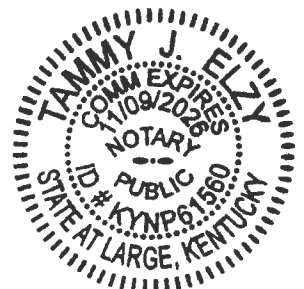


Notary Public

Notary Public ID No. KYNP61560

My Commission Expires:

November 9, 2026

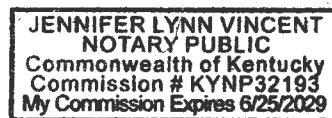


COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)


Charles R. Schram

Annies Lynn Vincent
Notary Public

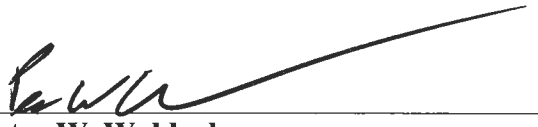
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VERIFICATION

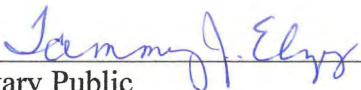
COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Peter W. Waldrab**, being duly sworn, deposes and says that he is Vice President, Electric Distribution, 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.



Peter W. Waldrab

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 11th day of August 2025.

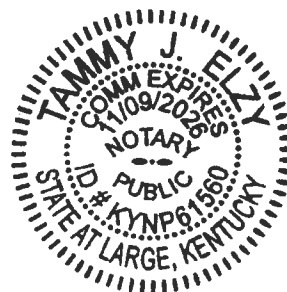


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LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
Information**

Dated July 31, 2025

Case No. 2025-00114

Question No. 1

Responding Witness: Charles R. Schram

Q-1. Reference: Companies' Response to KYSEIA's Initial Request for Information, Question 2 ("Response to KYSEIA 1-__").

- a. Please provide off-system sales quantities in MWh in 8,760-hour format for each of the Companies' generating resources during the most recent year and as forecast in the test year in spreadsheet format with all formulas and links intact.
- b. Please provide quantities of purchase power used to serve native load in MWh in 8,760-hour format for each of the Companies' generating resources during each calendar year since and including 2020 in spreadsheet format with all formulas and links intact.

A-1.

- a. The Companies do not make off-system sales from individual generating resources. The Companies' after-the-fact billing process (AFB) assigns off-system sales to the highest incremental cost MWh for each hour. See attachment being provided in a separate file. Historical sales shown as being sourced from "purchase" were sourced from transmission imbalance purchases, purchases associated with load transfers from adjacent systems, or purchases associated with the TEE Contingency Reserve Sharing Group.
- b. See attachment being provided in a separate file.

LOUISVILLE GAS AND ELECTRIC COMPANY

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Dated July 31, 2025

Case No. 2025-00114

Question No. 2

Responding Witness: Charles R. Schram

- Q-2. Reference: Application, Direct Testimony of Charles R. Schram ("Schram Direct"), page 33, lines 13-21, and Section 2 of Exhibit CRS-6. Please explain fully which variable operations and maintenance costs (e.g., costs associated with the repair, overhaul, replacement, or inspection of a resource, as well as consumables other than those already identified) are included in avoided energy costs. If not, please explain fully why not.
- A-2. The only variable operating and maintenance costs included in avoided energy costs are costs for consumables to operate emission control equipment. Other operating and maintenance costs are excluded because they are fixed costs and do not vary with the operation of the unit.

LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
Information**

Dated July 31, 2025

Case No. 2025-00114

Question No. 3

Responding Witness: Charles R. Schram

Q-3. Reference: Schram Direct, Exhibit CRS-6, page 11 of 14, Response to KYSEIA 1- 5, and Response to KYSEIA 1-21(c) and (d).

- a. Please provide all studies or other documentation in which the Companies have examined the potential reliability impacts of 1,000 MW or more of QFs by QF type?
- b. Please explain why the Companies expectation for new data center load of between 1,750 MW and 6,000 MW is not reflected in workpapers previously provided in Exhibit CRS-7 at the file path \CSR_QF_NMS\ PLEXOS\Results\20250312_2025QF_PlexosResults.xlsm on worksheet "USE-dump" in the column labeled "Planning Peak Load (MW)", which shows a declining peak load over the analysis years.

A-3.

- a. The Companies have not performed the requested analysis.
- b. See Mr. Schram's testimony on pp. 5-6. The load forecast used in this proceeding is identical to the Mid case load forecast from the Companies' 2024 IRP, which included 1,050 MW of data center load. See also the response to Question No. 12(c). All 1,050 MW of data center load was assumed by 2030 for the purpose of the PLEXOS evaluation.

LOUISVILLE GAS AND ELECTRIC COMPANY

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Dated July 31, 2025

Case No. 2025-00114

Question No. 4

Responding Witness: Charles R. Schram

Q-4. Reference: Response to KYSEIA 1-7.

- a. Please define and explain what is meant by “energy cost perspective.”
- b. Please explain all differences in modeling assumptions and resource configurations for the 815 MW of solar that was selected in the 2025 CPCN Resource Plan in high gas price scenarios and the 80 MW of QF solar whose addition appears to have no impact on the selected solar quantity.

A-4.

- a. Solar does not contribute to winter reserve margin because the winter peak typically occurs during non-daylight hours. Therefore, solar is selected in the high gas price scenarios to reduce only energy costs, with no impact on capacity costs.
- b. The 815 MW of solar reflected the assumptions and configurations of specific projects that were proposed in response to the Companies’ 2024 RFP for renewable resources, comprising three projects with a weighted average capacity factor of 23.8 percent. The 80 MW of QF solar technologies were based on the Companies’ generic solar profiles for both single-axis tracking and fixed tilt solar, which reflect the average solar output for ten sites in Kentucky using data from the National Renewable Energy Laboratory. As shown in Table 1 of Exhibit CRS-6, the assumed capacity factor of the single-axis tracking solar is 24.7 percent and the assumed capacity factor of the fixed tilt solar is 15.5 percent.

LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
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Dated July 31, 2025

Case No. 2025-00114

Question No. 5

Responding Witness: Peter W. Waldrab

Q-5. Reference: Response to KYSEIA 1-11(d), Attachment, which appears to show distribution circuit level loads at the times of the 2023 and 2024 system-wide peak load (HE 15 on 8/23/2023 and HE 15 on 8/28/2024).

- a. Please provide, in spreadsheet format, the date, time (hour ending format) and quantity of maximum annual non-coincident peak demand for each individual substation and distribution feeder on the Companies' systems for each of calendar years 2023 and 2024. Please include a column in your response identifying whether the circuit or substation is an LGE facility or a KU facility.
- b. Please provide the data shown in "04-2025_KSIA_DR1_KU_Attach_to_Q11(d).pdf" in spreadsheet format.

A-5.

- a. See attachment being provided in a separate file.
- b. See attachment being provided in a separate file.

LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
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Dated July 31, 2025

Case No. 2025-00114

Question No. 6

Responding Witness: Peter W. Waldrab

Q-6. Reference: Application, Direct Testimony of Peter W. Waldrab ("Waldrab Direct"), Exhibit PWW-3 at Page 1 of 5 which states, "For the LG&E case, meter data was collected from 47 residential meters on the WO1184 circuit, which feeds the Norton Commons community. Similarly, for the KU case, meter data was collected from 21 residential meters on the 777-0431 circuit, which feeds the Rocky Creek Reserve community."

- a. Please provide the total number of residential meters on the WO1184 circuit.
- b. Please provide the total number of residential meters on the 777-0431 circuit.
- c. Please provide the margin of error, confidence level, and other metrics related to the statistical validity of the sample sizes used.

A-6.

- a. There are 2,728 residential meters on WO1184.
- b. There are 1,254 residential meters on 777-0431.
- c. At the time of the original study (2020), the Company only had access to meter data from AMI-opt in early adopters. All available meter data (equating to 47 meters on WO1184 and 21 meters on 777-0431) was used to determine average load shapes for residential customers in that area. These meters represent approximately 1.7% of total residential meters on each circuit. When the study was updated in 2025, the customer load shapes were left unchanged but updated circuit loading data was integrated. Updates to load shapes were deemed unnecessary since averages were utilized and minor differences would be insignificant when compared to total circuit loading.

LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
Information**

Dated July 31, 2025

Case No. 2025-00114

Question No. 7

Responding Witness: Peter W. Waldrab

Q-7. Reference: Waldrab Direct, Exhibit PWW-3 at Page 2 of 5, Figure 2. Please provide all PV Watts input values for the output results depicted.

A-7. See attachments being provided in separate files.

LOUISVILLE GAS AND ELECTRIC COMPANY

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Question No. 8

Responding Witness: Peter W. Waldrab

- Q-8. Reference: Response to KYSEIA 1-13(b). Please define “maximum export potential” and explain how this metric is determined.
- A-8. Maximum export potential can be defined as the sum total of all nameplate capacities of DERs capable of producing power with zero load available to offset energy production.

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for Information

Dated July 31, 2025

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Question No. 9

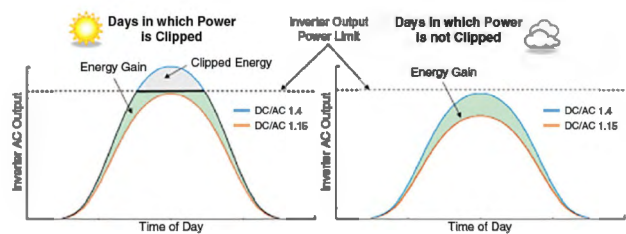
Responding Witness: Peter W. Waldrab

Q-9. Reference: Response to KYSEIA 1-12(c), which states, “a clipped production profile was chosen to maximize the capacity factor for the solar production resulting in the best-case output for solar.”

- a. Please confirm that a “clipped” production profile reduces the total kWh delivered to the grid.
- b. Please explain fully how a “clipped” production profile maximizes the capacity factor of solar production and provide an example if possible.

A-9.

- a. A solar array with a clipped production profile will in fact produce more energy (kWh) than a solar array sized at 1:1 DC to AC at the same AC nameplate capacity. Higher DC/AC ratios better utilize the inverter as the inverter is more likely to operate near its maximum output during periods of lower sunlight, such as mornings and evenings, or on cloudy days. See diagram provided in in response to part b.
- b. Capacity factor is defined as the ratio of the electrical energy produced by a generating unit for the period of time considered to the electrical energy that could have been produced at continuous full power operation during the same period. Clipped profiles, on systems with higher DC/AC ratios, produce more energy daily, therefore resulting in an increased capacity factor for the generator.



¹ Image source: <https://www.epri.com/research/products/000000003002014245>

LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
Information**

Dated July 31, 2025

Case No. 2025-00114

Question No. 10

Responding Witness: Charles R. Schram

Q-10. Reference: Response to KYSEIA 1-15 and Schram Direct, page 9, lines 13-15.

- a. Please explain whether the cumulative generating capacity of net metering systems used by the Companies to calculate the 1% threshold is based on nameplate capacity, AC or DC inverter capacity, actual net metering exports in the single-hour of peak load, estimated net metering output (including both behind the meter and exported output), or some other methodology.
- b. Please provide the MWh quantity of total net metering exports at the time of each company's single-hour peak load during 2024 and in all hours as forecasted for the test year.

A-10.

- a. The net metering forecast uses installed DC capacity to calculate the 1% threshold.
- b. Although not all net metering customers had AMI meters in 2024, the subset of net metering customers that did have AMI meters at the time of the Company's single-hour peak load during 2024, which occurred on August 28 during the hour beginning 3:00 p.m., provided 1.5 MWh of exports to the grid during this period.

Regarding the test year, the Companies do not have the requested hourly net metering export data. The load forecast assumes total LG&E distributed generation reduces load by 25 MWh during LG&E's peak hour in the test year (hour beginning 3:00 p.m. on August 10, 2026). See the table below for the MWh of monthly exports in 2026 for LG&E net metering customers assumed in the load forecast.

LG&E Forecasted Monthly Energy (MWh) Exports from Net-Metering Customers in the Test Year (2026)

Month	LG&E Forecasted Exports (MWh)
1	488
2	490
3	918
4	1,422
5	1,513
6	1,488
7	1,429
8	1,218
9	1,401
10	1,410
11	1,216
12	865

LOUISVILLE GAS AND ELECTRIC COMPANY

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Dated July 31, 2025

Case No. 2025-00114

Question No. 11

Responding Witness: Robert M. Conroy

Q-11. Reference: Schram Direct, Exhibit CRS-6, page 3 of 14, stating, "To focus the analysis on the cost of the Companies' resources serving native load, market electricity purchases and off-system sales were not permitted in PROSYM."

- a. Please explain if off-system sales provide financial or other benefits to ratepayers.
- b. Please explain the mechanism by which ratepayers benefit financially or otherwise from off-system sales.
- c. Please provide an example of how off-system sales impact retail rates.

A-11.

- a. Yes. See Adjustment Clause OSS, Sheet No. 88 of the Companies tariffs. Retail customers benefit from 75% of the margins on off-system sales.
- b. See the response to part (a). Adjustment Clause OSS is included in the monthly fuel adjustment clause filing.
- c. See the attachment being provided in a separate file. The monthly fuel adjustment clause filings are publicly available on the Commissions website at: <https://psc.ky.gov/Home/Library?type=FAC>

LOUISVILLE GAS AND ELECTRIC COMPANY

**Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for
Information**

Dated July 31, 2025

Case No. 2025-00114

Question No. 12

Responding Witness: Charles R. Schram

Q-12. Reference: Schram Direct, page 35, lines 7 through 11 that state: "Because the Companies are transitioning from lower economic minimum reserve margins to higher minimum reserve margins developed to reduce the loss of load expectations to one day in ten years, the capacity need is assumed to be immediate, in 2026."

- a. Please explain what resources the Companies will use to fill the immediate capacity need in 2026.
- b. Please provide the cost of the resources the Companies will use to fill the immediate capacity need in 2026.
- c. Additional Reference: Schram Direct, Exhibit CRS-6, Page 6 of 14. Please explain why modeling results shown in Table 5 only include years starting in 2030.
- d. Please explain what resources the Companies will use to fill the capacity need in years 2027-2029.
- e. Please provide the cost of the resources the Companies will use to fill the capacity need in 2027-2029.

A-12.

- a. The Companies are not planning resources to meet the capacity need during the transition year of 2026 due to the lead time required to bring new resources into service.
- b. See the response to part (a).
- c. Consistent with the Companies' methodology in Case No. 2025-00045, to ensure an optimal mix of resources, the Companies used PLEXOS to

develop resource plans with no technology availability constraints and with the assumption that economic development loads are added in 2030.²

- d. As stated in Section 2 of Exhibit CRS-6, “Assumptions for computing hourly energy costs included the resource-constrained load forecast and approval of the resource portfolio the Companies proposed in Case No. 2025-00045.” Appendix A of Exhibit CRS-6 shows winter and summer peak demand and resource summaries under the same assumptions. Capacity need is calculated based on winter and summer reserve margins of 29% and 23%, respectively.

At the time Exhibit CRS-6 was developed, the Companies assumed that Mill Creek 2 would retire in 2027 and the Cane Run BESS would be in service in 2028. As shown, the Companies would expect to have a 2026 winter capacity need of 137 MW. With the addition of 125 MW Brown BESS in 2027, the winter capacity need decreases to 22 MW. In 2028, increasing load and the Companies’ assumed retirement of Mill Creek 2 is offset by the addition of Mill Creek 5, resulting in 43 MW of winter capacity surplus. Then in 2029, with increasing load and the addition of 400 MW Cane Run BESS, the winter capacity need is 24 MW. Because the Companies’ capacity needs in 2027 and 2029 are relatively low, and because the addition of non-weather sensitive economic development loads results in slightly lower minimum reserve margin targets,³ the Companies are not planning additional resources beyond those proposed in Case No. 2025-00045.

With the Stipulation reached in Case No. 2025-00045, the Companies will delay Mill Creek 2’s retirement and are withdrawing their request for the Cane Run BESS, pending a decision from the Commission. Depending on the pace of economic development load additions, the Companies will refile a request for any incremental capacity needed to reliably serve customers, which would likely be in the form of some level of BESS capacity.

- e. The Cane Run BESS costs are shown in Exhibit CRS-6, Table 6, in Section 3.2, Cost of New Capacity.

² See Case No. 2025-00045 Exhibit SAW-1, Section 4.4.

³ See Case No. 2025-00045 Exhibit SAW-1, Section 4.5.

LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Solar Industries Association, Inc.'s Supplemental Request for Information

Dated July 31, 2025

Case No. 2025-00114

Question No. 13

Responding Witness: Peter W. Waldrab

Q-13. Reference: Waldrab Direct, Exhibit PWW-3 at pages 1-3.

- a. Please provide the number, model (if known), and load of electric vehicle chargers installed in the Companies' service territories since 2020, including a breakout by customer class.
- b. Please provide the number of residential customer accounts that have upgraded their electric service capability, including those that required transformer upgrades, and the upgrade quantity, since 2020.
- c. Please provide the number of new service accounts for newly constructed facilities served by existing substations and distribution feeders since 2020, by company and by customer class.

A-13.

- a. The Companies do not currently have any means to know which customers have electric vehicles, the model of those vehicles, or the size/type of vehicle chargers installed. The Companies are in the process of implementing analytical models that would infer some of this information from AMI data. The Companies currently subscribe to an EPRI dataset that tracks electric vehicle registration by zip code.
- b. This is a broad question, but in the context of the pages of testimony referenced, appears to be asking about upgrades required as a result of solar generation interconnections. The following chart shows the known transformers that were upgraded due to installed solar PV being greater than the transformer nameplate rating:

Utility	Zip Code	System Size AC/DC	xfrmr size (new)	xfrmr Size (original)	Cost	Date Submitted
LGE	40214-2745	51.84 kW/54 kW DC	75 kVA (3x25)	45 kVA (3X15)	\$15,254	11/12/2023
LGE	40299	30.34 kW/30 kW	75 kva	25 kva	\$5,745	3/3/2022

- c. Again, this is a broad question, but in the context of the pages of testimony referenced, appears to be asking about new services required for the purpose of service solar PV generation. Since 2020 there have been no new interconnections for standalone large or small qualifying facility (LQF/SQF) generators requiring dedicated service.

If the question is further seeking the number of new service accounts for new net-metered solar generation, that data was provided in response to JI 1-109.

Any new service accounts with net metering capabilities are designed and built according to the load data sheet supplied by the developer or customer. This is a standard Company process and does not provide a method of identifying new services designed differently, specifically due to the presence of DER.

LOUISVILLE GAS AND ELECTRIC COMPANY

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Dated July 31, 2025

Case No. 2025-00114

Question No. 14

Responding Witness: Charles R. Schram

Q-14. Reference: Schram Direct, Exhibit CRS-1, Exhibit CRS-2, Exhibit CRS-3, and Exhibit CRS-4. Please provide, in spreadsheet format with all formulas and links intact, the data in the identified Exhibits

A-14. See attachments being provided in separate files.