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

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

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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.

19. “EPA” means the United States Environmental Protection Agency.

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.

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

2.1. Refer to the Companies' response to Joint Intervenors Q.1.123.c.i regarding fuel switching from electric to gas.

   a. Have the Companies proposed any fuel switching from electric to gas measures in their EE/DSM Plan? For any answer other than "no" please provide a detailed description of the measure(s), the program in which the measure(s) will be offered, and the expected program expenditure for the measure(s) by year.
   b. Please confirm that the Companies have included fuel switching from fossil fuel end uses to electricity in their projection of the impacts on the load forecast of IRA investments.

2.2. Refer to the Companies' response to Joint Intervenors Q-1.125.b. The Companies state that "there are alternate, lower cost options available now that were not available at the time of the initial direct load control deployment which may be installed at a customer's request if a switch fails."

   a. This statement implies that the Companies only address switch failures at the request of customers. Is this accurate?
   b. Please describe any proactive efforts the Companies take to enroll current Connected Solutions customers in load control programs that rely on "alternate, lower cost options."
      i. Do the Companies engage with Connected Solutions customers regarding alternate, lower cost options only after a switch fails, or do the Companies proactively work to sustain the participation of Connected Solutions customers in DLC initiatives by encouraging them to obtain alternate participation options? Please explain.

2.3. Refer to the Companies' response to Joint Intervenors Q-1-126.b. Please provide a list of each measure or measure category for which multi-family property owners were offered a 50% incremental cost incentive in 2021 and 2022, including the number of times an incentive was offered for each measure or measure category and the number of times for each measure or measure category the property owner accepted the incentive and installed the measures. In other words, please provide the acceptance rate and number of installations for each measure or measure category offered to multi-family property owners for 2021 and 2022.

2.4. Please refer to the Companies' response to Joint Intervenors Q-1.129.a.

a. In each scenario the attachment provided assumes a 40% down payment on the Total project cost to reduce the PAYS project cost from $7,592 to $4,555.

    i. Have the Companies made any assumptions regarding how the down payment would be paid? For instance, do the Companies assume that participants will pay the 40% down payment from their own funds, or do the Companies assume that the 40% down payment will be paid through a program incentive? Please explain.

b. The Companies appear to assume that certain categories of costs, including Program Set Up Cost, Direct Program Labor, Office Supplies and Expenses, Training, Advertising, and Evaluation are the same regardless of the number of participants.

    i. Please confirm that the Companies position is that these costs would not vary with participation.

    ii. If subpart b.ii. is confirmed, please explain why this would be the case. For example, why would 100 participants require the same level of Direct Program Labor as 1000 participants? Why would 100 participants require the same level of Advertising as 1000 participants?

c. The notes for the budget category "Outside Services" and the budget category "Rebates" both indicate that the costs are attributable to interest buydowns.

    i. Please explain, in detail what is included in the budget category "Outside Services" and the budget category "Rebates" and confirm that there is no duplication of costs.

d. Does the analysis in the attachment assume that the only rebates or incentive provided by the Companies are to buy down interest rates, or does the analysis assume there would also be direct rebates or incentives? Please explain.

2.5. Please refer to the Companies' response to Joint Intervenors Q-1.129.h, which explains that Ex. JB-3 "does not make any assumptions related to federal incentives" for energy efficiency upgrades, and states that "At the time the analysis was finalized, the Companies did not know the incentives that will be available through the Inflation Reduction Act, eligibility specifics, and application processes."

a. Please confirm that Ex. JB-3 does not include any assumptions related to federal incentives, including federal incentive programs that pre-date the Inflation Reduction Act. If not confirmed, please explain.

b. In the Companies' view, could incentives for energy efficiency provided under the Inflation Reduction Act impact the cost-effectiveness results provided in Ex. JB-3? Please explain.

c. In the Companies' view, could incentives for energy efficiency provided under the 2021 Infrastructure Investment and Jobs Act (IIJA) impact the cost-effectiveness results provided in Ex. JB-3? Please explain.

2.6. Please refer to the Companies response to Joint Intervenors Q-1.130.

a. What is the basis of the Companies' 15 year measure life assumption?
b. Please confirm that the file "DSM Savings Summary_Cadmus_Final_D02" included in Exhibit TAJ-3 PUBLIC indicates on the tab "Combine InputMeasure" in cell W5 that the EUL for "KU-WeCare Weatherization Project - Single Family - Complete Package" is 20 years. For any answer other than "confirm" please explain the response in detail.
c. Why would it be reasonable for the Companies to assume different measure lives for a single family weatherization project and a PAYS project? Please provide any justification the Companies believe support its decision to model PAYS with a 15 year life.

2.7. Please refer to the Companies' response to Joint Intervenors Q-1.131.c.i: "Cadmus selected the scenario population assumptions using realistic expectations for the number of potential participants from historic performance for similar programs in Kentucky."

a. Please confirm that the basis Cadmus used for determining "realistic expectations for the number of potential participants" is the "historic performance for similar programs in Kentucky." For any answer other than "confirm" please provide all data sources used to determine "realistic expectations."
b. Please confirm that the "historic performance for similar programs in Kentucky" would not account for incentives created, increased, or expanded by the Inflation Reduction Act. If anything but confirmed, please explain.

2.8. Please refer to the Companies' response to Joint Intervenors Q-1.131.c.ii, referring to "economies of scale."

a. Confirm that the Companies did not reflect any economies of scale in their PAYS analysis other than in the Outside Services and Rebates budget categories.

2.9. Please refer to the Companies' response to Joint Intervenors Q-1.134.b. Please provide a list of all criteria, including the weighting of each, used in the potential study to "calculate the achievable potential."

a. Did the potential studies consider the effect that enhanced program design, outreach/marketing, technical support, and/or incentives could have in increasing the "achievable potential?" Please explain.

2.10. Please refer to the Companies' responses to JI 1.109 and JI 1.103, and answer the following requests.

a. If the Companies do not track income data on customers, on what basis did the Companies determine an appropriate number of customers to reach through income-qualified programs? Please explain.
b. If the Companies do not have any data quantifying the customers that may be eligible for income-qualified programs, on what basis did the Companies determine to expand the eligibility threshold from 200% FPL to 300% FPL? Please explain.

2.11. 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" as well as to the Companies response to Joint Intervenors Q-1.135.

a. How many households with incomes at or below 300% of the federal poverty level are served by the Companies and thus would be eligible to participate in the WeCare program with the proposed income qualification?
b. How many households with incomes at or below <u>200%</u> of the federal poverty level are served by the Companies and thus are currently eligible to participate in the WeCare program?
c. Regarding the Companies' response to Joint Intervenors Q-1.135(b), please explain in full why the Companies will not use any of the following data categories to target eligible customers: (i) energy use; (ii) bill payment history; (iii) arrearage history; and (iv) receipt of fuel assistance.

2.12. Please refer to the Companies' response to Joint Intervenors Q-1.135.b. The original question is reproduced here for convenience: "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. <u>***If no, please explain why not***</u>." (emphasis added).

a. Please answer the question asked by explaining why the Company will not use the listed data that are available to them to target eligible customers to participate in the WeCare program.

2.13. Please refer to the Companies' response to Joint Intervenors Q-1.136.a.

a. Do the Companies believe that the proposed 10% estimated cost increase from the 2019-2025 Plan for WeCare measures is sufficient?
b. If costs are in fact, higher on average than the 10% estimate what would be the effect on the We Care program? Would fewer measures be installed per household, or would fewer households be served? Or, would the Companies request additional budget approvals to ensure that the impact of the program would not be diminished?

2.14. Please refer to the Companies’ response to Joint Intervenors Q-1.136.b.

a. Confirm that the Companies do not maintain any records of appropriate energy efficiency upgrades that are not installed in participating customers’ homes, and thus have no basis for determining whether the average allowable measure cost is appropriate for addressing the opportunities available to save energy for participating customers. For any answer other than “confirm” please explain.
b. Given the Companies do not track opportunities that are foregone in participating customers’ homes, how is calibrating potential in the potential studies to historic performance a reliable indicator of potential?

2.15. Please refer to the Companies’ response to Joint Intervenors Q-1.137.b, stating “The goal is to maximize funding options available to participating income qualified customers using both the available IRA funds and DSM/EE funds.”

a. Have the Companies estimated the amount of funding that may be available to its customers through the IRA? If yes, please provide the Companies’ estimates and assumptions related to IRA funding for its customers, including the amount it believes may be available through each of the programs it has identified as likely funding sources.

2.16. Please see Exhibit TAJ-1, p. 22: “the energy efficiency reflected in the figure above results in summer peak demand reductions in 2035 through 2038 ranging from 341 MW to 367 MW and winter peak demand reductions ranging from 256 MW to 279 MW. In 2043, the resulting summer peak demand reduction is 406 MW, and the winter peak demand reduction is 313 MW.”

a. Do the figures in the cited statement include demand response MW reductions, or only demand reductions associated with energy efficiency?
b. Please provide a breakdown of the different sources of demand reductions, by year through 2043, to make clear how much comes from the Companies’ EE and DR programs and how much comes from customer-initiated projects.
c. Please provide a specific reference in the TAJ-3 workpapers showing the calculations that support the statement.

2.17. Please see Exhibit TAJ-1, p. 22: “the Companies have not explicitly forecasted energy requirements reductions resulting from energy efficiency for industrial customers, and the DSM-EE programs were assumed to reduce only residential and commercial loads.”

a. Do the Companies have any information based on major accounts management or otherwise on whether their opted-out industrial customers are installing energy efficiency measures of their own volition?
b. Did the Companies include projections of customer-initiated energy efficiency by industrial customers in its load forecasts? If yes, please explain the Companies’ assumptions and estimates, and provide their basis. If no, Please explain why they did not.

c. Please describe any requirements for industrial customers to choose to opt-out.
d. Please explain any reporting requirements for the Companies' industrial customers who elect not to participate in the Companies energy efficiency programs.

2.18. Please refer to the Companies response to Attorney General's Q-67.a.
a. Please provide the annual budgets for each year in the columns headed with "Current Budget for 2024 & 2025" and "New Budget for 2024-2030."

2.19. Please refer to the Companies' response to Commission Staff Q-20.e, which states "the Commission approved the Companies' request to cease the [New Home Construction Rebates] program in Case No. 2014-00003, at which time the Companies had achieved maximum results."
a. Please explain what the Companies mean in stating the program "had achieved maximum results."
b. What criteria determined that the Companies "had achieved maximum results"?

2.20. Please refer to the Companies' response to Commission Staff Q-33.a: "The Companies' assumed energy-efficiency savings are already near or at the upper bounds of reasonableness given existing technology and economics."
a. Please explain, in detail, how the Companies define the terms "upper bounds," "reasonableness," "existing technology," and "economics."
b. Is the Companies' determination that higher levels of energy-efficiency savings would not be reasonably achievable based on the potential studies?
c. Are the Companies aware of other jurisdictions in which higher levels of energy efficiency savings are being obtained?
d. Please provide any empirical data used by the Companies to determine that higher levels of energy-efficiency savings would not be reasonably achievable.

2.21. Please refer to the Companies response to Commission Staff Q-73.b. Given "the Companies did not calculate the lifetime savings values" please explain how they accounted for savings persistence in its load forecasts.

2.22. Please refer to the Companies response to Commission Staff Q-82.b, Item #3 which states that Res TOU "is a base rate design offering and was not considered in the current DSM/EE Plan."
a. Please explain how demand savings associated with Res TOU were reflected in the load forecast. If they were not reflected in the load forecast please explain why not.

2.23. Please refer to Exhibit TAJ-1, p. 3: "BlueOval SK Battery Park is the major driver of change from the 2021 IRP load forecast, with almost 260 MW summer peak load, about 225 MW winter peak load, and a load factor of almost 90%."

   a. Please describe the Companies assumptions for BlueOval regarding the applicability of demand response programs and/or interruptible tariffs to mitigate the expected summer and winter peak loads.
   b. Do the peak load assumptions in the statement cited above reflect participation in any demand response programs or interruptible tariffs? If yes, please indicate what the peak loads would be absent such participation. If no, please explain why not.

2.24. Please refer to Exhibit TAJ-1, p. 18: "Because heat pumps have the highest rebate of any appliance discussed in the IRA, space heating electrification is anticipated to increase as a result. This will especially increase morning, evening, and overnight load during the winter months."

   a. Please describe all assumptions used by the Companies in projecting peak demand effects resulting from increased space heating electrification, including the following:
      i. Prevalence of "standard" vs. cold-climate heat pumps;
      ii. Heat pump performance at design temperatures and requirements for back-up resistance heating;
      iii. Applicability of and participation in heating demand response programs.

2.25. Please refer to Exhibit TAJ-1, p. 18: "As was assumed in the 2021 IRP, electric vehicles are assumed to primarily charge at homes and overnight. This should have little impact on the summer peak and minimal impact on the winter peak in the morning."

   a. Please describe any support for this assumption.
      i. Will the Companies require or incentivize off-peak charging to mitigate the potential peak impacts of EV charging?

2.26. Please refer to Exhibit LI-1, p. 2: "Achievable potential represents the portion of economic potential assumed to be reasonably achievable in the course of a planning horizon (typically 20 years), given market barriers that may impede customers' participation in utility programs."

   a. Please define "reasonably" as used in the cited statement.
   b. Please define "market barriers" as used in the cited statement.
   c. Is "Achievable Potential" constrained in any way other than by reflecting market barriers? For instance, is Achievable Potential constrained by available budgets?
      i. Please provide a list of all factors used in the analysis in addition to market barriers that affected the determination of achievable potential, define each factor, and provide an explanation of how each was applied and the effect it had on the achievable potential.

2.27. Please refer to Exhibit LI-1, p. 2: "increases in high-efficiency equipment standards, such as changes in ENERGY STAR® specification requirements or the inclusion of new highest efficiency or emerging technologies since the 2016 and 2017 studies were not accounted for in this analysis." Please confirm that the analysis did not incorporate any equipment efficiency improvements that have occurred since the 2016 study was conducted. For any answer other than "confirm" please explain, in detail, what equipment efficiency improvements were incorporated in the analysis.

2.28. Please refer to Exhibit LI-1, p. 2: "this analysis did not entail a measure or fuel cost update or cost-effectiveness model re-run."

a. To the Companies or Cadmus' knowledge, have fuel costs changed since the 2016 study? Please explain.
b. Please provide a table that lists each element of the Companies' avoided costs used in the 2016 study, and which provides the 2016 value and the current value associated with each element.

2.29. Please refer to Exhibit LI-1, p. 3: "it should be noted equipment cost and labor/installation cost have only increased since these studies due to inflation and other market drivers." To the Companies' or Cadmus' knowledge, have costs for all equipment types considered in the analysis "only increased" relative to the efficiency of that equipment? For example, have costs for heat pumps "only increased" without also becoming more efficient? Please explain.

2.30. Please refer to Exhibit LI-1, p. 4: "Step two. Account for end-use equipment turnover since the starting year of the previous studies." Did Cadmus account for customers who are new to the Companies' systems? In other words, does the analysis reflect a growing number of customers?

2.31. Please refer to Exhibit LI-1, p. 5, regarding LED linear lighting: "the market has largely adopted LED linear lighting technologies. 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. Was all of the site visit data collected in other jurisdictions collected from facilities and customers that did not participate in any energy efficiency programs? Please explain.
b. Please compare and contrast the economic conditions in the in the other jurisdictions with the current economic conditions in the Companies' service territories and explain in what ways they are similar and different.
c. Please describe any adjustments made by Cadmus to the out-of-program installations in other jurisdictions when applying those data to form "a more realistic view of the available remaining lighting potential for the Companies.

2.32. Please refer to Exhibit LI-1, p. 9, regarding Dominion Energy's recent energy efficiency potential studies: "These studies showed that technical potential as compared to baseline sales declined from 39% (2014) to 35% (2017) to 32% (2020)."

a. Please provide the time frame that each of these studies refers to. In other words, across how many years is the technical potential calculated, in what year does the study period begin, and in what year does it end?
b. Please confirm the 2020 potential study for Dominion Energy Virginia identified a cumulative technical potential of 32%. For any answer other than "confirm" please explain.
c. Please confirm that the current Cadmus analysis identified a cumulative 2043 technical potential of 24.3% - which is roughly three-quarters of the technical potential identified for Dominion Energy Virginia. What accounts for this difference?

2.33. Please refer to Exhibit LI-2, p. 1: "fourteen products were selected to conduct an in-depth analysis to assess the DR potential." Please describe the selection process and provide criteria used in determining which products to select.

2.34. Please refer to Exhibit LI-2, p. 4, Table 2. DLC Products – Summer Market Potential. Are the product potentials illustrated competitive with each other, such that it would not be possible to add the potentials for each to determine a composite total potential for them? Please explain.

2.35. Please refer to Exhibit LI-2, p. 6: "Nearly all LG&E and KU customers have electric AC units that can be curtailed during summer events, but less than half have electric heating units (air source heat pumps) that can be targeted for winter event curtailment." Also refer to Exhibit TAJ-1, p.4 "By 2052, electric space heating saturation increases from 2015 levels by 7% in KU's service territory (already highly saturated) and by 33% in LG&E's service territory."

a. Please reconcile the statements that "less than half have electric heating units" and "KU's service territory [is] (already highly saturated) [with electric space heating].
b. The Companies' load forecast anticipates a 33% increase in electric space heating by 2052. Did the Demand Response Assessment account for the potential due to increased saturation of electric space heating? Please explain.

2.36. Please refer to Exhibit LI-2, p. B-9, Table B-7. Residential DLC BYOT Input Assumptions: "Winter eligibility based on percent of questionnaire respondents who reported using a heat pump as the primary source of heating for their home."

a. What are the date parameters for when the referenced questionnaire was fielded to customers?
b. Did Cadmus adjust results for recent and expected growth in electric space heating? Please explain.

2.37. Please refer to Exhibit LI-2, p. B-10, Table B-7. Residential DLC BYOT Input Assumptions: "LG&E and KU currently does not offer incentives for smart thermostats, therefore Cadmus assumed smart thermostats saturations conservatively."

   a. In Cadmus' view, if LG&E and KU were to offer incentives for smart thermostats would it expect saturations to increase?
   b. Is Cadmus aware of program administrators that offer incentives for smart thermostats? Please list all such program administrators of which Cadmus is aware.
   c. Did Cadmus assess the potential that could be obtained from a BYOT program in which LG&E and KU provide incentives for customers to purchase smart thermostats? If yes, please provide the results of the assessment. If no, please explain why not.

2.38. Please refer to Exhibit JB-1, p. 9: "Offer integrated efficiency and demand response incentives and focused promotional campaigns for products, such as smart thermostats, that provide both energy savings and direct load management capabilities." Do the Companies plan to offer incentives for smart thermostats? If yes, please describe the incentive amount and implementation approach the Companies propose to employ.

2.39. Please refer to Exhibit LI-2, p. 8, footnote 8: "The benefit/cost ratios following the Total Resource Cost (TRC) test methodology to assess product cost effectiveness."

   a. Did Cadmus also determine Utility Cost Test ("UCT") results for the Demand Response programs?
   b. If yes, please provide these results and supporting workpapers in native format with formulas intact.

2.40. Please refer to Exhibit LI-2, p. 12: "Cadmus applied a ten percent risk factor to avoid overestimating savings of program achievements and other unforeseen barriers (e.g., customer acceptance)."

   a. What empirical evidence did Cadmus rely on to determine that a 10% downward risk adjustment is warranted? Please provide citations to all sources and explain the basis of this adjustment.
   b. Admit that program potentials can also be underestimated. For any answer other than "admit" provide evidence to support the answer.
   c. In Cadmus' view, are there risks associated with underestimating program potential? Please explain.
      i. For example, is there a risk that underestimating program potential could lead to infrastructure or energy/capacity investments that might not have been needed? Please explain.

2.41. Please refer to Exhibit LI-2, p. A-1: "Technical potential assumes 100% participation of eligible customers in all programs included in the assessment. Hence, technical potential represents a theoretical limit for unconstrained potential."

   a. Please provide a table showing each product assessed and the associated technical potential as determined by Cadmus.
   b. Please indicate the method used in determining the technical potential for each product and providing supporting workpapers in fully functional electronic format.

2.42. Please refer to Exhibit LI-2, p. A-1: "Market potential reflects a subset of technically feasible DR opportunities we assumed to be reasonably obtainable, based on market conditions and the end-use customers' ability and willingness to participate in the DR market."

   a. Please define "reasonably obtainable" as used in the referenced statement.
   b. Please provide the criteria used to determine "reasonably obtainable" and explain how the criteria were applied in making the determination.

2.43. Please refer to Exhibit JB-1, p.26: "Customers who receive smart thermostats through Income-Qualified Solutions will be directly enrolled in the Bring-Your-Own-Device subcomponent of Connected Solutions. Demand reduction resulting from load control events will be captured through Connected Solutions, and direct enrollment through Income Qualified Solutions will increase overall participation in the Companies' demand conservation offerings." Please also refer to Exhibit JB-1, p. 46: "**BYOD subcomponent.** Beginning in 2024, the Companies will offer customers an incentive of up to $50 for enrolling a smart thermostat and up to $10 for each event in which their device participates (up to 25 events per year)…. A maximum incentive of $300 per device in the first year of participation and $250 per device in each year thereafter."

   a. Will Income-Qualified Solutions participants be able to opt-out of BYOD direct enrollment?
   b. Will the Companies provide the $50 enrollment incentive to Income-Qualified Solutions participants who are directly enrolled in the BYOD subcomponent?
   c. Will the Companies provide the per event incentives to Income-Qualified Solutions participants who are directly enrolled in the BYOD subcomponent?

2.44. Please refer to the Companies' response to MCFC 1-29.f. For 2020, 2021, and 2022, please provide the actual average monthly energy use for each month of the calendar year in each of the utility categories provided in the referenced response to MCFC 1-29.f.

2.45. Please identify each specific customer benefit, including non-energy benefits, that (a) were considered as part of the initial screening of DSM/EE programs, and (b) were included in the cost-effectiveness testing of DSM/EE programs.

2.46. Please refer to the Companies response to JI 1.28a, which states, "The following are examples of rate schedules and programs the Companies have implemented to reduce the level of peak demands, which have the effect of dampening load swings: TOD rates, CSR, and non-dispatchable and dispatchable DSM programs."; and answer the following requests.

   a. Do the companies agree that energy efficiency can also dampen peak demand (e.g. if buildings are more energy efficient, then less adjustment is needed to respond to temperature swings)? If not, please explain why not.
   b. Have the Companies performed any resource optimization modeling to evaluate the potential for increased energy savings through energy efficiency programs to cost-effectively reduce peak demand? If so, please provide the results of each such modeling analysis, including supporting workpapers with formulas intact.
   c. Please explain how analyses identified in response to subpart (b) were incorporated in the resource assessment, the initial screening of DSM/EE programs, and/or the cost effectiveness testing of DSM/EE programs?

2.47. Please refer to the file contained in SAW-2 workpapers entitled "BuildCost_GasTransmission".

   a. Do these costs represent firm gas transmission costs to each of these units? If not, what do they represent?
   b. Please explain why some of the values are negative.
   c. Please provide with all formulas and links intact and changing nothing, the spreadsheet(s) used to create these values.

2.48. Please provide in spreadsheet format the hourly load, in MW, for the KU/LGE LSE in each of 2022 and 2021. If the load is not net of demand response, please provide the level, in MW, of demand response called in each hour, if applicable.

2.49. Please refer to the Companies response to SC 1-5(a), stating that "[n]o workpapers were provided for the adjustments" to the neighboring regions' generating portfolios as needed to reflect planned retirements and meet the neighboring regions' target reserve margins. With respect to this statement, please answer the following:

   a. Please explain, in the absence of any workpapers, how the Companies decided which "existing dispatchable resources [to deactivate]".
   b. Please explain why only the resources needed to meet the reserve margins specified were included in the neighboring regions.
   c. What resource types were excluded from the category "existing dispatchable resources"? Please explain why these resource types were excluded.
   d. Please provide any documents, spreadsheets, and/or other workpapers that support your response to subparts (a) – (c).

2.50. Please refer to the Companies' response to PSC 1-38. Please provide any documents in the Companies' possession related to communication between the Companies and BlueOval about potential participation in interruptible service.

2.51. Please refer to the Companies' response to JI 1-89. Please provide the documentation that demonstrates that "Blue Oval SK has indicated that it does not desire any part of its load to be interruptible, and it intends to have round-the-clock operations, resulting in a very high load factor."

2.52. Regarding BlueOval SK's load, please answer the following.
  a. When did BlueOval SK first approach the Companies about the possibility of taking electrical service?
  b. When did BlueOval SK sign the agreement

2.53. Please refer to the Companies' response to PSC 1-31(d), and answer the following requests.
  a. Do the Companies expect that Blue Oval will pay the full cost of the contract for the 300 MW of renewable energy?
  b. If the answer to subpart (a) is no, please explain why not.
  c. If the answer to subpart (a) is no, please explain how the Companies will apportion the cost of the contract between the various rate classes.
  d. Have the Companies sought to make 300 MW of the solar projects listed on page 6 of Mr. Crockett's testimony the source of energy that would be subject to this agreement?
  e. If the answer to subpart (d) is no, please explain why not.
  f. If the answer to subpart (d) is yes, please explain why this contract is not part of the present application to the Commission.
  g. Please provide any documents that support your responses to the proceeding subparts.

2.54. Please provide, with all formulas and links intact, changing nothing, the workbook(s) used to derive the data in "20221028_LGELoad2028.csv".

2.55. Please provide all SERVM and PLEXOS workpapers created by the Companies in producing the 2021 IRP.

2.56. Please refer to the PLEXOS file entitled "Maintenance Schedule", and answer the following requests.
  a. Please explain why no values for the proposed NGCCs are given.
  b. How is planned maintenance accounted for these units?
  c. What is the anticipated maintenance schedule for the units?

2.57. With respect to the forced outage rate for the proposed NGCCs in PLEXOS, please answer the following requests.

   a. Did the Companies model a forced outage rate for the proposed NGCCs in PLEXOS?
      i. If not, please explain why not in full?
      ii. If so, how was the forced outage rate modeled?
   b. What forced outage rate is anticipated for each of the proposed NGCCs?

2.58. Section 6 of SAW-1 states, "Brown Solar's ownership was assigned by allocating its forecasted generation in each hour based on each company's forecasted share of native load energy requirements for the hour" and "[t]he new solar resources were assigned to each company using a method similar to the method used for Brown Solar."

   a. Please confirm that this methodology was implemented within the SERVM interface and did not serve as an adjustment to the load contained in the file "20221028_LGELoad2028".
   b. If subpart a is not confirmed, please provide a version of "20221028_LGELoad2028" that does not contain the adjustment for solar projects.

2.59. Please refer to the PLEXOS file entitled "MinCapacityReserves_2023BPLoad_IRA_DSM_20221026_24WRM".

   a. Does PLEXOS optimize to the values in this file or to the reserve margin requirements set by LG&E?
   b. If both are used, please explain how.
   c. How were these values determined? Please provide the workbook(s) with all formulas and links intact showing how they were derived.

2.60. Regarding the files "20221028_LGELoad2028" and "Load2023PlanCC_IRA_DSM_20221026" please answer the following:

   a. Please explain why the annual energy requirements in "Load2023PlanCC_IRA_DSM_20221026" fall below the energy requirements for all the weather years in "20221028_LGELoad2028".
   b. Please explain why 31 of the 49 weather years in "20221028_LGELoad2028" contain annual peak values in excess of the 2028 peak contained in "Load2023PlanCC_IRA_DSM_20221026", i.e, why is the distribution of load modeled in SERVM distorted to the high side relative to the base load forecast?
   c. Please provide any workbooks that support your response to the previous subparts with all formulas and links intact, changing nothing.
   d. Please provide the workbooks with all formulas and links intact, changing nothing, that show how the hourly load shapes in "20221028_LGELoad2028" were updated from the 2021 IRP to the present docket.

2.61. Response to PSC 1-27 states, "The Companies' quantification of solar project execution risk is in Exhibit SAW-1, Section 4.6.1. Indeed, until December 2022, the largest solar installation in Kentucky today remains the Companies' E.W. Brown Solar Facility (10 MW), notwithstanding numerous Siting Board approvals and Commission approvals related to much larger solar facilities in recent years. For example, the Companies have executed two solar PPAs for true utility-scale solar PPAs (100 MW Rhudes Creek in 2019 and 125 MW Ragland in 2021), yet neither project has received all necessary approvals, and neither is on schedule or has begun construction. The Companies are not alone: Big Rivers Electric Corporation ("BREC") received Commission approval for three solar PPAs in September 2020. BREC has received termination notices for two of the contracts, and the facility for the third is not yet operational. Regarding Siting Board approved solar projects, it appears that 24 merchant solar projects have been approved by the Siting Board, but only one is in operation and one is under construction. Therefore, solar project execution risk is real, and the Companies have quantified the possible impact of it in their analysis in this proceeding."

a. What approvals are the Rhudes Creek and Ragland projects missing?
b. When did Rhudes Creek and Ragland apply for these missing approvals?
c. Why, in the Companies' judgement, are the approvals missing?
d. Please explain why Company ownership would have mitigated the absence of approvals for these projects.
e. Regarding the Big Rivers experience, please explain why utility ownership, but not a price reopener clause, would have mitigated the possibility of termination notices.
f. Regarding the 24 solar projects that have been approved by the Siting Board, please provide all documents in the Companies' possession that demonstrate the projects that have yet to start construction or operation are behind schedule.
g. Regarding the 24 solar projects that have been approved by the Siting Board, but have yet to start construction or operation, please explain each factor leading to this status that would have been mitigated by utility ownership.
h. Do the Companies intend to hire an engineer, procure, construct ("EPC") firm to build the Mercer County project? If not, how will construction of and procurement of equipment and labor for the project be conducted?

2.62. Regarding Exhibit SAW-1, Section 4.6.1, please answer the following:

a. Why did Portfolio 12 not include the other solar projects discussed in Mr. Crockett's testimony that the Companies intend to seek contracts with?
b. Did the Companies' model a portfolio that included all the new projects discussed in Mr. Crockett's testimony? If not, why not?
c. If the answer to subpart b is yes, please provide the PROSYM files associated with this run.

2.63. Please provide a copy of all confidential workpapers and discovery responses submitted by the Companies as part of Case No. 2021-00393.

2.64. Regarding the PLEXOS file "MinCapacityReserves_2023BPLoad_IRA_DSM_20221026_24WRM" please answer the following.

a. Why did the Companies model these values rather than a winter 24% planning reserve margin target?
b. Please provide the workbooks with all formulas and links intact, changing nothing, that show how the values in this workbook were created.
c. Please explain why these values were not applied to all models, e.g. Model 7 used a different reserve margin requirement.

2.65. Regarding the PLEXOS files "FirmCapacityWinter" and "FirmCapacityMonthly", please answer the following.

a. Please explain why the Companies used these values rather than the values in "FirmCapacityMonthly_22RFP". What are the values in this spreadsheet intended to represent?
b. Please explain why solar is given no accredited capacity and provide the documents that serve as the basis for your response.

2.66. Please refer to the Companies' Response to JI 1-32(b). Please provide any preliminary pricing and terms received by the Companies from these potential gas suppliers.

2.67. Please refer to SAW-1, Tables 20 and 21.

a. Expressed in the same terms as given in these tables, what is the Companies' minimum LOLE standard?
b. Please provide the workbook(s) with all formulas and links intact and changing nothing, that were used to create these tables.

2.68. Please provide the documents with all formulas and links intact and changing nothing, that serve as the basis for the Mercer County solar project cost contained in "CONFIDENTIAL_20221209_ResourceAssessmentTables_0308".

2.69. Please provide the workbooks with all formulas and links intact showing how the HDR study given as Attachment to JI-1.9(e) was translated into the values given in cells Z23 and Z24 of "CONFIDENTIAL_20221209_FinancialModel_0308_Ph1_D01".

2.70. Please refer to the Attachment to JI-1.9(e).

a. In what year's dollars are the project cost estimates given?
b. The study states, [redacted] What contracting approach is intended in this statement?
c. Please provide the workbook(s) with all formulas and links intact used to create the NGCC project cost estimates.

d. If the workbooks requested in subpart (c) do not show when the date and source of information upon which the various components of the cost estimate were collected, e.g., turbine, commodities, labor, etc. please provide that information as well.
e. What is the basis for the statement in response to JI 1.11(a) that the estimate is at an AACE Class 3?
f. Do the Companies intend to complete a front end engineering and design study before beginning construction of these facilities? If so, when?

2.71. Please refer to the response to JI-1.9(a). Please assume that the Companies' petition is approved by the Commission.
a. What approval, if any, will the Companies seek from the Commission over the signed EPC agreement?
b. What approval, if any, will the Companies seek from the Commission over the Long-Term Service Agreement (LTSA)?
c. Do the Companies intend to enter into a turbine purchase agreement (TPA)?
d. If the answer to subpart c is yes, who will be responsible for potential delays in commercial operation date due to start up and commissioning?
e. Are the Companies aware of any other NGCC project currently under development or construction using the approach of separate solicitations and contracts for the EPC and OEM? If so, which projects?

2.72. Please provide the annual sum of cumulative MW of distributed solar contained in the load forecast produced by Mr. Jones.

2.73. If the Companies have re-estimated the High Case for distributed solar given in Figure 5-13 of the 2021 IRP, please provide that forecast in spreadsheet format.

2.74. Please refer to the PLEXOS input file named "RenewableProfiles_22RFP".
a. Please confirm that the profiles were developed by the Companies. If not confirmed, please explain.
b. If the profiles were developed by the Companies, please explain how each of the solar and wind profiles were developed.

2.75. Please refer to the PLEXOS input file named "StorageEfficiency_22RFP". Please explain how the Companies developed the values provided in this file.

2.76. Please refer to the workbook "CONFIDENTIAL_2021209_ResourceAssessmentTables_0308", worksheet named "RFPResponses".
a. Please confirm if the costs reported in columns L, M, and N are reported in 2021 dollars.
b. Please provide the round-trip efficiency for each of the four hour standalone battery storage projects.

2.77. Please refer to the SERVM Study named “Case30_Case21PlusDSMBatt” and resource named “SolarAsset.265”.

  a. Please confirm that this resource represents the Mercer County and Marion County solar projects.
  b. If not, please explain what this resource represents.

2.78. Please refer to Exhibit SAW-1 on page 37.

  a. Please explain if the DSM modeled in SERVM incorporated energy efficiency impacts.
  b. Please explain how energy efficiency was modeled in SERVM.

2.79. Please refer to page two of the file named “06-JI_DR1_LGE_KU_Attach_to_Q_1(c)_-_Att_4_Gas_Conversion_Technical_Summary”.

  a. Please provide the page number reference from the “B&V Study” for the “Total Capital Cost of Unit Conversion” reported for Mill Creek 1&2 and Brown 3.
  b. Please provide the EN Engineering “Natural Gas Transmission Pipeline Cost Estimate, E.W. Brown Station 30’’ Proposed Pipeline” referenced on page 7.
  c. Please provide the EN Engineering “Mill Creek Generating Station Pipeline Feed Study” referenced on page 7.

2.80. Please refer to the workbook named “PSC DR 1 LGE-KU Attach to Q47(a) - Att 4 2023-03 UPDATE CONFIDENTIAL_FinancialModel”.

  a. Please explain why the “XM System Upgrades” are reported as a [redacted] in Column O of the worksheet named “Detail” for the Mill Creek CC but are reported as a [redacted] for the Brown CC.
  b. Please confirm that the costs of the 637 MW of PPA solar resources are included in the “ProdCosts” row of worksheet “Model”.
    i. If the costs are not included in the “ProdCosts” row please provide a reference for the costs in the worksheet “Model”.

2.81. Please refer to the Companies response to PSC Question 47 subpart (a) where the Companies state “Regarding the PTC, the Companies determined that the PTC for the owned solar projects should be grossed up for taxes to fully reflect its impact on revenue requirements.”

   a. Please confirm if the Companies applied a gross up for taxes to the 637 MW of solar PPAs.
      i. If the Companies did apply a gross up for taxes, please provide the supporting workbook, with all formulas and links intact showing the gross up for taxes.
      ii. If the Companies did not apply a gross up for taxes for the 637 MW of solar PPAs, please explain why not.
   b. Please refer to the table showing the “Brown BESS ITC ($ millions)”. Please explain the basis for the “ITC 50% Tax Basis Reduction” that is included in the “Net Tax Benefit”.

2.82. In LGE-KU’s 2021 IRP filing (Volume I, p.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 provide the workpapers and supporting documentation used in the development of the above-referenced distributed generation growth scenario.
   b. Please refer to the Companies Response to PSC 1.90.c, including a “comparison of the annual distributed generation capacity forecasts from the 2021 IRP and the current CPCN filing,” and referring to Exh. TAJ-3 at: Hourly_Forecast_Updates\PV\PV_newHourly.xlsx.
      i. Regarding Exh. TAJ-3 at: Hourly_Forecast_Updates\PV\PV_newHourly.xlsx, please explain all column headings, and provide all assumptions and formulas used.
      ii. Please produce additional workpapers or supporting documentation used in the development of the annual distributed generation capacity forecast in the current CPCN filing, if any.

2.83. In Commission Staff DR 1.90, the Companies provide a projection of DER growth, assuming that after DER's reach 1% of annual peak load, exported energy will be compensated at the SQF rate. Please provide an alternate scenario projecting DER growth, assuming energy exports will continue to be compensated at the NMS-2 rate beyond the 1% threshold. Please provide all underlying calculations and workpapers.

2.84. Please refer to PPL's 2021 Climate Assessment Report, "Energy Forward," at 4, including the statement: "We view our path to net-zero emissions on a continuum, with a primary focus on eliminating our gross emissions, leveraging technology to remove emissions where they cannot be eliminated due to cost or reliability constraints, and finally, considering carbon offsets for any remaining emissions as the least-preferred options."

a. Have the Companies done any price discovery related to existing carbon offset markets? If so, please explain the scope of such efforts, including methods, sources, and purpose of analysis. Please provide supporting documentation, if applicable.
b. In the Companies' estimation, how will the price and availability of carbon offsets change over each of: (i) the next 10 years; (ii) the next 20 years; (iii) the next 30 years; and (iv) the next 40 years?

2.85. Please refer to the Companies' Response to Joint Intervenors' Initial Request 1.92(e), which includes the following statements:
"The load forecast reflects the impacts of non-dispatchable DSM-EE programs. Preliminary non-dispatchable programs and kWh savings estimates were provided in early October 2022. Final programs and savings estimates were provided in November 2022."; and "The information provided was projections of energy reductions associated with each applicable DSM-EE program."

a. Please produce the information provided in early October 2022, including identification of each specific non-dispatchable program and associated program-level savings estimates.
b. Please produce the information provided in November 2022, including identification of each specific non-dispatchable program and associated program-level savings estimates.

2.86. Please describe how the Companies evaluated the potential for expanded energy efficiency programs in their Resource Assessment.

2.87. Please describe whether and how each of the following avoided costs related to energy efficiency were factored into each of the resource assessment, the initial screening of DSM/EE programs, and/or the cost effectiveness testing of DSM/EE programs. For each of these not factored into analyses, explain why not. Please identify and quote any parts of Kentucky statutes used in responding.

a. Avoided risks related to future carbon related costs;
b. Avoided environmental compliance costs; and
c. Avoided costs due to fewer arrearages; collections costs; bill payment problems.

2.88. The Companies frequently mention the lower levels of carbon dioxide emissions that will come from the gas plants in comparison to existing coal plants.

a. Please describe whether and how avoided greenhouse gas emissions from energy efficiency program savings were factored into each of the resource assessment, the initial screening of DSM/EE programs, the cost effectiveness testing of DSM/EE programs or any other analyses of energy efficiency programs.
b. Please explain how avoided carbon dioxide emissions from energy efficiency program savings were included in your analyses, if at all?

2.89. Please refer to the Companies' response to JI 1.105.c and 1.105.d, and answer the following requests.

a. If the measures currently offered through the WeCare Program do not differ at all from the ten measures listed at page 28 of Ex. JB-1 (response to JI 1.105.c), please explain why, in response to JI 1.105.d, Mr. Bevington states that there are approximately 100 measures that qualify for installation through the program.
b. Do the Companies record the particular measures installed in each customer home served through the WeCare program?
    i. If so, please provide, for each one of the eligible measures in the WeCare program, the percentage of WeCare applicants that received that measure in each of the last three years.
    ii. If so, please also identify the percentage of WeCare applicants that received only educational measures in each of the last three years.
    iii. If not, please explain why not.

2.90. Please refer to PSC DR1.87a, which begins, "*Refer to the executive summary of Exhibit SAW-1 (Reserve Margin Analysis), 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 the Companies state in response: "The updated SCCT capacity cost is based on an RFP response from LG&E/KU's Project Engineering group. See Proposal No. 108 in Table 42 in Exhibit SAW-1, Appendix B."

a. Please confirm that, in the context of the above-referenced question, "capacity price" and "cost of capacity" have the same meaning? If not confirmed, please explain the distinction between the two phrases.

b. Please identify the cost of capacity used in the SAW-1 analysis and demonstrate how that figure was arrived at based on the SCCT proposal number 108, including production of underlying workpapers or calculations.

2.91. Please refer to the Companies' response to PSC DR 1.87b, and answer the following requests.

a. The response to PSC DR1.87b explains why the SCCT cost of capacity in the SAW-1 analysis was 34% lower than in the 2021 IRP analysis, and states, "Capital, fixed O&M, and firm gas transport costs are 23%, 85%, and 30% lower, respectively." Please explain in detail the reasons for these substantial price declines.

b. Has there been a dramatic change in SCCT technology between the 2021 IRP and the SAW-1 analysis that would explain an 85% decline in fixed O&M costs?

2.92. On April 4, 2023, the IRS released regulation IR-2023-69 that describes certain rules that the IRS intends to include in forthcoming proposed regulations for determining what constitutes an energy community for the production and investment tax credits. Have the Companies reviewed this new guidance to evaluate whether any of their solar or storage proposals would qualify for the 10% bonus tax credit for energy communities? If so, please describe the Companies' review process and report the Companies' current view of each project's potential eligibility for the referenced bonus tax credit.

2.93. Is respect to the proposed Mercer County solar site, please answer the following requests:

a. Is the proposed Mercer County solar site adjacent to or contiguous with the Companies' existing EW Brown facility or other Company-owned facility?

b. If the answer to subpart (a) above is, no, please state the distance separating the proposed Mercer County solar site and the EW Brown facility.

c. Do the Companies presently own all the land planned for the Mercer County Solar project? If not, what is the status of land acquisition effort, including future milestones and timeline to completion.

2.94. Please refer to page 13 of Ex. SAW-1, particularly the following statement:

> "The Companies' Muhlenberg Self-Build Solar Proposal Relocated to Mercer County. One RFP response proposed to sell the Companies a solar project already in advanced stages of development, but not construction, located in Mercer County. Because the proposal was not for a commercially executable transaction for a PPA or to acquire a solar facility per se, the Companies' Project Engineering group reviewed it and determined it would be a more suitable self-build solar site than their originally proposed site in Muhlenberg County, which had become problematic due to land acquisition issues. The Companies' Project Engineering group therefore revised their self-build proposal to suit the proposal at the Mercer County site, resulting in a 120 MW self-build solar proposal in Mercer County rather than a 145 MW self-build solar proposal in Muhlenberg County."

a. Please describe the specific land acquisition issues for the Muhlenberg County site.
b. Where there other issues, apart from land acquisition, that also created barriers to the Muhlenberg County site, or made it a less suitable self-build solar site? Please explain.
c. Do the Companies own property or generation assets in Muhlenberg County? If yes, please identify each such project. For each project identified, please also state that project's proximity to the Muhlenberg County site discussed above.

2.95. In response to PSC DR1 Q.53(b), the Companies provided a spreadsheet comparing pricing of battery storage proposals and the Brown BESS 125 MW project the Companies propose to build.

a. Have the Companies calculated a capacity price ($/KW-Month) for the Brown BESS? If so, please provide the capacity price ($/KW-Month) and explain why it was not included in the referenced spreadsheet.
b. Please explain how the Levelized Cost of Capacity ($/MW-Year) is calculated.
c. Please explain why the Brown BESS was selected above other battery storage projects submitted in response to the RFP.
d. For each lower-cost battery proposal, please identify any and all factors that led to its rejection.
e. What are the execution risks for BESS proposals and how do they compare to solar PPA execution risks?

2.96. Please refer to the Companies' response to the Attorney General's request No. 1. Please identify and explain in detail any updates that are needed to this response to account for EPA's announcement of its final Good Neighbor Plan on March 15, 2023.

2.97. Please refer to the Companies' response to the Attorney General's request No. 2. Please identify and explain in detail any updates that are needed to this response to account for EPA's announcement of its final Good Neighbor Plan on March 15, 2023.

2.98. Please refer to the Companies' response to the Sierra Club's request No. 1-25(a). Please identify and explain in detail any updates that are needed to this response to account for EPA's announcement of its final Good Neighbor Plan on March 15, 2023.

2.99. Please refer to the Companies' response to KIUC's request No. 1-2(c). Please identify and explain in detail any updates that are needed to this response to account for EPA's announcement of its final Good Neighbor Plan on March 15, 2023.

2.100. Please refer to the Companies' response to the PSC Staff's request No. 56. Please identify and explain in detail any updates that are needed to this response to account for EPA's announcement of its final Good Neighbor Plan on March 15, 2023.

2.101. Please refer to the Companies' response to the Kentucky Coal Associations' request No. 1-15. Please identify and explain in detail any updates that are needed to this response to account for EPA's announcement of its final Good Neighbor Plan on March 15, 2023.

2.102. Do the Companies believe that EPA's announcement of its final Good Neighbor Plan on March 15, 2023 included any changes from the proposed version of the Good Neighbor Plan that are material to the Commission's decision in this case? Please explain in detail why or why not.

2.103. Would EPA's new proposed rule (dated April 3, 2023) that would revise Mercury and Air Toxics Standards for power plants, if finalized as proposed, require the Companies to make any additional capital expenditures to continue operating any of their coal-fired generating units?

a. If yes, please identify which units would require additional capital expenditures and describe the projects that would be required, the anticipated timeframe required to ensure compliance, and any current estimates as to the cost of those projects. If no, please explain in detail why not.
b. To the extent not addressed specifically in response to paragraph (a), please explain in detail whether each of the Companies' coal-fired generating units would require any additional capital expenditures to comply with the proposed revised filterable particulate matter standard of 0.010 lbs/MMBtu. For any units that would require any additional capital expenditures, please describe the projects that would be required, the anticipated timeframe required to ensure compliance, and any current

estimates as to the cost of those projects. For any units that would not require any additional capital expenditures, please explain in detail why not.

2.104. Please refer to the Companies' response to the Kentucky Coal Association's request No. 1-22.

a. For each of the Effluent Limitations Guidelines projects identified, have the Companies assessed how much additional cost would be required to comply with EPA's proposed supplemental Effluent Limitations Guidelines rule, which was published in the Federal Register on March 29, 2023 (88 Fed. Reg. 18,824)? If yes, please describe in detail what additional projects would be required to comply with the requirements of that proposed rule (if finalized as proposed) and the current cost estimate for those projects. If not, please explain in detail why not.
b. The proposed supplemental rule (if finalized as proposed) would change the technology basis for FGD wastewater requirements and require zero discharge. Please identify what steps the Companies would need to take at Mill Creek, Ghent, E.W. Brown, and Trimble to comply with these proposed rule changes and the estimated minimum amount of time that the Companies would need to complete of those steps.
c. The proposed supplemental rule (if finalized as proposed) would change the technology basis for bottom ash transport water requirements and require zero discharge. Please identify what steps the Companies would need to take at Mill Creek, Ghent, E.W. Brown, and Trimble to comply with these proposed rule changes and the estimated minimum amount of time that the Companies would need to complete of those steps.
d. The proposed supplemental rule (if finalized as proposed) would require additional wastewater treatment for combustion residual leachate prior to discharge. Please identify what steps the Companies would need to take at Mill Creek, Ghent, E.W. Brown, and Trimble to comply with these proposed rule changes and the estimated minimum amount of time that the Companies would need to complete of those steps.

2.105. Please refer to the Companies' response to the Attorney General's request No. 56. Please identify all special contracts for which the Companies have sought Commission approval for service under Option #3, including (1) the date of the request; (2) the date of any Commission decision on the request; (3) any docket number or other identifying number for the special contract; (4) the name of the customer associated with the special contract; (5) the billing load associated with the special contract; and (6) the type of renewable resource associated with the special contract.

2.106. Please refer to Attachments 1 and 2 to the Companies' response to Joint Intervenors' request No. 1-19, which both state (on page 2 of each document) that, "[i]n recognition of U.S. EPA's current environmental justice policies," the

Companies “performed certain environmental justice reviews” in connection with preparation of their Title V air construction permit applications.

a. Please identify all environmental justice reviews that the Companies have performed concerning the proposed construction of NGCC plants and supporting infrastructure at Mill Creek and E.W. Brown, including but not limited to any such reviews performed in connection with preparation of the Title V air construction permit applications.
b. Please produce copies of any documents in the Companies’ possession reflecting the results of any environmental justice reviews identified in response to paragraph (a) or, to the extent any such documents that have already been produced by the Companies in this case, please identify those documents.
c. Page 2 of each of Attachments 1 and 2 to the response to Joint Intervenors’ request No. 1-19 states that each “project has no significant impacts to the environment.” Please explain in detail why a project that would potentially burn fossil fuels over a 40-year lifespan (with associated pollutant emissions and other environmental impacts) could be considered to have “no significant impacts to the environment.”
d. Page 2 of Attachment 1 to the response to Joint Intervenors’ request No. 1-19 states that “[t]he localized air emissions and traffic reductions resulting from the project should theoretically translate to improved health (life expectancy) outcomes.” Please identify and explain in detail what is being referred to as the “localized air emissions and traffic reductions resulting from the project.” Please produce copies of any documents supporting this statement or, to the extent any such documents that have already been produced by the Companies in this case, please identify those documents.
e. Page 2 of each of Attachments 1 and 2 to the response to Joint Intervenors’ request No. 1-19 states that the Companies used the Climate & Economic Justice Screening Tool as part of its environmental justice reviews. Did the Companies also use U.S. EPA’s Environmental Justice Screening and Mapping Tool or U.S. EPA’s Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool? If yes, please produce any documents reflecting the results of using these tools or, to the extent any such documents that have already been produced by the Companies in this case, please identify those documents. If not, please explain why not.

2.107. Please refer to Attachments 1 and 2 to the Companies’ response to Joint Intervenors’ request No. 1-19, which both state (on page 2-6 of each document) that the proposed NGCC Units are “[d]esigned for future hydrogen co-firing.” Please confirm whether the Companies are proposing to co-fire hydrogen at either proposed NGCC project, either now or in the future.

2.108. Please refer to the Companies' response to Joint Intervenors' request No. 1-2(b)-(d).

a. Please provide a copy of the Southeast Hydrogen Hub Concept Paper submitted to the U.S. Department of Energy on November 4, 2022.
b. Please confirm whether the Southeast Hydrogen Hub Coalition (or Battelle Memorial Institute as Prime Applicant) have submitted a Phase I application to the U.S. Department of Energy.
c. If yes, please provide a copy of the Phase I application and explain the nature and extent of the Companies' involvement in developing the final proposal and application. If not, please explain why not.

2.109. Please refer to the Companies' response to Joint Intervenors' request No. 1-2(b)-(d).

a. Please provide a copy of the Southeast Hydrogen Hub Concept Paper submitted to the U.S. Department of Energy on November 4, 2022.
b. Please confirm whether the Southeast Hydrogen Hub Coalition (or Battelle Memorial Institute as Prime Applicant) have submitted a Phase I application to the U.S. Department of Energy.
c. If yes, please provide a copy of the Phase I application and explain the nature and extent of the Companies' involvement in developing the final proposal and application. If not, please explain why not.

2.110. Please refer to the solar PPA contracts filed in this proceeding on March 1, 2023.

a. Please confirm whether the title on page 1 of the Nacke Pike Solar, LLC PPA (page 5 of the document) that says "Grays Branch Solar, LLC" was written in error. If yes, please provide the correct text. If not, please explain why not.
b. Please confirm whether the definition of "Commission Approvals," found on page 6 of both the Nacke Pike Solar, LLC PPA (page 10 of the document) and the Grays Branch Solar, LLC PPA (page 324 of the document), was written in error where "'Commission Approvals' means such approvals from the PSC or the *Virginia State Corporation Commission*" (emphasis added). If yes, please provide the correct text. If not, please explain why not.
c. Please confirm whether Exhibit E-1 of the Nacke Pike Solar, LLC PPA (page 69 of the document) where the guarantor is identified as an affiliate of "Grays Branch Solar, LLC" was written in error. If yes, please provide the correct text. If not, please explain why not.

2.111. Please refer to the solar PPA contracts filed in this proceeding on March 1, 2023.

   a. Please confirm that the GGSO, LLC PPA, found on page 233 of the document, is the same PPA identified in the Direct Testimony of John Crockett, page 7, with BrightNight, LLC and named Gage Solar. If yes, please confirm whether the name of the solar PPA is "Gage Solar" or "GGSO." If not, please explain.
   b. Please confirm whether the GGSO, LLC PPA, found at page 233 of the document, is between Companies' and BrightNight, LLC or GGSO, LLC. If BrightNight, LLC, please explain why BrightNight, LLC is not identified in the PPA contract provided.

2.112. Please refer to the Companies' response to Joint Intervenors' request No. 1-9(a)-(b). Please identify and explain in detail the basis for the Companies' understanding that approval of a CPCN is required prior to execution of an EPC contract or final selection of the power island technology.

2.113. Please refer to the Companies' response to Joint Intervenors' request No. 1-20, which in turn refers to the response to Joint Intervenors' request No. 1-9(e).

   a. Please explain in detail how the feasibility study produced in response to Joint Intervenors' request No. 1-9(e) "evaluate[s] alternative generation and storage technologies" and "identif[ies] potential new sites for solar generation," as discussed in Mr. Sinclair's testimony.
   b. Did the Project Engineering group evaluate other technologies than those discussed in the feasibility study produced in response to Joint Intervenors' request No. 1-9(e)?
      i. If yes, please explain in detail what technologies were evaluated and produce any documents in the Companies' possession reflecting that evaluation. If no additional documents exist, please explain in detail why not.
      ii. If no, please explain in detail why Mr. Sinclair referenced evaluation of additional technologies in his testimony.
   c. Did the Project Engineering group identify potential new sites for solar generation other than those discussed in the feasibility study produced in response to Joint Intervenors' request No. 1-9(e)?
      i. If yes, please explain in detail what steps were taken to identify potential new sites and what potential new sites were identified. Please produce any documents in the Companies' possession reflecting that evaluation. If no additional documents exist, please explain in detail why not.
      ii. If no, please explain in detail why Mr. Sinclair referenced identification of potential new sites for solar generation in his testimony.

2.114. Please identify LG&E/KU's reliability coordinator, and provide the minimum reserve capacity requirement established by that reliability coordinator.

  a. If the minimum reserve capacity requirement established by the Companies' reliability coordinator is different from the summer and winter "minimum reserve margin target" reflected in Table 5 of Mr. Wilson's direct testimony, please explain the differences.

2.115. Please refer to the Companies' response to Joint Intervenors' request No. 1-26(b) and accompanying attachment.

  a. Please confirm that the attachment is a 232-page contract that was executed on April 14, 2022. If you are unable to confirm, please explain in detail why not.
  b. Please identify the first date on which the Companies began discussions with HDR Engineering, Inc. which led to the April 2022 contract that was attached to the response to Joint Intervenors' request No. 1-26(b).
  c. Please produce any documents in the Companies' possession that reflect the initial discussions with HDR Engineering, Inc. which led to the April 2022 contract or that otherwise substantiate the date identified in response to paragraph (b) above.

2.116. Please refer to the Direct Testimony of Tim A. Jones, page 8, and the Companies' response to the PSC Staff's request No. 1-31(d).

  a. Please explain in detail the Companies' understanding as to why BlueOval is interested in having a contract for up to 300 MW of solar generation if the facility's current summer peak load is 260 MW and its current winter peak load is 225 MW.
  b. Please identify any other of the Companies' large commercial or industrial customers whom the Companies are aware have an interest in contracting for renewable energy. For each customer identified, please identify the potential timing, size, and source of the renewable energy that the customer has expressed an interest in.

2.117. Please refer to the Companies' response to Joint Intervenors' request No. 1-51. Please confirm that, now that EPA has announced its final version of the Good Neighbor Plan, the Companies continue to believe that this is an appropriate approach to modeling the Plan's constraints in PLEXOS. If you are unable to confirm, please explain in detail why not.

2.118. Please refer to the Companies' March 17, 2023 supplemental response to Joint Intervenors' request No. 1-97.

  a. Please produce copies of any documents in the Companies' possession reflecting the results of the preliminary subsurface investigation.
  b. Please produce copies of all historical records referenced in the response to paragraph (b).

c. Please identify the following concerning the "permitted CCR landfill that was closed before 1993 under and in the vicinity of the proposed Mill Creek NGCC footprint":
    i. The name of the CCR unit;
    ii. Which permits applied to the CCR unit, which entity issued those permits, and the permit numbers;
    iii. The size of the CCR unit;
    iv. The depth of the CCR unit;
    v. The amount of CCR that is disposed of in the unit;
    vi. The method by which the CCR unit was closed; and
    vii. Any post-closure care or maintenance, or groundwater monitoring, conducted by the Companies concerning the CCR unit.
d. Please produce copies of any documents in the Companies' possession that were relied on to answer the questions above in paragraph (c).
e. Please identify and describe in detail any steps that the Companies intend to take, or changes that the Companies intend to make to their proposal to construct a NGCC at Mill Creek, to address the discovery of a closed CCR landfill under and in the vicinity of the proposed footprint of the NGCC. If there are none, please explain in detail why not.

Respectfully submitted,

Ashley Wilmes

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Kentuckians for the Commonwealth,
Kentucky Solar Energy Society and
Mountain Association

CERTIFICATE OF SERVICE

In accordance with the Commission's July 22, 2021 Order in Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID*-19, this is to certify that the electronic filing was submitted to the Commission on April 14, 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