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

INITIAL DATA REQUESTS OF JOINT INTERVENORS METROPOLITAN HOUSING COALITION, KENTUCKIANS FOR THE COMMONWEALTH, KENTUCKY SOLAR ENERGY SOCIETY, AND MOUNTAIN ASSOCIATION

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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" 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. "DSM-EE" means Demand Side Management-Energy Efficiency.

17. "RFP" means Request for Proposals.

18. "RTO" means Regional Transmission Organization.

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.

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

1.1. Please refer to Mr. Crockett's Direct Testimony, page 4, lines 14–17.

a. Prior to issuing the June 2022 Request for Proposals ("RFP"), did the Companies consider converting any of its coal-fired units to run as gas-fired units, as an alternative to a new self-build gas unit or procurement of a different resource? Please explain in detail the extent of any such consideration, including whether the Companies performed any analysis of any such potential conversion, and the timeframe over which such consideration occurred. If not, please explain in detail why not.

b. Prior to issuing the June 2022 RFP, did the Companies consider acquiring energy or capacity resources from one or more gas-fired units in the region that were either already constructed or in the process of construction? Please explain in detail the extent of any such consideration, including whether the Companies performed any analysis of any such potential conversion, and the timeframe over which such consideration occurred. If not, please explain in detail why not.

c. Please produce copies of any documents in the Companies' possession that reflect any analyses identified in response to paragraphs (a) or (b) above.

1.2. Please refer to Mr. Crockett's Direct Testimony, page 8, lines 16–17, which states that the Companies recently joined the Southeast Hydrogen Hub to pursue federal financial support for the regional hub.

a. Please identify when the Companies joined the Southeast Hydrogen Hub coalition.

b. Please explain the nature and extent of the Companies' involvement in the Southeast Hydrogen Hub coalition, including the Companies' involvement in developing the application, concept papers, or other supporting documentation submitted to the U.S. Department of Energy.

c. Please provide any concept papers, applications, or other documentation submitted to the U.S. Department of Energy in support of the Southeast Hydrogen Hub, including any correspondence or response received from the U.S. Department of Energy.

d. Please explain whether the Companies, in connection with the Southeast Hydrogen Hub coalition, will be submitting a formal proposal for the Southeast Hydrogen Hub. If so, please provide the anticipated timeline for submission, review, and decision on the proposal.

1.3. Please refer to Mr. Crockett's Direct Testimony, at page 8, line 21 through page 9, line 1.
    a. Please provide further information about the full-scale carbon capture feasibility study that will be conducted at the Cane Run gas plant, including the proposed scope of the study, timelines, and anticipated costs.

1.4. Please refer to Mr. Crockett's Direct Testimony, page 9, lines 1–4, which states, "with our existing carbon capture site . . . our joint research and development team has simulated net negative emissions from natural gas by capturing carbon from both the flue gas and carbon from the ambient air." Please answer the following requests:
    a. Please explain what the word "simulate" means, as used by Mr. Crockett in the above-quoted testimony.
    b. Please confirm that LG&E/KU have not captured carbon from an operating combined cycle gas plant. If anything but confirmed, please explain in detail and provide supporting documentation.
    c. Please confirm that LG&E/KU have not captured carbon from the ambient air. If anything but confirmed, please explain in detail and provide supporting documentation.

1.5. Please refer to Mr. Crockett's Direct Testimony at page 9, lines 17–19, which states that "the Companies' proposals would reduce carbon emissions by over 6 million metric tons or nearly 25 percent annually compared to the Companies' carbon emissions in 2021."
    a. Please confirm that the referenced statement refers to carbon dioxide emissions. If anything but confirmed, please explain in full.
    b. Please confirm that the referenced statement estimates the Companies' direct carbon emissions and does not include upstream emissions. If anything but confirmed, please explain in full.
    c. Have the Companies estimated the change in emissions for any greenhouse gas other than carbon dioxide? If so, please provide each such estimate, including supporting workpapers in native format with formulas intact. If not, please explain why not.
    d. Have the Companies attempted to estimate upstream emissions from their existing or proposed resource portfolio, including but not limited to upstream methane emissions? If so, please provide each such estimate, including supporting workpapers in native format with formulas intact. If not, please explain why not.

1.6. Please refer to Mr. Bellar's Direct Testimony, page 2, lines 11–19.
    a. Please produce copies of any documents in the Companies' possession reflecting the updated analysis for E.W. Brown Unit 3, Mill Creek Unit 2, and Ghent Unit 2 that is referenced in the testimony or, for any such documents that have already been filed with the Commission in this case, please identify those documents.

1.7. Please refer to Mr. Bellar's Direct testimony, page 3, lines 12–14, which states that the continued operation of E.W. Brown Unit 3 beyond 2028 was "reevaluated utilizing updated information, most significantly the responses from the June 2022 Request for Proposals. Retiring E.W. Brown Unit 3 in 2028 continues to result in a least cost plan for serving customer requirements."
    a. Please explain what "updated information" was obtained from the RFP responses and how it changed the retirement date calculus for E.W. Brown Unit 3.
    b. Please produce copies of any documents in the Companies' possession reflecting the "updated information" referenced in the testimony or, for any such documents that have already been filed with the Commission in this case, please identify those documents.

1.8. Please refer to Mr. Bellar's Direct Testimony at page 11, lines 17–18, which states: "The proposed NGCCs will reduce carbon emissions by up to 65% compared to the coal-fired units the Companies propose to retire by 2028."
    a. Please provide any documents reflecting calculations supporting this statement, in native format, with formulas intact.
    b. Please describe each assumption implicit in the above-referenced statement (e.g., carbon intensity of fuel source; duration and frequency of unit use).
    c. Mr. Bellar's testimony states an upper bound for emission reductions ("up to 65%); did Mr. Bellar's supporting analysis identify a lower bound for emission reductions? If so, please provide that estimate.

1.9. Please refer to Mr. Bellar's Direct Testimony, page 12, lines 11–16.
   a. Why are the Companies seeking CPCN approvals for the Mill Creek and Brown NGCCs before having an EPC contractor in place?
   b. Why are the Companies seeking CPCN approvals for the Mill Creek and Brown NGCCs before having specified the power island technology including turbine type?
   c. Why are the Companies selecting the OEM for the power islands rather than also considering the option of having the EPC contractor procure that equipment?
   d. What type of EPC contract do the Companies intend to solicit? E.g., lump sum turn key (less the cost of the power island)?
   e. Has the Company conducted a front-end engineering and design or similar study? If so, please provide a copy.

1.10. Please refer to Mr. Bellar's Direct Testimony, page 14, lines 13–17, which states: "We also know from experience that the large scope of the projects requested will require an intensive process of qualifying suppliers, evaluation of bids and earnest negotiations. In light of the complexity of the construction project and the anticipated market impacts due to the EPA regulations, difficulties and resulting delays are possible."
   a. Please provide any analyses, assessments, etc. in the Companies' possession that evaluate the potential impact of other proposed combined cycle facilities on any aspect of constructing new combined cycle projects such as cost, timeframe, competition for equipment, competition for specialized labor, etc.
   b. What contingencies does Mr. Bellar expect the Companies will build into the cost estimates and project schedules to account for the factors listed in these statements?

1.11. Please refer to Mr. Bellar's Direct Testimony, page 17, lines 13–15, which states that the cost of the Mill Creek NGCC is expected to be $662 million and the Brown NGCC is expected to be $700 million.
   a. What is the basis for the current cost estimate for the NGCCs? In which Association for the Advancement of Cost Engineering (AACE) cost estimate class does the current estimate fall in? Please provide all documents that serve as the basis for your response.
   b. Please provide any spreadsheet(s) or other documents reflecting the calculations used to create these estimates.
   c. What cost guarantees, if any, are the Companies prepared to offer ratepayers for these projects?
   d. In the event that costs increase, what steps, if any, would the Companies take to seek Commission approval of those additional costs?

1.12. Please refer to Mr. Bellar's Direct Testimony, page 20, line 3, which states that the cost of the Mercer County solar project is expected to be $243 million.
   a. Please provide any spreadsheet(s) or other documents reflecting the calculations used to create this estimate.
   b. What cost guarantees, if any, are the Companies prepared to offer ratepayers for this project?
   c. In the event that costs increase, what steps, if any, would the Companies take to seek Commission approval of those additional costs?

1.13. Please refer to Mr. Bellar's Direct Testimony, page 18, lines 6–11.
   a. Please define "significant system upgrade" as used in the referenced testimony.
   b. Please explain in full the basis for the Companies' belief that "significant system upgrades" will not be needed to integrate the Mill Creek NGCC with the transmission network.
   c. Please explain in full the basis for the Companies' belief that "significant system upgrades" will not be needed to integrate the Brown NGCC with the transmission network.
   d. Please produce copies of any documents in the Companies' possession that support the statement that "[r]equired electric transmission modifications represent approximately 1% of the total cost of the Mill Creek and Brown NGCC units."

1.14. Please refer to Mr. Bellar's Direct Testimony, page 19, lines 20–22, which states: "The facility will interconnect with the Companies' existing transmission and distribution network per the signed large generator interconnection agreement LGE-GIS-2019-025 that will be assigned to the Companies."
   a. Please confirm that the referenced interconnection agreement provides for a maximum output capacity of 98.42 MW. If anything but confirmed, please explain and provide supporting documentation, if any.
   b. What changes, if any, to the referenced interconnection agreement will be necessary. If any changes will be needed, please explain the process required for each change.

1.15. On June 21, 2022, the Companies submitted an NGCC project to the generation interconnection queue, LGE-GIS-2022-004, with the point of interconnection identified as "Brown North Substation 345 kV bus."
   a. Please confirm that the Companies withdrew that project from the generation interconnection queue after the scoping meeting.
      i. If confirmed, please explain the reason(s) that the Companies withdraw that project.
      ii. If anything but confirmed, please explain in full.
   b. On October 28, 2022, the Companies submitted an NGCC project to the generation interconnection queue, LGE-GIS-2022-011, with the point of

interconnection identified as "Brown North Substation 138 kV bus." Is the generation resource in LGE-GIS-2022-004 identical to the generation resource in LGE-GIS-2022-011? If not, please explain each difference.

c. Please identify each available point of interconnection at the E.W. Brown Plant.

d. Please explain each material difference, as understood by the Companies, between connecting the proposed Brown NGCC via "Brown North Substation 345 kV bus" as opposed to via "Brown North Substation 138 kV bus." If the Companies have estimated cost implications of using one point of interconnection over the other, please provide each such estimate.

1.16. Please refer to Mr. Conroy's Direct Testimony at page 3, lines 7–8. Please provide the anticipated construction schedule for each of the four projects: (a) Mill Creek NGCC; (b) E.W. Brown NGCC; (c) Mercer County Solar; and (d) E.W. Brown BESS.

1.17. Please refer to Mr. Conroy's Direct Testimony at page 4, lines 3–4, which states: "The Companies do not project finance and use all forms of capital to finance their construction projects."

a. Please define "project finance," as used by Mr. Conroy.

b. Is Mr. Conroy suggesting that "project finance" necessarily forecloses the availability of certain forms of capital? If so, please explain in full, including identification of specific forms of capital unavailable to "project finance," if any.

1.18. Please refer to Mr. Imber's Direct Testimony at page 9, line 11, through page 10, line 2.

a. Have the Companies done any analysis of the potential impacts of the IRA's Methane Emissions Reduction Program on the resource plans in this case? If so, please provide each such analysis, including supporting documentation and workpapers in native format with formulas intact.

b. Please confirm that the identified testimony reports on the full extent of the Companies' accounting for the IRA's Methane Emissions Reduction Program. If anything but confirmed, please describe any additional attempts to account for impacts of the IRA's Methane Emissions Reduction Program (such as impacts to natural gas prices) and produce supporting documentation, if any.

c. Please confirm that the Companies' fuel price forecasts in this matter do not account for impacts of the IRA's Methane Emissions Reduction Program. If not confirmed, please explain in full how each fuel price forecast accounts for impacts of the IRA's Methane Emissions Reduction Program.

1.19. Please refer to Mr. Imber's Direct Testimony, page 10, line 24 through page 11, line 2. Have the Companies submitted applications for a Title V air construction permit for each NGCC? If yes, please produce a copy of each application, any accompanying submissions to the permitting agency, and any correspondence with the permitting agency concerning each application. If no, please explain in detail why not.

1.20. Please refer to Mr. Sinclair's Direct Testimony at page 7, lines 10–14. Please produce any documents in the Companies' possession that were created by the Project Engineering group in support of, or reflecting the results of, its evaluation of "alternative generation and storage technologies that could be installed at the Mill Creek and Brown sites to take advantage of existing infrastructure to reduce future costs and identify potential new sites for solar generation."

1.21. Please refer to Mr. Sinclair's Direct Testimony at page 10, lines 9–11. Please produce copies of any final agreements, to the extent that they have not already been filed in the docket of this proceeding. If any of the agreements have not yet been finalized, please explain in detail why not.

1.22. Please refer to Mr. Sinclair's Direct Testimony, page 14, lines 8–10, which states: "The Companies know from experience that their current generating fleet is capable of meeting such ramping needs reliably day-in, day-out throughout the year across a broad range of weather events."

a. Data reported by the Companies in EIA Form 930, show that during the three day period from December 23–25, 2022, net interchange was negative, i.e., more power was imported into the Companies' balancing authority than was exported, in all hours except two. Please explain the circumstances that led to this outcome during that period and provide any documents that support your response.
b. Data reported by the Companies in EIA Form 930, show that on December 23, 2022, the Companies' balancing authority experienced demand that was, on average, 18% higher than forecasted. Please explain the circumstances that led to this outcome during that period and provide any documents that support your response.
c. Data reported by the Companies in EIA Form 930, show that between December 22, 2022, hour ending 8 pm E.T., and December 23, 2022, hour ending 10 am E.T., that demand with the Companies' balancing authority experienced grew by 60%.
    i. Please explain what end-uses, in the Companies' view, drove this increase in demand.
    ii. Please explain what steps, if any, the Companies took to manage this additional load.
    iii. Please provide all documents that support your response to subparts i and ii.

d. Please provide the hourly availability status, e.g., available, forced outage, planned outage, etc. of the Companies' generating units during the period from December 1, 2022, to January 31, 2023. If any unit was in partial outage during this period, please provide the MW portion of the unit that was available to generate.

1.23. Please refer to Mr. Sinclair's Direct Testimony at page 20, lines 14–15.

a. Does the "general rising cost environment" also affect the costs of a self-build NGCC?
b. Please identify when the pricing information for the 620 MW self-build NGCC options submitted by the Companies' Project Engineering group in response to the June 2022 RFP was developed.
c. Please identify all data sources that the Companies' Project Engineering group relied on to develop the pricing information for the 620 MW self-build NGCC options submitted in response to the June 2022 RFP. Please produce copies of any such data sources, to the extent that they have not already been produced in this case.
d. Please provide the Companies' current cost estimate for the two proposed self-build NGCC units in this case, and please explain in detail how that cost estimate has been updated since the Companies' Project Engineering group submitted a response to the June 2022 RFP.

1.24. Please refer to Mr. Sinclair's Direct Testimony at page 25, lines 5–10.

a. Please explain in detail any factors that led to the choice of a 125 MW BESS, other than that it is approximately the same size as a 11N2 existing gas turbine. Did the Company consider building a larger BESS, and/or more than one similarly sized BESS? Why or why not? If yes, what factor(s) informed the Company's decision to propose only a single 125 MW BESS in this case?
b. Please describe the construction process for the BESS. Will the Companies contract construction of the batteries? If yes, please describe the process used to select the contractor. If not, will the Companies' engineers oversee the construction?

1.25. Please refer to Mr. Sinclair's Direct Testimony, page 29, lines 1–8.

a. Please explain in detail why the pumped storage proposal "was viewed as not far along enough in its development to be a viable resource to address the timing of the Companies' current energy and capacity needs."
b. Please explain in detail why, "even if the project was assumed to be viable, the economics as proposed were not competitive with other peaking resources, including lithium-ion batteries."
c. Please explain in detail how the "typical" ratio of 1.25 MWh of energy to pump water into the reservoir for every one MWh it produces is "consistent with the pumped hydro proposal to the Companies' RFP," as stated in footnote 16.

1.26. Please refer to Mr. Sinclair's Direct Testimony, page 33, line 13, which describes the process to come to the approvals sought in this proceeding as "comprehensive and thoughtful".
   a. Please explain why, in Mr. Sinclair's view, the approvals sought in this proceeding differ from any plan analyzed in the Companies' Joint 2021 IRP.
   b. When did the Companies' first start considering the construction of the two NGCCs included in the current proposal? Please provide any documents that support your response.

1.27. What fuel supply limitations, if any, effected the Companies' generating units during the month of December 2022? Please provide all documents in the Companies' possession that describe such limitations.

1.28. Please refer to the Mr. Schram's Direct Testimony at page 2, lines 11–16, which states: "The Companies have experienced hourly winter load that varies up to 2,760 MW in a day and hourly summer load that varies 3,220 MW in a day. Furthermore, intra-hour load can swing by several hundred megawatts over the course of an hour and more than 100 MW over a period of seconds, highlighting the importance of generation assets with ramping capabilities to meet these changes in demand."
   a. What steps have the Companies undertaken to dampen these swings in demand?
   b. What analysis have the Companies undertaken to understand the causes of these swings in demand?
   c. Please provide all documents that support your responses to subparts a and b.

1.29. Please refer to Mr. Schram's Direct Testimony at page 5, line 18. Please identify the five respondents who provided updated information.

1.30. Please refer to Mr. Schram's Direct Testimony at page 6, lines 1–3, which states: "Despite the IRA legislation, respondents' solar PPA offer prices were generally at least 30 percent higher than similar offers the Companies received in response to their 2021 RFP." Please provide the information upon which Mr. Schram drew this conclusion.

1.31. Please refer to Mr. Schram's Direct Testimony at page 6, lines 15–18, which states: "Under my supervision, the Companies' Power Supply group reviewed each RFP response for the required data and addressed any missing information with the applicable respondent(s). We then submitted the data to the Generation Planning group for analysis."

a. Was the purpose of the Power Supply group's review only to identify missing information or were any bid eliminated from further consideration in this step? If bids were eliminated, please provide the information upon which that decision was based.

1.32. Please refer to Mr. Schram's Direct Testimony at page 12, lines 11–24.

a. Please explain what is meant by the statement the "Brown NGCC will require a suite of firm transport services similar to Mill Creek NGCC".
b. Please provide the documentation from Texas Gas, Texas Eastern, and Tennessee Gas detailing the terms and pricing of the gas transportation services offered.

1.33. Please refer to Mr. Schram's Direct Testimony at page 13, lines 11–12, which states: "Texas Gas's nine gas storage fields in western Kentucky and southern Indiana further support system reliability and supply flexibility." Please explain how the storage fields would help ensure supply to the Mill Creek NGCC. For example, will Mill Creek have rights to any gas stored in those fields or would that gas be subject to apportionment amongst all customers taking firm gas transport from Texas Gas?

1.34. Please refer to Mr. Schram's Direct Testimony at page 14, lines 2–7, which states: "To hedge against fuel price volatility for Cane Run Unit 7, the Companies currently purchase up to 50 percent of the unit's forecasted gas burn on a forward basis for the current year. The balance of natural gas is purchased daily on the spot market. For the following years one, two, and three the Companies purchase 40-60 percent, 20-40 percent, and 0-20 percent, respectively, of the unit's minimum forecasted burn on a forward basis." Please provide the commodity purchase cost and MMBTU delivered by quarter in each of the last three years to Cane Run Unit 7. Please divide the data by timeframe of the purchase, e.g., forward purchased gas, spot gas, etc.

1.35. Please refer to Exhibit CRS-1 to Mr. Schram's Direct Testimony, page 2 of 10.

a. Please explain in detail why the Companies required RFP responses to have at least 100 MW of nameplate rated capacity.
b. Please explain in detail why, for renewable and storage combined proposals, the Companies required RFP responses to include a minimum of 100 MW capacity with four-hour battery storage.
c. Please explain in detail why, for standalone energy storage, the Companies required RFP responses to include a minimum of 100 MW of capacity and 400 MWh of energy.

d. Did the Companies consider inviting proposals by third parties to build new generation at its existing power plant sites and/or with a tie-in interconnecting new generation to existing injection points? If not, why not? If so, why did the Companies decide not to do so? Please provide any copies of any documents in the Companies' possession that support your response.

1.36. Please refer to Appendix A of Mr. Wilson's Direct Testimony. Please provide, unredacted, all table and figures contained therein, in Excel format with all formulas and links intact.

1.37. Please refer to Appendix B of Mr. Wilson's Direct Testimony.
a. Please confirm that all cost data from the request for proposals ("RFP") is contained therein.
b. Please indicate where the Companies used the cost data from the RFP in its PLEXOS modeling.
c. Please provide all tables and figures contained in Appendix B, unredacted, in Excel format with all formulas and links intact.

1.38. Please refer to Appendix E of Mr. Wilson's Direct Testimony. Please provide the following, unredacted:
a. Figures 2 and 3; and
b. For the coal price forecast, the bid data and S&P Global forecast data.

1.39. Please refer to Mr. Wilson's Direct Testimony, at page 16. Please provide:
a. The "11 different combinations of the solar PPAs PLEXOS selected in the first step" referenced in lines 3 through 5 of witness Wilson's testimony; and
b. The "22 portfolios" created and referred to in lines 5 through 7 of witness Wilson's testimony.

1.40. For all PLEXOS runs referenced in Mr. Wilson's Direct Testimony, please provide the following:
a. The zipped output solution files for each run and associated portfolio containing the log files and other relevant output;
b. The summarized output of the model run including but not limited to annual generation, annual build costs, capacity factors, fuel expense, variable and fixed O&M, etc.
c. All data files referenced in the PLEXOS (.xml) database and used in the PLEXOS modeling runs sorted by the following categories:
i. "Load" for the load forecast data files including any Demand Side Management, Electric Vehicle, or other forecast adjustments;
ii. "Fuel" for the fuel cost data files modeled; and
iii. "Resource" for all data files related to the new and existing resources modeled including but not limited to all file related to capital, fixed, variable O&M, emissions, production profiles, firm

capacity, etc.

d. The source files for the information contained in (b)(i).

1.41. Please provide a key to all acronyms used in the Companies' PLEXOS modeling for this case.

1.42. Please provide a key to all acronyms used in the Companies' PROSYM modeling for this case.

1.43. Please provide a key to all acronyms used in the Companies' SERVM modeling for this case.

1.44. Please provide a copy of the PROSYM user guide.

1.45. Please provide a copy of the SERVM user guide.

1.46. Please refer to the PROSYM file entitled "MarketAdders_2023BP.dat".

a. To which stations do these adders apply?

b. Please explain how PROSYM interprets the date and time stamps associated with each adder. E.g. for an adder following the stamp of "[2022] [m1] [WKD12AM]" does the adder apply in every hour until 7 am on a weekday when the next adder value is given?

c. What is the purpose of these adders?

d. Please provide the information serving as the basis for the adders.

1.47. Please refer to the PROSYM file entitled "GasPrices_2023BP_Mid.dat".

a. In what units are these prices given?

b. Please break out the prices by commodity and delivery charges.

1.48. Please provide the spreadsheet(s) with all formulas and links intact used to create the inputs contained in "BuildCost_GasTransmission 2.csv".

1.49. Please provide the information that serves as the basis for the data contained in "20221116 DR Capacity and Cost D04.xlsx". If any of that information is in spreadsheet format, please provide it, with all formulas and links intact.

1.50. Please refer to Mr. Wilson's Direct Testimony at pages 7–9.

a. Mr. Wilson states that the first step in the Resource Assessment was to update the load forecast to account for three specific adjustments: (1) BlueOval SK Battery Park load; (2) the effects of the IRA; and (3) the effects of the Companies' proposed 2024-2030 DSM-EE Program Plan. Please confirm that the load forecast Mr. Wilson refers to is the same load forecast presented in Exhibit TAJ-1, "2022 CPCN Load Forecast," dated December 2022. If anything but confirmed, please produce the specific load forecast used in the Resource Assessment and please identify the approximate date on which that load forecast was completed.

b. At page 7, line 16, to page 8, line 3, Mr. Wilson discusses how the Companies next "gathered information regarding the costs and operating characteristics of potential supply-side and demand-side replacement resources." Approximately when did this phase of the Companies' resource assessment take place?
c. At page 8, lines 4–15, Mr. Wilson explains that, finally, the Companies pursued a three-stage resource analysis. Approximately when did this phase of the Companies' resource assessment begin?
d. Approximately when did the Companies determine the methodology for the three-stage resource assessment summarized by Mr. Wilson on page 8, lines 4–15?

1.51. Please refer to Mr. Wilson's Direct Testimony, page 13. Please explain in detail how the constraints imposed by the Good Neighbor Plan were modeled in PLEXOS.

1.52. Please refer to Mr. Wilson's Direct Testimony, page 14, line 16. Please provide the Excel Financial Model referred to therein, including but not limited to:
a. Any user documentation; and
b. The financial models containing the financial scenarios modeled and the corresponding present value revenue requirements with all formulas and links intact.

1.53. Please refer to Mr. Wilson's Direct Testimony, page 14.
a. Please provide all of the modeling output files for each run conducted within PROSYM.
b. Please provide all of the modeling output files for each run conducted within SERVM.
c. If they have not been previously provided, please provide all SERVM files necessary to execute runs within the SERVM software.

1.54. Please refer to Mr. Wilson's Direct Testimony, page 15, line 1.
a. Please explain if 43 individual RFP bids were modeled as individual resources available for selection within PLEXOS or if another approach was used to model the RFP bids (i.e., weighted average cost across technology types).
b. Please confirm that the energy efficiency from the 2024-2030 DSM-EE Program Plan was modeled as a reduction to the load forecast and not as a supply side resource within PLEXOS.

1.55. Please refer to Mr. Wilson's Direct Testimony, page 23, lines 3–6. Please explain how existing dispatchable DSM in every portfolio was retired in the PLEXOS model.

1.56. Please refer to 2022RFP (8.300 R08)_PLEXOS_Database_Export_ExcelFormat. Please confirm the Companies performed all PLEXOS modeling using the load duration curve based "Partial" setting in the capacity expansion planning runs.

1.57. Please refer to 2022RFP (8.300 R08)_PLEXOS_Database_Export_ExcelFormat. Please provide a detailed narrative describing why the Company did not use the "Fitted" optionality to model the load chronologically over the planning horizon.

1.58. Please refer to Mr. Wilson's Direct Testimony, page 10, lines 10–12, which states: "Therefore, any portfolio that achieves a total summer reserve margin of 17% but includes significantly less than a 12% reserve margin consisting of fully dispatchable resources raises reliability concerns."

a. Please produce any documents in the Companies' possession that support this contention.

b. Is Mr. Wilson's statement applicable irrespective of the makeup of load, e.g., the proportion of residential, commercial, and industrial customers; the proportion of interruptible load; the proportion of sales by end-use type, etc.?

c. What portion of generators up to peak load, but excluding those satisfying the reserve margin, would have to be dispatchable according to Mr. Wilson? Please explain your answer in detail.

1.59. During the period from December 17 through December 31, 2022, please provide the total energy and its hourly cost imported into the Companies' balancing authority by source and by type, if available, e.g., x MWh imported from MISO at $Y per MWh.

1.60. Please produce any documents in the Companies' possession explaining how spot and/or short-term imports into and exports from the Companies' balancing authority are priced.

1.61. Please refer to Mr. Wilson's Direct Testimony, page 29, lines 3–5, which states: "One means of mitigating actual, non-zero solar PPA execution risk would be to add solar capacity the Companies would own, either through acquisition or self-building." Please explain in detail the belief that ownership would mitigate solar execution risk.

1.62. Please explain how to interpret the "Counter/Case (N+1)" value given on tabs "ModelCounter" of the Financial Model spreadsheets in Exhibit SAW-2 Confidential.

1.63. Please provide a copy of "CONFIDENTIAL_20221209_ResourceScreeningModel_0308" populated with the data for all RFP responses.

1.64. Please provide a copy of the Companies' most recent appliance saturation study.

1.65. Please refer to page 22 of Exhibit SAW-1, which states: "The load scenarios were developed based on the weather in each of the last 49 years." Please provide all spreadsheets, changing nothing and with formulas and links intact, used to develop these 49 load scenarios.

1.66. Please provide all spreadsheets, changing nothing and with formulas and links intact, used to develop the unit outage inputs for analysis in SERVM in this case including the temporal distribution of those outages.

1.67. Please see the Companies' response to Joint Intervenors' Q-1.76 in Case No. 2021-00393.

a. Please confirm that the Companies stated in that response that they did not conduct any renewable sampling in SERVM. If anything but confirmed, please explain.
b. Did the Companies add renewable sampling as part of the analysis in this case? If yes, please provide the spreadsheet(s) changing nothing and with formulas and links intact, used to develop those inputs. If not, please explain in detail why not.

1.68. Please provide the date and time stamp of each of the loss of load hours identified in the SERVM modeling in this case.

1.69. Did Astrape or the Companies conduct the SERVM modeling for this case? Please explain your answer.

1.70. Did the Companies consider evaluating fuel supply risk in SERVM for this case? If so, why did the Companies ultimately choose not to do so? If not, why not?

1.71. What steps, if any, do the Companies intend to take to weatherize the Mill Creek and Brown NCGGs and the gas transmission lines serving those units? Please explain in detail.

1.72. Please see the Companies' response to Joint Intervenors' Q-2.1 in Case No. 2021-00393. In that response the Companies state that they have "been testing the production cost capabilities of PLEXOS since January 2021 in parallel with use of PROSYM. The Companies have not estimated work hours associated with this evaluation and have not yet confirmed if or when PLEXOS will be appropriate to serve the Companies' production cost modeling needs." What is the current status of the Companies' effort to evaluate moving to PLEXOS for production costing needs?

1.73. Please refer to Mr. Conroy's Direct Testimony, which includes proposed tariff sheets adjusting certain rates for DSM expenditures as shown in RMC-1, RMC-2, and RMC-3.
   a. Please explain why Mr. Conroy did not also include tariff sheets showing the impacts of the supply-side investments proposed by the Companies?
   b. Have the Companies conducted any rate and/or bill impact analyses of the proposed package of investments? If not, why not? If so, please provide such analyses in spreadsheet format changing nothing and keeping all formulas and links intact.

1.74. Please refer to Exhibit SAW-1, page 13, which states: "The dispatchable DSM portion of the 2024-2030 DSM-EE Program Plan, including the existing dispatchable DSM programs the Companies currently have in place, advanced for further analysis to determine their role in the optimal resource portfolio." Please explain if this means that the Companies existing dispatchable DSM programs were modeled as selectable resources within PLEXOS.

1.75. Please refer to Exhibit SAW-1. Table 2. Please explain why the summer capacity for the DLC-AC program is declining from 2024 to 2030.

1.76. Please refer to Exhibit SAW-1, page 16. Please confirm if the level of selectable resources modeled in the Economic Optimization Stage were limited to the capacity of the RFP bids.

1.77. Please refer to Exhibit SAW-1, page 46, footnote 31. Please provide all supporting workbooks, with formulas and links intact, used to develop the assumption that the solar capacity value reflects 0% expected contribution to winter peak capacity.

1.78. Please refer to Exhibit SAW-1, Table 34. Please explain if all of the battery storage projects bid into the RFP qualified for the 50% Investment Tax Credit or if this only applied to the Brown battery storage project.

1.79. Please refer to Exhibit SAW-1, page D-4. Please explain if the referenced 85%, 94%, and 69% capacity contributions for 4-hour battery storage, 8-hour battery storage, and dispatchable DSM were modeled in PLEXOS for both the summer and the winter reserve margin requirement.

1.80. Please refer to Exhibit SAW-1, page 11, Table 1.
   a. Please explain whether, or to what extent, the numbers presented in the "Price" column reflect the impacts from the IRA tax credit assumptions.
   b. Please explain whether, or to what extent, the solar bid proposals included assumptions for the Investment Tax Credit or the Production Tax Credit.

1.81. Please refer to Exhibit SAW-1, page 12, which states that "[c]ertain of the Companies' self-build NGCC and SCCT proposals for the E.W. Brown Generating Station ("Brown") would have required additional land acquisitions. The Companies excluded those proposals due to the development risk associated with land acquisition."

a. Please identify each of the referenced NGCC and SCCT proposals.
b. For each proposal identified in response to subpart (a), please also explain the specific land acquisition requirements including location of parcel, size of parcel, current ownership of parcel, and assumed cost of acquisition, along with any other material detail.

1.82. Please refer to Exhibit SAW-1, Section 4.4.1, addressing "Stage One, Step One." Please confirm that the new supply-side resource options available to be selected by PLEXOS at Stage One, Step One of the modeling were limited to projects bid into the Companies June 2022 Request for Proposals. If anything but confirmed, please explain in full.

1.83. Please refer to page 38 of Exhibit SAW-1, which states: "It is notable that Brown BESS might provide quantifiable benefits the Companies have not attempted to quantify here." Have the Companies attempted to quantify these benefits elsewhere? If so, please produce that analysis. If not, please explain why not.

1.84. Please refer to page D-3 of Exhibit SAW-1, which states: "The cost of capacity for this analysis was based on a response to the Companies' June 2022 RFP for simple-cycle combustion turbine ("SCCT") capacity and was 34% lower than the cost of SSCT capacity used in the 2021 IRP Reserve Margin Analysis."

a. Please identify the referenced SCCT project bid into the Companies' June 2022 RFP, which the cost of capacity was based on in the CPCN Reserve Margin analysis.
b. Please state the approximate date when the above-referenced RFP bid was provided for use in the 2022 RFP Minimum Reserve Margin Analysis.

1.85. Please refer to page 55 of Appendix A to Mr. Wilson's Direct Testimony. Please provide the following:

a. The date(s) the Companies anticipate the interconnection studies referenced therein will be completed; and
b. A detailed explanation as to why the Companies did not model the estimated interconnection costs.

1.86. Please refer to Wilson Public Exhibit_SAW-2_-_Vol 1>02_PLEXOS and the files contained therein. Please provide the following:

a. An index file indicating the contents of each file in the folder;
b. How each file was used in the PLEXOS simulation;
c. Whether a file is an output or input file; and
d. Which scenarios/portfolios use the file.

1.87. Please refer to the "2022 RFP Minimum Reserve Margin Analysis," and please answer the following requests.

a. Please state the approximate date when the RFP Minimum Reserve Margin Analysis process began.
b. Please state the approximate date when the results of the 2022 CPCN Load Forecast (Ex. TAJ-1) were provided to Mr. Wilson, or another individual in the Companies' Generation Planning & Analysis groups, for use in the development of the 2022 RFP Minimum Reserve Margin Analysis.
c. Please state the approximate date when the proposed 2024-2030 DSM-EE Program Plan was provided to Mr. Wilson, or another individual in the Companies' Generation Planning & Analysis group, for use in the development of the 2022 RFP Minimum Reserve Margin Analysis.
d. Please confirm that the 2022 RFP Minimum Reserve Margin Analysis was completed in December 2022, as reflected on the first page of the analysis. If anything but confirmed, please explain in full.

1.88. Please refer to the 2022 RFP Minimum Reserve Margin Analysis, page D-12, Footnote 14, which states: "In the reserve margin analysis, adjustments were made to the neighboring regions' generating portfolios as needed to reflect the planned retirements and meet the neighboring regions' target reserve margins."

a. Please list each adjustment(s) made to the generating portfolios for each of the following neighboring regions, as defined at pages D-11 to D-12 of Ex. SAW-1: (i) MISO-Indiana; (ii) PJM-West; and (iii) TVA.
b. In the reserve margin analysis, did the Companies make any adjustments for the addition of new resources in neighboring regions? If so, please list each such adjustment. If not, please explain why not in full.
c. Please explain in full each adjustment used to "meet the neighboring regions' target reserve margins," for each neighboring region.
d. In the reserve margin analysis, did the Companies make any adjustments to account for planned transmission projects in each of the neighboring regions? If so, please list each such adjustment. If not, please explain why not in full.

1.89. Please refer to Mr. Jones' Direct Testimony, page 6, lines 12–16.

a. Please explain if any portion of the BlueOval SK Battery Park load is interruptible.
b. If any portion of the BlueOval SK Battery park load is interruptible, please provide the MW level.
c. If no portion of the BlueOval SK Battery park load is interruptible, please detail any steps taken by the Companies to encourage some portion of it to be interruptible. If no such steps were taken, please explain why. If such steps were taken, but were not successful, please explain why. Please provide any documents that support your response.

1.90. Please refer to Mr. Jones' Direct Testimony, page 6, footnote 5. Please provide the BlueOval's non-coincident and coincident peak hourly usage projection.

1.91. Please refer to Mr. Jones' Direct Testimony, page 17, lines 6–16. Please provide the "forecast of energy efficiency improvements for residential and small commercial customers" under the ten year acceleration and without the ten year acceleration.

1.92. Please refer to Mr. Jones' Direct Testimony, including attachments TAJ-1 and TAJ-2.

a. Please confirm that the "2022 CPCN Load Forecast" is distinct from the 30-year demand and energy forecast prepared annually from approximately March through July (discussed at page 3, lines 1–2).
    i. If confirmed, please state whether the Companies performed the usual 30-year demand and energy forecast from approximately March 2022 through July 2022. If the Companies did perform such a forecast, please produce that load forecast. If the Companies did not perform such a forecast, please explain why not.
b. Please state the approximate date when the 2022 CPCN Load Forecast process began.
c. Please state the approximate timeframe during which the "Review" process described in Section 7 of Exhibit TAJ-2 was performed.
d. Please state the approximate date when the 2022 CPCN Load Forecast was completed.
e. Section 6 of Exhibit TAJ-2 discusses how the proposed 2024-2030 DSM-EE Program Plan was incorporated into the 2022 CPCN Load Forecast.
    i. Please state the approximate date when Mr. Jones, or member(s) of his team, was provided with the proposed 2024-2030 DSM-EE Program Plan, enabling its incorporation into the 2022 CPCN Load Forecast.
    ii. Please describe the specific information provided to Mr. Jones, or member(s) of his team, concerning the 2024-2030 DSM-EE Program Plan, for incorporation into the 2022 CPCN Load Forecast.
    iii. Does Table 7 of Exhibit TAJ-2 include every adjustment made to the 2022 CPCN Load Forecast to account for the Inflation Reduction Act and 2024-2030 DSM-EE Program? If not, please explain in full, including providing a comprehensive summary of those adjustments.

1.93. Please refer to Exhibit TAJ-2, Figure 1, titled "Load Forecasting Process Diagram."

a. Please state the timeframe during which the first part of Figure 1 was completed (i.e., "1. Data Inputs" collected for each of Macroeconomic Drivers, Historical Energy and Customer Data, Weather, and Other Inputs (e.g., end use data)).
b. Please state the timeframe during which the second part of Figure 1 was completed (i.e., "2. Forecast Models).
c. Please state the timeframe during which the third part of Figure 1 was completed (i.e., "3. Data Processing).

1.94. Please refer to Exhibit TAJ-2, Table 1, titled "Summary of Forecast Data Inputs."

a. For the data described in each row of Table 1, please state the approximate date when data inputs were collected for use in the 2022 CPCN Load Forecast.
b. For the data described in each row of Table 1, please state whether the data collected for use in the 2022 CPCN Load Forecast purports to account for the effects of the Inflation Reduction Act, and explain in full, as understood by the Companies, how those effects were accounted for.

1.95. Please refer to Exhibit TAJ-2.

a. Please refer to Table 1 on page 5.
    i. Please provide the annual line loss factors used for the data inputs.
    ii. Please explain how the line loss factors were applied within the model.
b. Please refer to page 9, where it states: "Historical data used in the residential and general service models is not adjusted for previous or current non-dispatchable demand side management and energy efficiency ("DSM-EE") programs, so the forecasts incorporate both customer-initiated energy efficiency in addition to impacts of utility DSM programs moving forward."
    i. Please confirm that the Companies are not including historical energy efficiency savings as an independent variable in the load forecast regression model.
c. Please confirm that the referenced portion of Exhibit TAJ-2 means that the Company is not making any adjustments to the load forecast regression model to account for DSM (i.e., adding back DSM savings or modeling DSM as an independent variable).

1.96. In LGE/KU's Joint 2021 IRP (Volume I, page 5-29), the Companies address "Distributed Generation Forecast Scenarios." Figure 5-13 shows a High scenario in which distributed generation solar capacity grows to exceed 500 MW by 2030. In the discussion, it states: "In the high scenario, a new federal law is assumed to

eliminate the 1% cap on total installed net metering capacity. As a result, the high scenario is identical to the base scenario through 2027 and then continues to grow thereafter. The steep increase in capacity seen from 2028-2030 in the high scenario is due to quickly falling capital costs coupled with the ITC. After 2030, the capacity costs for installing solar decline much less rapidly, resulting in slower capacity growth as compared to the previous few years. Capacity growth flattens out further after 2034 due to the assumed end of the 10-year ITC."

a. Please confirm that the referenced forecast preceded passage of the Inflation Reduction Act ("IRA"), and does not incorporate distributed generation incentives created, expanded, or extended by the IRA. If anything but confirmed, please explain.
b. In the referenced forecast, what value was assumed for the Investment Tax Credit in each year of the forecast, through 2036?
c. Have the Companies modeled or forecasted adoption rates for behind-the-meter storage capacity? If so, please provide each such analysis, including supporting documentation and workpapers in native format with formulas intact.

1.97. Please refer to Joint Application Exhibit 5 (Mill Creek NGCC Site Assessment Report) at page 4-4.

a. Did the Companies assess whether any coal combustion residuals would be disturbed during land clearing and demolition activities? If yes, please explain in detail what steps the Companies took to assess this possibility. If no, please explain in detail why not.
b. Are the Companies aware of any areas within the proposed footprint of the Mill Creek NGCC where coal combustion residuals have been placed on the land or otherwise disposed of? If yes, please explain in detail the Companies' knowledge concerning any such placement or disposal.

1.98. Please refer to Joint Application Exhibit 6 (Brown NGCC Site Assessment Report) at page 4-4.

a. Did the Companies assess whether any coal combustion residuals would be disturbed during land clearing and demolition activities? If yes, please explain in detail what steps the Companies took to assess this possibility. If no, please explain in detail why not.
b. Are the Companies aware of any areas within the proposed footprint of the Brown NGCC where coal combustion residuals have been placed on the land or otherwise disposed of? If yes, please explain in detail the Companies' knowledge concerning any such placement or disposal.

1.99. Please refer to the Joint Application, page 7, lines 1-6.

a. Do any of the Companies' currently operating coal units, other than Mill Creek Unit 2 and Ghent Unit 2, lack NOx-controlling selective catalytic reduction treatment? If yes, please identify the units and explain in detail how they would be impacted by the proposed Good Neighbor Rule.

b. Please explain in detail the reasons why E.W. Brown Unit 3 will "require a $28 million overhaul in 2027 if it is to operate safely beyond 2028."

1.100. For each of the following generating units, please identify (i) whether its air emissions are controlled by a flue gas desulfurization ("FGD") system; (ii) the year that the unit's FGD system was installed; and (iii) the expected year in which the unit's FGD system is anticipated to require replacement were the generating unit to continue to operate.

a. E.W. Brown Unit 3
b. Ghent Unit 1
c. Ghent Unit 2
d. Ghent Unit 3
e. Ghent Unit 4
f. Mill Creek Unit 2
g. Mill Creek Unit 3
h. Mill Creek Unit 4
i. Trimble County Unit 1

1.101. For each of the following generating units, please produce a copy of the most recent Kentucky Pollutant Discharge Elimination System ("KPDES") permit, the most recent KPDES permit fact sheet, and the most recent KPDES permit renewal application.

a. E.W. Brown Unit 3
b. Ghent Unit 1
c. Ghent Unit 2
d. Ghent Unit 3
e. Ghent Unit 4
f. Mill Creek Unit 2
g. Mill Creek Unit 3
h. Mill Creek Unit 4
i. Trimble County Unit 1

1.102. For each of the following generating units, please produce a copy of the most recent Clean Air Act Title V operating permit and the most recent Clean Air Act Title V operating permit renewal application.

a. E.W. Brown Unit 3
b. Ghent Unit 1
c. Ghent Unit 2
d. Ghent Unit 3
e. Ghent Unit 4
f. Mill Creek Unit 2
g. Mill Creek Unit 3
h. Mill Creek Unit 4

i. Trimble County Unit 1

1.103. Please provide the following information:

a. Please provide all data used to define/determine low- and fixed-income households and how this data was used in targeting DSM-EE programs for specific classes, in spreadsheet format.
b. Please provide a detailed description, detailed process, and internal policies on how the Companies track low-income households for targeting programs to benefit low- and fixed-income households by class.
c. Please provide data for the number of people who are eligible for electric and gas disconnection by zip code and census tract.
d. Please provide data on the number of people who are behind on their electric and gas payments by zip code and census tracts.
e. Please provide data on the average amount owed on past due bills by zip code and census tract.
f. Please provide data on the number of people who have a signed repayment plan by zip code and census tract.
g. Please provide data on the number of people who are behind on their payments, but do not have a signed payment plan in place by zip code and census tract.
h. Please provide data on the number of people who have a signed payment plan who are currently on that payment plan by zip code and census tract.
i. Please provide data on the number of people who have a signed payment plan who have missed one or more payments by zip code and census tract.
j. Are the people who have missed one or more payments on their payment plan included in the overall number of people who are eligible for disconnection?
k. Please provide data on the number of people who have received support from pandemic utility assistance programs by zip code and census tract.
l. Please provide data on the amount of money received by the Companies from pandemic utility assistance programs and average assistance dollars to each household.

1.104. Please refer to Mr. Bevington's Direct Testimony, page 4, lines 10–12, which states: "Through October 2022, the Companies' DSM-EE programs have produced cumulative energy and gas savings of approximately 1,566 GWh and 7.5 million ccf, along with a cumulative demand reduction of 523 MW."

a. Over what time period were these cumulative savings achieved?
b. Over what time period was this cumulative demand reduction achieved?

1.105. Please answer the following requests concerning the Companies' existing Low Income Weatherization Program ("WeCare").

a. Please explain the relationship between WeCare and the weatherization programs implemented by Community Action Agencies.

b. Please report the number of households served under the WeCare program in each of the last five years.
c. Do the measures currently offered differ at all from the measures listed at page 28 of Exhibit JB-1? If so, please identify each difference.
d. Please report, on an annual basis over the last five years, the percentage of participants that receive each measure available through WeCare.
e. Do the Companies record the number of eligible households that it is unable to serve through WeCare due to needed "pre-weatherization" upgrades (e.g., mold remediation; roof damage), commonly referred to as "walk-aways"? If so, please report the number of eligible households that could not be served due to such issues in each of the last five years.
f. Please explain how the Companies respond when an eligible household needs upgrade or repairs before the home can be weatherized.
g. Please explain any challenges that the Companies have faced in reaching and serving eligible customers.

1.106. Please answer the following requests regarding the Kentucky School Energy Managers Program ("SEMP").
a. Did the Companies support SEMP in past years? If so, please explain the following:
i. What was LG&E/KU's role?
ii. Did LG&E/KU support SEMP as a DSM Program?
iii. What was the cost to LG&E/KU to support SEMP, and what savings were achieved?
iv. How would LG&E/KU rate the success of SEMP?
b. Did the Companies evaluate restarting SEMP, or a similarly designed program, as part of the DSM/EE planning process that led to the proposed DSM/EE Plan in this case? If so, please explain the extent of that evaluation and produce supporting documentation, if any.

1.107. Please refer to Mr. Bevington's Direct Testimony, page 6, lines 8–10, which states that "the Companies' asked their DSM-EE consultant, The Cadmus Group, Inc. ("Cadmus"), to perform a demand response potential study in the first quarter of 2021."
a. Please provide Cadmus' demand response potential study in fully functional electronic format.
b. Please provide all workpapers for the study in fully functional Excel format with formulas intact.

1.108. Please refer to Mr. Bevington's Direct Testimony, page 12, lines 21–23, which states that "these savings are consistent with the numbers identified as achievable from the most recent potential studies and updates by Cadmus."

a. Specifically, which scenario in the most recent potential studies and updates are the projections in the Companies' Plan consistent with?
b. Please provide Cadmus' most recent potential studies and updates in fully functional electronic format, including data for each scenario Cadmus assessed.
c. Please provide all workpapers for the studies in fully functional Excel format with formulas intact, including measure inputs, estimated measure saturations and stock turnover assumptions, baseline assumptions, take-rates for retrofit measures, etc.
d. Please provide electronic workpapers for the proposed DSM-EE Plan in fully functional Excel format with all formulas intact.

1.109. Please refer to Mr. Bevington's Direct Testimony, page 13, lines 8–10, which states: "The Income-Qualified Solutions are designed to positively impact approximately 5,400 customers per year and nearly 38,000 customers over the program period."
a. How many income-qualified customers receive electric service only from the Companies, assuming the proposed 300% FPL eligibility criterion?
b. How many income-qualified customers receive gas service only from the Companies, assuming the proposed 300% FPL eligibility criterion?
c. How many income-qualified customers receive both electric and gas service from the Companies, assuming the proposed 300% FPL eligibility criterion?
d. How many income-qualified customers receive electric service only from the Companies, assuming a 200% FPL eligibility criterion?
e. How many income-qualified customers receive gas service only from the Companies, assuming a 200% FPL eligibility criterion?
f. How many income-qualified customers receive both electric and gas service from the Companies, assuming a 200% FPL eligibility criterion?

1.110. Please provide DSM-EE Annual Reports for the five previous complete program years.
a. Please provide reports as filed with the Commission;
b. For each program, by program year, please provide projected and actual costs, participation, and gross and net savings;
c. For each program, by program year, please provide a listing of measures installed/incentivized and quantities of each;
d. Please provide electronic workpapers in fully functional Excel format with formulas intact.

1.111. Please refer to Exhibit JB-1, page 2, which states: "These factors have prompted the Companies to file a mid-plan adjustment to request approval for additional budget and programs to support a substantive increase in their portfolio

offerings that will make more comprehensive energy efficiency and demand response opportunities available to a broader customer population."

a. Please explain the Companies' meaning of the term "more comprehensive energy efficiency and demand response opportunities."
b. Please explain the Companies' meaning of the term "a broader customer population."

1.112. Please refer to Exhibit JB-1, page 2, which states: "The law of diminishing returns indicates the potential for saving energy through DSM/EE programming declines as economic and market factors are introduced."

a. Do the Companies agree that in some cases economies of scale can decrease program costs per unit of savings by, for example, spreading fixed administrative costs over a greater number of measures? Please explain.

1.113. Please refer to Exhibit JB-1, page 2, which refers to "the environmental imperative to electrify buildings."

a. Please describe the Companies' understanding of "the environmental imperative to electrify buildings."
b. Please describe any activities, programs, initiatives, or strategies the Companies plan to implement to support "the environmental imperative to electrify buildings."

1.114. Please refer to Exhibit JB-1, page 10, which states: "The Companies identified appropriate measures for the 14 selected programs."

a. Please define "appropriate" as used by the Companies in this statement.
b. Given the Companies selected programs and then-identified appropriate measures, please explain whether any cost-effective measures are not "appropriate" for the selected programs. In other words, are there measures that are not included, but that might have been included if other programs were selected?

1.115. Please refer to Exhibit JB-1, pages 10-11, which states: "The Companies estimated participation (number of installations) for measures in the DSM/EE Program Plan using historical participation data (for measures currently offered), past potential studies, and secondary sources. The Companies then applied reasonable escalation (or de-escalation) rates that considered market trends, changing equipment standards, and other factors and projected those rates over the seven years of the plan."

a. For any estimates of measure participation it included in the Plan, did the Companies estimate the maximum participation it could achieve using enhanced program implementation and outreach practices and/or increased incentives? Please explain.

b. As used in the referenced statement, please explain the Companies' use of the term "reasonable." What criteria, specifically, were used to determine if an escalation or de-escalation rate was "reasonable"?

1.116. Please refer to Exhibit JB-1, page 11, which states: "All savings in the plan are calculated at a gross level." Were gross savings used to calculate cost-effectiveness? Please explain.

1.117. Please refer to Exhibit JB-1, page 11, which states: "Finally, the Companies iteratively adjusted each program's expected participants and customer incentive levels as needed to balance the DSM/EE Program Plan. The goal was to provide a reasonable mix of programs that meet the Companies' objectives for a comprehensive plan with robust programmatic options for all customer sectors and segments."

a. As used in the referenced statement, please explain the Companies' use of the term "reasonable." What criteria, specifically, were used to determine if an escalation or de-escalation rate was "reasonable"?

1.118. Please refer to Exhibit JB-1, page 34, which shows the incentive amounts provided for the Residential Online Audit Program.

a. For each incentive listed (heat pump water heater, central air conditioner, ductless heat pump, air source heat pump, and 95% AFUE furnace) please provide the estimated incremental measure cost assumed in the Companies' analyses.
b. For each of these measures, how did the Companies determine the appropriate incentive amount to offer?

1.119. Please refer to Exhibit JB-1.

a. Please identify the author(s) of Exhibit JB-1.
b. Please state approximately when Exhibit JB-1 was drafted.
c. At page 2, the author(s) state: "At the outset of development of this DSM/EE Program Plan, the Companies sought to identify opportunities to curtail demand to compensate for planned fossil fuel generation retirements." Please state the approximate timeframe described, when the Companies attempted "to identify opportunities to curtail demand to compensate for planned fossil fuel generation retirements."
d. Please explain in full the process the Companies undertook for the above-referenced analysis, including but not limited to the following details:
    i. identification of the specific staff involved in the analysis;
    ii. statement of whether the process is the same one used by the Companies to develop previous DSM/EE plans; and
    iii. to the extent that the process has changed relative to the processes used to develop previous DSM/EE plans, please also explain the reason for each change.

1.120. Please refer to Exhibit JB-1, page 1, which provides a bulleted list of the Companies' aim in offering DSM/EE programs. Do the Companies measure their success in meeting each of the Companies' listed aims? If so, please explain how. If not, why not.

1.121. Refer to Exhibit JB-1, page 6, which states: "Many new and emerging electric energy-saving measures that initially showed promise, such as heat pumps and smart technologies, have been hindered by persistently high costs, inconsistent performance, and slow market adoption." Please provide the data or sources supporting this assertion, if any.

1.122. Refer to Exhibit JB-1, page 7, which states: "A large and growing population of Kentucky residents struggle to make ends meet, and their energy burden has increased. The need to serve these populations with robust income-qualified program offerings has grown substantially." In the last three years, has LG&E/KU studied, or caused to be studied, residential customers' energy burden? If so, please produce the results of each such study. If not, please explain why not.

1.123. Refer to Exhibit JB-1, page 10, which states that, at Step 1 of the DSM/EE planning process, "the Companies created a comprehensive list of 39 potential programs (not including the Companies' administrative program) covering a wide range of energy efficiency end uses, demand reduction strategies, behavioral conservation approaches, and other innovations based on reviews of best practice programs, successful strategies offered by utilities in other jurisdictions, and ideas generated by the Companies' internal and external stakeholders."

a. Please identify each of the "best practice programs" reviewed at Step 1, including identification of the program, jurisdiction, implementing utility, program savings, and program costs.
b. Please identify each of the "successful strategies offered by utilities in other jurisdictions" that informed Step 1, including identification of the implementing utility and a full description of the specific strategy.
c. Confirm that the 39 potential programs included "Fuel Switching (Electric to Gas Conversion)", but not gas to electric conversion.
    i. If confirmed, please explain the Companies' decision to focus exclusively on fuel switching to gas.
    ii. If anything but confirmed, please explain in full.

1.124. Refer to Exhibit JB-1, page 10, which states that, at Step 2 of the DSM/EE planning process, "[t]he Companies then assigned six individuals to score each potential program by its ability to meet each criterion, which resulted in total scores ranging from zero to 100."

a. Did the Companies retain a record of the scores assigned by each of the six individuals assigned to score each potential program? If so, please provide documentation of the scoring by each of those six individuals. If

not, please explain why not.

b. Please provide written materials, if any, provided to the six individuals to explain the "12 key objective criteria (outlined in Appendix C)."

1.125. Please refer to Exhibit JB-1, page 15, which states that, in the Connected Solutions program, the Companies will "[c]ontinue direct load control (DLC) for current participants and increase incentives, expecting lower participation as the program matures due to switch failures."

a. Please explain what is meant by "switch failures" as used in the above-referenced statement.

b. Please explain what steps, if any, the Companies take to address "switch failures."

1.126. Please refer to Exhibit JB-1, page 28, which states *inter alia*: "Through the Whole-Building Multifamily subcomponent, the Companies offer property owners and tenants direct installation of energy efficiency measures to reduce energy use in units and common areas at no cost."

a. Please identify each energy efficiency measure available through the Whole-Building Multifamily subcomponent at no cost to the property owner or tenant.

b. Please reconcile the above-referenced statement which states that energy efficiency measures are provided "at no cost" with the statement on the following page of JB-1, p.29, that "[t]he Whole-Building Multifamily component will require property managers and owners to contribute to project costs. The Companies will offer an incentive that covers 50% of whole-building project incremental costs."

1.127. The Companies' proposed 2024 – 2030 DSM/EE Plan includes planned capital expenditures of $1,800,000. Please refer to Ex. JB-1, page 23, which states that "[t]he Companies planned $1,800,000 for the setup cost of a centralized, digital DSM tracking and reporting system as capital." (*See also* Ex. JB-1 at Table 1-9).

a. Please provided an itemized list of purchases the Companies expects to make under this capital expense budget line item (e.g., license for a specific software platform, hardware).

b. For each item listed in response to subpart (a) above, please also explain in full the process by which the Companies estimated the cost of each item.

c. For each item listed in response to subpart (a) above, please provide the estimated cost of each item.

1.128. Please refer to Exhibit JB-3, Cadmus' Pay-As-You-Save Financing Program Cost Effectiveness Analysis.

a. Please state the approximate date when the Companies entered into a contract with Cadmus for the referenced analysis.

b. Please confirm that Cadmus conveyed the results of its analysis on November 11, 2022, as reflected on the first page of Cadmus's

Memorandum. If anything but confirmed, please explain.

1.129. Please refer to Exhibit JB-3.

a. Please provide underlying workpapers for the PAYS cost-effectiveness screening in native format with formulas intact.
b. Please explain the basis for including both an inflation rate (2.53%) and a discount rate (6.41%).
c. Does the analysis consider the potential for wholesale purchase of equipment (e.g., heat pumps) and discounts relative to retail purchase? Please explain.
d. Are the savings used in the analysis deemed savings, absolute savings, or as-found savings? Please explain.
e. Does the analysis include coincidental peak load savings? If so, please provide the value(s) assumed for coincidental peak load savings. If not, please explain why not.
f. Does the analysis account for future avoided costs? If so, please explain all assumptions used to account for future avoided costs. If not, please explain why not.
g. Does the analysis assume any changes to electric utility or gas utility rates across time? If so, please state the assumed rates used. If not, please explain why not.
h. Does the analysis make any assumptions related to applicable federal incentives for energy efficiency upgrades? Please explain.

1.130. Please refer to Exhibit JB-3, page 2. Table 1 shows a full project cost of $7,592 and an incremental project cost of $4,555, as well as kWh savings per project of 5,514, and therm savings per project of 25.40. Please provide a list of the specific measures, as well as costs, savings, and estimated useful lives of each.

1.131. Please refer to Exhibit JB-3, page 3, which states: "We tested the program assuming either 100 or 1,000 statewide participants per year."

a. Please explain the difference in costs between a scenario that assumes 100 participants and a scenario that assumes 1,000 participants.
b. Please provide the itemized total program cost per participant under each of the listed scenarios.
c. Please explain the basis for testing program cost-effectiveness in scenarios with only 100 or 1,000 participants per year, including answering the following questions:
    i. Who determined the appropriate level of participation to assume for purposes of cost-effectiveness screening, Cadmus, the Companies, or some other party? Please explain.
    ii. Did the Companies ask Cadmus to evaluate higher levels of participation each year? If so, please state the level of participation the Companies asked to be analyzed and explain Cadmus' basis for not evaluating higher levels of participation.
    iii. Did Cadmus evaluate any level of participation other than the two

reported in Ex. JB-3? If so, please provide the results of each such evaluation. If not, please explain why not.

1.132. Please answer the following requests related to the Residential Online Audits.

a. Are the Companies aware of any empirical studies comparing the efficacy of online audits to in-home audits? For example, a study comparing participation rates and/or likelihood of customers making efficiency-related improvements after the audit. If so, please provide each such study.
b. Will online audits be available only to customers with AMI meters? Please explain.
c. Did the Companies evaluate an audit program design in which an in-home auditor uses the online tool in-person with the customer? If so, please report the results of the Companies evaluation.

1.133. Please refer to Ms. Isaacson's Direct Testimony, page 5, lines 12–13, which states that "even the identified economic potential would fail to meet the Companies' capacity shortfall." Would the identified Technical Potential meet the Companies' capacity shortfall?

1.134. Please refer to Ms. Isaacson's Direct Testimony, page 5, lines 17–18, which states that "the Proposed DSM-EE Program Plan will allow the Companies to reach their program DSM-EE potential."

a. Which of the different achievable scenarios in the 2022 Cross-Sector DSM Potential Study Projection is the "program DSM-EE potential" referred to by Ms. Isaacson?
b. Please provide a description of the methodology used to determine the "program DSM-EE potential" including all criteria used in that determination.

1.135. Please refer to Ms. Isaacson's Direct Testimony, page 6, lines 14–18, which states that "the Companies propose to expand the successful WeCare program in a number of meaningful ways to reach more customers, including expanding the eligibility to serve customers who are at or below 300% of the federal poverty level, including a smart thermostat direct install measure, using publicly available data to better target eligible customers, promoting the program services in high-need areas . . . ."

a. Which publicly available data do the Companies plan to use to better target eligible customers? Please explain how it will use these data to better target customers.
b. Will the Companies also use non-public data, such as energy use, bill payment and arrearage histories, and/or receipt of fuel assistance to target eligible customers? If yes, please explain how they will use these data. If no, please explain why not.

c. How will the Companies define and identify "high-need areas"?

1.136. Please refer to Ms. Isaacson's Direct Testimony, page 6, lines 14–20, which states that "the Companies propose to expand the successful WeCare program in a number of meaningful ways to reach more customers, including . . . increasing the overall average allowable measure cost per single-family home to a larger group of eligible customers."

a. Please explain how the Companies determined the appropriate allowable measure cost for the Income-Qualified Solutions program.
b. Do the Companies track measures that could be done in customers' homes in the Income-Qualified Solutions program that are left undone due to reaching the maximum allowable measure cost? Please explain.
c. In the previous three program years, how many participants in the Income-Qualified Solutions program reached the maximum allowable measure cost?
d. Do the Companies anticipate that the increased allowable measure cost will be sufficient to address all of the energy efficiency opportunities in customers' homes? Please explain.

1.137. Please refer to Ms. Isaacson's Direct Testimony, page 7, lines 4–6, which states: "The Income-Qualified Solutions program includes Inflation Reduction Act consultation to educate various stakeholders and participants about the future options made available through this legislation."

a. Please describe specifically the actions the Companies expect to take in order to "educate various stakeholders and participants about the future options made available through this legislation."
b. How do the Companies expect to address customers who are eligible to participate in the Income-Qualified Solutions program and are also eligible to receive rebates through the Inflation Reduction Act ("IRA")?
    i. For example, for the customers who are eligible to receive IRA rebates for energy efficiency measures, will the Companies facilitate using IRA rebates to pay for an increased work scope that exceeds its allowable measure cost? Please explain.

1.138. Please refer to Ms. Isaacson's Direct Testimony, page 9, lines 10–13, which states: "The Companies will continue DLC for current participants, though participation will decrease over time as switches fail. As switch failures occur, the Companies will direct customers to other demand response offerings."

a. Have the Companies assessed the risk that customers with switches will drop out of the demand response offering when the switches fail? Please explain.
b. Have the Companies assessed the potential benefits of proactively replacing switches prior to their anticipated failure? Please explain.

1.139. Please refer to Ms. Isaacson's Direct Testimony, page 11, lines 6–8, which states that "with limited exceptions, the Companies plan to allow customers to participate in multiple programs and will use software to manage enrollment, accurately calculate savings, and issue incentives to customers enrolled in multiple programs." Please explain how the Companies will communicate potentially competing program opportunities to customers. Specifically, how will the Companies direct customers in choosing between competing options?

1.140. Please refer to Ms. Isaacson's Direct Testimony, page 16, lines 8–12, which states: "The Companies recognize the value in having a continuous improvement process for programming. The Companies currently use a third-party contractor to examine program design, delivery, impacts, and processes. The contractor ensures quality and effectiveness of the programs, optimal use of resources, and responsiveness to customers' needs." Please provide all Evaluation, Measurement, and Verification reports of the Companies' DSM-EE programs completed in the prior two program cycles.

1.141. Please refer to Exhibit LI-1, 2022 Cross-Sector DSM Potential Study Projection, Tables 1, 2 and 3, which refer to "Technical", "Economic", and "Achievable" results, and Figures 1 and 2 which refer to the "Medium Achievable Scenario."

a. Please list all of the different "achievable" scenarios that were assessed in the 2016 and 2017 potential studies, and please describe the criteria and/or conditions that apply to each.
b. Which of the different achievable scenarios were updated in the 2022 Cross-Sector DSM Potential Study Projection?

1.142. Please provide a matrix showing proposed full-time equivalent (FTE) positions for each program by category (program manager, program associates, operations manager, and any other applicable job categories).

1.143. Please provide proposed non-incentive third-party program administration and implementation costs by program, by year.

1.144. Please refer to the 2022 Cross-Sector DSM-Potential Study Projection, Exhibit LI-1, at page 5, stating "Cadmus projected that not all estimated installations went through the Companies' program, so Cadmus increased the overall saturation of LED linear lighting to align with site visit data collected in other jurisdictions to reflect a more realistic view of the available remaining lighting potential for the Companies."

a. Please list each of the "other jurisdictions" where site visit data was collected.

b. For each jurisdiction identified in response to subpart (a), please (i) identify the month(s) and year(s) when site visit data was collected in each jurisdiction; (ii) identify the party or parties responsible for collection of site visit data collected from each jurisdiction; and (iii) produce documentation of the specific site visit data collected from each jurisdiction.
c. For each jurisdiction identified in response to subpart (a), please explain in full the empirical basis for assuming site visit data collected in each jurisdiction is representative of the Companies service territories.
d. Please quantify the increase in overall saturation of LED linear lighting that Cadmus applied.

1.145. Please refer to the 2022 Cross-Sector DSM-Potential Study Projection, Exhibit LI-1 at page 9, which states:

> The results from this study indicate that available potential is declining and aligns with regional trends. For example, in neighboring Virginia, Dominion Energy's recent energy efficiency potential studies (2014, 2017, and 2020 studies) have shown a steady decline in the available technical and economic potential. These studies showed that technical potential as compared to baseline sales declined from 39% (2014) to 35% (2017) to 32% (2020). The economic potential as compared to baseline sales also showed a decline from 22% (2014) to 19% (2017) to 16% (2020). The Dominion Energy study results of the decline in potential are consistent with Cadmus' study findings.

a. Please describe the geographic boundaries of the region contemplated when this study is compared to "regional trends."
b. Please list each additional state or territory that the GDS study results were compared to.

1.146. Please refer to Exhibit LI-1, 2022 Cross-Sector DSM Potential Study Projection.

a. Page 1 of the above-referenced exhibit states, "The Companies commissioned this study in conjunction with their analysis of the 2024-2030 DSM/EE Program Plan." From the Companies' perspective, is this statement by Cadmus accurate? If the Companies find the statement inaccurate in any respect, please explain in full.
b. Please identify the date when the Companies entered into a contract with Cadmus to perform the study presented in Exhibit LI-1.
c. Confirm that Cadmus conveyed the contents of Exhibit LI-1 to the Companies on November 30, 2022. If anything but confirmed, please identify the date on which the Companies claim to have received the contents of Exhibit LI-1 from Cadmus.

1.147. Please refer to Exhibit LI-2, 2023 LG&E and KU Demand Response Assessment.

a. Page 1 of Exhibit LI-2 states: "LG&E and KU sought an update to the previously estimated DR potential for all customer sectors." From the Companies' perspective, is this statement by Cadmus accurate? If the Companies find the statement inaccurate in any respect, please explain in full.

b. Page 1 of Exhibit LI-2 states: "In addition, this assessment will identify possible DR products to address LG&E and KU's projected capacity shortfall of 300 to 900 megawatts starting in 2025 through 2028."

i. Please identify the approximate date when the Companies would have provided Cadmus with an estimate of projected capacity need for purposes of this assessment.

ii. In the Companies' view, does Cadmus' statement accurately reflect the Companies' projected capacity need at the time? If it does not, please explain.

iii. Please identify the specific study, analysis, forecast, or plan that provided a basis for the projected capacity provided to Cadmus for purposes of this assessment.

c. Page 1 of Exhibit LI-2 states: "Timeline for potential DR deployment over a 20-year period, beginning in 2023[1] and ending in 2042," with footnote 1 stating that "2023 aligns with LG&E and KU's planned program update."

i. In the Companies' view, do these statements from Cadmus accurately reflect the Companies' planning program update timeline at the time (April 1, 2021)? If not, please explain.

d. Please identify the date when the Companies entered into a contract with Cadmus to perform the study presented in Exhibit LI-2.

e. Confirm that Cadmus conveyed the contents of Exhibit LI-2 to the Companies on April 1, 2021. If anything but confirmed, please identify the date on which the Companies claim to have received the contents of Exhibit LI-2 from Cadmus.

f. Page 1 of Exhibit LI-2 states that the study "incorporates the latest baseline and DR data from primary and secondary sources and is informed by the work of other entities in the region and across the country."

i. Please provide the referenced baseline data.

ii. Please identify each primary and secondary source providing DR data incorporated into the study.

iii. Please identify the "work of other entities" incorporated into the study.

1.148. Please refer to Lana Isaacson's Direct Testimony and Exhibits LI-3, LI-4, and LI-5.

a. Please state the approximate date when the supporting calculations for each of the following were performed:

i. KU's DSM cost recovery mechanism, Exhibit LI-3;
ii. LG&E's electric DSM cost recovery mechanism, Exhibit LI-4; and
iii. LG&E's gas DSM cost recovery mechanism, Exhibit LI-5.

b. For each of Exhibits LI-3, LI-4, and LI-5, please explain how, if at all, the 2022 Cross-Sector DSM Potential Study Projection (Exhibit LI-1) informed the calculation of each respective cost recovery mechanism.

c. For each of Exhibits LI-3, LI-4, and LI-5, please explain how, if at all, the 2023 LG&E and KU Demand Response Assessment (Exhibit LI-2) informed the calculation of each respective cost recovery mechanism.

1.149. What role, if any, does PPL's stated corporate goal concerning net zero carbon emissions by 2050 (described as "PPL's Commitment to the Clean Energy Transition" in PPL's Energy Forward Generation Study 2022 – Addendum to 2021 Climate Assessment Report) play in the evaluation and development of the Companies' resource portfolio?

1.150. Please identify each of PPL's stated corporate goals concerning a reduction in carbon emissions in generation through 2050 that have been adopted by the Companies and, for each goal, please state the Companies' strategy regarding maintaining (1) reliable service and (2) affordability while implementing these goals.

1.151. Please identify and explain the Companies' strategy for meeting its supply needs through use of or access to resources that are (1) outside of its service territories and within the state and (2) outside of its service territories and outside of the state.

1.152. Please refer to the following: Joint Application at page 2; Direct Testimony of Robert M. Conroy at page 4; Direct Testimony of David S. Sinclair at pages 24 and 25; and Direct Testimony of Stuart A. Wilson at page 38.

a. Please confirm that the proposed battery energy storage facility will be located at a Kentucky Utilities Company facility in Mercer County, Kentucky. If not confirmed, please explain in full.

b. Please confirm that Mercer County is a county served by Kentucky Utilities Company and is not a county served by Louisville Gas and Electric Company. If not confirmed, please explain in full.

c. If "successful operation experience with the Brown BESS asset would potentially enable the retirement of one" of the "Companies existing 11N2 gas turbine fleet that is also located at Brown," please state why Kentucky Utilities Company will not share in any ownership of the Brown BESS asset.

d. If "the optimal ownership allocation for the Brown BESS is 100% to LG&E to better balance the Companies' summer reserve margins," please state how the operation and use of the Brown BESS will benefit LG&E in

meeting LG&E's summer reserve margin.

e. If "it is essential that the Companies have day-to-day operational experience at scale with the technology before they transition to relying on batteries for system reliability," please state why Kentucky Utilities Company will not share in any ownership of the Brown BESS asset.

1.153. Please refer to Mr. Wilson's Direct Testimony at page 16. Please state whether the Companies incorporated fuel price volatility into the analysis in arriving at the Table 1: Portfolio Optimization Results. Further, if applicable, please describe in detail how fuel price volatility is incorporated into each stage and step of the analysis, including all assumptions.

1.154. Please refer to the Direct Testimony of Tim A. Jones at page 14.

a. What are the Companies' assumptions regarding EVs and their potential to reduce peak demands?
b. What are the Companies' proposals for incenting reductions in peak hour demand through distributed energy resources?
c. What are the Companies' assumptions concerning distributed energy resource management systems (DERMS)?
d. What are the Companies' proposals for incenting battery storage for distributed energy resources?

1.155. Please refer to Mr. Jones' Direct Testimony at page 25. Please identify all "reasons other than economics," that might result in large customers pursing distributed solar generation.

1.156. Please refer to the Direct Testimony of Lana Isaacson at page 1. Do the Companies ever directly or indirectly propose solar programs and services for residential, commercial, and industrial customers? If yes, please fully explain how the Companies develop such programs and services and thereafter propose them. If no, explain why not.

1.157. Please explain how a non-firm, energy-only power purchase agreement differs from other non-firm, energy-only power purchases in the market in the absence of a PPA.

1.158. Please refer to the Direct Testimony of John Bevington at pages 13–14. Regarding rooftop solar and the "further research including program feasibility, implementation methods, effect on DSM planning, and cost-effectiveness," please identify the details of the research agenda including the Market Research budget amount corresponding to this research.

1.159. If the PPAs with four solar PV facilities with a combined peak output of 637 MW do not come to fruition and come on-line, please explain the result of losing this hedge against fuel-cost risk and how it has been incorporated into the

optimum resource analysis.

1.160. Please refer to Mr. Bellar's Direct Testimony at pages 19 through 21 and Exhibit SAW-1, pages 54 and 55.

a. For the proposed Mercer County solar facility and regarding interconnection, please state the advantages and disadvantages of locating the solar facility at this site including but not limited to preparation of any study required for determining the proposed generators' impact to the transmission system.
b. For the proposed Marion County solar facility and regarding interconnection, please state the advantages and disadvantages of locating the solar facility at this site including but not limited to preparation of any study required for determining the proposed generators' impact to the transmission system.
c. In terms of site selection and transmission interconnection, please identify the factors that the Companies consider when seeking to optimize the site selection for a proposed generator.
d. In terms of site section and transmission interconnection, is there any advantage to locating a proposed generator at or in close proximity to a site which currently contains Company generators?
e. In terms of site selection and transmission interconnection, what are the advantages and/or disadvantages, if any, of locating a new generation site within one of the Companies' certified territories established through KRS Chapter 278?

1.161. In selecting the two (2) NGCC generating options proposed through the instant application, did the Companies incorporate into the planning process any assessment of risk of early retirement of either or both of these options? If yes, how was the risk assessment developed and incorporated? If no, please explain why not.

1.162. What role, if any, does the prevention of the creation (or increase) in stranded costs serve in the Companies' supply planning? Please explain.

1.163. Please refer to the Direct Testimony of Charles R. Schram at page 12. Please confirm the identity of each pipeline proposed for service to each facility and, by pipeline, please identify that pipeline's operational status, including pressure and utilization rate, from December 20, 2022, through December 28, 2022.

1.164. For each utility, please separately state:

a. The hourly demand for December 20, 2022, through and including December 28, 2022;
b. The hourly generation unit output for December 20, 2022, through and including December 28, 2022;

c. The hourly imports, and from which balancing authority at what price on a dollar per megawatt hour basis, for December 20, 2022, through and including December 28, 2022; and
d. The hourly exports, and to which balancing authority and at what price on a dollar per megawatt hour basis, for December 20, 2022, through and including December 28, 2022.

1.165. Are Louisville Gas and Electric Company and/or Kentucky Utilities Company directly or indirectly modeling the use of the Southeastern Energy Exchange Market? If yes, please explain how. If no, please explain why not.

1.166. Are Louisville Gas and Electric Company and/or Kentucky Utilities Company considered net buyer(s) or net seller(s) in the Southeastern Energy Exchange Market? Please identify the status for each.

1.167. Please refer to Mr. Jones' Direct Testimony at pages 8 through 13. Please provide, in an Excel file, the hourly forecast spreadsheets supporting this testimony.

1.168. Please refer to Mr. Sinclair's Direct Testimony at pages 28–29. Mr. Sinclair's testimony discussing a pumped storage option includes the statement that "the economics as proposed were not competitive with other peaking resources, including lithium-ion batteries."
a. Please identify each element composing "the economics as proposed";
b. By year, beginning with 2017 through the year to date, please state the number of days each month that the Kentucky Utilities Company's Dix Dam Generating Station generated electricity;
c. Please state the current cost on a dollar per megawatt hour basis for generation through the Dix Dam facility;
d. Please state whether the current cost identified in sub-part c above includes recovery of capital costs for the Dix Dam facility;
e. Please state whether the Dix Dam Generating Station is operated to meet (i) peak summer needs and/or (ii) peak winter needs, if yes, then please explain how;
f. By year, beginning with 2017 through the year to date, please state the number of days each month that the Louisville Gas and Electric Company's Ohio Falls Generating Station generated electricity;
g. Please state the current cost on a dollar per megawatt hour basis for generation through the Ohio Falls facility;
h. Please state whether the current costs identified in sub-part g above includes recovery of capital costs for the Ohio Falls facility; and
i. Please state whether the Ohio Falls Generating Station is operated to meet (i) peak summer needs and/or peak winter needs, if yes, then please explain how.

Respectfully submitted,

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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 February 17, 2023; 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.

Ashley Wilmes

Ashley Wilmes