

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) CASE No. 2022-00402
PUBLIC CONVENIENCE AND)
NECESSITY AND SITE COMPATIBILITY)
CERTIFICATES AND APPROVAL OF A)
DEMAND SIDE MANAGEMENT PLAN)

**FOURTH DATA REQUEST OF JOINT INTERVENORS METROPOLITAN HOUSING
COALITION, KENTUCKIANS FOR THE COMMONWEALTH, KENTUCKY SOLAR
ENERGY SOCIETY, AND MOUNTAIN ASSOCIATION
[REDACTED]**

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Metropolitan Housing Coalition,
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Mountain Association*

DEFINITIONS

1. Unless otherwise specified in each individual interrogatory or request, the terms “you,” “your,” “LG&E,” “KU,” “LG&E/KU,” or “Companies” refer collectively to Louisville Gas & Electric Company and Kentucky Utilities Company, including any affiliated companies, predecessors-in-interest, employees, authorized agents, outside consultants or contractors, or other representatives.
2. “LG&E” means Louisville Gas & Electric Company and/or any of their officers, directors, employees or agents who may have knowledge of the particular matter addressed, and affiliated companies.
3. “KU” means Kentucky Utilities Company and/or any of their officers, directors, employees or agents who may have knowledge of the particular matter addressed, and affiliated companies including Pennsylvania Power and Light.
4. “The Companies” means LG&E and KU.
5. “Joint Intervenors” or “JI” means the Metropolitan Housing Coalition, Mountain Association, Kentuckians for the Commonwealth, and Kentucky Solar Energy Society, who were granted the status of full joint intervention in this matter.
6. “Commission” or “PSC” means the Kentucky Public Service Commission, including its Commissioners, personnel, and offices.
7. A request to identify a natural person means to state his or her full name and business address, and last known position and business affiliation at the time in question.
8. A request to identify a person other than a natural person means to state its full name, the address of its principal office, and the type of entity.
9. A request to identify a document means to state the date or dates, author or originator, subject matter, all addressees and recipients, type of document (e.g., letter, memorandum, telegram, chart, etc.), identifying number, and its present location and custodian. If any such document was but is no longer in the Company’s possession or subject to its control, state what disposition was made of it and why it was so disposed.
10. “And” and “or” should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.
11. “Each” and “any” should be considered to be both singular and plural, unless specifically stated otherwise.

12. Words in the past tense should be considered to include the present, and words in the present tense include the past, unless specifically stated otherwise.
13. “Document” means the original and all copies (regardless of origin and whether or not including additional writing thereon or attached thereto) of any memoranda, reports, books, manuals, instructions, directives, records, forms, notes, letters, or notices, in whatever form, stored or contained in or on whatever medium, including digital media.
14. “Study” means any written, recorded, transcribed, taped, filmed, or graphic matter, however produced or reproduced, either formally or informally, a particular issue or situation, in whatever detail, whether or not the consideration of the issue or situation is in a preliminary stage, and whether or not the consideration was discontinued prior to completion.
15. “Person” means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.
16. “CT” means combustion turbine.
17. “DSM-EE” means Demand Side Management-Energy Efficiency.
18. “EPA” means Environmental Protection Agency.
19. “NGCC” means Natural Gas Combined Cycle.
20. “RFP” means Request for Proposals.
21. “RTO” means Regional Transmission Organization.
22. “Senate Bill 4” and “SB4” refer to Senate Bill 4 enacted by the Kentucky Generally Assembly during its 2023 Regular Session, now 2023 Ky. Acts 118.

INSTRUCTIONS

1. If any matter is evidenced by, referenced to, reflected by, represented by, or recorded in any document, please identify and produce for discovery and inspection each such document.
2. These requests for information are continuing in nature, and information which the responding party later becomes aware of, or has access to, and which is responsive to any request is to be made available to Joint Intervenors. Any studies,

documents, or other subject matter not yet completed that will be relied upon during the course of this case should be so identified and provided as soon as they are completed. The Respondent is obliged to change, supplement and correct all answers to interrogatories to conform to available information, including such information as it first becomes available to the Respondent after the answers hereto are served.

3. Unless otherwise expressly provided, each data request should be construed independently and not with reference to any other interrogatory herein for purpose of limitation.

4. Whenever the documents responsive to a discovery request consist of modeling files (including inputs or output) and/or workpapers, the files and workpapers should be provided in machine-readable electronic format (e.g., Microsoft Excel), with all formulas and cell references intact.

5. The answers provided should first restate the question asked and also identify the person(s) supplying the information.

6. Please answer each designated part of each information request separately. If you do not have complete information with respect to any interrogatory, so state and give as much information as you do have with respect to the matter inquired about, and identify each person whom you believe may have additional information with respect thereto.

7. Wherever the response to a request consists of a statement that the requested information is already available to Joint Intervenors, please provide a detailed citation to the document that contains the information. This citation shall include the title of the document, relevant page number(s), and, to the extent possible, paragraph number(s) and/or chart/table/figure number(s).

8. If you claim a privilege including, but not limited to, the attorney-client privilege or the work product doctrine, as grounds for not fully and completely responding to any discovery request, please describe the basis for your claim of privilege in sufficient detail so as to permit Joint Intervenors or the Commission to evaluate the validity of the claim. With respect to documents for which a privilege is claimed, please produce a "privilege log" that identifies the author, recipient, date, and subject matter of the documents or interrogatory answers for which you are asserting a claim of privilege and any other information pertinent to the claim that would enable Joint Intervenors or the Commission to evaluate the validity of such claims.

9. In the case of multiple witnesses, each interrogatory should be considered to apply to each witness who will testify to the information requested. Where

copies of testimony, transcripts or depositions are requested, each witness should respond individually to the information request.

10. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

**FOURTH DATA REQUEST PROPOUNDED TO LOUISVILLE GAS
AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY
BY JOINT INTERVENORS**

- 4-1. Please refer to the Companies' response to JI Request 3-3(a), which refers to the Companies' response to Attorney General and Kentucky Industrial Utility Customers, Inc. ("AG-KIUC") joint request 3-12. Please explain how Companies' response regarding curtailment is responsive to the original question or provide a direct response to JI request 3-3(a) by explaining whether Companies anticipate having the capability to operate their solar panels in downward dispatch or full flexibility operating mode.

- 4-2. Please refer to Companies' response to JI Request 3-3(c), which provides the capability of the proposed NGCCs and Cane Run 7 to follow load in units of MW per minute and refers to the capabilities of solar facilities in units of MW.
 - a. Please confirm that units of MW is not usually considered a metric for measuring load-following capability. If anything but confirmed, please explain your response.
 - b. Please explain how Companies response to JI request 3-3(c) is responsive to the original question or provide a direct response.
 - c. The Companies' response to AG-KIUC joint request 3-6(a) indicates that solar generation's "ramp rate is almost instantaneous with changes in solar irradiance." Is solar generation's ramp rate also almost instantaneous when curtailing or re-dispatching such assets?

- 4-3. Please refer to Companies' response to JI request 3-6. Please provide a comprehensive *summary* of the services provided by TVA related to reliability coordination. While the referenced agreements are appreciated, please provide a summary if one exists (for example, for training of management reference purposes) or state that no such summary exists.

- 4-4. Please refer to Companies' response to SC request 3-4(b), which states that TVA, acting as the reliability coordinator for LG&E-KU, "did not direct or coordinate specific actions . . . during Winter Storm Elliot." According to Attachment A to the Reliability Coordinator Agreement, Part II.A(c), TVA shall perform the function of "curtailment of transmission service or energy schedules, redispatch of generation and load shedding as necessary to alleviate facility overloads and abnormal voltage conditions, and other circumstances that affect interregional bulk power reliability."
- a. Please state whether during Winter Storm Elliot there was any curtailment of transmission service or energy schedules, redispatch of generation, or load shedding. If so, please provide a brief summary of such actions.
 - b. If the response to Part (a) includes any such actions, please explain why TVA did not direct or coordinate those actions, and how the direction and coordination of those actions conformed to the Reliability Coordinator Agreement.
 - c. If the answer to Part (a) includes any such actions, please provide any documents that summarize those actions and their results, such as reports to management or communications to relevant parties, such as TVA in its role as reliability coordinator, or to PJM or other parties as relevant to the Congestion Management Process referenced in the Reliability Coordinator Agreement.
- 4-5. Please refer to Attachment A to the Reliability Coordinator Agreement, Part III.B(a)-(b), which provides that LG&E-KU are responsible for providing outages, facility ratings, and operational data for all generators, and according to Part V.B(b), are responsible for providing generator unit performance characteristics and capabilities. Please provide such information provided to TVA in its role as reliability coordinator for each of the units proposed for retirement in Case No. 2023-00122 related to the June 1, 2018 to May 31, 2023 period.
- 4-6. Please refer to Attachment A to the Reliability Coordinator Agreement, Part V.A(a)-(b), which provides that TVA as the Reliability Coordinator is responsible for integrating system models to ensure resource adequacy and applying methodologies and tools to assess and analyze resource adequacy plans. Similar responsibilities are described in Attachment B to the Reliability Coordinator Agreement, Parts 3.1, 3.2, and 3.3. Please provide any results from TVA's models, methodologies and tools that provide information regarding the resource adequacy of (a) LG&E/KU's current system and (b) the system with the proposed unit retirements and resource additions. If no such information exists, please explain why not.

- 4-7. Please provide the Independent Transmission Operator's most recent review, evaluation, comments, and approval of LG&E/KU's Base Case Model and Annual Plan as referenced in Attachment B to the Reliability Coordinator Agreement, Parts 2.2 and 2.6.
- 4-8. Please refer to the Companies' response to JI request 3-7(d), which states that "the RTO concept of capacity accreditation for thermal resources is not applicable to the Companies or this proceeding." However, Companies' response to JI-3-7(b)(i) states that "the Companies model seasonal capacity ratings for their thermal units."
- a. Please explain how seasonal capacity ratings differ from capacity accreditation.
 - b. If the response to subpart (a) above is that there is not a meaningful difference, please provide an updated response to JI request 3-7.
- 4-9. Please refer to JI request 3-9(a), which requested supporting evidence that tax advantages for renewable generation resources inure *completely* to the benefit of customers, precluding the possibility that a substantial portion of those tax advantages are captured in the form of transaction costs or retained by the solar developer or owner. The response refers to Staff request 1-47, which provided information regarding how the Companies assessed the tax implications of RFP responses for purposes of assessing the revenue requirements.
- a. Please confirm that the response is based on the assumption or understanding that tax advantages would inure completely to the benefit of customers via a reduction in the revenue requirement. If confirmed, please provide supporting evidence of that assumption or understanding. If not confirmed, please explain.
 - b. The response to JI request 3-9(a) states, "This evidence precludes any tax benefits associated with the four PPAs." Please explain this statement.
 - c. The responses to JI request 3-9(b)(i) and (iii) state that tax advantages related to coal purchases inure completely to customers in the form of lower fuel costs or tax expense. Please provide evidence or the Companies' reasoning for its belief supporting this statement. For example, such savings could inure partially to customers as stated in each response and partially to the fuel suppliers as support for higher prices since non-Kentucky suppliers do not benefit from this tax advantage.

- 4-10. Please refer to Companies' response to Staff request 4-12(a), which states, "The Companies assumed that forced outage rates are not affected by the addition of SCR." Please provide supporting evidence for this statement. If the Companies do not possess any supporting evidence, please state whether in the Companies' best professional judgement, it is more likely that:
- a. An SCR would result in an overall increase in forced outage rates by some amount due to the introduction of additional points of failure;
 - b. An SCR would result in an overall decrease in forced outage rates because the unit would be dispatched less often due to higher variable operating costs; or
 - c. It is not possible to forecast the net impact on forced outage rates because multiple factors need to be considered and no such study has been done.
- 4-11. Please refer to the Companies' response to Staff request 4-13 which states, "Note also that there is no reason to expect that either of the Companies' NGCCs will have a 20-year service life." Please state what service life the Companies expect for the proposed NGCCs and provide an explanation for the response.
- 4-12. Please state the number and size (MW) of requests to the Companies for demand for energy from new extra-large energy users (e.g., users with over 10 MW in demand) who need consistently high levels of energy 24/7/365, such as data centers, in each of the last five years (2019-2023 to-date).
- a. Are the Companies preparing for or anticipating the possibility of limiting future commitments to projects that do not already have signed agreements or firm commitments for service? Please explain.
 - b. Are the Companies aware of any other electric utilities preparing for or anticipating the possibility of limiting future commitments to projects that do not already have signed agreements or firm commitments to service? If so, please identify those utilities and explain the relevant circumstances, as understood by the Companies.
 - c. If the Companies were faced with requests for as much as 1 GW of new service, how long would it take to develop and build new generation and transmission infrastructure to serve that scale of load? Please explain.

- 4-13. Please refer to Attachment 1 provided in response to KCA request 2-19, and answer the following requests.
- a. Please explain the Companies' intended meaning of "top down cost estimates" as used in the above-referenced attachment at page 10 of 232 ("Engineer shall provide the following services: . . . Top down cost estimates . . .").
 - b. To the Companies' knowledge, did HDR use its prior Green River NGCC feasibility study to inform its feasibility study for the proposed Mill Creek and Brown NGCCs? Please explain.
 - c. To the Companies' knowledge, what methodology did HDR employ in order to estimate labor costs to build the proposed NGCCs? Please explain.
 - d. To the Companies' knowledge, what data sources did HDR consider in order to estimate labor costs to build the proposed NGCCs? Please explain.
 - e. To the Companies' knowledge, what methodology did HDR employ in order to estimate turbine costs for the proposed NGCCs? Please explain.
 - f. To the Companies' knowledge, what data sources did HDR consider in order to estimate turbine costs for the proposed NGCCs? Please explain.
- 4-14. Please provide the most recent Handy-Whitman Index for public utility construction costs in the Companies' possession.
- 4-15. Please refer to JI 1.9 Attachment 1 and to the HDR "New Generation Options Feasibility Study" filed in Docket No. 2014-0002. Please explain why the current HDR study concluded that a Siemens 9000HL would have a cost of \$1,068 to \$1,129 per kW (June 2022 cost basis) while the HDR study filed in Docket No. 2014-0002 would have a cost of \$1,162 per kW (February 2013 cost basis).
- 4-16. Please refer to Companies' response to JI request 3-17(b). Have the Companies' estimated the costs required for anticipated upgrades and modifications that will be necessary to accommodate hydrogen? If so, please explain and provide any supporting workpapers. If not, please explain why not.
- 4-17. Please refer to Companies' response to JI request 3-27. If there are no workpapers supporting the Company's firm gas transportation costs, please explain how the costs given in response to KCA request 1-51 were derived?

- 4-18. Please refer to Companies' responses to JI request 3-28 and to AG request 1-49(a). Are the SERVM adjustments to Cane Run 7 capacity consistent with the "partial advantage of the capacity improvement" described in the response to AG request 1-49(a)? If not, what capacity improvement in summer and winter will be experienced in the absence of the engineering evaluation described?
- 4-19. Please refer to Companies' response to JI request 2-70 which states, the "contracting approach for the NGCC projects is an Original Equipment Manufacturer ("OEM") lead Engineering, Procurement, and Construction ("EPC") Agreement."
- What language in the documents provided in the supplemental response to KCA request 2-51 indicate a preference for this contracting approach?
 - Would the Companies count proposals from joint ventures such as the consortium of Mitsubishi Power, Sargent & Lundy, and TIC as an OEM lead approach?
 - To the Companies' knowledge, what other power plant projects recently constructed or planned have utilized or will utilize an OEM lead EPC agreement?
- 4-20. Please refer to Companies' response to Staff request 1-58(a), which states in part that "The changes TGT describes in its letter are in addition to the pipeline system changes TGT will make to accommodate the addition of the Mill Creek NGCC."
- Please explain how this sentence can be reconciled with the claim that no upgrades to the interstate pipeline would be needed to facilitate the NGCC as stated in response to JI request 3-27(e).
 - Are the "pipeline system changes TGT will make" changes to lateral(s) supplying the site?
 - Please give the cost of the pipeline system changes TGT will make to accommodate the addition of the Mill Creek NGCC.
- 4-21. Please refer to Companies' response to JI request 1-11(a).
- Please provide the "recent project data and current OEM indicative costs" referenced in the response.
 - What specific projects supported the estimate?
 - What steps were taken to make the "recent project data and current OEM indicative costs" reflect the Mill Creek and Brown NGCC project costs? Please provide the documents that support your response.

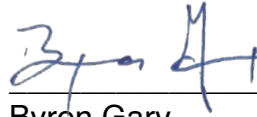
- 4-22. Please refer to Companies' response to Staff request 1-58(a), which states in part that "The curtailed output of the Cane Run Unit 7 combined cycle unit and the Trimble County simple cycle peaking units on December 23 was caused by a drop in pressure on the Texas Gas Transmission ("TGT") system due primarily to the failure of certain compressor equipment. TGT has identified and is implementing upgrades to their equipment and operating procedures to address the issue as described in the attached letter from TGT to the Companies."
- a. Do the Companies contend that, but for the referenced compressor failures, natural gas wellhead freeze-ins during Winter Storm Elliott would have had no impact on the ability of Cane Run 7 and Trimble County CTs to perform during this event? Please explain.
 - b. Has Texas Gas offered the Companies any fiduciary guarantees related to future performance of its compressor equipment? If so, provide the document supporting your response.
 - c. Has Texas Gas offered the Companies any fiduciary guarantees related to future delivery of natural gas during extreme weather events? If so, provide the document supporting your response.
 - d. Do the Companies contend that the loss of pipeline compression in Ohio and Pennsylvania during Winter Storm Elliott had no impact on the availability of Cane Run 7 and the Trimble County CTs?
 - e. Provide all documents that support your responses to subparts a – d above.
 - f. To the Companies' knowledge, is the Slaughters compressor station, the only compressor station being upgrade by TGT?
- 4-23. Please provide in spreadsheet format the temperature series used to derive the hourly load modeled in SERVVM as provided in "JI DR2 LGE KU Attach to Q60(c) – 20230420_LGELoad2028" for 1973 through 2021.
- 4-24. Please provide an updated project schedule for the proposed NGCCs.
- 4-25. Please refer to the Companies' supplemental response to Kentucky Coal Association's ("KCA") request 2-51 and accompanying attachments, and answer the following requests.
- a. Please confirm that the attachments produced on June 26, 2023, include all documents transmitted and made available to potential RFP respondents. If anything but confirmed, please produce all such documents.
 - b. Did the Companies provide any additional cover documents when transmitting the RFP to interested parties? If so, please produce such documents.

- 4-26. Please refer to the supplemental response to KCA request 2-51.
- a. How many unique bidders have requested a site walkdown to date?
 - b. How many unique bidders attended the pre-proposal meeting on May 8th, 2023?
 - c. What is the current proposal due date?
 - d. How many OEM firms attended the pre-proposal meeting on May 8th, 2023?
 - e. Please explain why the release of the RFP documents and award of the contract was accelerated from the schedule given in response to JI 1-16.
 - f. Do the Companies intend to issue a separate RFP for the OEM? If so, when?
- 4-27. Please refer to the iSource Portal provided in response to KCA 2.51.
- a. [REDACTED] Please explain.
 - b. [REDACTED]
- 4-28. Please provide an updated response to JI request 1-10.
- 4-29. Please state the lowest achievable NOx emission rate for each of Mill Creek Unit 2 and Ghent Unit 2.
- 4-30. Please refer to the forecasted NOx credit costs provided in response to Sierra Club ("SC") request 1.25b, Exhibit SAW-2 at \06_ModelInputs\CommodityPriceForecasts\CONFIDENTIAL_Price_Forecast_Emissions.xlsx, and answer the following requests.
- a. Please identify the source or author(s) for the referenced attachment.
 - b. Please state the approximate date when the referenced NOx credit cost forecast was developed (e.g., month and year).
 - c. Please list and explain in full the assumptions and calculations used to derive the referenced NOx credit cost forecast.
- 4-31. Do the Companies have a forecast for NOx credit costs under the EPA's Final Good Neighbor Plan, 88 Fed. Reg. 36,654 (June 5, 2023)?
- a. If yes, please produce each such forecast and answer the following questions:
 - i. Please identify the source or author(s) for each forecast.
 - ii. Please state the approximate date when each forecast was developed.

- iii. Please list and explain in full the assumptions and calculations used to derive each forecast.
 - b. If no, please explain why the Companies have not re-forecast NOx credit costs under the final Good Neighbor Plan.
- 4-32. Please confirm that Mr. Imber participated in at least one of two EPA stakeholder outreach sessions, held on May 31st from 11am-12:30pm (EDT) and Thursday, June 1st from 11am-12:30pm (EDT), concerning the development of a new proposed rulemaking that would add an allowance auction mechanism for power plants to the CSAPR NOx Ozone Season Group 3 trading program under the Good Neighbor Plan for the 2015 Ozone NAAQS.¹ If confirmed, please answer the following requests:
 - a. As understood by Mr. Imber, what are the EPA's reasons for developing the new proposed rule referenced above?
 - b. Does Mr. Imber have any concerns about the EPA's development of the new proposed rule referenced above? If so, please explain those concerns.
 - c. To the extent that the Companies will continue to engage in the new proposed rulemaking referenced above, please explain the Companies' goal(s).
- 4-33. Please refer to Attachment 4 provided in response to Joint Intervenors' ("JI") Request 1-1(c). Page 7 (of 7) in Attachment 4 lists Reference Documents. Please produce the "Black & Veatch, 2017, NOx Reduction Study" and the "Generation Engineering, 2020, Mill Creek Unit 1&2 Gas Co-Firing" reference documents.
- 4-34. Please refer to the Companies' response to JI Request 1-1 and accompanying attachments, and answer the following requests:
 - a. Is the current gas supply to Mill Creek Station able to provide adequate gas conditions and flow rate if only Mill Creek 2 were converted to gas? If not, please explain what changes would be required and provide cost estimates for those changes, if known.
 - b. Please provide a cost estimate for a CO catalyst at Mill Creek Unit 2, with supporting documentation, if any.
 - c. Please provide a cost estimate for a VOC catalyst at Mill Creek Unit 2, with supporting documentation, if any.

¹ EPA, *Stakeholder Outreach Sessions on Upcoming GNP EGU Allowance Auction Rule* (last updated May 24, 2023), <https://www.epa.gov/csapr/stakeholder-outreach-sessions-upcoming-gnp-egu-allowance-auction-rule>.

Respectfully Submitted,

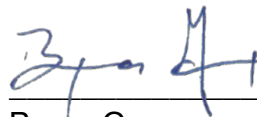


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CERTIFICATE OF SERVICE

This is to certify that any electronic version of the *Fourth Data Request of Joint Intervenors* in this action is being electronically transmitted to the Commission on June 27, 2023, and that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding.



Byron Gary