COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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

INITIAL DATA REQUESTS OF JOINT INTERVENORS METROPOLITAN HOUSING COALITION, KENTUCKIANS FOR THE COMMONWEALTH, KENTUCKY SOLAR ENERGY SOCIETY, AND MOUNTAIN ASSOCIATION TO LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY

Byron L. Gary
Ashley Wilmes
Kentucky Resources Council, Inc.
P.O. Box 1070
Frankfort, KY 40602
(502) 875-2428
Byron@kyrc.org
Ashley@kyrc.org

Counsel for Joint Intervenors Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society, and Mountain Association

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DEFINITIONS

1. "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.

2. "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.

3. "Person" means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.

4. 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.

5. 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.

6. 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.

7. "And" and "or" should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.

8. "Each" and "any" should be considered to be both singular and plural, unless specifically stated otherwise.

9. 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.

10. 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.

11. "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.

12. "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.

13. "The Companies" means LG&E and KU.

14. "Joint Intervenors" means the Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society, and Mountain Association.

15. "Commission" or "PSC" means the Kentucky Public Service Commission, including its Commissioners, personnel, and offices.

16. "BA" means Balancing Authority.

17. "CPCN" means Certificate of Public Convenience and Necessity.

18. "CT" means Combustion Turbine.

19. "DSM" means Demand Side Management.

20. "EE" means Energy Efficiency.

21. "NGCC" means Natural Gas Combined Cycle.

22. "PJM" means PJM Interconnection, a regional transmission organization.

23. "PPA" means Power Purchase Agreement.

24. "PVRR" means present value revenue requirement(s).

25. "RC" means Reliability Coordinator.

26. "RTO" means Regional Transmission Organization.

27. "TVA" means Tennessee Valley Authority.

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 Movants 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.

INITIAL DATA REQUESTS PROPOUNDED TO
LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY BY JOINT INTERVENORS

1.1. Do the Companies anticipate the filing of any Certificate of Public Convenience and Necessity applications related to a supply-side resource, or resources, in the three-year period 2025-2027?
   a. If so, please list and explain each potential CPCN application.
   b. For each potential CPCN application listed in response to subpart a, please identify how each project was analyzed as part of this integrated resource planning process.

1.2. Do the Companies anticipate the filing of any retirement notices with the Energy Planning and Inventory Commission, as prescribed by KRS 164.2807, in the three-year period 2025-2027? Please explain.

1.3. Do the Companies anticipate the filing of any updates to their DSM-EE plan in the three-year period 2025-2027? Please explain.
   a. If so, please list and explain each potential DSM-EE plan update.
   b. For each potential DSM-EE plan update listed in response to subpart a, please identify how each project was analyzed as part of this integrated resource planning process.

1.4. Since the 2021 IRP was filed with the Commission in 2021, please list and describe each Request for Proposals issued by the Companies in relation to:
   a. Demand-side management;
   b. Energy and/or capacity resources;
   c. Distribution resources; and
   d. Transmission resources.

1.5. Please produce Requests for Proposals issued, and responses thereto, in relation to generation-related projects that may be pursued by the Companies in the three-year period 2025-2027.

1.6. Please provide supporting workpapers and modeling files, including (not limited to) all input files, output files, and pre- and post-processing of said inputs and outputs for all resource portfolios and scenarios/sensitivities and for all years modeled, in machine-readable Excel format with formulae intact.

1.7. Please provide a table of the annual resource additions and retirements (in MW) in machine-readable Excel format with formulae intact for:

a. All resource portfolios and scenarios/sensitivities modeled (i.e., 60 resource plans comprised of three load scenarios, four environmental scenarios, and five fuel price scenarios); and
b. The Companies' Recommended Resource Plan.

1.8. Please provide the annual revenue requirements and present value revenue requirement (PVRR) in machine-readable Excel format with formulae intact for:
a. All resource portfolios and scenarios/sensitivities modeled (i.e., 60 resource plans comprised of three load scenarios, four environmental scenarios, and five fuel price scenarios); and
b. The Companies' Recommended Resource Plan.

1.9. Please provide the Companies' Financial Model in machine-readable Excel format with formulae intact.

1.10. With regard to resource planning and retirement timelines, in the Companies' estimation, approximately how many months before a target retirement date would the Companies need to (a) provide notice of a proposed retirement to the Energy Planning and Inventory Commission, and (b) seek and receive approval for a proposed retirement from the Public Service Commission.

1.11. Please list all city franchise agreements, including fees, method of collection from ratepayers, and expiration dates for each.

1.12. Please refer to Vol. I at 5-3, which states "The Companies' overarching resource planning objective is straightforward: Develop a resource plan that will enable the Companies to serve all customers safely, reliably, and at the lowest reasonable cost at all times, day or night, and in all seasons and weather conditions," and answer the following requests:
a. How does this objective comport with the aims of KRS 278.016:
i. To avoid wasteful duplication of distribution facilities?
ii. To avoid unnecessary encumbering of the landscape of the Commonwealth of Kentucky?
iii. To prevent the waste of materials and natural resources?
b. How does this objective comport with the goals or purposes of the Companies and their parent Company as stated in their respective corporate Articles of Incorporation?
c. How does this objective comport with the corporate sustainability goals of the Companies and/or their parent company?
d. How does this objective compare to the statement at Vol. I, 5-9 that "[t]he primary focus of resource planning is risk management"?

1.13. Please refer to Vol. I at 5-3, n.7, regarding the increase in capacity at Cane Run 7, and answer the following requests:
   a. How was the increase in capacity accomplished?
   b. Is the increased capacity accounted for in Section 8(3) of the IRP? Please describe.
   c. Did LG&E apply for or receive any permits or regulatory approvals for this project? Please provide such applications and permits or approvals.
   d. Did the increase in capacity require expansion of gas transport capacity to Cane Run? Please explain.
   e. Has the Company begun a transmission study? If so, what stage is that study in, and when is it expected to be completed?

1.14. Please refer to Vol. I, page 6-5, Table 6-4, providing the "Capital Costs ($/kW) and Sum of Capital and Non-Fuel O&M ($/kW-yr) for Selected Resources." Absent from the table are customer-owned solar and battery storage. Please provide the capital costs, fuel, and non-fuel O&M costs *to the utility* for these resources.

1.15. Please refer to Vol. I at 6-6, n.38, and answer the following requests:
   a. Please identify the project "canceled by the developer due to interconnection issues," including but not limited to the project's queue number in the Companies' Generation interconnection queue.
   b. Please describe the "significant price increases" that led to one PPA being canceled by the developer and another PPA being canceled by the Companies' unwillingness to proceed at a higher price.
   c. Please provide further explanation as to why the "remaining three PPAs appear unlikely to proceed under their approved terms." Please identify which specific PPAs are being referred to, the reasons they are unlikely to proceed, and what conditions would enable them to proceed.
   d. The 2022 CPCN included approval for the Companies to build the Mercer County Solar Facility and acquire the Marion County Solar facility. Please explain the status of each of these projects, whether they are still expected to be developed, the expected operational dates, any significant obstacles to project development that exist, and if they are included within the IRP's resource plan.

1.16. According to PPL's Second Quarter 2024 Investor Update presentation,[1] "active data center requests" to the Companies "have increased to more than 2 GWs over 2027-2033, with about 350 MW in advanced stages."
   a. Please define "active request" as used in the referenced presentation.
   b. Please define "advanced stages" as used in the referenced presentation.
   c. Please describe each "stage" that a data center request would progress through from initial contact with the Companies to delivery of electric services.
   d. Please state the number of combined load of active data center requests currently before the Companies, if any, as well as the stage of each.

[1] Available at https://filecache.investorroom.com/mr5ir_pplweb2/1143/PPL_2024_Q2_Investor_Update_Final.pdf

1.17. Please refer to Vol. I at 8-2, n.71, and explain the basis for assuming (a) a 100% capacity contribution for Brown BESS, and (b) an 85% capacity contribution for additional 4-hour BESS additions.

1.18. In the last five years, has LG&E-KU entered into economic development contract, or other special contract, for new large load customers (>25 MW) or large additions of incremental load from existing customers? If so, please identify each.

1.19. Please refer to Vol. I at 8-10, "Advanced data analytics tools and resources are now allowing LG&E and KU to more wisely invest in areas of concern based on outage history, geo-spatial characteristics, and environmental factors."

a. Please identify the outage history criteria enabled by advanced data analytics and informing LG&E and KU investments.
b. Please identify the ten worst performing circuits for each of LG&E and KU in the last three years in terms of the duration of outages.
    i. Please provide a map illustrating where the circuits identified in response to subpart b are located.
c. Please identify the ten best performing circuits for each of LG&E and KU in the last three years in terms of the duration of outages.
    i. Please provide a map illustrating where the circuits identified in response to subpart c are located.
d. Please identify planned investments over the next three years in the reliability or resilience of the circuits identified in response to subparts b and c.

1.20. Please refer to Vol. I at 8-10, "For customers with heavy resistive loads, such as baseboard heating, this results in energy savings for customers and reduced fuel consumption for generators."

a. Please explain whether the Companies can estimate the number of customers on their systems that would have the "heavy resistive loads" described above, and the aggregate energy demand of such loads.
b. Please explain whether and how the Companies are working to identify other loads that are likely to result in energy savings for customers and reduced fuel consumption for generators.
c. Please provide an estimated magnitude of savings on a system and average cost per kwh.

1.21. Please refer to Vol. I at 8-20, Table 8-11. Confirm that the referenced table reflects forecasted electricity purchases and sales from the Companies' mid energy requirements forecast. If anything but confirmed, please explain.

a. Were purchases and sales forecasted as part of the resource expansion or production cost modeling? Please explain.
b. Do the values in 2024 reflect actuals or a model output?

c. Provide actual market purchases and off-system sales in each of the last ten years.

1.22. Please provide the Companies' actual energy requirements in years 2020 to 2024, on an individual and combined basis, disaggregated by customer class.

1.23. Please refer to page 4 of the *Long-Term Firm Transfer Analysis – Impact to the LG&E-KU Transmission System* in IRP Vol. III, and answer the following requests:
a. Please provide LG&E-KU's 2024 Transmission Expansion Plan.
b. For the cost estimates provided at page 4-5, please identify which are newly-developed planning level cost estimates and which project cost estimates "already existed."
c. For each project identified in the referenced analysis, please provide the estimated timeline for construction, including regulatory approvals, if any.
d. Please specify which among the identified projects was included in the LG&E-KU 2024 Transmission Expansion Plan, if any.
e. Have any of the projects identified in the referenced analysis been included in the 2024 IRP? Please explain.
f. Have any of the projects identified in the referenced analysis been studied, identified, or otherwise included in previous Transmission Expansion Plans? Please explain.

1.24. Please refer to page 43 of the *2024 IRP Resource Assessment: Generation Planning & Analysis* report in IRP Volume III, in which the Companies discuss the least-cost resource plans for all fuel price scenarios: "[T]he Companies evaluated each resource plan with detailed production costs over each of the five fuel price scenarios to determine which resource plan for a given load and environmental scenario has the lowest PVRR on average across all fuel price scenarios."
a. Please describe in detail the Companies' method for determining the least-cost plan for each load and environmental scenario across the five fuel price scenarios.
b. Please provide the calculations and/or analysis conducted by the Companies to determine the least-cost plan for each load and environmental scenario across the five fuel price scenarios in machine-readable Excel format with formulae intact.

1.25. Please refer to page 49 (including Table 29) of the *2024 IRP Resource Assessment: Generation Planning & Analysis* report in IRP Volume III, in which the Companies discuss their recommended resource plan: "To develop the Recommended Resource Plan, the Companies started with this resource plan and modified it to (1) support the potential for high economic development load growth and CO_2 regulations and (2) have no regrets should high load or CO_2 regulations not come to fruition."
a. Please describe in detail the Companies' method for developing their Recommended Resource Plan, including their rationale for each resource decision. Within this description, please specify why the Companies chose to modify the timing of certain resource decisions from those selected in their Least-

Cost Resource Plans (as shown in Table 29) to construct their Recommended Resource Plan.

b. Please confirm that the resource decisions within Companies' Recommended Resource Plan are not a direct result of least-cost capacity expansion modeling. If denied, please explain.
c. Did the Companies model the Recommended Resource Plan (that is, modeling fixed assumptions used to represent the Recommended Resource Plan)?
d. If so, please provide all input files, output files, pre- and post-processing of said inputs and outputs, background materials, and source citations for the Companies' modeling of their Recommended Resource Plan.

1.26. Please provide the following annual historical data for each of LG&E-KU's gas- and coal-fired units from 2019 through the latest date available, in machine-readable Excel format with formulae intact:

a. Nameplate capacity (MW)
b. Generation (MWh)
c. Fuel usage (MMBtu)
d. Heat rate (MMBtu/MWh)
e. Forced outage rate (%)
f. Planned outage rate (%)
g. Equivalent availability factor (%)
h. Capacity value (%) (also referred to as capacity credit, effective load carrying capacity, etc.)
i. Variable O&M ($)
j. Fixed O&M ($)
k. Fuel costs ($)
l. Non-environmental capital spending ($)
m. Environmental capital spending ($), including corresponding regulation
n. Market revenues ($) (e.g., capacity, energy, and/or ancillary services)
o. Capital revenue requirements/costs to customers ($), including any supporting calculations
p. NO_x emissions
q. Particulate matter (PM) emissions
r. SO_2 emissions
s. CO_2 emissions

1.27. Please provide the following annual historical data for each of LG&E-KU's solar (i.e., E.W. Brown Solar and Simpsonville Solar) and wind (i.e., E.W. Brown Wind) resources from 2019 through the latest date available, in machine-readable Excel format with formulae intact:

a. Nameplate capacity (MW)
b. Generation (MWh)
c. Capacity value (%) (also referred to as capacity credit, effective load carrying capacity, etc.)
d. Fixed O&M ($)
e. Capital spending ($)

f. Market revenues ($) (e.g., capacity, energy, and/or ancillary services)
g. Capital revenue requirements/costs to customers ($), including any supporting calculations

1.28. Please provide the Companies' forecasts for the following for each of LG&E-KU's generating units (or plant-level if unit-level is unavailable) for all resource portfolios, scenarios, and years modeled within the 15-year modeling period (2024 through 2039), in machine-readable Excel format with formulae intact:
a. Nameplate capacity (MW)
b. Generation (MWh)
c. Fuel usage (MMBtu)
d. Heat rate (MMBtu/MWh)
e. Forced outage rate (%)
f. Planned outage rate (%)
g. Equivalent availability factor (%)
h. Capacity value (%) (also referred to as capacity credit, effective load carrying capacity, etc.)
i. Variable O&M ($)
j. Fixed O&M ($)
k. Fuel costs ($)
l. Non-environmental capital spending ($)
m. Environmental capital spending ($), including corresponding regulation
n. Market revenues ($) (e.g., capacity, energy, and/or ancillary services)
o. Capital revenue requirements/costs to customers ($), including any supporting calculations
p. NO_x emissions
q. Particulate matter (PM) emissions
r. SO_2 emissions
s. CO_2 emissions

1.29. Regarding the Companies' cost forecasts for new supply-side resources:
a. Please provide all cost forecasts (including sensitivities), in machine-readable Excel format with formulae intact, of new supply-side resource builds, including capital, O&M and fuel costs for each relevant resource:
i. Solar PV
ii. Battery Storage
iii. Wind
iv. Gas CC
v. Gas CT
vi. Any other new supply-side resources modeled
b. Please identify the source for each cost provided, any calculations or processing of those sources' costs used prior to modeling, the supporting analyses and/or documentation for any adjustments made to the primary sources of these forecasts, and federal tax credit assumptions applied in each year for each relevant resource.

1.30. Did the Companies perform any sensitivity analysis on the cost forecasts of new supply-side resource builds?
   a. If so, please specify which cost forecast sensitivities were assessed in all resource portfolios and scenarios modeled (i.e., 60 resource plans comprised of three load scenarios, four environmental scenarios, and five fuel price scenarios) for each relevant resource:
      i. Solar PV
      ii. Battery Storage
      iii. Wind
      iv. Gas CC
      v. Gas CT
      vi. Any other new supply-side resources modeled
   b. If not, please explain why not.

1.31. Refer to page 24 of the *2024 IRP Resource Assessment: Generation Planning & Analysis* report in IRP Volume III, in which the Companies discuss the key constraints and uncertainties of analysis: "The earliest new NGCC or SCCT can be added is 2030, and the earliest a small modular nuclear reactor can be added is assumed to be 2039. All other resources are assumed to be available in 2028."
   a. On what basis did the Companies determine their assumed availability dates for each resource type? Please provide supporting documentation, background materials, and analysis.

1.32. Refer to page 24 of the *2024 IRP Resource Assessment: Generation Planning & Analysis* report in IRP Volume III, in which the Companies discuss the key constraints and uncertainties of analysis: "Solar generation is limited to 20% of total energy requirements and the sum of solar and wind generation is limited to 25% of total energy requirements."
   a. On what basis did the Companies determine their assumed limitations on solar generation (i.e., 20 percent of total energy requirements) and solar and wind generation (i.e., 25 percent of total energy requirements)? Please provide supporting documentation, background materials, and analysis.
   b. Are any of the resource portfolios and scenarios modeled by the Companies impacted by these limitations on renewable energy resources? If so, please identify all resource portfolios and scenarios where the limitations are met and in what year(s).

1.33. Have the Companies considered federal assistance available through the Inflation Reduction Act's Energy Infrastructure Reinvestment (EIR) program (administered by the U.S. Department of Energy's Loan Programs Office) when modeling supply-side resources?
   a. If so, please describe how the EIR program was considered in the Companies' modeling.
   b. If not, please explain why the Companies did not consider the EIR program.
   c. In either case, please describe the Companies' understanding of the EIR program.
      i. Do the Companies agree that the EIR program provides an opportunity

for lower-cost financing of eligible energy projects?
ii. If so, please explain why.
iii. If not, please explain why not.

1.34. Please refer to Vol. I at 5-12, in which the Companies describe their assumptions related to the coal unit retirements: "For the 2024 IRP, at the Commission's request, the Companies configured PLEXOS to evaluate the economics of all coal unit retirements."
a. Please explain in detail how coal retirement dates were determined for the Companies' resource plans.
b. Please list the retirement dates that were tested in the Companies' IRP modeling for each coal unit and identify which resource portfolios and scenarios tested these retirement dates.

1.35. Regarding the Good Neighbor Plan for the 2015 Ozone National Ambient Air Quality Standards ("Ozone NAAQS"):
a. Do all of the Companies' portfolios and scenarios/sensitivities modeled in the 2024 IRP meet the requirements of the rule?
i. If so, please provide a list of the modeling runs that meet the rule's requirements.
ii. If so, please explain how compliance is achieved for each of the Companies' coal-fired units in each compliant plan.
iii. If not, explain why not.
iv. If not, please provide a list of the modeling runs that do not meet the rule's requirements.
b. Please provide the Companies' understanding of the compliance requirements for each of their coal-fired units.
c. Please provide the most recent capital and O&M cost estimates for Good Neighbor Rule compliance at each of the Companies' coal-fired units.
i. To the extent these capital and O&M costs were included in the IRP, please specify in what scenario(s).
d. Please provide forecasts of NO_X allowance prices reviewed by the Company in the past two years.
e. Please provide forecasts of NO_X allowance prices and costs for each of the Companies' coal-fired units for all portfolios modeled in the 2024 IRP.

1.36. What analysis, research, or other considerations have the Companies performed regarding the early retirement of any of their coal-fired units to avoid Effluent Limitation Guidelines (ELG), Coal Combustion Residual (CCR), Mercury Toxics Standards (MATS) or Regional Haze compliance costs?
a. Please provide supporting documentation, background materials, and analysis (in machine-readable Excel format with formulae intact).
b. For each coal-fired unit*:* Has it been considered for early retirement for any of the listed rules? Why or why not? Include what specific rules led to that consideration.
c. For each coal-fired unit*:* Please provide the costs of compliance with each of

these rules that were modeled in the IRP and supporting documentation for those costs.

d. Please provide the costs of compliance with each of these rules developed by or for the Companies in the past two years.

1.37. In April 2024, U.S. EPA issued final new Clean Air Act carbon pollution standards for coal- and gas-fired power plants ("section 111(d)") that will require these resources to employ capacity factor limitations, co-firing, and/or carbon capture and storage (CCS) to continue operations into the future.

a. Which of the Companies' portfolios meet the requirements of the U.S. EPA's proposed CO_2 emission limits?

i. For each portfolio, please explain how compliance is achieved for each coal- and gas-fired unit, including: timing of compliance, constraints imposed on those units, and costs of compliance (where appropriate).

ii. For any portfolios and scenarios/sensitivities not in compliance with section 111(d), please explain why not and the costs of non-compliance anticipated by the Companies.

b. Please explain the Companies' rationale for including environmental regulation scenarios that do not comply with section 111(d).

c. Please explain how scenarios that assumed 111(d) provisions would be stayed or appealed accounts for regulatory risk of carbon emitting generating sources.

1.38. Please refer to page 25, of the *2024 IRP Resource Assessment: Generation Planning & Analysis* report in IRP Volume III, in which the Companies discuss their *Ozone NAAQS + ELG + GHG* environmental regulation scenario: "Retiring generation is a compliance alternative for the GHG Rules, but retirements require reliable replacement capacity. Replacing generation at the scale necessary for compliance is not reasonable on the GHG Rules' timeline. Therefore, the Companies assign a low likelihood to this scenario."

a. On what basis did the Companies determine that replacing generation at the scale necessary for compliance is not reasonable on the GHG Rules' timeline? Please provide supporting documentation, background materials, and analysis.

b. Please provide a detailed explanation of the decision-making behind assigning a low likelihood to the *Ozone NAAQS + ELG + GHG.*

c. Please provide a discussion of the Companies' understanding of whether or not *Ozone NAAQS + ELG + GHG* is unique among the scenarios modeled in the 2024 IRP in terms of meeting Clean Air Act requirements.

d. What are the consequences to the Companies of the assumed low likelihood of the *Ozone NAAQS + ELG + GHG scenario*?

i. Do the Companies anticipate a failure to comply with certain federal requirements? If so, please explain.

ii. Do the Companies anticipate non-compliance costs? If so, please explain.

1.39. Please refer to "Key Forecast Assumptions and Uncertainties" in Section 5 of IRP Volume I, in which the Companies provide brief descriptions of a set of load components that influence their three load forecast scenarios.

a. Please further explain the Companies' methodological approach for developing its Low, Mid, and High load scenarios for each of the following load impact components, including but not limited to data sources, assumption explanations, detailed tables of assumption values, and justifications for the selected assumptions. Please include background materials and citations for data and assumption sources:
    i. Customer growth
    ii. Heating electrification
    iii. Electric vehicles
    iv. Distributed generation
    v. Major accounts
    vi. Efficiency gains
    vii. Economic development

1.40. Please refer to Figures 5-12, 5-13 and 5-14 on pages 5-23 and 5-24 in Section 5 of IRP Volume I, in which the Companies provide differences between their Low and High load forecast scenarios and their Mid load forecast scenario.
a. For each of the Companies' Low, Mid, and High load forecast scenarios (2024 through 2039), please provide the following data, in machine-readable Excel format with formulae intact including supporting analyses and/or documents. Include KU, LG&E, and combined data, disaggregated by load impact components (i.e., customer growth, heating electrification, electric vehicles, distributed generation, major accounts, efficiency gains, and economic development):
    i. Energy requirements forecast (in GWh), disaggregated by load components
    ii. Summer peak forecast (in MW), disaggregated by load components
    iii. Winter peak forecast (in MW), disaggregated by load components

1.41. Please refer to Figure 5-8 and "1. Economic Development" on page 5-16 and 5-17 in Section 5 of IRP Volume I, in which the Companies show their economic development growth projections for the Low, Mid, and High load scenarios. Please clarify whether the data shown in Figure 5-8 is measured in megawatts (MW)—as stated in the y-axis label—or gigawatt-hours (GWh)—as stated in the figure caption.

1.42. Please refer to "5. Cost of Service" on page 5-19 in Section 5 of IRP Volume I, in which the Companies describe how electricity prices are considered in the electric load forecasts: "[T]he Mid load forecast represents the Companies' view of the most likely development in end-use saturations and efficiencies, electric vehicle adoption, distributed energy resources, and economic conditions in the service territory, all of which are impacted by electricity prices. Electricity prices are assumed to increase by 2.3 percent per year, consistent with long-term inflation expectations."
a. Please confirm that the increase in electricity prices "by 2.3 percent per year" is applied to all three of the Companies' load forecast scenarios.
b. If so, please explain why the Companies did not consider different electricity price assumptions among its Low, Mid, and High load forecast scenarios.

c. If not, please provide electricity price forecasts by load scenario.

1.43. Please refer to "5. Cost of Service" on page 5-19 in Section 5 of IRP Volume I, in which the Companies describe the negative price elasticities within their forecasting models: "If higher-than-expected prices materialize, the Companies anticipate a decline in sales as compared to the current forecast (all else equal) due to the negative price elasticities incorporated into the forecasting models."

a. Please describe and provide the values of the Companies' assumed negative price elasticities between electricity prices and electric sales.

1.44. Please refer to "6. Customer Growth" on page 5-19 in Section 5 of IRP Volume I, in which the Companies describe their customer growth assumptions: "A potential for [sic] upside for Kentucky's economy is rapid growth in the state's housing market. S&P Global is forecasting total housing starts in Kentucky to be the eighteenth highest in the United States during 2024. Further, the forecasted 2024-2039 growth rate averages tenth in the US as compared to the average rate over the previous ten years."

a. Please provide the following data for the Companies' customer growth projections, in machine-readable Excel format with formulae intact, for the Low, Mid, and High load scenarios (2024 through 2039), including KU, LG&E, and combined:
    i. Customer counts (# of customers), disaggregated by customer class
    ii. Average annual use-per-customer (kWh), disaggregated by customer class

1.45. Please refer to "7. Distributed Generation and Battery Storage" on page 7-19 in Section 7 of IRP Volume I, in which the Companies describe their forecasts related to distributed generation: "While batteries may be the most feasible of all options in terms of physical location, their LCOE is not competitive when compared to solar under the Companies' current rate design."

a. Is the Companies' assessment of energy storage based on its utility as an energy resource (like solar) rather than a capacity resource? Please explain the Companies direct comparison of the competitiveness of solar versus storage.
b. Please provide the quantitative comparison of solar and storage resources assumed capabilities and limitations used by the Companies in developing the 2024 IRP. Please include analysis, background materials, and detailed citations.
c. What external factors (economic outlook, market forecasts, existing or expected policies, etc.) have the Companies considered in developing their predictions related to energy storage that could result in increased adoption rates within their service territories?
    i. If so, please describe which external factors were considered.
    ii. If not, please explain why not.

1.46. Please refer to "8. Electric Vehicles" on page 5-22 in Section 5 of IRP Volume I, in which the Companies describe the primary factors that influence EV electric consumption: "The primary factors impacting total electricity consumption by EVs are the number of EVs and the distance driven per vehicle, though the timing of EV charging is at least equally important for resource planning."

a. Please provide the following data, in machine-readable Excel format with formulae intact, for the Low, Mid, and High load scenarios (2024 through 2039):
    i. Number of electric vehicles in operation
    ii. Average distance driven per vehicle
    iii. Assumed consumption (kWh) per unit of distance

1.47. Please refer to "7.(7).(f) Research and Development" on page 7-37 of IRP Volume I, stating: "Customer behavior is a key component to robust load forecasting. Since the last IRP, the Companies have surveyed their residential customers to see the kinds of decisions they are making when it comes to home appliances, distributed generation, and other energy-related topics." Please describe and provide the results of each such survey effort.

1.48. Please refer to "9. Space Heating Electrification" on page 7-31 in Section 7 of IRP Volume I, in which the Companies describe their forecasts related to space heating electrification.
a. Please provide detailed data, justification, and citations for the Companies' assumptions on space heating electrification as it relates to their load forecasts.
b. Please provide the Companies' forecasts of space heating electrification by technology type and customer type in the Low, Mid, and High load scenarios (2024 through 2039)?
c. What electric space heating technologies (e.g., electric resistance, air-source heat pumps, ground-source heat pumps, networked geothermal, etc.) are being modeled in the Companies' load forecasts?
d. What assumptions regarding customers' heating with electric resistance heating are included in the Companies' load forecasting? Please provide the following in machine-readable Excel format with formulae intact:
    i. Customer counts
    ii. Costs
    iii. Operating characteristics
e. What assumptions regarding customers' heating and cooling with heat pump technologies are included in the Companies' load forecasting? Please provide the following in machine-readable Excel format with formulae intact:
    i. Customer counts
    ii. Costs
    iii. Operating characteristics
f. What assumptions regarding load impacts due to increased adoption of air conditioning over time are included in the Companies' load forecasting? Please describe how this is included in the Companies' modeling.

1.49. Please refer to page 7-12 through 7-13 in Section 7 of IRP Volume I, in which the Companies describe the benefits of data centers: "Given the nature of their operations, data centers have extremely high load factors – upwards of 95%. Energy intensive data centers are crucial to consumers, businesses, and the safety and security of our nation. They support critical business applications, store valuable business and personal data, keep data safe from threats, and serve as a foundation for modern

business and government applications."

a. Please describe how these benefits associated with data centers are relevant to ratepayers.
b. What transmission planning and/or analyses have the Companies conducted in relation to anticipated load growth from data centers? Please provide supporting documentation, background materials, and analysis (in machine-readable Excel format with formulae intact).
c. What reliability planning and/or analyses have the Companies conducted in relation to anticipated load growth from data centers? Please provide supporting documentation, background materials, and analysis (in machine-readable Excel format with formulae intact).
d. What requirements for curtailable potential are assumed in the Companies' modeling in relation to anticipated load growth from data centers? Please provide supporting documentation, background materials, and analysis (in machine-readable Excel format with formulae intact).
e. What requirements for data centers investment in on-site battery energy storage systems (BESS) are assumed in the Companies' modeling in relation to anticipated load growth from data centers? Please provide supporting documentation, background materials, and analysis (in machine-readable Excel format with formulae intact).

1.50. The following requests concern the service requirements of potential new data center customers.

a. To the extent known, what level of interest in participation in the "Green Tariffs" do the Companies expect from potential new data center customers? Please explain.
    i. If unknown, please explain at what stage in the process of negotiating with a potential new data center customer that the Companies would be aware of interest in the Green Tariffs?
b. To the extent known, what is the likelihood that a new data center customer would be interested in participating in demand response programs.
    i. If unknown, please explain at what stage in the process of negotiating with a potential new data center customer that the Companies would be aware of interest in demand response programs?
c. To the extent known, what is the likelihood that a new data center customer will rely on behind-the-meter resources, including solar, battery storage, and fuel-dependent generators.
    i. If unknown, please explain at what stage in the process of negotiating with a potential new data center customer that the Companies would be aware of a customer's interest in behind-the-meter generation?

1.51. Please provide a breakdown of peak MW and MWH of industrial load by sector and season. This could be provided using NAICS or SIC or a comparable segmentation.

1.52. Please refer to page 19 of the *2024 IRP Resource Assessment: Generation Planning &*

Analysis report in IRP Volume III, in which the Companies discuss their dispatchable DSM programs: "The dispatchable DSM programs in the 2024-2030 DSM-EE Program Plan are modeled as existing resources and are assumed to grow throughout the 15-year planning horizon. In addition to these resources, the new dispatchable DSM program measures in Table 4 provide alternative means for customers to participate in existing programs."

a. What are the growth assumptions for existing dispatchable DSM programs associated with the 2024-2030 DSM-EE Program Plan throughout the 15-year planning horizon?
b. Are the dispatchable DSM programs available for model selection in portfolio modeling separate from and additional to the Companies' expected distributed generation and energy efficiency measures included in their load forecasts? Please explain.
c. Please clarify how the Companies distinguish between existing and new dispatchable DSM in their modeling by listing for each resource type:
    i. What DSM resources are modeled as supply and modeled as demand;
    ii. What DSM resources are classified as existing and as new dispatchable;
    iii. Providing costs and other functional characteristics.

1.53. Please refer to "2. Normal Weather" on page 5-17 in Section 5 of IRP Volume I, in which the Companies describe their assumption that weather will be average or "normal" every year. Does the 2024 IRP model the effects of climate change on weather and load in the future?

a. If so, please explain in detail how the Companies' load forecasts account for climate change impacts.
b. If not, please explain why not.

1.54. Please provide energy burden analyses conducted or considered as a part of the 2024 IRP process, if any.

1.55. Please provide the following data over the most recent three-year period available, and related internal analysis considered as part of the 2024 IRP:

a. Monthly number of customers that received a disconnection notice by zip code;
b. Monthly number of disconnections for nonpayment by zip code;
c. Monthly average number of customers with a past due balance;
d. Monthly average past due balance amount;
e. Monthly average number of participants in a payment assistance program.

1.56. Please refer Vol. I, page 8-10, stating, "[i]ncreasingly, customer outages are being driven by extreme weather conditions. Since 2020, outage duration and frequency during major even days, defined by IEEE 1366, have increased. LG&E and KU's territory experiences tornadoes, severe thunderstorms, ice storms, and occasional hurricanes."

a. Please specify the outage duration experienced on each of LG&E and KU's systems over the last ten years on a monthly basis. If that level of granularity is

not available, please provide the information on the most granular time scale available.

b. Please specify the outage frequency experienced on each of LG&E and KU's systems over the last ten years on a monthly basis. If that level of granularity is not available, please provide the information on the most granular time scale available.
c. In each of LG&E and KU's territories, for each of the last three years, please identify the ten census tracts that experienced the longest outage durations.
d. In each of LG&E and KU's territories, for each of the last three years, please identify the ten census tracts that experienced the shortest outage durations.
e. In each of LG&E and KU's territories, for each of the last three years, please identify the ten census tracts that experienced the highest frequency of outages.
f. In each of LG&E and KU's territories, for each of the last three years, please identify the ten census tracts that experienced the lowest frequency of outages.

1.57. Do the Companies agree that extreme weather conditions challenge, and sometimes negatively impact, the reliability and resilience of their system? If not, please explain why not.

1.58. Do the Companies agree that the risk of extreme weather conditions imposes new costs in order to maintain reliability and resilient service? If so, please describe those costs, and produce any analysis of those costs and/or weather-related cost risks considered by the Companies in integrated resource planning. If not, please explain why not.

1.59. Please refer to Vol. I, Table 5-2, at page 5-13, and answer the following requests.

a. Please describe the methodology analysis undertaken by the Companies in order to determine reasonable values, including any underlying assumptions, for each of the three load scenarios with respect to each of:
    i. Data center growth;
    ii. The timing of data center growth (i.e., 2032);
    iii. Distributed generation in 2032; and
    iv. Energy efficiency, CVR, AMI, and other energy reductions in 2032.
b. Please provide the calculations and assumptions underlying the values in the table for each of the three "key differences" between the low, mid, and high load scenarios.
c. For the values provided in the far right column of Table 5-2, please disaggregate the contributions to the total provided from each of:
    i. Energy Efficiency;
    ii. CVR;
    iii. AMI; and
    iv. "Other Energy Reductions"

d. Please explain why the Companies forecast reduced adoption of distribution generation as system-wide load increases in the mid- and high-load scenarios.
e. Please explain why the Companies forecast reduced savings from "Energy Efficiency, CVR, AMI, and Other Energy Reductions in 2032" as system-wide load increases in the mid- and high-load scenarios.
f. Please confirm that, all else being equal, as system-wide load increases, avoided cost benefits of energy savings will generally increase. If anything but confirmed, please explain.
g. Please identify where the "Electric Sales & Demand Forecast Process" report included in Vol. II explains the process for incorporating data center load growth in the IRP forecast. If the data center load forecast adjustments are not discussed therein, please explain why not.

1.60. Please refer to Vol. I, page 5-18, stating: "the Companies' Mid load forecast includes nearly 1,500 GWh of reductions by 2032 from customer-initiated energy efficiency improvements, AMI-related conservation load reduction and ePortal savings, distributed generation, and the energy efficiency effects of the Companies' proposed 2024-2030 DSM-EE Program Plan as well as new programs beyond 2030."
a. Please confirm that this refers to the same information conveyed in Table 5-2. If anything but confirmed, please explain.
b. If not already provided in response to the previously numbered request (JI 1.59) concerning Table 5-2, please provide all worksheets and explain how these savings estimates were derived for each of the above components.
c. If not already provided in response to the previously numbered request (JI 1.59), for each of the Low, Mid, and High Load Forecasts, identify the energy savings provided by each of these components: customer-initiated energy efficiency improvements, AMI-related conservation load reduction, ePortal savings, distributed generation, the 2024-2030 DSM-EE Program, and new programs beyond 2030.
d. If not already provided in response to the previously numbered request (JI 1.59), please provide all worksheets and explain how these savings estimates were derived for each of the above components.
e. How many KW of installed distributed solar generation were assumed in these estimates and did this include net metering and Qualifying Facilities?
f. For each energy-saving component, calculate the percent savings relative to the Companies' total forecast energy sales.
g. What were the demand (MW) savings achieved by each of these energy-saving components?

1.61. Please refer to the process for interconnecting new load in each of the Companies' territories.
a. Please describe and provide documentation that details the Companies' policy and procedures for interconnecting a new customer with load of at least 25 MW. To the extent that the Companies policy and procedures for interconnecting a new

customer vary at higher load levels (e.g., 100 MW, 400 MW, etc), please specify each such load level and explain differences in policy and procedure.

b. Please describe each step of the process for interconnecting a new customer load of at least 25 MW (e.g., what studies are conducted, how long do those take, what negotiations are conducted, etc.). To the extent that the process changes at higher load levels, please specify each such load level and explain differences.
c. Please describe and estimate the range of total interconnection costs for a prospective new customer load of 100 MW or larger.

1.62. Please provide all analyses conducted by or at the direction or supervision of LG&E and/or KU to analyze the potential impact(s) of new large loads on:
a. LG&E and/or KU revenue;
b. LG&E and/or KU net income or profit;
c. LG&E and/or KU cost of service study results, including cost allocation to customer classes;
d. LG&E and/or KU cost-shifting or cross-subsidization among customer classes; and
e. LG&E and/or KU residential rate or bill impacts.

1.63. Please produce documents, presentations, and communications to the Companies' Independent Transmission Operator by the Companies in the last twelve months related to the possibility of connecting new large load customers, including data centers, cryptocurrency mining operations, and other industrial sectors, in the Companies' service territory.

1.64. Please provide an electronic copy of all presentations made by or given to PPL leadership team in the last 12 months, that identifies, summarizes, analyzes, or evaluates the impacts of data centers or other new large load facilities to PPL, the Companies' or its customers, including, but not limited to, factors considered by such facilities in making siting decisions, load growth, energy consumption, revenue generation, rate impacts, bill impacts, subsidies or cross-subsidies associated with such facilities, use of special contracts, modifications to applicable rates or tariffs, electric interconnection agreements, economic development, and inquiries received by the Companies' for interconnection.

1.65. These questions pertain to the impacts of the IRP on residential customers with low- and fixed-incomes.
a. Please provide any and all internal analysis and discussion materials used to forecast and consider the impact of the proposed IRP on low-income customers at 30%, 50%, and 80% Area Median Income (AMI).
b. Please provide any historical data on low-income households considered in the preparation of the IRP by census tract and zip code.
c. Please provide any internal analysis of Annual Use-per-Customer and Total Energy Sales correlated to impact on average customer bills as 30%, 50%, and

80% Area Median Income (AMI). Please provide data by census tract and zip code if possible.

d. Please provide any analysis conducted on residential end-use trends and the impact on low-income customers at 30%, 50%, and 80% Area Median Income (AMI) by census tract and zip code.
e. Please explain how the Companies propose to create equitable models for collecting survey data and direct feedback for residential, small customers as is repeatedly mentioned in regard to large, nonresidential, commercial customers.
f. Please provide any analysis performed by the Companies specific to future low-income household customer demand for energy.
g. Please provide any analysis and discussion materials from this IRP process pertaining to the planning and development of new DSM programs targeted at low-income households at 30%, 50%, and 80% Area Median Income (AMI). Please provide any data considered as a part of that analysis and discussions by census tract and zip code.
h. Please provide any analysis of the impact of the preferred portfolio of resources on low-income customers, and of how those concerns were considered as part of the Integrated Resource Plan (IRP) process.
i. Please provide any studies related to environmental and health impacts on low-income communities and communities of color considered as a part of the Integrated Resource Plan (IRP) process. Please provide any and all internal analysis and discussion materials from the Companies of these studies.
j. Please provide any and all studies related to the impact of economic disparities on low-income communities and communities of color considered as a part of the Integrated Resource Plan (IRP) process. Please provide any and all internal analysis and discussion materials from the Companies of these studies.

1.66. Please provide the most recent condition assessment report for each of E.W. Brown Unit 3 and Ghent Unit 2.

1.67. Please refer to the 20214 IRP Long-Term Resource Planning Analysis.

a. Did the Companies conduct or cause to be conducted any economic analysis, under any of the scenarios, of when existing units would have costs (fixed costs and variable costs) that exceed their revenues? If so, please provide any such analyses. If not, please explain in detail why not.
b. Did the Companies conduct or cause to be conducted any economic analysis, under any of the scenarios, of when it would be economic to retire any existing generating units? If so, please provide any such analyses. If not, please explain in detail why not.
c. Within the last five years, have the Companies prepared or caused to be prepared any analysis of whether to continue to operate or retire any of their existing generating units? If so, please produce any such analyses. If not, please explain in detail why not.

d. Have the Companies prepared or caused to be prepared any analysis of the reliability impacts of retiring existing units? If so, please produce any such analyses, including all supporting workpapers and modeling input and output files. If not, please explain in detail why not.

1.68. In comparing and evaluating possible resource additions and retirements (including distributed generation) do the companies include the costs of pollutants and environmental damage, negative health impacts, and the potential avoided costs of these (such as those costs quantified in: https://www.epa.gov/statelocalenergy/estimating-health-benefits-kilowatt-hour-energy-efficiency-and-renewable-energy; and https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf)?

1.69. Please explain how the Companies' approach to evaluating distributed generation adoption rates as part of the load forecast analysis has changed in comparison to the approach used in the 2021 IRP, if at all.

1.70. Please provide the data underlying the following Figures in Section 7 of IRP Vol. I:
a. Figure 7-3 "Adoption of battery storage devices by net-metering customers";
b. Figure 7-4 "Cumulative Net Metering Customer and Capacity Adoption";
c. Figure 7-5 "Distributed Generation Forecast Scenarios"; and
d. Figure 7-8 "Incremental Net Metering Customer Adoption by Month (Jan. 2019 - Jun 2024)."

1.71. To the extent available in calendar year 2024, please provide the number of customers with distributed solar and battery systems, and the average battery installation size.

1.72. Please refer to Vol. I, page 7-20, stating "Currently, the Companies do not have access to data concerning how these customers are using their batteries. The Companies are also unsure to what extent non-net metering customers have battery storage as there is no mechanism to track this today outside of net metering. Due to the low rates of energy storage adoption, uncertainty around charging and discharging patterns, and unknown adoption numbers of battery storage for non-net metering customers, the Companies do not explicitly forecast distributed battery adoption, but will continue to monitor. For now, the distributed generation forecast implicitly assumes the level of battery storage increases with customer growth."
a. When do the Companies expect to be able to access data on customer battery usage. Please explain.
b. What possible mechanisms to track stand-alone behind-the-meter storage adoption have the Companies considered? Please explain.
c. Please explain how the Companies monitor distributed battery adoption, and how that monitoring process and/or capability may change over the next three years.

1.73. Please refer to Vol. I, page 7-20, Figure 7-3, and answer the following requests.
   a. Please identify the data sources relied on with respect to customer adoption of batteries.
   b. Are net metering customers required to report batteries if included in their solar project? Please explain why or why not.
   c. Does the net metering application ask customers if a battery is included in their system? Please explain why or why not.

1.74. The following requests concern the AMI meters being deployed by the Companies.
   a. Are the AMI meters capable of providing data on how customers use batteries? Please explain.
   b. If the AMI meters do have the capability of providing data on how customers use batteries, are the Companies presently tracking or monitoring that data? If not, when will the Companies begin to do so?
   c. Are the AMI meters capable of providing data on the location and size of stand-alone batteries? Please explain.
   d. If the AMI meters do have the capability of providing data on the location and size of stand-alone batteries, do the Companies presently track or monitor that data? If not, when will the Companies begin to do so?
   e. Are AMI meters required for the utility to use a customer-owned battery as a demand response resource? Please explain.

1.75. Please refer to Vol. I, page 7-22, stating: "The high solar (Low load) scenario assumes the 1% cap on total installed net metering capacity is removed, which would most likely occur due to a change in law at the state or federal level."
   a. Can the Companies cite any federal or state statute which requires the utility to cap net metering service at 1% of the Companies' annual peak load (or at any other threshold)?
   b. Please describe any internal discussions the Companies have had about whether to allow net metering to continue beyond the 1% threshold?
   c. Please produce any studies, presentations, reports, or other analyses that the Companies have created, or caused to be created, regarding the ability to integrate greater amounts of net metering capacity in the Companies' respective or combined territories.
   d. Is it the Companies' position that they will impose a cap on net metering upon reaching the 1% threshold unless a change in law at the state or federal level prevents them from doing so? If so, please produce any analyses, studies, reports, or other evaluations undertaken by or for the Companies in the last three years to determine ratepayer benefits, utility net revenue and profit, and/or specific operating cost implications of that position.

1.76. Please refer to Vol. I, pages 7-21 and 7-22, Figure 7-4 "Cumulative Net Metering Customer and Capacity Adoption" and Figure 7-5 "Distributed Generation Forecast Scenarios."
   a. What was the annual growth rate of new net metering customers and capacity each year for 2013 through 2024?

b. Referencing Figure 7-5, for each scenario, what is the forecast annual growth rate of new net metering customers and capacity each year for 2024 – 2039?
c. In the High Solar forecast, why does the annual growth rate after 2024 decline so dramatically relative to the historic growth rate?
d. Please provide a "*Revised High Solar*" forecast of net metering customers and solar capacity for 2024 – 2039 assuming future growth rates are similar to the average annual growth rates for 2013 - 2024. Provide data in a table including solar's percent of the Companies' annual peak demand for each year. Please reproduce Figure 7-5 including the "*Revised High Solar*" forecast.
e. Referencing Figure 7-7 at page 7-23 of Volume I of the IRP, please produce an Hourly Forecast Profile for August 26 for the years 2030, 2032 and 2034, using the *Revised High Solar* forecast.

1.77. Please refer to Vol. I, page 7-27, comparing the solar resource and the rate of solar adoption in Kentucky to that in California and Arizona. To the extent known to the Companies, please identify the rate of solar adoption and average solar resource in the following states: Massachusetts, Maine, New Jersey, North Carolina, and Vermont. Please present the data in a table including data for Kentucky, Arizona, and California for reference.

1.78. Have the Companies studied, or caused to be studied, possible rates of adoption for distributed solar (with or without a battery), under rate structures other than the Companies' current Net Metering Service rider for new net metering customers (NMS-2) and qualifying facility riders (SQF and LQF). If so, please produce any such studies. If not, please explain why not.

1.79. Please refer to Vol. I, Section 8.(3).(e) at 8-21, and answer the following requests.
a. Please describe the work of the DSM advisory group since the Companies' most recent DSM plan approval.
b. Please produce written communications (including electronic communications) received or sent by the Companies concerning the DSM advisory group.
c. Please provide any recommendations from the DSM Advisory Group.
d. Provide a list of meetings and attendees of the DSM Advisory Group.
e. What is the current status of the DSM Advisory Group? What meetings are planned?
f. Were the specific DSM programs analyzed in this IRP provided to the DSM Advisory Group for input or feedback?

1.80. Please refer to page 21 and 22 of the *2025 IRP Technology Update: Generation Planning & Analysis*" report in IRP Vol. III, Section 3.3.2, addressing "Dispatchable Demand-Side Management." For each of the three DSM program enhancements modeled, please provide the assumptions and calculations used to characterize customer participation, energy and demand savings, and net system benefits.

1.81. Please refer to page 8-21 of Vol. I, discussing new demand response measures,

including dispatchable customer-owned battery storage (BYOD-Energy Storage) and expanded Business Demand Response; as well as Table 8-16 on page 8-26 of Vol. I, providing forecast peak demand impacts for these new programs through 2039, and assuming that the BYOD-Energy Storage program enhancement producing 0.48 MW peak reductions in 2027 with savings rising to 2.41 MW in 2039.

a. Have the Companies prepared a market potential study for customer-sited battery storage as a demand response resource? If so, please produce the most recent such study. If not, please explain why not?
b. Please provide citations for all studies and resources the Companies have referenced regarding the use of customer-sited batteries as a demand response resource.
c. What was the basis for determining the peak demand savings achievable by the BYOD-Energy Storage program in Table 8-16? Provide all analysis and workpapers used to determine these figures.
d. During development of the IRP and the BYOD-Energy Storage program component, did the Companies reference testimony presented on this topic by Joint Intervenor's witness Andy McDonald, in the LGE-KU CPCN Case No. 2022-00402 (pages 24-38)? Did the Companies consider, for example, that utilities in Massachusetts had deployed 288 MW of customer-sited batteries within the first two years of their battery storage demand response program, which is 120 times more capacity than LG&E-KU forecast to deploy after 15 years?
e. Would the "BYOD- Whole House Generator" program include batteries as generators or what generator technologies are envisioned?
f. Would the Business Demand Response program include batteries as a measure to enable businesses to achieve their peak demand reductions?
g. Have the Companies evaluated a battery storage program available to commercial and industrial customers? Please explain why no commercial or industrial battery storage program is included in the forecast.

Respectfully submitted,

Byron L. Gary
Ashley Wilmes
Kentucky Resources Council, Inc.
P.O. Box 1070
Frankfort, KY 40602
(502) 875-2428
Byron@kyrc.org
Ashley@kyrc.org

Counsel for Joint Intervenors Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society, and Mountain Association

CERTIFICATE OF SERVICE

In accordance with the Commission's July 22, 2021 Order in Case No. 2020-00085, Electronic Emergency Docket Related to the Novel Coronavirus COVID-19, this is to certify that the electronic filing was submitted to the Commission on November 22, 2024; that the documents in this electronic filing are a true representations of the materials prepared for the filing; and that the Commission has not excused any party from electronic filing procedures for this case at this time.

Byron L. Gary