COMMONWEALTH OF KENTUCKY BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF KENTUCKY)UTILITIES COMPANY AND LOUISVILLE GAS)AND ELECTRIC COMPANY FOR CERTIFICATES)CASE NO. 2025-00045OF PUBLIC CONVENIENCE AND NECESSITY)AND SITE COMPATIBILITY CERTIFICATES)

SUPPLEMENTAL REQUESTS FOR INFORMATION OF KENTUCKIANS FOR THE COMMONWEALTH, KENTUCKY SOLAR ENERGY SOCIETY, METROPOLITAN HOUSING COALITION, AND MOUNTAIN ASSOCIATION TO LOUISVILLE GAS & ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY

PUBLIC

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Dated: May 2, 2025

DEFINITIONS

- "Document" means the original and all copies (regardless of origin and whether or not including additional writing thereon or attached thereto) of any memoranda, reports, books, manuals, instructions, directives, records, forms, notes, letters, or notices, in whatever form, stored or contained in or on whatever medium, including digital media.
- 2. "Study" means any written, recorded, transcribed, taped, filmed, or graphic matter, however produced or reproduced, either formally or informally, a particular issue or situation, in whatever detail, whether or not the consideration of the issue or situation is in a preliminary stage, and whether or not the consideration was discontinued prior to completion.
- 3. "Person" means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.
- 4. A request to identify a natural person means to state his or her full name and business address, and last known position and business affiliation at the time in question.
- 5. A request to identify a document means to state the date or dates, author or originator, subject matter, all addressees and recipients, type of document (e.g., letter, memorandum, telegram, chart, etc.), identifying number, and its present location and custodian. If any such document was but is no longer in the Company's possession or subject to its control, state what disposition was made of it and why it was so disposed.
- 6. A request to identify a person other than a natural person means to state its full name, the address of its principal office, and the type of entity.
- 7. "And" and "or" should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.
- 8. "Each" and "any" should be considered to be both singular and plural, unless specifically stated otherwise.
- 9. Words in the past tense should be considered to include the present, and words in the present tense include the past, unless specifically stated otherwise.

- 10. "You" or "your" means the person whose filed testimony is the subject of these data requests and, to the extent relevant and necessary to provide full and complete answers to any request, "you" or "your" may be deemed to include any other person with information relevant to any interrogatory who is or was employed by or otherwise associated with the witness or who assisted, in any way, in the preparation of the witness' testimony.
- 11. "Companies", "Louisville Gas & Electric Company and Kentucky Utilities Company", or "LG&E-KU", means Louisville Gas & Electric Company and Kentucky Utilities Company, their parents or subsidiaries, and/or any of its officers, directors, employees or agents who may have knowledge of the particular matter addressed, and affiliated companies including member cooperatives.
- 12. "Joint Intervenors" means Kentuckians for the Commonwealth, Kentucky Solar Energy Society, Metropolitan Housing Coalition, and Mountain Association who have been granted the status of full intervention as joint intervenors in this matter.
- 13. Unless otherwise specified in each individual request the term "tariff" means the tariff as filed in this matter by LG&E-KU.
- 14. "Commission" or "PSC" means the Kentucky Public Service Commission, including its Commissioners, personnel, and offices.
- 15. "AMI" means Advanced Metering Infrastructure.
- 16. "BESS" means Battery Energy Storage System.
- 17. "BTM" means Behind-the-Meter.
- 18. "C&I" means Commercial and Industrial.
- 19. "CHP" means Combined Heat and Power.
- 20. "CSR" means Curtailable Service Rider.
- 21. "DCP" means Demand Conservation Program.
- 22. "DR" means Demand Response.

- 23. "DSM" means Demand-Side Management.
- 24. "EE" means Energy Efficiency.
- 25. "EPC" means Engineering, Procurement, and Construction.
- 26. "IRP" means Integrated Resource Plan.
- 27. "ITO" means Independent Transmission Operator.
- 28. "LCOE" means for Levelized Cost of Energy.
- 29. "LOLE" means Loss of Load Expectation.
- 30. "NAICS" means North American Industry Classification System.
- 31. "PPA" means Power Purchase Agreement.
- 32. "PS" means Power Service.
- 33. "PV" means Photo-voltaic.
- 34. "QF" means Qualifying Facilities.
- 35. "RR" means Revenue Requirement.
- 36. "SAE" means Statistically Adjusted End-use.
- 37. "SCCT" means Simple-Cycle Combustion Turbine.
- 38. "SEM" means Strategic Energy Management.
- 39. "SIC" means Standard Industrial Classification.
- 40. "TOU" means Time of Use.
- 41. "TSR" means Transmission Service Request.

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. The answers provided should first restate the question asked and also identify the person(s) supplying the information.
- 5. 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.
- 6. 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.
- 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. 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.
- 10. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

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

Joint Intervenors hereby tender the following supplemental requests for information to the Companies:

- 2.1. Please refer to the Companies' response to JI 1.121. For each of the low, mid, and high load forecasts in the 2024 IRP,¹ and the load forecast in the 2025 CPCN, identify for each of the years 2025 through 2054:
 - a. The forecasted annual energy demand in MWhs for each customer class for which such data is available. If not available for any or all customer classes, then for the Companies as a whole.
 - b. The forecasted winter peak in MWs for each customer class for which such data is available. If not available for any or all customer classes, then for the Companies as a whole.
 - c. The forecasted summer peak in MWs for each customer class for which such data is available. If not available for any or all customer classes, then for the Companies as a whole.
- 2.2. Please refer to the Companies' response to JI 1.130. When a proposed data center or other potential large load customer contacts LG&E-KU regarding new service, does LG&E-KU present such prospective customers with information regarding DSM programs and/or curtailable services?
 - a. If so:
 - i. Identify each DSM programs or curtailable services for which LG&E-KU provides information.
 - ii. Produce copies of all documents regarding DSM programs or curtailable services that LG&E-KU provides to prospective data center or other large load customers.
 - iii. Identify at what stage (i.e. when the prospective customer inquires about potential service, an application is received, an electric service agreement is signed, etc.) in the development of a relationship with a prospective data center or other large load customer that LG&E-KU provides such DSM program or curtailable service information.
 - b. If not, explain why not.
- 2.3. Please refer to the Companies' responses to JI 1.145 and 1.146 and to the Direct Testimony of John Bevington, p. 8, lines 16-21. State whether land in Kentucky is "relatively inexpensive" compared to land in the areas "in close proximity to major

¹ 2024 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company, Case No. 2024-00326 (Oct. 18, 2024) ("2024 IRP").

data centers in neighboring states" as described in JI 1.145(a). If so, provide any documentation showing such.

- 2.4. Please refer to the Companies' response to JI 1.147. State whether the Companies have analyzed the potential impact that serving the 1,750 MW of data center load assumed in this proceeding would have on the rates or monthly bills that the Companies' residential customers would pay.
 - a. If so, explain in detail the inputs, assumptions, and results of such analysis, and produce any modeling inputs and output files, workpapers, workbooks, and other documents used in carrying out such analysis.
 - b. If not, explain why not.
- 2.5. Please refer to the Companies' response to JI 1.150. For data centers or other large load projects:
 - a. In the Companies' experience with completed or expected projects, what is the average time and range of time from a TSR being completed to the signing of an EPC contract?
 - b. In the Companies' experience with completed or expected projects, what is the average time and range of time from the signing of an EPC contract to start of construction?
 - c. In the Companies' experience with completed or expected projects, what is the average time and range of time from the start of construction to the customer coming online?
 - d. In its planning, how much time are the Companies' assuming there would be between a TSR being completed and a data center coming online?
- 2.6. Please refer to the Companies' response to Staff 1.18(c), which explains the Companies' five economic development project stages. Confirm the number of projects and MW of peak demand identified for each stage are only for data center projects, as opposed to also including other economic development projects.
 - a. If confirmed, identify for each stage the number of other economic development projects and MW of peak demand for such projects.
 - b. If not confirmed, identify for each stage how much of the number of projects and MW of peak demand identified are for data center projects versus other economic development projects.
- 2.7. Please refer to the Companies' response to Staff 1.18(c). For each of the six projects in the Prospect stage, state whether the project has:
 - a. Secured control of the land where the project would be located.
 - b. Entered into any contractual relationships with the Companies and, if so, identify what such contracts have been entered.
 - c. Applied for any construction, water use, or air quality permits.
 - d. Been submitted to any other utility's economic development queue.

- 2.8. Please refer to the Companies' response to Staff 1.17(a). With regards to the Camp Ground Road and Project Lincoln: OC data center projects referenced therein, state whether the project has:
 - a. Secured control of the land where the project would be located.
 - b. Entered into any contractual relationships with the Companies and, if so, identify what such contracts have been entered.
 - c. Applied for any construction, water use, or air quality permits.
 - d. Been submitted to any other utility's economic development queue.
- 2.9. Please refer to the Companies' response to Staff 1.17(a). Is the referenced Project Lincoln: OC Data Center in Oldham County anticipated to have 600 MW of demand in its initial year of operation?
 - a. If not, identify the anticipated demand in the initial year of operation and the rate and timing over which the data center is expected to ramp up to 600 MW of demand.
- 2.10. Please refer to the Companies' response to AG-KIUC 1-35(a)-(b) and the AG-KIUC_DR1_LG&E-KU Attachment to Q35 (a)(b)(f).
 - a. Explain what the LowProbability, MidProbability, and HighProbability tabs in the referenced attachment refer to.
 - b. Explain what the percentages in Columns G, H, and I in the Project Map tab of the referenced attachment represent, and what role they played in identifying the Companies' projected 1,750 MW of economic development load.
 - c. Explain how the percentages in Columns G, H, and I in the Project Map tab of the referenced attachment were determined, and provide any analysis or other document supporting such percentages.
- 2.11. Please refer to the Companies' response to Staff 1.1(b) and 1.17(a) which state "there are currently about 1,000 MW of announced data center projects in the Companies' service territories: the 402 MW Camp Ground Road data center in Jefferson County and the 600 MW Project Lincoln: OC Data Center in Oldham County." Please reconcile that statement with the Companies' Response to Staff 1.18(c) in which they state there are currently no projects in the "announced" phase.
- 2.12. Please refer to the Companies' response to Staff 1.96 which states that "[i]n this proceeding, the Companies are proposing neither rates for data centers nor demand-charge discounts of any kind." Please confirm whether any such rates or discounts are part of the Companies' discussions with potential data center customers.
- 2.13. Please refer to the Companies' response to JI 1.92 referring to JI 2.15 in Case No. 2024-00326 in which the Companies' state "there is no need to evaluate [distributed capacity procurement or virtual power plants] in view of the

Companies' effective use of the demand response and distributed generation offerings."

- a. Please define the term "effective" as used in the referenced statement.
- b. Please explain the Companies' plan for promoting and increasing participation in existing demand response and distributed generation offerings.
- c. Please explain whether and how the Companies intend to increase spending or otherwise expand existing program offerings. If not, explain why not.
- 2.14. Please refer to the Companies' response to JI 1.93, which provides data on the WeCare program over the past five years showing a decline in both spending and the number of energy efficiency measures installed since 2020.
 - a. Please explain why the WeCare program investment has decreased despite increasing need for energy efficiency and affordability among ratepayers.
 - b. Explain whether the Companies plan to scale up WeCare and other bill assistance programs in light of potential rate increases from the construction of the proposed resources.
- 2.15. Please refer to the Companies' response to JI 1.106(b) and (d). When do the Companies expect the design for the BYOD programs to be complete?
- 2.16. Please refer to the Companies' response to JI 1.106(g). Please explain why the Companies have not evaluated the reasonableness of increasing the program budget for the existing Business Demand Response program given the increased urgency and size of expected load since the program was approved in November 2023.
- 2.17. Please refer to the Companies' response to JI 1.62 and explain when the Companies anticipate knowing for certain whether new interstate pipeline additions or other upgrades would be required to support the addition of either of the two NGCCs.
- 2.18. Please refer to the Companies' response to JI 1.63 and explain what is meant by the statement that Texas Eastern Transmission Company is "fully subscribed" and whether that is expected to change by the Brown 12 in-service date.
- 2.19. Please refer to the Companies' response to JI 1.71 and clarify whether the cost figure provided for Mill Creek 6 in 2050 is accurate. If so, justify the firm gas transportation cost assumed for Mill Creek 6 in 2050. If not, please provide the accurate firm gas transportation cost assumed for Mill Creek 6 in 2050.
- 2.20. Please refer to the Companies' response to JI 1.26 and AG-KIUC 1.14(e) and explain why the Companies are proposing that Brown 12 and Mill Creek 6 be owned 100% by LG&E due to expected incremental data center load when the Companies claim the two proposed NGCCs will not be used exclusively to supply

data center load and any new data center load will be supplied by all resources on a system-wide basis.

- 2.21. Please refer to the Companies' response to Staff 1.28. The Companies' assert that there is more than 2000 MW of non-data center economic development load but acknowledge that "not . . . all [] will come to fruition." Please provide the Companies' best estimation of non-data center economic development load that will likely materialize, including any analysis or support for such belief.
- 2.22. Please refer to the Companies' response to JI 1.31 and explain the following:a. Why Ghent 2 cannot utilize the SCR on Ghent Unit 3 with which it shares a
 - common stack.
 - b. Explain why the Companies installed had previously installed a SCR on Ghent Unit 3 and not Ghent 2.
- 2.23. Please refer to the Companies' response to JI 1.32(b). Please explain the Companies plan to "self-supply required NOX allowances" to operate Ghent 2 in a scenario without SCR.
- 2.24. Please refer to the Companies' response to JI 1.17. Please confirm that favorable solar panel pricing reduced costs for the Marion Solar County facility by \$11 million.
- 2.25. Please refer to the Companies' response to LMG-LFUCG 1.18 and confirm whether different customers can aggregate loads to meet the 10 MVA requirement.
- 2.26. Please refer to Direct Testimony of Stuart A. Wilson, Exhibit SAW-1 at p. 11, where it states that the Companies' Mid-Case load forecast includes annual energy reductions of 1,500 GWh by 2032 from energy efficiency and other reductions.
 - a. Please provide, in a Microsoft Excel workbook in executable format, a breakdown of the sources of the 1,500 GWh savings for each year of the planning period. Please provide a table(s) with separate rows for each category of savings listed (i.e., customer-initiated EE, AMI-related Conservation Voltage Reduction and ePortal savings, distributed generation, and the Companies 2024-2030 DSM-EE Plan amounts and assumed impacts of DSM-EE programs beyond 2030.)
 - b. Please describe the methodology the Companies followed to estimate the customer-initiated energy efficiency improvements. Please provide any and all associated workpapers.
 - c. Please describe the methodology for assigning impacts of DSM-EE programs beyond 2030 the Companies included in the forecast. Please provide any and all associated workpapers.
 - d. Please reconcile the statement in Wilson Direct Testimony of including 1,500 GWh annual energy savings amount by 2032 with Figure 12 from Direct

Testimony of Jones, at 31, which does not appear to reach 1,500 GWh until approximately 2037.

- 2.27. Please answer the following requests concerning the Companies' 2021 AMI plan.
 - a. Please state the number of AMI installations each year from 2021 to 2024, on a monthly basis.
 - b. Please provide the costs of implementing the 2021 AMI plan that are currently being collected in rate base.
 - c. Specific to customers that received AMI installation in each of calendar years 2021, 2022, 2023, and 2024, have the Companies attempted to estimate how customer usage patterns changed post-AMI installation? If so, please provide the Companies' most recent assessment of AMI installation impacts on customer usage behavior for each cohort or group analyzed.
 - d. Please specifically identify the means through which AMI installation impacts customer energy usage behavior (e.g., enhanced customer ability to reduce specific appliance loads).
 - e. Please describe the Companies' plan to encourage customer familiarity and use of energy services or features newly available post-AMI installation. (e.g., bill inserts, email).
- 2.28. Please refer to the Companies' Joint Application at pp. 8-9, showing the summer and winter capacity need based on the 2025 CPCN load forecast.
 - a. Please explain why Table 1 includes only 2 MW of Dispatchable DSM additions for summer peak load by 2032 but Table 2 includes 125 MW for winter. Please provide the composition of these MW totals in a Microsoft Excel spreadsheet, including any and all associated workpapers.
 - b. Please explain why new Dispatchable DSM additions were limited to 2 MW in summer and 125 MW in winter through 2032 and why greater amounts for these resources were not selected. Please provide any analysis conducted in the selection of these amounts of additional dispatchable DSM.
- 2.29. Curtailable Service Rider (CSR) has 107 MW summer and 111 MW winter. Please provide a Microsoft Excel spreadsheet with the customers enrolled in this, by kW of load enrolled.
 - a. Do any of these customers have backup diesel generators that are used during curtailment events? Please provide any internal tracking reports showing the installed backup capacity at each site.
 - b. How many times have the Companies called curtailment events?
 - c. Have the Companies received any interest from the customers enrolled in the CSR program about additional resilience or backup-power options, such as battery storage, on-site renewables or combined heat-power, or microgrids?
 - d. Have the Companies conducted any potential assessments or other evaluations for demand response at these customer sites?

- e. Have the Companies conducted any potential assessments at these customer sites for on-site generation, whether renewable (e.g., solar), co-generation (i.e., combined heat and power or CHP), or natural gas?
- f. Have the Companies conducted any potential assessments for microgrids at these customer sites?
- 2.30. Refer to the Direct Testimony of Tim A. Jones at 30, which states that the 1,500 GWh of EE included in the 2025 CPCN forecast by 2032 will reduce peak demand by 230 MW in summer and 171 MW in winter by 2032. Please reconcile this statement with Table 7-14 of the 2024 IRP, Vol. 1 at pp. 7-6 (pdf p. 53/135), which states that for an existing cumulative amount of EE of 1,546 GWh in 2023, there were an associated 555 MW of demand savings.
- 2.31. Please refer to Exhibit SAW-1 at 20, which shows Limited Duration Dispatchable DSM Resources (BYOD Energy Storage = 0.89 MW; BYOD Home Generators = 0.85 MW; BDR 50-200 kW = 1.45 MW, summer and winter) for a total of 3.19 MW.
 - a. Please explain how these figures were determined.
 - b. Please provide any market potential studies that have been prepared regarding the Dispatchable DSM programs shown in Table 5.
 - c. How do these figures reconcile with Tables 1 and 2 in the Companies' Joint Application at pp. 8-9, which provide that Additions of Dispatchable DSM equate to 1 MW in summer and 125 MW in winter in 2030?
- 2.32. Please refer to Exhibit SAW-1 at 20, which states "[t]he Companies' load forecasts fully account for the energy efficiency effects of the proposed 2024-2030 DSM-EE Program Plan as well as such programs beyond 2030; the combined impact of company-sponsored programs and customer-initiated energy efficiency improvements is assumed to grow throughout the planning horizon."
 - a. Please provide a Microsoft Excel spreadsheet with the incremental annual and cumulative annual MWh assumed for each year in the planning horizon for the 2025 CPCN load forecast.
 - b. For the 2024-2030 period covered by the 2024-2030 DSM-EE plan, please provide these broken out by sector, program, and measure.
 - c. For the period beyond 2030, please describe how the Companies estimated growth beyond the 2024-2030 DSM-EE plan levels. Please provide the annual incremental and annual cumulative amounts.
- 2.33. Please refer to Exhibit SAW-1 at 39, which shows the 2032 LG&E/KU Generating and DSM Portfolio in Table 16.
 - a. Please provide all evaluations of the Demand Conservation Program (DCP).
 - b. Please provide, in a Microsoft Excel spreadsheet, the net max summer and winter capacity (MW) by year for each year of the planning horizon, broken out by residential and non-residential customer classes.

- 2.34. Please refer to Direct Testimony of Tim A. Jones at p. 30, referring to the impact of previous EE on the statistically adjusted end use model and usage per customer trends. In the 2024 IRP, Vol. I at pp. 7-15 (pdf p. 61/135), which states, "[f]rom 2010 to 2023, residential and commercial weather- normalized use-per-customer decreased by a total of 10% and 13%, respectively, due primarily to customer-initiated energy efficiency and the Companies' DSM-EE programs."
 - a. Please confirm that this statement refers to the fact that the Companies' view is that previous efficiency achievements and observed load reductions are reflected in the SAE methodology to forecast future residential and commercial sales, and therefore are already accounted for in its load forecast. If anything but confirmed, please explain.
 - b. Did this trend contribute to any decisions made by the Companies regarding whether or not to model increased levels of DSM in the future?
 - c. Given that the past observed reductions in customer energy usage were "primarily driven by customer-initiated energy efficiency and the Companies' DSM-EE programs", is it the Companies' opinion that these reductions will persist, even if funding levels are not continued at the same levels?
 - d. Do the Companies have an estimate for how much of the embedded past efficiency was due to customer-initiated EE versus EE driven by utility programs?
- 2.35. Regarding multifamily DSM-EE programs, please answer the following requests:
 - a. Please provide details about historical participation in the Companies' DSM-EE program offerings (Program name, MWh per year, # of projects, incentives paid) for renters (both single family and multifamily).
 - b. Have the Companies evaluated barriers to participation in multifamily and renters energy efficiency or DSM-EE programs? Please provide any third-party evaluations or internal studies conducted for this market sector. If none have been conducted, please explain the rationale behind not evaluating this market segment.
- 2.36. Please refer to the Commission's November 6, 2023 Order in Case 2022-00402², at 149, which describes the proposed Business Solutions program, and answer the following requests.
 - a. Please provide estimated total installed cost of each measure offered in the audit, and the incentive level. If no data on installed cost is available, please describe what portion of the total installed cost the Companies estimate must be covered by the customer.
 - b. Does the Small Business Audit and Direct Install program provide options for no-cost or reduced cost financing options? If yes, please describe the loan

² 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 and Approval of Fossil Fuel-Fired Generation Unit Retirements, Case No. 2022-00402, Order at 149 (Ky. PSC Nov. 6, 2023)

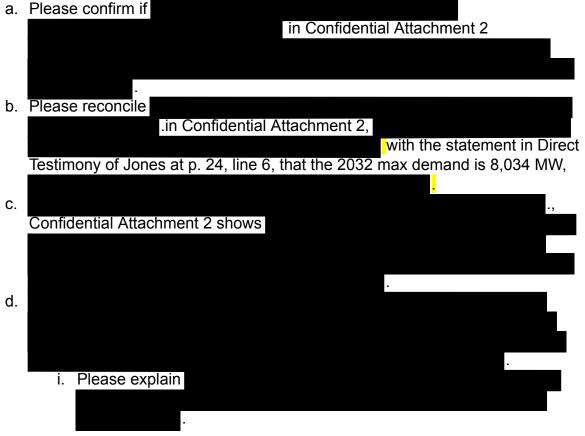
terms offered (loan period, interest rate, any down payment requirements, credit score, etc.). If no, please clarify whether the Companies have evaluated financing options for Direct Install or are aware of any other utilities offering turnkey financing options for small business direct install programs, and provide any and all workpapers.

- 2.37. Please refer to Direct Testimony of Lana Isaacson in Case 2022-00402, at p. 12, lines 5-13, regarding DSM-EE opportunities for large customers.
 - a. Strategic Energy Management (SEM) is a method to engage large C&I customers in active management of their energy usage through continued education and behavioral incentives, such as paying for facility operators to attend efficiency trainings, developing lists of energy improving actions at the site, and implementing better O&M practices to reduce wasted energy. Have the Companies considered offering Strategic Energy Management to large C&I customers? Please explain why or why not.
 - b. Have the Companies previously conducted any site energy audits for large customers that identify potential energy saving opportunities, demand response potential, or on-site renewable potential? If so, please provide copies of all reports and associated workpapers. If not, please explain why the Companies have not engaged large customers in such audits.
 - c. Please provide data regarding DSM-EE opt out customers, in a Microsoft Excel spreadsheet, containing a single row for each customer grouping, with the following columns:
 - i. Industry type (SIC or NAICS, or other similar internal Companies' categorization);
 - ii. Count of opt-out customers;
 - iii. Average MWh billed over the last 12 complete billing cycles;
 - iv. Average monthly peak demand during summer months over the last 12 complete billing cycles; and
 - v. Average monthly peak demand during winter months over the last 12 complete billing cycles.
- 2.38. Please refer to Direct Testimony of Lana Isaacson in Case 2022-00402, Exhibit LI-1, at 2, which states that the Cadmus EE potential assessment did not include increases in high-efficiency equipment standards or other emerging technologies since the 2016-17 study, and answer the following requests.
 - a. Do the Companies include any level of emerging technologies in the long-term DSM-EE forecast used in its 2025 CPCN forecast? If yes, please provide annual MWh by technology type and sector/program, in Microsoft Excel format. If no, please justify not included emerging technologies in a long-term outlook.

- b. Do the Companies have an established process to identify and evaluate emerging technologies for DSM-EE measures or programs? Please describe and provide any and all workpapers.
- c. Do the Companies have an established process to test and validate emerging technologies for DSM-EE in terms of field performance, i.e., to develop and conduct pilots or field tests? Please describe and provide any and all workpapers and any previous pilot program evaluation reports for measures not already included in DSM-EE program offerings included in the 2024-2030 DSM-EE Plan.
- d. Thermal energy storage (e.g., ice storage, or phase change materials) can be used to shift commercial HVAC loads to nighttime and have been shown to provide good load shifting and peak-shaving capabilities. Have the Companies analyzed the potential for thermal energy storage (TES) for inclusion in its DSM portfolio, or otherwise explored developing an incentive offering for this technology type? Please provide any associated internal workpapers.
- 2.39. Please refer to Direct Testimony of Isaacson in Case 2022-00402, Exhibit LI-1, at
 - 2, which describes the three types of DSM market potential included in the study.
 - a. Please provide details of the measure characterization used for the study, in Microsoft Excel format, for each year of the forecast period from the most recent DSM potential study, including as many of the following fields as are available:
 - i. Sector (Residential, Commercial, Industrial, Agricultural)
 - ii. Program (if applicable)
 - iii. End Use Type (e.g., water heating, space heating, etc.)
 - iv. Measure Name
 - v. Measure Description
 - vi. Efficiency level (e.g., UEF, ENERGY STAR TIER, COP)
 - vii. Load Profile Name
 - viii. Baseline saturation %
 - ix. kWh per unit savings
 - x. Unit type
 - xi. Measure Life
 - xii. Replacement Type (replace on burnout, lost opportunity/new construction)
 - xiii. Baseline equipment type
 - xiv. Baseline equipment efficiency (and source)
 - xv. Total Cost
 - xvi. Incremental Cost
 - xvii. Incentive

- Please provide annual incremental and annual cumulative MWh savings in Microsoft Excel format for each potential types (Technical Potential, Economic Potential, Achievable Potential) from the most recent DSM potential study, including the following fields:
 - i. Sector (Residential, Commercial, Industrial, Agricultural)
 - ii. Program (if applicable)
 - iii. End Use Type (e.g., water heating, space heating, etc.)
 - iv. Measure Name
 - v. Measure Description
 - vi. Annual MWh
- c. Please provide the 8760 or 12x24 load profiles for each measure grouping used to characterize the EE resource potential that the Companies' use in altering the 2025 CPCN load forecast. If providing in a 12x24 format, please provide both weekday/peak day profiles as appropriate.
- 2.40. Regarding Manufactured Home Replacement, please answer the following requests:
 - a. A Manufactured Home Replacement program is one option to overcome the unique market barriers to retrofitting specific end-use equipment within existing manufactured homes, recognizing that it can be cheaper and more efficient to replace the entire unit versus making incremental improvements. Have the Companies evaluated the potential for a Manufactured Home Replacement program?
 - b. Please provide residential customer counts by dwelling type (single family, multifamily, manufactured home)
 - c. Please provide residential customer counts by dwelling type (single family, multifamily, manufactured home) and by estimated construction year
 - d. Please provide the recent historical monthly residential energy usage for 2022-present broken out by dwelling type (single family, multifamily, manufactured home)
 - e. Please provide the residential energy usage forecast for the planning period broken out by dwelling type (single family, multifamily, manufactured home).
 - f. Have the Companies offered specific programs tailored to manufactured homes in the past? Please provide any in-house or third-party evaluations of past pilot programs or programs serving this market sector.
- 2.41. Please refer to the Companies' response to JI-1 1.93(e) provided as Confidential Attachment 1, regarding the determination of avoided capacity costs for EE and DR resources.
 - a. Please provide copies of each table in Attachment 1 in Microsoft Excel format.
 - b. Please provide all workpapers used to derive the avoided capacity costs in table 1 through table 7, in Microsoft Excel format, with all cell formulas intact.

- c. Please provide all workpapers, in Microsoft Excel format, with all cell formulas intact, showing the derivation of
- , including labeled input assumptions. d. Please confirm, and provide
- e. Do the Companies attribute any Transmission capacity deferral credit to DR and EE programs in calculating program cost effectiveness? If yes, please provide the \$/kW-yr assumed along with any and all associated workpapers. If no, please justify.
- f. Do the Companies attribute any Distribution capacity deferral credit to DR and EE programs in calculating program cost effectiveness? If yes, please provide the \$/kW-yr assumed along with any and all associated workpapers. If no, please justify.
- 2.42. Please refer to the Companies' response to JI-1 1.93(e) provided as Confidential Attachment 2 20241021_LAK_2025BP_IRPUpdate_MarginalCost_2025-2050. Please also refer to Direct Testimony of Jones at p. 24, lines 4-8, describing the hourly system load profile for the 2025 CPCN load forecast.



- ii. Please explain
- iii. Please explain whether the Companies have ability to sell surplus energy to other counter-parties through bilateral day-ahead, week-ahead, or other types of forward contracts during peak demand periods.
- iv. Please explain whether, in the Companies' view, having greater amounts of demand-side resources such as DSM-EE (both dispatchable and traditional EE) would provide additional system benefits from selling excess capacity to counter-parties through such contract mechanisms, regardless of the Companies' capacity need.
- 2.43. Please refer to the Companies' response to JI-1 1.93(e), provided as Confidential Attachment 3 20220630_LAK_AvoidedCapacityCost_Jhayden_DR, which represents the avoided cost of capacity values assumed in Case No. 2022-00402.



2.44. Please refer to Confidential Attachment 1 to Response to JI-1 1.93(e), at 1, which states

Please also refer to Exhibit SAW-1 at 20, which shows the Capacity Contribution of Dispatchable DSM, CSR, and BYOD Energy Storage.

- a. Please confirm or deny that the levels of cost-effective DSM-EE included in the 2025 CPCN forecast were developed using avoided capacity costs developed under 2022-0042 DSM-EE and that they assumed a SCCT as the capacity resource proxy. If deny, please provide evidence of where this change is noted and provide any and all associated workpapers.
- b. Please confirm or deny that the 39% capacity contribution shown in Table 5 of Exhibit SAW-1 for the above referenced energy-limited resources was developed using comparison to a SCCT and associated forced outage rates. If deny, please provide evidence of where this change is noted and provide any and all associated workpapers.
- c. Has the Company conducted any subsequent LOLE or resource capacity contribution modeling for energy-limited resources like Dispatchable DSM, BYOD energy storage, or CSR

resource proxy as opposed to a SCCT? If yes, please provide the updated capacity contribution values for each, along with any and all supporting workpapers. If not, please explain whether the Company plans to modify capacity contribution calculations in the future to reflect this change, and what expected directional impacts it would have.

- 2.45. Please refer to the Companies 2024 IRP, Volume III Resource Adequacy study, section 5.10 at 29, regarding scarcity pricing used in evaluating the economic reserve margin, and answer the following requests.
 - a. Please provide the model inputs and outputs of the SERVM model instance used to support the 2024 IRP Mid and High cases, including (as available) hourly load forecasts, generation from each source (coal, gas, solar, wind, hydro, other), market purchases/sales, market price assumptions and assumed weather inputs.
 - b. Please confirm or deny that the energy avoided cost values associated with the Companies' EE and DR programs reflected in its 2024-2030 DSM-EE plan levels is based upon the system hourly marginal cost prices provided in Confidential "20220803_LAK_2023BPMarginalCost." If deny, please describe the source of the energy avoided cost values and provide any and all associated workpapers.
 - c. Please explain the large difference between the marginal cost prices used in developing avoided costs for EE and DR, and the scarcity pricing values underlying the economic reserve margin calculation.
 - d. Do the Companies

If so, please explain, and provide any references or workpapers. If not, please justify.

- 2.46. Please refer to Direct Testimony of Tim Jones at page 37, describing the forecast of distributed generation capacity.
 - a. Please provide the annual incremental adoption figures, in a Microsoft Excel spreadsheet, showing nameplate kW of net-metered rooftop solar and distributed QFs separately. In the spreadsheet, please include five columns including: Year, kW, Sector (Residential, Non-Residential), Number of projects, and flag for rooftop or QF.
 - b. Please provide the annual incremental adoption figures, in a Microsoft Excel spreadsheet, showing BTM storage. In the spreadsheet, please include four columns including: Year, kW, Sector (Residential, Non-Residential), Number of projects.
 - c. Please provide the annual incremental adoption figures, in a Microsoft excel spreadsheet, showing nameplate kW of any other solar or storage interconnections the Companies are aware of and tracking. In the spreadsheet, please include four columns including: Year, kW, Sector (Residential, Non-Residential), Number of projects.
- 2.47. Please refer to the Direct Testimony of Tim A. Jones at p. 32, lines 12-17, which states "Batteries can only increase total energy consumption for residential customers due to AC-to-DC losses when charging and DC-to-AC losses when discharging. Given that the vast majority of residential customers take service under Rate RS, which has a flat rate per kWh and no demand charge, this can only mean a more expensive energy proposition for the battery alone for most of the Companies' residential customers."
 - a. Admit that the Companies have freedom and wherewithal to suggest alternative rates, programs, and/or incentives to alter the economic proposition facing residential and commercial customers with respect to adopting battery storage technologies, as opposed to simply taking the fact that most customers are on a flat rate as a given.
 - b. Have the Companies evaluated any alternative rate designs (including different peak to off-peak ratios, time windows, or seasonal differences) to its current Time of Use rate design? If yes, please describe why the current TOU rate design was chosen over the alternatives and provide any and all workpapers. If no, please explain why the Companies did not evaluate any alternatives.
 - c. Have the Companies evaluated different TOU rate designs or incentive mechanisms that could provide economically attractive incentives to battery storage customers to align their consumption and export profiles to achieve higher grid value? If yes, please provide any and all workpapers. If no, please describe why not.
 - d. Please provide any and all workpapers and evaluations the Companies have completed in developing and implementing its TOU rates.

- e. Do the Companies admit that a possible use case for customers adopting storage is to mitigate peak demand charges, such as is the case for PS customers?
- f. Have the Companies studied the potential for storage adoption at PS customer classes, including by evaluating the payback or other economics of installing battery storage for purposes of reducing the demand charge? If yes, please provide any and all workpapers. If no, please describe why not.
- 2.48. Please refer to Direct Testimony of Tim A. Jones at p. 33, lines 5-10, which refers to customers adopting storage to act as backup power supply.
 - a. Have the Companies conducted any evaluation of customer motivations, preferences, and experiences with battery storage to justify this claim? Please justify and provide any and all workpapers or third-party evaluations that informed its position.
 - b. Do the Companies admit that, even if a customer with storage intends their system primarily for backup power use cases during extreme conditions, there are likely significant numbers of hours throughout the year under "blue sky" conditions where energy shifting may be valuable and mutually desirable to both the customer and the utilities?
- 2.49. Please refer to Direct Testimony of Tim A. Jones at p. 34, lines 10-12, which cites an NREL 2022 report³ and states that the Companies' storage attachment rates are in line with most other states, and that there is no reason to believe the Companies' penetration would approach that of California.
 - a. Do the Companies see potential future value for residential and commercial BTM storage to act as a grid resource, for example when coordinated for charging and discharging along with normal utility planning and operations?
 - b. Do the Companies admit that the utilities play an important role in developing and expanding a future market for distributed storage?
 - c. Please refer to Table 2 and Table 3 of the cited NREL report regarding policies and associated utility actions that can advance distributed storage adoption, by market preparation, market creation, and market expansion. In the Companies' opinion, which of these items have the Companies met through its current planning and proposed program offerings?
- 2.50. Please refer to Direct Testimony of Tim A. Jones at p. 36, Fig. 13, and the 2024 IRP Figure 7-3, showing a decline in annual BTM battery storage adoption and stating that "[i]t is worth noting that after an uptick in 2021 and 2022, incremental battery storage adoption in 2023 fell off significantly." Please provide an update to the data behind the referenced figures, showing 2016 through year-end 2024, in a Microsoft Excel spreadsheet. Please include columns for Year, Month, Nameplate kW, Sector (Res, Non-Residential), and number of projects.

³ NREL, Check the Storage Stack: Comparing Behind-the-Meter Energy Storage State Policy Stacks in the United States (Aug. 2022).

- 2.51. Please refer to 2024 IRP at p. 7-21 (pdf p. 68/135), which states "[a]II net metering forecasts were created using a consumer choice model, in which the ratio of net-metering customers to total residential customers is predicted by the avoided cost-to-LCOE ratio, which is weighted by the potential universe of net-metering customers per company. The avoided-cost-to-LCOE ratio is computed as a function of the above economic factors."
 - a. How do the Companies define the "potential universe of net-metering customers"?
 - b. Please provide all workpapers showing the calculation of the avoided cost-to-LCOE ratio, including the sources and derivation of the inputs (namely, the avoided cost values and LCOE calculation), and how it is applied to the potential universe of net-metering customers.
- 2.52. Please refer to 2024 IRP, at pp. 7-22 (pdf p.69/135), which states, "[t]his lessens the benefits of selling back to the grid, so it is assumed that customers will be less likely to overbuild their solar installations. However, the number of customers choosing to install solar will be less affected; average customer growth after the cap is hit is not adjusted in the mid forecast. This is similar to the Companies' distributed generation forecast in the most recent CPCN."
 - a. Please confirm that this means the Companies did not alter the estimates trajectory of the mid-case number of projects based on the 1% net-metering cap, but that it did alter the sizing of systems installed.
 - b. Please explain how the Companies determined the relative impact of the reduction in "oversizing" based on reducing the net-export credit from the full retail rate to the QF avoided cost rate. Please provide any and all workpapers supporting this assumption.
 - c. Please provide the estimated average size of BTM solar installations in each year of the Companies' planning period, segmented by residential and non-residential.
- 2.53. Please refer to Direct Testimony of John Bevington in Case 2022-00402, at p. 14, lines 1-7, which describes future plans for studying DSM-EE programs that incorporate rooftop solar and the feasibility of including this in future DSM-EE program plans.
 - a. Have the Companies conducted any internal or external evaluations related to potential program designs for rooftop solar since filing its application in Case 2022-00402? If so, please provide any and all workpapers, evaluation reports, internal memoranda, or other summaries of the evaluation(s).
 - b. Have the Companies initiated plans for any pilot programs relating to how rooftop solar could interact with other DSM-EE program designs?
 - c. Have the Companies initiated plans for any pilot programs relating to how rooftop solar could interact with other DSM-EE program designs?
- 2.54. Please refer to Direct Testimony of Stuart A. Wilson, at p. 5, line 7, through p. 6, line 1, regarding the LOLE analysis for the 2024 IRP. Please provide the LOLE

heat maps, in Microsoft Excel format, for each year throughout the study period showing the relative resource adequacy need in each month-hour (i.e., a 12x24 matrix).

- 2.55. Please refer to Direct Testimony of Stuart A. Wilson, at p. 8, footnote 8, related to the solar output during recent Winter storms. Please provide hourly solar output estimates, based on billing or direct metering where possible, and estimates otherwise, for each large solar PPA throughout the duration of each previous winter storm, including one day prior to the storm onset.
- 2.56. Please refer to the Companies' 2024 IRP, Vol. III Resource Adequacy Study at 18, which shows the generation profiles used for capacity contribution analysis in SERVM, and answer the following requests.
 - a. Please explain the Companies' rationale for using a reference profile of "2032 less solar" to evaluate future capacity contributions of energy-limited resources.
 - Please clarify if the adjustment to remove solar from the reference portfolio in Table 10 is supply-side solar, distributed solar (rooftop and QFs), or some combination thereof.
 - c. Please provide the hourly load profile for the reference scenario before and after this adjustment, with separate columns for the amount of solar removed due to supply-side and distributed solar generation, as applicable.
 - d. Did the Companies' resource adequacy modeling in the 2024 IRP evaluate portfolio interactive effects of different resource combinations, such as adding solar and storage together, or solar and dispatchable DSM? If yes, please provide the combined ELCCs of the different scenarios studied. If no, please explain why possible interactive effects were not considered.
- 2.57. Please refer to Exhibit SAW-1, at 6, which states, "Finally, given limitations on the availability of these resources, the Companies determined the levels of economic development load they can serve as the optimal resources are placed in service." Flexible connections are a tool to allow interconnection of load or generation with pre-established rules for curtailing demand/output under certain conditions. Have the Companies evaluated flexible connections as an opportunity to interconnect new economic development loads and data center loads? If yes, please summarize the steps taken to evaluate and the conclusions reached by the Companies. If no, please describe why not.
- 2.58. Please provide the power flow models in PSS/E machine-readable, executable format for the system impact studies and facilities studies which resulted in the list of interconnection facilities for each generation option.
 - a. Please provide the associated monitored element files (.MON) used for the system impact studies.
 - b. Please provide the associated contingent element files (.CON) used for the system impact studies.

- c. Please provide the associated subsystem definition files (.SUB) used for the system impact studies.
- 2.59. Please provide the PSS/E output in machine-readable format used to generate the results of the system impact studies.
- 2.60. Have any transmission system upgrades from affected systems been identified? If so, please provide the following:
 - a. Please provide the power flow models in PSS/E machine-readable, executable format for the affected system studies which resulted in the list of network upgrade for each generation option.
 - b. Please provide the associated monitored element files (.MON) used for the affected system studies which resulted in the list of network upgrade for each generation option.
 - c. Please provide the associated contingent element files (.CON) used for the affected system studies which resulted in the list of network upgrade for each generation option.
 - d. Please provide the associated subsystem definition files (.SUB) used for the affected system studies which resulted in the list of network upgrade for each generation option.
 - e. Please provide the PSS/E output in machine-readable format used to generate the results of the affected system studies which resulted in the list of network upgrades for each generation option.
- 2.61. Please provide the methodology used by the ITO in performing system impact studies and facilities studies.
- 2.62. Please provide the Facility Connection Requirements document that served as the guide for the interconnection facilities for the generation options.
- 2.63. Please provide the language that describes how BESS facilities are studied by the ITO.
- 2.64. Please provide the transmission planning criteria used by the ITO for evaluation of interconnection and transmission service studies.
- 2.65. Please provide the three most recently approved transmission expansion plans for LG&E/KU.
- 2.66. Please describe how the LOLE is impacted by the configuration of the transmission system. If the transmission system does impact LOLE, please explain how this impact is captured in the LOLE calculation.
- 2.67. Please provide the cost and specific facilities breakdown of transmission facilities broken down into: Interconnection Facilities, Network Facilities, and Affected System Facilities for the BESS and generation options.
- 2.68. What is the Companies' philosophy on the use of BESS to impact LOLE?

- 2.69. Please describe the process for including large load additions into the ITO power flow models, including:
 - a. When are the load additions included in the power flow models?
 - b. When are transmission facilities associated with the load additions included in the power flow models?
- 2.70. Please provide the application used for load additions to enter the interconnection queue.
- 2.71. Please refer to the Companies' response to JI 1.25, and provide:
 - a. The interconnection request for Brown 12;
 - b. The date the interconnection request for Brown 12 was submitted;
 - c. The interconnection requests for Mille Creek 6, and Brown 12, when they are completed;
 - d. The average time from submission of interconnection requests by the Companies to final decision.
- 2.72. Please refer to the Direct Testimony of Philip A. Imber at 13-15:
 - a. Are the Companies' aware of ongoing litigation over the status of the GHG Rule? Please describe the current status of any such litigation.
 - b. If the GHG Rule were to remain in place, or if a subsequent administration were to enact a rule with similar restrictions applicable to Brown 12 and Mill Creek 6, how would they comply with such a rule?
 - c. If the answer to b., above, is based on capacity or dispatch limitations, what effect would that have on the cost-effectiveness of the chosen resources?
- 2.73. Please refer to the Companies' Response to Staff 1.7, and verify whether [t]he Companies have sufficient space at currently-owned generation properties to construct the additional generation required to serve the noted additional load" after compliance with the 2024 updates to the coal combustion residuals and effluent limitations guidelines rules.
- 2.74. Please refer to the Companies' response to Staff 1.11(a) and state what "queues" the Companies are in for generation work outside the scope of this application.
- 2.75. Please refer to the Companies' response to Staff 1-14 and state:
 - a. Is there physical space in the line serving Mill Creek now to accommodate Mill Creek 6, or would it need to be expanded? If expanded, what would the estimated cost be?
 - b. Is there physical space in the line serving Brown station now to accommodate Brown 12, or would it need to be expanded? If expanded, what would the estimated cost be?
- 2.76. Please refer to the Companies' response to JI 1.5., and state the following:
 - a. The Intended peak demand, demand curve, annual energy requirement, and specific location of "Project Shelby"
 - b. Have any Data Center projects signed a service agreement?

- c. Confirm no data centers have moved to the "announced" phase.
- d. Has the Company determined whether any of the potential customers have submitted the same project to another utility's economic development queue?
- e. To the extent known, and subject to the confidentiality agreement with Joint intervenors, disclose the identity of all potential customers in the economic development queue.
- f. For each project that is a data center listed in the queue, in addition to the identity, disclose whether it is a developer to lease or an end-user (i.e., a "colocation" project or a "hyperscaler")

[Signature on next page]

Respectfully Submitted,

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

CERTIFICATE OF SERVICE

In accordance with the Commission's July 22, 2021 Order in Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19*, this is to certify that the electronic filing was submitted to the Commission on May 2, 2025; that the documents in this electronic filing are a true representation of the materials prepared for the filing; and that the Commission has not excused any party from electronic filing procedures for this case at this time.

Byron L. Gary