

**KENTUCKY UTILITIES COMPANY  
AND  
LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition, Kentuckians for the Commonwealth,  
Kentucky Solar Energy Society and Mountain Association's  
Initial Request for Information  
Dated February 17, 2023**

**Case No. 2022-00402**

**Question No. 1.83**

**Responding Witness: David S. Sinclair / Stuart A. Wilson**

- Q-1.83. Please refer to page 38 of Exhibit SAW-1, which states: "It is notable that Brown BESS might provide quantifiable benefits the Companies have not attempted to quantify here." Have the Companies attempted to quantify these benefits elsewhere? If so, please produce that analysis. If not, please explain why not.
- A-1.83. No. These benefits are related to the potential to provide generation-based ancillary services. The PLEXOS and PROSYM models utilized in this CPCN analysis are generally not well-suited to address these types of generator attributes.

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**Case No. 2022-00402**

**Question No. 1.84**

**Responding Witness: Stuart A. Wilson**

- Q-1.84. Please refer to page D-3 of Exhibit SAW-1, which states: "The cost of capacity for this analysis was based on a response to the Companies' June 2022 RFP for simple-cycle combustion turbine ("SCCT") capacity and was 34% lower than the cost of SSCT capacity used in the 2021 IRP Reserve Margin Analysis."
- a. Please identify the referenced SCCT project bid into the Companies' June 2022 RFP, which the cost of capacity was based on in the CPCN Reserve Margin analysis.
  - b. Please state the approximate date when the above-referenced RFP bid was provided for use in the 2022 RFP Minimum Reserve Margin Analysis.
- A-1.84.
- a. See the response to PSC 1-87(a).
  - b. August 17, 2022.

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**Question No. 1.85**

**Responding Witness: Lonnie E. Bellar / Stuart A. Wilson**

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

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

A-1.85. The Companies assume that this question refers to Appendix A of Exhibit SAW-1 rather than Appendix A of Mr. Wilson's Direct Testimony.

- a. The status summary as of March 2, 2023 of all of the ITO's current interconnection studies is publicly available.<sup>7</sup> The ITO's expected start dates for the study regarding Mill Creek 5 and Brown 12 are 1/27/2025 and 8/4/2025, respectively. The ITO has not indicated an expected completion date for either study.
- b. Assuming this question is referencing footnote 44 on page 55, see the response to PSC 1-55.

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<sup>7</sup> See

[https://www.oasis.oati.com/woa/docs/LGEE/LGEEdocs/LGE\\_and\\_KU\\_GI\\_Study\\_Queue\\_Status\\_March\\_2\\_2023.pdf](https://www.oasis.oati.com/woa/docs/LGEE/LGEEdocs/LGE_and_KU_GI_Study_Queue_Status_March_2_2023.pdf).

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**Question No. 1.86**

**Responding Witness: Stuart A. Wilson**

Q-1.86. Please refer to Wilson Public Exhibit\_SAW-2\_-\_Vol 1\02\_PLEXOS and the files contained therein. Please provide the following:

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

A-1.86.

- a-d. See attachment being provided in Excel format.

Note that all files in the \02\_PLEXOS\CONFIDENTIAL\ folder must be moved to the \02\_PLEXOS\ folder in order to run the PLEXOS database (\02\_PLEXOS\2022RFP (8.300 R08).xml).

The attachment is being  
provided in a separate  
file.

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**Question No. 1.87**

**Responding Witness: Stuart A. Wilson**

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

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

A-1.87. See the response to Question No. 50.

- a. The development of inputs for this analysis began in August 2022.
- b. Late October 2022.
- c. The 2022 Resource Assessment evaluated dispatchable DSM-EE programs. Preliminary dispatchable DSM-EE program data was provided in October 2022. Final program data was provided in early December 2022.

- d. Not confirmed. The report was completed in December 2022 but the analysis to determine minimum reserve margins and capacity contributions for limited-duration resources was completed in early November 2022.

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**Case No. 2022-00402**

**Question No. 1.88**

**Responding Witness: Stuart A. Wilson**

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

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

A-1.88.

- a. See the response to SC 1-5(b).
- b. No. See the response to SC 1-5(b).
- c. See the response to part (a).
- d. No. Planned transmission projects in neighboring regions are not intended to materially impact available transmission capacity ("ATC") between these



regions and the LKE BA. Therefore, ATC availability in 2028 is assumed to be consistent with recent history.

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**Question No. 1.89**

**Responding Witness: John Bevington / Robert M. Conroy**

- Q-1.89. Please refer to Mr. Jones' Direct Testimony, page 6, lines 12–16.
- a. Please explain if any portion of the BlueOval SK Battery Park load is interruptible.
  - b. If any portion of the BlueOval SK Battery park load is interruptible, please provide the MW level.
  - c. If no portion of the BlueOval SK Battery park load is interruptible, please detail any steps taken by the Companies to encourage some portion of it to be interruptible. If no such steps were taken, please explain why. If such steps were taken, but were not successful, please explain why. Please provide any documents that support your response.
- A-1.89.
- a. See the response to PSC 1-38.
  - b. Not applicable.
  - c. The Companies have not encouraged some portion of the load to be interruptible because 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.

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**Question No. 1.90**

**Responding Witness: Tim A. Jones**

- Q-1.90. Please refer to Mr. Jones' Direct Testimony, page 6, footnote 5. Please provide the BlueOval's non-coincident and coincident peak hourly usage projection.
- A-1.90. The footnote referenced and discussion on page 6 of the Jones Direct Testimony refers to the summer and winter non-coincident peaks of approximately 260 MW and 225 MW, respectively, which are grossed up for transmission losses. The coincident peak grossed up for transmission losses varies slightly by year, but ranges from 250 MW to 257 MW in the summer and 207 MW to 216 MW in the winter.

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**Question No. 1.91**

**Responding Witness: Tim A. Jones**

- Q-1.91. Please refer to Mr. Jones' Direct Testimony, page 17, lines 6–16. Please provide the “forecast of energy efficiency improvements for residential and small commercial customers” under the ten year acceleration and without the ten year acceleration.
- A-1.91. See Figure 9 on page 18 of the Jones Direct Testimony as an indicator of the differences in end-use efficiency projections under the 10-year accelerated (blue line) and base (black line) scenarios. See also the response to PSC 1-91(c). In the residential data folders, the files ending in “\_AccEff” are those that show the accelerated efficiency inputs on the Efficiencies tabs. The files ending in “Res21” with no underscore are the base efficiency files from Itron. The files ending in “\_NoEffGains” are the files used to calculate the model results holding efficiencies flat at current levels. Additionally, the following file in Exhibit TAJ-3 shows how the 10-year accelerated efficiencies were derived:  
July2022\_Forecast\Electric\2\_Forecasts\Residential\Work\KU Res  
EastSouthCentralRes21\_AccEff\_UpdatedCalculation\_v3\_10Year.xlsx.

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**Question No. 1.92**

**Responding Witness: Tim A. Jones**

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

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

member(s) of his team, concerning the 2024-2030 DSM-EE Program Plan, for incorporation into the 2022 CPCN Load Forecast.

- iii. Does Table 7 of Exhibit TAJ-2 include every adjustment made to the 2022 CPCN Load Forecast to account for the Inflation Reduction Act and 2024-2030 DSM-EE Program? If not, please explain in full, including providing a comprehensive summary of those adjustments.

A-1.92.

- a. Confirmed.
  - i. The Companies produced the 2023 Business Plan load forecast over the specified timeline with it being finalized in July 2022. For that hourly forecast, see Exhibit TAJ-3 at:  
July2022\_Forecast\Electric\4\_Demand\_Forecasts\1\_Hourly\_Demand\LDC\tbl16\_GenPlanData\_OvernightCharging\_D02.xlsx.
- b. The Companies began the load forecasting process for the 2023 Business Plan in March 2022. The 2023 Business Plan load forecast served as the starting point of the CPCN forecast prior to adjustments for IRA and DSM-EE impacts and updates to the BlueOval SK load.
- c. Forecast review occurs throughout the forecast process. As model specifications and corresponding outputs are developed, they are evaluated for reasonableness by other analysts and management.
- d. The final version of the hourly load forecast was completed in late October 2022.
- e.
  - i. 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. The Companies modeled the impacts of the DSM-EE and IRA programs together through the 10-year acceleration mechanism described in Exhibit TAJ-1. Because the final estimates were not significantly different from the preliminary estimates in total, it was not necessary to revise the load forecast upon receiving the final numbers.
  - ii. The information provided was projections of energy reductions associated with each applicable DSM-EE program.

- iii. It does at a high level. Figure 17 on page 17 of Exhibit TAJ-1 provides more detail concerning the impact of the adjustments that were made. See also the responses to PSC 1-31(a), PSC 1-39, and PSC 1-91(c).

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**Question No. 1.93**

**Responding Witness: Tim A. Jones**

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

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

A-1.93.

- a. The timeline for preparing inputs varies depending upon the source, but ranges from March 2022 to May 2022 for the 2023 Business Plan load forecast. Inputs for the Residential, Small Commercial, Distributed Generation, and Electric Vehicle forecasts were updated in October 2022 to reflect the impact of the IRA and proposed DSM-EE programs. See also the response to PSC 1-91(c).
- b. For the 2023 Business Plan load forecast completed in July 2022, models were updated and evaluated from April 2022 to early July 2022. See the response to part (a) regarding October 2022 updates. In addition to these updates, BlueOval SK provided an updated forecast, both in terms of total MW and hourly load profile, in September 2022. Therefore, the BlueOval SK forecast was also updated at this time. This process took place in September and October 2022 and used the results from the 2023 Business Plan load forecast completed in July 2022 as a starting point.



- c. As detailed in Section 5 of Exhibit TAJ-2, the data processing steps are primarily converting billing period forecast model results to calendar month results as well as converting calendar month sales forecasts to hourly energy requirements forecasts. These processes were completed in July 2022 for the 2023 Business Plan load forecast and in October 2022 for the CPCN load forecast.

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**Question No. 1.94**

**Responding Witness: Tim A. Jones**

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

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

A-1.94.

- a. See the response to Question No. 93. All forecast inputs were initially developed between March 2022 and May 2022. Then, all forecast inputs materially impacted by the IRA and the proposed non-dispatchable DSM-EE programs were updated in October 2022.
- b. See the response to part (a).

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**Question No. 1.95**

**Responding Witness: Tim A. Jones**

Q-1.95. Please refer to Exhibit TAJ-2.

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

A-1.95.

- a.
  - i. 6.2% annual loss rate (which equates to a loss factor of approximately 1.066) for KU; 5.8% annual loss rate (which equates to a loss factor of approximately 1.0616) for LG&E.

- ii. See Section 5.2.1, Step 1 beginning on page 17 of Exhibit TAJ-2. See also Exhibit TAJ-3 at:  
July2022\_Forecast\Electric\4\_Demand\_Forecasts\1\_Hourly\_Demand\LDC\Data\HourlyDemandForecastInputs\_OvernightCharging\_2023BP.xlsx (specifically, see the tabs titled “LossRateCheck” and “EnergyRequirements”).
  
- b.
  - i. As the quoted testimony states, the Companies do not attempt in load forecasting to adjust their historical load data to remove inferred effects of either customer-initiated energy-efficiency efforts or the Companies’ own DSM-EE programs. Therefore, the historical regression modeling that serves as the basis for the Companies’ load forecasting implicitly includes the effects of *historical* customer-initiated energy-efficiency efforts and the Companies’ own DSM-EE programs. The Companies use end-use efficiency data from Itron, which draws data from the U.S. Department of Energy’s Energy Information Administration (“EIA”), in their load forecasting model as a proxy for *prospective* DSM-EE programs and customer-initiated energy-efficiency efforts, including those incentivized by the IRA.<sup>8</sup> The Companies then compare projected demand and energy savings for their DSM-EE programs on a prospective basis to the total energy-efficiency adjustment to their load forecast as part of ensuring the reasonableness of the load forecast’s explicit, prospective energy-efficiency assumptions. Thus, it is correct that the Companies’ load forecasting does not separately or independently model customer-initiated energy efficiency versus savings resulting from the Companies’ DSM-EE programs; rather, the Companies’ models include a total amount of *additional, prospective* energy efficiency based on EIA data. That total is then compared to the Companies’ DSM-EE savings projections to ensure reasonableness. In sum, in the 2022 CPCN Load Forecast, the Companies accelerated by ten years the energy-efficiency projections from Itron-EIA data to account for the combined impact of the IRA and DSM-EE programs.<sup>9</sup>
  
- c. See the response to part (b).

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<sup>8</sup> See, e.g., Jones at 16-17.

<sup>9</sup> See *id.* at 17-21; Exhibit TAJ-1 at 17-21.

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**Question No. 1.96**

**Responding Witness: Tim A. Jones**

Q-1.96. In LGE/KU's Joint 2021 IRP (Volume I, page 5-29), the Companies address "Distributed Generation Forecast Scenarios." Figure 5-13 shows a High scenario in which distributed generation solar capacity grows to exceed 500 MW by 2030. In the discussion, it states: "In the high scenario, a new federal law is assumed to eliminate the 1% cap on total installed net metering capacity. As a result, the high scenario is identical to the base scenario through 2027 and then continues to grow thereafter. The steep increase in capacity seen from 2028-2030 in the high scenario is due to quickly falling capital costs coupled with the ITC. After 2030, the capacity costs for installing solar decline much less rapidly, resulting in slower capacity growth as compared to the previous few years. Capacity growth flattens out further after 2034 due to the assumed end of the 10-year ITC."

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

A-1.96.

- a. Confirmed.
- b. The value for the ITC in the 2021 IRP forecast was assumed to be 26% in 2021 and 2022, 22% in 2023 through 2033, and 0% from 2034 onwards.

c. No. See the response to PSC 1-35.

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**Question No. 1.97**

**Responding Witness: Lonnie E. Bellar**

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

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

A-1.97.

- a. No, the proposed Mill Creek NGCC is not located within and does not require access through the boundaries of a CCR storage facility.
- b. The Companies are not aware of any areas within the proposed footprint of the Mill Creek NGCC where coal combustion residuals have been placed on the land or otherwise been disposed.

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**Question No. 1.98**

**Responding Witness: Lonnie E. Bellar**

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

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

A-1.98.

- a. No, the proposed Brown NGCC is not located within and does not require access through the boundaries of a CCR storage facility.
- b. The Companies are not aware of any areas within the proposed footprint of the Brown NGCC where coal combustion residuals have been placed on the land or otherwise been disposed.



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**Question No. 1.99**

**Responding Witness: Lonnie E. Bellar**

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

- a. Do any of the Companies' currently operating coal units, other than Mill Creek Unit 2 and Ghent Unit 2, lack NOx-controlling selective catalytic reduction treatment? If yes, please identify the units and explain in detail how they would be impacted by the proposed Good Neighbor Rule.
- b. Please explain in detail the reasons why E.W. Brown Unit 3 will "require a \$28 million overhaul in 2027 if it is to operate safely beyond 2028."

A-1.99.

- a. Yes. Mill Creek Unit 1 does not have an SCR. It is scheduled to retire prior to being affected by the Good Neighbor Rule.
- b. See the response to PSC 1-44(a).

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**Question No. 1.100**

**Responding Witness: Lonnie E. Bellar**

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

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

A-1.100.

- a. Yes, originally shared with EW Brown 1 and 2, 2010.
- b. Yes, 1994
- c. Yes, 2009
- d. Yes, 2007
- e. Yes, 2008
- f. Yes, shared with Mill Creek 1, 2015.
- g. Yes, 2016

h. Yes, 2014

i. Yes, 1990

For all of the above listed units, there is no established year where the system is expected to require replacement. So long as proper industry accepted maintenance and inspections are performed on system components, the FGD systems should continue to run until the generating unit retires.

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**Question No. 1.101**

**Responding Witness: Philip A. Imber**

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

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

A-1.101.

- a. E.W. Brown’s most recent KPDES permit, KPDES permit fact sheet, and KPDES permit renewal application are attached as Attachment 1, Attachment 2, and Attachment 3, respectively.
- b. Ghent’s most recent KPDES permit, KPDES permit fact sheet, and KPDES permit renewal application are attached as Attachment 1, Attachment 2, and Attachment 3, respectively.
- c. See the response to part (b).
- d. See the response to part (b).
- e. See the response to part (b).

- f. Mill Creek's most recent KPDES permit, KPDES permit fact sheet, and KPDES permit renewal application are attached as Attachment 1, Attachment 2, and Attachment 3, respectively.
- g. See the response to part (f).
- h. See the response to part (f).
- i. Trimble County's most recent KPDES permit, KPDES permit fact sheet, and KPDES permit renewal application are attached as Attachment 1, Attachment 2, and Attachment 3, respectively.

The attachments are  
being provided in  
separate files.

**KENTUCKY UTILITIES COMPANY  
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**Case No. 2022-00402**

**Question No. 1.102**

**Responding Witness: Philip A. Imber**

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

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

A-1.102.

- a. E.W. Brown's most recent Clean Air Act Title V operating permit and renewal permit application are attached as Attachment 1 and Attachment 2, respectively.
- b. Ghent's most recent Clean Air Act Title V operating permit and renewal permit application are attached as Attachment 1 and Attachment 2, respectively.
- c. See the response to part (b).
- d. See the response to part (b).
- e. See the response to part (b).

- f. Mill Creek's most recent Clean Air Act Title V operating permit and renewal permit application are attached as Attachment 1 and Attachment 2, respectively.
- g. See the response to part (f).
- h. See the response to part (f).
- i. Trimble County's most recent Clean Air Act Title V operating permit and renewal permit application are attached as Attachment 1 and Attachment 2, respectively.



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**Question No. 1.103**

**Responding Witness: Lonnie E. Bellar / John Bevington**

Q-1.103. Please provide the following information:

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

who have missed one or more payments by zip code and census tract.

- j. Are the people who have missed one or more payments on their payment plan included in the overall number of people who are eligible for disconnection?
- k. Please provide data on the number of people who have received support from pandemic utility assistance programs by zip code and census tract.
- l. Please provide data on the amount of money received by the Companies from pandemic utility assistance programs and average assistance dollars to each household.

A-1.103. The Companies do not maintain census tract data in their records. For this reason, census tract data cannot be provided. Additionally, the Companies do not maintain records or information in the manner requested for many sub-parts below. The following represents the Companies' best effort to be responsive to the requests.

- a. The Companies do not track income data on customers. The Companies partner with agencies that help to serve customers in need.
- b. The Companies do not track income data on customers. Customers are made aware of all programs via marketing, communications, business partner outreach, and partnerships with community organizations serving similar customers.
- c. See attachment provided in Excel format.
- d. See attachment provided in Excel format.
- e. See attachment provided in Excel format.
- f-j. The Companies do not currently require payment plans to be signed, but payment plans for 30 days or more are captured in writing in accordance with regulations.
- f. See attachment provided in Excel format.
- g. For the 30 days ending February 21, 2023, there were 148,617 customers who were late on their payments, but not on a payment plan for 30 days or more. This number includes 24,398 customers who are on shorter term payment plans and those that have paid their past due amounts after their bill due date passed. The number of customers late on their payments does not include customers who previously set up a payment plan and have maintained payments. See attached for breakdown by zip code.

- h. See attachment provided in Excel format.
- i. Typically, when a customer misses one payment, the plan is removed and the entire balance is due.
- j. Yes. When a customer falls behind on a payment plan, the payment plan is removed and the customer is provided the opportunity to pay the full amount. The Companies send a disconnection notice to the customer providing 10 additional business days to pay or contact the Company prior to disconnection.
- k. See attachment provided in Excel format.
- l. See attachment provided in Excel format.

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**Case No. 2022-00402**

**Question No. 1.104**

**Responding Witness: John Bevington**

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

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

A-1.104.

- a. The Companies have offered a comprehensive portfolio of Demand Side Management Programs since 1994. The Companies calculated the referenced cumulative energy and gas savings since 1994.
- b. See the response to part (a).

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**Case No. 2022-00402**

**Question No. 1.105**

**Responding Witness: John Bevington**

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

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

A-1.105.

- a. The WeCare Program encourages customers to contact the Community Action Agencies for services not covered by the program. The two programs

coordinate offerings to ensure the best use of dollars and to maximize a positive customer experience.

| Year               | # of Contract Accounts |
|--------------------|------------------------|
| 2018               | 4,463                  |
| 2019               | 4,098                  |
| 2020               | 4,006                  |
| 2021               | 4,000                  |
| 2022               | 4,052                  |
| <b>Grand Total</b> | <b>20,619</b>          |

b.

c. No.

d. Each year, approximately 2,000 LG&E and 2,000 KU (4,000 total) customers receive installed measures through the WeCare program. There are approximately 100 measures that qualify for installation through the program. The approved WeCare budget and average allowable measure cost per customer would not support the installation of all 100 measures on any residence in a given year. Therefore, the percentage of participants that receive each measure is 0%.

e. No.

f. The Companies encourage customers to contact a community agency that can help with the needed repairs and apply to the WeCare Program once the repairs are complete.

g. Servicing renters is the biggest challenge for the program due to the difficulty in obtaining signed consent forms from property owners or landlords, which delays or stops the process of servicing the customer. Generally, when this situation occurs, the property owner or landlord is either not familiar with the program, rarely engages with the customer, or is not local. Additionally, with the onset of COVID, the number of appointment cancellations has increased.



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**Case No. 2022-00402**

**Question No. 1.106**

**Responding Witness: John Bevington**

Q-1.106. Please answer the following requests regarding the Kentucky School Energy Managers Program ("SEMP").

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

A-1.106.

- a. Yes.
  - i. The Companies provided additional funding to support SEMP activities.
  - ii. Yes, but only via funding support, not operationally.
  - iii. In 2013 through 2018, the net total cost was approximately \$3.4 million, which reflects some unspent funds that were returned to the Companies from the program. Over that period, total savings were 30,394 MWh and 8 MWs.

- iv. The Companies supported the initiative as it was a proactive approach by a group of customers (schools through KSBA membership) aiming to assess and reduce their energy consumption. Further, the Companies proposed continuing the funding arrangement in Case No. 2017-00441, but in the final order for the case, the Commission denied the program.
- b. No.

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**Case No. 2022-00402**

**Question No. 1.107**

**Responding Witness: John Bevington**

Q-1.107. Please refer to Mr. Bevington's Direct Testimony, page 6, lines 8–10, which states that "the Companies' asked their DSM-EE consultant, The Cadmus Group, Inc. ("Cadmus"), to perform a demand response potential study in the first quarter of 2021."

- a. Please provide Cadmus' demand response potential study in fully functional electronic format.
- b. Please provide all workpapers for the study in fully functional Excel format with formulas intact.

A-1.107.

- a. See Exhibit LI-2 for an electronic copy of this potential study.
- b. See attachments provided in Excel format. There are also supporting documents footnoted throughout the document as well as in tables contained in the Appendices.

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**Question No. 1.108**

**Responding Witness: John Bevington**

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

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

A-1.108.

- a. See the achievable potential data within Exhibit LI-1, Table 6 and Table 10.

The recent energy efficiency and demand response potential studies informed the DSM/EE Program Plan as described in Section 1.3 of Exhibit JB-1. The potential studies inform the program design in terms of types of measures to offer and levels of projected participation. The Companies' Plan is most consistent with the recent energy efficiency potential studies and updates that use the achievable potential medium scenario. This achievable potential medium scenario is based on adoption projections that assumes 50% incentive of measure incremental costs and compared to the other scenarios assessed,

the achievable potential medium scenario is most consistent with the Companies' Plan. The 2017 Residential and Commercial potential study scenarios are No Incentive (Low), 50% Incentive (Medium), and 75% Incentive (High) of measure incremental cost. The 2016 Industrial potential study scenarios are 25% Incentive (Low), 50% Incentive (Medium), and 75% Incentive (High) of measure incremental cost.

- b. See Exhibit LI-1 and LI-2 for the most recent potential studies.
- c. See the response to Question No. 1.107(b).
- d. See Exhibit LI-6.

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**Question No. 1.109**

**Responding Witness: Lonnie E. Bellar / John Bevington**

Q-1.109. Please refer to Mr. Bevington's Direct Testimony, page 13, lines 8–10, which states: "The Income-Qualified Solutions are designed to positively impact approximately 5,400 customers per year and nearly 38,000 customers over the program period."

- a. How many income-qualified customers receive electric service only from the Companies, assuming the proposed 300% FPL eligibility criterion?
- b. How many income-qualified customers receive gas service only from the Companies, assuming the proposed 300% FPL eligibility criterion?
- c. How many income-qualified customers receive both electric and gas service from the Companies, assuming the proposed 300% FPL eligibility criterion?
- d. How many income-qualified customers receive electric service only from the Companies, assuming a 200% FPL eligibility criterion?
- e. How many income-qualified customers receive gas service only from the Companies, assuming a 200% FPL eligibility criterion?
- f. How many income-qualified customers receive both electric and gas service from the Companies, assuming a 200% FPL eligibility criterion?

A-1.109.

- a.– f. See the response to Question No. 1.103(a).

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**Case No. 2022-00402**

**Question No. 1.110**

**Responding Witness: John Bevington**

Q-1.110. Please provide DSM-EE Annual Reports for the five previous complete program years.

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

A-1.110. The Companies do not create or file annual DSM reports with the Commission.



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**Case No. 2022-00402**

**Question No. 1.111**

**Responding Witness: John Bevington**

Q-1.111. Please refer to Exhibit JB-1, page 2, which states: "These factors have prompted the Companies to file a mid-plan adjustment to request approval for additional budget and programs to support a substantive increase in their portfolio offerings that will make more comprehensive energy efficiency and demand response opportunities available to a broader customer population."

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

A-1.111.

- a. More comprehensive energy efficiency and demand response offerings means more programs and measures that are accessible to more customers.
- b. The currently approved filing is limited in budget and the number of offerings and programs. The newly proposed filing contains programs, measures, and incentives that provide more value and opportunities for participation for a larger number of business and residential customers.

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**Question No. 1.112**

**Responding Witness: John Bevington**

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

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

A-1.112.

- a. The context of the referenced quote relates to the broader market potential as referenced further in Exhibit JB-1, page 2. While economies of scale can in some cases reduce costs, they do not impact market potential.

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**Question No. 1.113**

**Responding Witness: John Bevington**

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

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

A-1.113.

- a. Market trends and recent legislation, including the Inflation Reduction Act, require the electrification of buildings. As described on page 6 of Exhibit JB-1, “the environmental imperative to electrify buildings” is one of many reasons demand is growing.
- b. See the response to part (a). The Companies are proposing DSM/EE programs to meet growing demand caused, in part, by the electrification of buildings.

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**Question No. 1.114**

**Responding Witness: John Bevington**

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

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

A-1.114.

- a. "Appropriate" means that the Companies selected measures for each program based on their applicability to the program design.
- b. Yes, the selected measures could be different if the Companies selected other programs.

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**Question No. 1.115**

**Responding Witness: John Bevington**

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

- a. For any estimates of measure participation it included in the Plan, did the Companies estimate the maximum participation it could achieve using enhanced program implementation and outreach practices and/or increased incentives? Please explain.
- b. As used in the referenced statement, please explain the Companies' use of the term "reasonable." What criteria, specifically, were used to determine if an escalation or de-escalation rate was "reasonable"?

A-1.115.

- a. The Companies' potential studies identify maximum *achievable* potential. The programs are designed to maximize participation using cost-effective incentive levels and outreach strategies, however, achieving maximum participation is subject to market trends and customer adoption.
- b. The Companies relied on research and benchmarking from adoption of similar programs in other markets and applied historical trends in Kentucky to develop the reasonable escalation and de-escalation rates for the Companies' specific service territory.

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**Question No. 1.116**

**Responding Witness: John Bevington**

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

A-1.116. Yes. As there are no "net to gross" regulations/guidelines in the state for DSM nor a state specific Technical Reference Manual ("TRM"), the Companies used gross savings to calculate cost-effectiveness.

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**Question No. 1.117**

**Responding Witness: John Bevington**

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

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

A-1.117.

- a. The term “reasonable” represents the goal of offering the right balance between number of programs, measures, and energy efficiency and demand response related programs, while not overwhelming customers with too many choices, which could create confusion as to what is available.

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**Case No. 2022-00402**

**Question No. 1.118**

**Responding Witness: Lana Isaacson**

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

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

A-1.118.

- a. Heat pump water heaters: \$1,030  
Central air conditioner: \$339  
Ductless heat pump: \$1,002  
Air source heat pump: \$405  
95% AFUE furnace: \$977
- b. The Companies determined the incentive amounts through industry expertise and reviewing other comparable utility company offerings.



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**Case No. 2022-00402**

**Question No. 1.119**

**Responding Witness: John Bevington**

Q-1.119. Please refer to Exhibit JB-1.

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

A-1.119.

- a. John Bevington directed the preparation of and is a co-sponsor of Exhibit JB-1. Lana Isaacson is the other co-sponsor of Exhibit JB-1.
- b. Exhibit JB-1 was drafted from August 2022 through early December 2022.

- c. This process began in late 2020 when the Companies initially contracted with Cadmus to update the Demand Response Potential Study. See the Direct Testimony of John Bevington at page 6.
- d. It is unclear to which analysis the request refers.
  - i. It is unclear to which analysis the request refers. Staff who were primarily involved in the development of the Companies' proposed DSM-EE Program Plan are the Companies' Emerging Business Planning and Development Group, including John Bevington and Lana Isaacson who are witnesses in this proceeding.
  - ii. Yes, the process for developing the proposed DSM-EE Program Plan was fundamentally the same as the process the Companies have used to develop previous DSM-EE Program Plans.
  - iii. Not applicable.

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**Case No. 2022-00402**

**Question No. 1.120**

**Responding Witness: John Bevington**

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

A-1.120. Yes. For example, the Companies' current DSM-EE offerings are meeting or exceeding forecasted demand and energy savings expectations. Therefore, the Companies know that one of the objectives is being met. Additionally, the Companies know that the currently filed plan includes programs that are interesting to the stakeholder group, including peak time rebates and residential online audits, which means another objective is being met. Finally, the Companies have been recognized for many years as best in class for JD Power awards, which indicate the customer experience is best in class, which again indicates another of the stated aims is being met.

**KENTUCKY UTILITIES COMPANY  
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**Response to Metropolitan Housing Coalition, Kentuckians for the Commonwealth,  
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Initial Request for Information  
Dated February 17, 2023**

**Case No. 2022-00402**

**Question No. 1.121**

**Responding Witness: John Bevington**

- Q-1.121. Refer to Exhibit JB-1, page 6, which states: "Many new and emerging electric energy-saving measures that initially showed promise, such as heat pumps and smart technologies, have been hindered by persistently high costs, inconsistent performance, and slow market adoption." Please provide the data or sources supporting this assertion, if any.
- A-1.121. See the footnote supporting this statement in Exhibit JB-1. The Companies and Cadmus also relied on their experience and knowledge of the industry and specific technologies.

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**Case No. 2022-00402**

**Question No. 1.122**

**Responding Witness: John Bevington**

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

A-1.122. No. The Companies' goal is to provide safe and reliable energy at a reasonable cost. The Companies and the Commission recognize the need and importance of serving the income-qualifying population with DSM/EE programs as evidenced by the historic presence and approvals of the WeCare program despite it not showing positive cost-effectiveness.

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**Case No. 2022-00402**

**Question No. 1.123**

**Responding Witness: John Bevington**

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

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

A-1.123.

- a. See the response to PSC 1-3(a) for a list of the 39 potential programs. As noted in Exhibit JB-1, the Companies identified these programs by reviewing programs and successful strategies offered by utilities in other jurisdictions, surveying and meeting with the DSM Advisory Group, receiving guidance from a consultant that works nationwide on energy efficiency and demand

response matters, and generating ideas from the Companies' internal stakeholders. All of this work and research occurred continuously over time and there is not a library of information to supply the requested information. Rather, the information and work fed the creation of the comprehensive list of 39 programs.

- b. See the response to part (a). The “successful strategies offered by utilities in other jurisdictions” are included in the list of the 39 original programs considered and are part of the Companies' ongoing work, research, and collaboration including specific program and strategy requests from the DSM Advisory Group. The Companies did not categorize each program based on the source from which it was identified, nor did the Companies document the full description of the specific strategy for all the programs in other jurisdictions.
- c. Confirmed.
  - i. The Companies considered only electric to gas conversion because the current DSM/EE portfolio plan development process had a specific need to address electric capacity and energy needs comprehensively alongside the supply-side resource analysis. Unlike the need for electric capacity, LG&E does not have a broad need for gas capacity in its system.
  - ii. Not applicable.

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**Case No. 2022-00402**

**Question No. 1.124**

**Responding Witness: John Bevington**

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

- a. Did the Companies retain a record of the scores assigned by each of the six individuals assigned to score each potential program? If so, please provide documentation of the scoring by each of those six individuals. If not, please explain why not.
- b. Please provide written materials, if any, provided to the six individuals to explain the “12 key objective criteria (outlined in Appendix C).”

A-1.124.

- a. Yes. See the response to PSC 1-3(a), which provides the individual evaluator scores.
- b. No written materials were provided to the scorers as all were involved throughout the planning and development process.



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**Case No. 2022-00402**

**Question No. 1.125**

**Responding Witness: Lana Isaacson**

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

- a. Please explain what is meant by “switch failures” as used in the above-referenced statement.
- b. Please explain what steps, if any, the Companies take to address switch failures.

A-1.125.

- a. A switch failure refers to the installed device no longer being functional typically due to the age of the device.
- b. As part of Case No. 2017-00441, LG&E/KU discontinued all quality assurance and quality control checks on installed devices. 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.

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**Case No. 2022-00402**

**Question No. 1.126**

**Responding Witness: Lana Isaacson**

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

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

A-1.126.

- a. As shown on page 28 of Exhibit JB-1, the Whole-Building Multifamily direct install measures includes LED bulbs, low-flow showerheads, pipe wrap, and faucet aerators. These direct install measures are provided at no cost to the property owner or tenant.
- b. The Companies will offer an incentive that covers 50% of the whole-building project incremental costs for those energy efficiency upgrades the property owner chooses to make beyond the direct install measures.

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**Case No. 2022-00402**

**Question No. 1.127**

**Responding Witness: Lana Isaacson**

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

- a. Please provided an itemized list of purchases the Companies expects to make under this capital expense budget line item (e.g., license for a specific software platform, hardware).
- b. For each item listed in response to subpart (a) above, please also explain in full the process by which the Companies estimated the cost of each item.
- c. For each item listed in response to subpart (a) above, please provide the estimated cost of each item.

A-1.127.

- a. The \$1,800,000 expenditure in 2024 and 2025 is the forecasted total internal and external costs to implement and integrate a centralized DSM tracking, reporting, and management system with other internal and external systems. The Companies plan follow the established procurement procedures which include issuing a Request for Proposals to obtain additional information as to specific expenses.
- b. See the response to part (a). This budgetary expenditure is an estimate based on discussions with the Companies' DSM consultant, prior experience implementing and integrating other cloud-based SaaS solutions, and vendor feedback.
- c. See the response to part (a). There are currently no itemized costs available.

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**Case No. 2022-00402**

**Question No. 1.128**

**Responding Witness: John Bevington**

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

- a. Please state the approximate date when the Companies entered into a contract with Cadmus for the referenced analysis.
- b. Please confirm that Cadmus conveyed the results of its analysis on November 11, 2022, as reflected on the first page of Cadmus's Memorandum. If anything but confirmed, please explain.

A-1.128.

- a. The contract was signed on August 8, 2022.
- b. Cadmus emailed the PAYS memo to the Companies on November 14, 2022. Although the memo is dated on November 11, 2022, the Companies received it on the following business day.

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**Case No. 2022-00402**

**Question No. 1.129**

**Responding Witness: Lana Isaacson**

Q-1.129. Please refer to Exhibit JB-3.

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

A-1.129.

- a. See attachment provided in Excel format.
- b. The Companies included inflation to account for anticipated increased cost (inflation rate) of installing the same quantity of measures in future years while also allowing for net present values of those installations to be modeled in the current year (discount rate) against current costs.
- c. As noted in Exhibit JB-3, the analysis uses the average total job cost based on HowSmartKY program data from 2020 as provided by Chris Woolery from Mountain Association. Wholesale purchase of equipment is not considered.
- d. The electric savings used in the analysis are based on the as-found information from HowSmartKY program 2020 data as provided by Chris Woolery from Mountain Association. As noted in Exhibit JB-3, for the natural gas savings, Cadmus used the savings algorithm for “ENERGY STAR Furnace - 95% AFUE” as found in Mid-Atlantic Technical Reference Manual v9.0 and assumed that a third of the projects will have natural gas savings.
- e. The analysis includes peak demand savings at a value of 0.47 kW per participant. This is calculated based on the ratio of kW savings to kWh savings in Companies’ WeCare program, which provides low-income heating assistance.
- f. See the response to PSC 1-16(b).
- g. Yes. See Exhibit LI-6, specifically the folder “Cadmus Input Files.”
- h. No, the analysis does not make any assumptions related to federal incentives. 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.

The attachment is being  
provided in a separate  
file.

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**Case No. 2022-00402**

**Question No. 1.130**

**Responding Witness: Lana Isaacson**

- Q-1.130. Please refer to Exhibit JB-3, page 2. Table 1 shows a full project cost of \$7,592 and an incremental project cost of \$4,555, as well as kWh savings per project of 5,514, and therm savings per project of 25.40. Please provide a list of the specific measures, as well as costs, savings, and estimated useful lives of each.
- A-1.130. The Companies performed the analysis at the project level, not at the measure level, using How\$martKY program data from 2020 for savings and full project cost as provided by Chris Woolery from Mountain Association. The Companies assumed measure life to be 15 years.



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**Case No. 2022-00402**

**Question No. 1.131**

**Responding Witness: Lana Isaacson**

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

- a. Please explain the difference in costs between a scenario that assumes 100 participants and a scenario that assumes 1,000 participants.
- b. Please provide the itemized total program cost per participant under each of the listed scenarios.
- c. Please explain the basis for testing program cost-effectiveness in scenarios with only 100 or 1,000 participants per year, including answering the following questions:
  - i. Who determined the appropriate level of participation to assume for purposes of cost-effectiveness screening, Cadmus, the Companies, or some other party? Please explain.
  - ii. Did the Companies ask Cadmus to evaluate higher levels of participation each year? If so, please state the level of participation the Companies asked to be analyzed and explain Cadmus' basis for not evaluating higher levels of participation.
  - iii. Did Cadmus evaluate any level of participation other than the two reported in Ex. JB-3? If so, please provide the results of each such evaluation. If not, please explain why not.

A-1.131.

- a. There are two costs that are impacted by the number of participants as shown in the table in subpart b.: Outside Services and Rebates. The Outside Services



|                                     |      |         |         |         |         |         |         |
|-------------------------------------|------|---------|---------|---------|---------|---------|---------|
| <b>Outside Services</b>             | \$0  | \$59    | \$59    | \$59    | \$59    | \$59    | \$59    |
| <b>Rebates</b>                      | \$0  | \$102   | \$105   | \$107   | \$110   | \$113   | \$116   |
| <b>Evaluation</b>                   | \$0  | \$0     | \$0     | \$0     | \$0     | \$150   | \$0     |
| Total program cost                  | \$0  | \$719   | \$ 478  | \$487   | \$496   | \$655   | \$515   |
| <b>Number of participants</b>       | 100  | 100     | 100     | 100     | 100     | 100     | 100     |
| Program cost per participant        | \$0  | \$7.19  | \$ 4.78 | \$4.87  | \$4.96  | \$6.55  | \$5.15  |
| SCENARIO 4                          |      |         |         |         |         |         |         |
| <b>Program Set Up Cost</b>          | \$0  | \$250   | \$0     | \$0     | \$0     | \$0     | \$0     |
| <b>Direct Program Labor</b>         | \$0  | \$203   | \$209   | \$215   | \$221   | \$228   | \$235   |
| <b>Office Supplies and Expenses</b> | \$0  | \$1     | \$1     | \$1     | \$1     | \$1     | \$1     |
| <b>Training</b>                     | \$0  | \$5     | \$5     | \$5     | \$5     | \$5     | \$5     |
| <b>Advertising</b>                  | \$0  | \$100   | \$100   | \$100   | \$100   | \$100   | \$100   |
| <b>Outside Services</b>             | \$0  | \$586   | \$586   | \$586   | \$586   | \$586   | \$586   |
| <b>Rebates</b>                      | \$0  | \$1,021 | \$1,047 | \$1,073 | \$1,100 | \$1,128 | \$1,156 |
| <b>Evaluation</b>                   | \$0  | \$0     | \$0     | \$0     | \$0     | \$150   | \$0     |
| Total program cost                  | \$0  | \$2,165 | \$1,947 | \$1,980 | \$2,013 | \$2,197 | \$2,083 |
| <b>Number of participants</b>       | 1000 | 1000    | 1000    | 1000    | 1000    | 1000    | 1000    |
| Program cost per participant        | \$0  | \$2.17  | \$1.95  | \$1.98  | \$2.01  | \$2.20  | \$2.08  |
| SCENARIO 5                          |      |         |         |         |         |         |         |
| <b>Program Set Up Cost</b>          | \$0  | \$250   | \$0     | \$0     | \$0     | \$0     | \$0     |
| <b>Direct Program Labor</b>         | \$0  | \$203   | \$209   | \$215   | \$221   | \$228   | \$235   |
| <b>Office Supplies and Expenses</b> | \$0  | \$1     | \$1     | \$1     | \$1     | \$1     | \$1     |
| <b>Training</b>                     | \$0  | \$5     | \$5     | \$5     | \$5     | \$5     | \$5     |
| <b>Advertising</b>                  | \$0  | \$100   | \$100   | \$100   | \$100   | \$100   | \$100   |
| <b>Outside Services</b>             | \$0  | \$59    | \$59    | \$59    | \$59    | \$59    | \$59    |
| <b>Rebates</b>                      | \$0  | \$170   | \$174   | \$179   | \$183   | \$188   | \$192   |
| <b>Evaluation</b>                   | \$0  | \$0     | \$0     | \$0     | \$0     | \$150   | \$0     |
| Total program cost                  | \$0  | \$787   | \$547   | \$558   | \$569   | \$730   | \$592   |
| <b>Number of participants</b>       | 100  | 100     | 100     | 100     | 100     | 100     | 100     |
| Program cost per participant        | \$0  | \$7.87  | \$5.47  | \$5.58  | \$5.69  | \$7.30  | \$5.92  |
| SCENARIO 6                          |      |         |         |         |         |         |         |
| <b>Program Set Up Cost</b>          | \$0  | \$250   | \$0     | \$0     | \$0     | \$0     | \$0     |
| <b>Direct Program Labor</b>         | \$0  | \$203   | \$209   | \$215   | \$221   | \$228   | \$235   |
| <b>Office Supplies and Expenses</b> | \$0  | \$1     | \$1     | \$1     | \$1     | \$1     | \$1     |
| <b>Training</b>                     | \$0  | \$5     | \$5     | \$5     | \$5     | \$5     | \$5     |

|                                     |      |         |         |         |         |         |         |
|-------------------------------------|------|---------|---------|---------|---------|---------|---------|
| <b>Advertising</b>                  | \$0  | \$100   | \$100   | \$100   | \$100   | \$100   | \$100   |
| <b>Outside Services</b>             | \$0  | \$586   | \$586   | \$586   | \$586   | \$586   | \$586   |
| <b>Rebates</b>                      | \$0  | \$1,699 | \$1,742 | \$1,786 | \$1,831 | \$1,877 | \$1,925 |
| <b>Evaluation</b>                   | \$0  | \$0     | \$0     | \$0     | \$0     | \$150   | \$0     |
| Total program cost                  | \$0  | \$2,844 | \$2,643 | \$2,693 | \$2,744 | \$2,947 | \$2,851 |
| <b>Number of participants</b>       | 1000 | 1000    | 1000    | 1000    | 1000    | 1000    | 1000    |
| Program cost per participant        | \$0  | \$2.84  | \$2.64  | \$2.69  | \$2.74  | \$2.95  | \$2.85  |
| SCENARIO 7                          |      |         |         |         |         |         |         |
| <b>Program Set Up Cost</b>          | \$0  | \$250   | \$0     | \$0     | \$0     | \$0     | \$0     |
| <b>Direct Program Labor</b>         | \$0  | \$203   | \$209   | \$215   | \$221   | \$228   | \$235   |
| <b>Office Supplies and Expenses</b> | \$0  | \$1     | \$1     | \$1     | \$1     | \$1     | \$1     |
| <b>Training</b>                     | \$0  | \$5     | \$5     | \$5     | \$5     | \$5     | \$5     |
| <b>Advertising</b>                  | \$0  | \$100   | \$100   | \$100   | \$100   | \$100   | \$100   |
| <b>Outside Services</b>             | \$0  | \$59    | \$59    | \$59    | \$59    | \$59    | \$59    |
| <b>Rebates</b>                      | \$0  | \$102   | \$105   | \$107   | \$110   | \$113   | \$116   |
| <b>Evaluation</b>                   | \$0  | \$0     | \$0     | \$0     | \$0     | \$150   | \$0     |
| Total program cost                  | \$0  | \$719   | \$478   | \$487   | \$496   | \$655   | \$515   |
| <b>Number of participants</b>       | 100  | 100     | 100     | 100     | 100     | 100     | 100     |
| Program cost per participant        | \$0  | \$7.19  | \$4.78  | \$4.87  | \$4.96  | \$6.55  | \$5.15  |
| SCENARIO 8                          |      |         |         |         |         |         |         |
| <b>Program Set Up Cost</b>          | \$0  | \$250   | \$0     | \$0     | \$0     | \$0     | \$0     |
| <b>Direct Program Labor</b>         | \$0  | \$203   | \$209   | \$215   | \$221   | \$228   | \$235   |
| <b>Office Supplies and Expenses</b> | \$0  | \$1     | \$1     | \$1     | \$1     | \$1     | \$1     |
| <b>Training</b>                     | \$0  | \$5     | \$5     | \$5     | \$5     | \$5     | \$5     |
| <b>Advertising</b>                  | \$0  | \$100   | \$100   | \$100   | \$100   | \$100   | \$100   |
| <b>Outside Services</b>             | \$0  | \$586   | \$586   | \$586   | \$586   | \$586   | \$586   |
| <b>Rebates</b>                      | \$0  | \$1,021 | \$1,047 | \$1,073 | \$1,100 | \$1,128 | \$1,156 |
| <b>Evaluation</b>                   | \$0  | \$0     | \$0     | \$0     | \$0     | \$150   | \$0     |
| Total program cost                  | \$0  | \$2,165 | \$1,947 | \$1,980 | \$2,013 | \$2,197 | \$2,083 |
| <b>Number of participants</b>       | 1000 | 1000    | 1000    | 1000    | 1000    | 1000    | 1000    |
| Program cost per participant        | \$0  | \$2.17  | \$1.95  | \$1.98  | \$2.01  | \$2.20  | \$2.08  |

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. In the HowSmart KY program, 29 projects were completed per year between 2011 and 2022 for

utilities with a total customer count of 139,230; a ratio of approximately 0.0002. Applying this ratio to the Companies' customer count of approximately 1.3 million customers results in an estimated 271 projects per year. The participation values of 100 and 1,000 covered a range inclusive of this estimate.

- ii. No. The purpose of selecting 100 and 1,000 participants per year under different scenarios is to assess the range (economies of scale) in program costs, savings, and cost effectiveness results.
- iii. No. See the response to part (c)(ii).

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**Case No. 2022-00402**

**Question No. 1.132**

**Responding Witness: Lana Isaacson**

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

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

A-1.132.

- a. No.
- b. No.
- c. No.

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**Case No. 2022-00402**

**Question No. 1.133**

**Responding Witness: Lana Isaacson / Stuart A. Wilson**

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

A-1.133. No.

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LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition, Kentuckians for the Commonwealth,  
Kentucky Solar Energy Society and Mountain Association's  
Initial Request for Information  
Dated February 17, 2023**

**Case No. 2022-00402**

**Question No. 1.134**

**Responding Witness: Lana Isaacson**

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

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

A-1.134.

- a. The statement refers to the program potential, which is developed by using the achievable potential from the potential studies and applying it to the particular programs proposed.
- b. Reference Exhibit JB-1 for a full explanation of the methodology used to develop the plan. The potential studies calculate the achievable potential which was used to inform the program potential in the plan.



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**Case No. 2022-00402**

**Question No. 1.135**

**Responding Witness: Lana Isaacson**

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

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

A-1.135.

- a. See pages 25-26 of Exhibit JB-1.
- b. No.
- c. See the response to part (a).

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**Question No. 1.136**

**Responding Witness: Lana Isaacson**

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

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

A-1.136.

- a. The Companies used the prior estimated cost from the 2019-2025 WeCare Plan and added 10% to cover pricing pressure resulting from higher labor and material costs.
- b. There is not a "maximum allowable measure cost" for WeCare, rather the Companies establish an average allowable measure cost which creates a budget and forecast of how many customers can be served annually. After evaluating a qualifying WeCare customer's residence, the Companies create a work order for measure installation that is consistent with the average

allowable measure cost and the measures are installed. As such, the Companies do not track work that is not performed. After three years, a qualifying WeCare customer that has previously received service through the program can reapply, get a new assessment performed, and new, qualifying measures installed.

- c. Not applicable. See the response to part (b) above.
- d. It will certainly help, but due to the expensive nature of some major improvements that might be needed (i.e., roof or framing issue) and possible prior issues that have been neglected and have deteriorated over time, it is possible in future filings that the average cost may need to be increased to address more of the energy efficiency opportunities in customers' homes.

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**Case No. 2022-00402**

**Question No. 1.137**

**Responding Witness: Lana Isaacson**

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

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

A-1.137.

- a. The Companies plan to issue Request for Proposals for the deployment of the Income Qualified Solutions. The services of this contracted vendor should include expertise and guidance on the Inflation Reduction Act (“IRA”) and the means to obtain funds. .
- b. The goal is to maximize funding options available to participating income-qualified customers using both the available IRA funds and DSM/EE funds. For those identified measures that qualify for IRA funding, the customer will be guided through the process to obtain said funds. The remaining identified measures may use available DSM/EE funds.

- i. Depending on the IRA guidelines outlined to obtain funds, the Companies' plan is to work with the customer to increase the number of measures completed.

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**Case No. 2022-00402**

**Question No. 1.138**

**Responding Witness: Lana Isaacson**

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

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

A-1.138.

- a. The Companies recognize the possibility that customers may not re-enroll in other available demand response offerings in the event their direct load control device fails. From an energy and capacity standpoint, a switch failure or a customer choosing not to enroll into another demand response program offering is the same; in both instances, the Companies would not see an energy or capacity reduction during a called event. The proposed DSM/EE Plan outlines multiple options for the residential and small business customer to reduce capacity during peak periods, including enrolling in other programs while participating in direct load control. The Companies plan to deploy a communications and marketing strategy for those customers who cease participation in direct load control due to a switch failure to inform them of other available options. The Companies also plan to train customer service representatives when this situation or questions are posed during their direct customer engagement.
- b. The final order in Case No. 2017-00441 approved keeping the direct load control program in maintenance mode, with no new capital being invested and no new load control devices being deployed. The Companies do not plan

to deploy additional capital for direct load control switches. There are alternate, lower cost options available now that were not available at the time of the initial direct load control deployment.

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**Case No. 2022-00402**

**Question No. 1.139**

**Responding Witness: Lana Isaacson**

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

A-1.139. The Companies plan to implement the DSM/EE program eligibility and guidelines into the software solution(s) and customer's My Account web tool to make visible to customers those programs in which they are eligible to enroll and exclude programs in which they are not eligible to enroll. For example, a customer on direct load control would not have the Bring-Your-Own-Device option available for the same HVAC unit. In addition, the Companies' Corporate Communications team, DSM/EE team, and vendors will work together on the messaging for customer awareness and details.



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**Case No. 2022-00402**

**Question No. 1.140**

**Responding Witness: Lana Isaacson**

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

A-1.140. See attached.

The attachments are  
being provided in  
separate files.

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**Case No. 2022-00402**

**Question No. 1.141**

**Responding Witness: Lana Isaacson**

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

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

A-1.141.

- a. See attached.
- b. See Exhibit LI-1.

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being provided in  
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**Question No. 1.142**

**Responding Witness: Lana Isaacson**

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

A-1.142.

| Program Deployment Year | Proposed Programs   | Program Manager or Specialist | Program Associate | Manager  | Proposed Full-time Equivalent Total |
|-------------------------|---|-------------------------------|-------------------|----------|-------------------------------------|
| 2024                    | Business Solutions: Rebates   | 1                             | 0.25              | 0.05     | 1.3                                 |
| 2024                    | Business Solutions: Small Business Audit & Direct Install                     | 0.25                          | 0.25              | 0.05     | 0.55                                |
| 2024                    | Connected Solutions: Bring-Your-Own-Device & Online Transactional Marketplace | 0.75                          | 0.50              | 0.1      | 1.35                                |
| 2024                    | Connected Solutions: Optimized Charging                                       | 0.25                          | 0.25              | 0.05     | 0.55                                |
| 2024                    | Connected Solutions: Residential and Small Nonresidential Demand Conservation | 0.5                           | 0.50              | 0.05     | 1.05                                |
| 2024                    | Income-Qualified Solutions: Multi-family                                      | 0.75                          | 0.5               | 0.05     | 1.3                                 |
| 2024                    | Income-Qualified Solutions: Single Family                                     | 1                             | 0.5               | 0.05     | 1.55                                |
| 2024                    | Nonresidential Demand Response  | 0.5                           | 0.25              | 0.1      | 0.85                                |
| 2024                    | Program Development & Administration (PDA)                                    | 3                             | 0                 | 1.3      | 4.3                                 |
| 2025                    | Peak Time Rebates   | 0.5                           | 0.25              | 0.05     | 0.8                                 |
| 2025                    | Residential Online Audit, Kits, & Rebates                                     | 0.5                           | 0.5               | 0.05     | 1.05                                |
| 2026                    | Appliance Recycling   | 0.25                          | 0.25              | 0.05     | 0.55                                |
| 2026                    | Business Solutions: Nonresidential Midstream Lighting                         | 0.75                          | 0                 | 0.05     | 0.8                                 |
|                         | <b>Total</b>  | <b>10</b>                     | <b>4.00</b>       | <b>2</b> | <b>16.00</b>                        |

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**Question No. 1.143**

**Responding Witness: Lana Isaacson**

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

A-1.143. See in Exhibit JB-1 the implementation row in Tables 3-3, 3-6, 3-9, 3-12, 4-3, 4-6, and 4-9 for this information by program and year.

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**Case No. 2022-00402**

**Question No. 1.144**

**Responding Witness: Lana Isaacson**

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

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

A-1.144.

- a. Primary Data: WI Focus on Energy – Wisconsin  
Benchmark Data: NEEA CBSA – Washington, Oregon, Idaho, Montana  
Benchmark Data: NYSERDA – New York
- b. WI Focus on Energy:  
Site visits – August to December 2016  
Site visits and virtual site visits – July to December 2020

Responsible party: Cadmus  
Documentation: See attached.

NEEA CBSA:

CBSA site visits – 3 visits in 2013 to 2014

CBSA site visits – 4 visits from September 2018 to February 2020

Responsible party: Navigant Consulting and Cadmus

Documentation: raw data available at <https://neea.org/data/commercial-building-stock-assessments>

NYSERDA:

Web surveys – May to December 2018

Site visits – July 2018 – January 2019

Responsible party: Opinion Dynamics,

Documentation: See attached.

- c. The Companies' potential study update primarily used the WI Focus on Energy data for commercial lighting because the Wisconsin utility is similar to the Companies and the years of the Wisconsin site visit data most closely matched the date of the Companies' 2016 study and 2022 potential update. The Companies used the WI Focus on Energy data as a starting point with adjustments to avoid overstating saturation of LED lighting. See the response subpart (d) below for more details.

The Companies used the NEEA CBSA data for benchmarking. The Companies did not use the NYSERDA data for benchmarking as only one year of data was available and there was not enough information to determine the 2016 to 2022 overall market change.

- d. 24.6%



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**Question No. 1.145**

**Responding Witness: Lana Isaacson**

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

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

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

A-1.145.

- a. Virginia, specifically Dominion Energy.
- b. No other state was used.

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**Question No. 1.146**

**Responding Witness: Lana Isaacson**

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

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

A-1.146.

- a. Yes.
- b. See the response to Question No. 1.128(a).
- c. Confirmed.

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**Case No. 2022-00402**

**Question No. 1.147**

**Responding Witness: Lana Isaacson**

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

- a. Page 1 of Exhibit LI-2 states: "LG&E and KU sought an update to the previously estimated DR potential for all customer sectors." From the Companies' perspective, is this statement by Cadmus accurate? If the Companies find the statement inaccurate in any respect, please explain in full.
- b. Page 1 of Exhibit LI-2 states: "In addition, this assessment will identify possible DR products to address LG&E and KU's projected capacity shortfall of 300 to 900 megawatts starting in 2025 through 2028."
  - i. Please identify the approximate date when the Companies would have provided Cadmus with an estimate of projected capacity need for purposes of this assessment.
  - ii. In the Companies' view, does Cadmus' statement accurately reflect the Companies' projected capacity need at the time? If it does not, please explain.
  - iii. Please identify the specific study, analysis, forecast, or plan that provided a basis for the projected capacity provided to Cadmus for purposes of this assessment.
- c. Page 1 of Exhibit LI-2 states: "Timeline for potential DR deployment over a 20-year period, beginning in 2023<sup>1</sup> and ending in 2042," with footnote 1 stating that "2023 aligns with LG&E and KU's planned program update."
  - i. In the Companies' view, do these statements from Cadmus accurately reflect the Companies' planning program update timeline at the time (April 1, 2021)? If not, please explain.

- d. Please identify the date when the Companies entered into a contract with Cadmus to perform the study presented in Exhibit LI-2.
- e. Confirm that Cadmus conveyed the contents of Exhibit LI-2 to the Companies on April 1, 2021. If anything but confirmed, please identify the date on which the Companies claim to have received the contents of Exhibit LI-2 from Cadmus.
- f. Page 1 of Exhibit LI-2 states that the study “incorporates the latest baseline and DR data from primary and secondary sources and is informed by the work of other entities in the region and across the country.”
  - i. Please provide the referenced baseline data.
  - ii. Please identify each primary and secondary source providing DR data incorporated into the study.
  - iii. Please identify the “work of other entities” incorporated into the study.

A-1.147.

- a. Yes.
- b.
  - i. December 2020 or January 2021.
  - ii. Yes.
  - iii. See the RFP issued on 1/7/2021, which the Companies provided to the Commission in **Case No. 2021-00393**,<sup>10</sup> and the subsequent RFP issued on 6/22/2022, which the Companies provided as Exhibit CRS-1 to the Direct Testimony of Charles R. Schram filed in this proceeding. Also, upon Cadmus’s request, the Companies provided Cadmus with certain files to facilitate the analysis and cost-effectiveness scoring model. These files are included in Exhibit LI-6 in the subfolders titled Granular Files → Data Companies Provided to Cadmus.
- c.
  - i. Yes.
- d. The contract was executed on 12/8/2020.

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<sup>10</sup> *Electronic 2021 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, Case No. 2021-00393, Response to SC 1-5 (Ky. PSC filed Feb. 11, 2022);

- e. An email with the report was delivered on 4/2/2021 at 12:04 AM EDT.
- f.
  - i.
    - a. Utility information, including retail sales, demand forecasts, and customer data.
    - b. LG&E and KU's residential equipment saturation survey
    - c. LG&E and KU's projected AMI deployment in the ramp rate calculation for price-based measures that require AMI for EM&V.
    - d. Supplemental data from prior potential studies
  - ii. Exhibit LI-2, Appendix B, summarizes the modeling input assumptions Cadmus used for each DR product to generate the potential demand reduction results. The notes column under each product lists the sources used. All sources noted as "LG&E and KU" are considered primary and all other sources can be considered secondary.
  - iii. See Exhibit LI-2, Appendix B, which summarizes the modeling input assumptions Cadmus used for each DR product to generate the potential demand reduction results.

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**Question No. 1.148**

**Responding Witness: Lana Isaacson**

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

- a. Please state the approximate date when the supporting calculations for each of the following were performed:
  - i. KU's DSM cost recovery mechanism, Exhibit LI-3;
  - ii. LG&E's electric DSM cost recovery mechanism, Exhibit LI-4; and
  - iii. LG&E's gas DSM cost recovery mechanism, Exhibit LI-5.
- b. For each of Exhibits LI-3, LI-4, and LI-5, please explain how, if at all, the 2022 Cross-Sector DSM Potential Study Projection (Exhibit LI-1) informed the calculation of each respective cost recovery mechanism.
- c. For each of Exhibits LI-3, LI-4, and LI-5, please explain how, if at all, the 2023 LG&E and KU Demand Response Assessment (Exhibit LI-2) informed the calculation of each respective cost recovery mechanism.

A-1.148.

- a.
  - i-iii. These calculations (from start to finish) were performed over several weeks from mid-November to early December of 2022.
- b. The Companies used the potential study for the DSM/EE planning process, not the calculation of the respective cost recovery mechanisms directly.
- c. See the response to part (b).

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**Case No. 2022-00402**

**Question No. 1.149**

**Responding Witness: Lonnie E. Bellar**

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

A-1.149. PPL's stated corporate goal concerning net zero carbon emissions by 2050 is not an evaluation factor in the development of the current resource portfolio assessment. The retirements and replacement generation proposed are based on economics, compliance with increasingly stricter environmental requirements for electric generating units, and reliability. See also the response to LFUCG/Louisville Metro 1-6.



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**Question No. 1.150**

**Responding Witness: Lonnie E. Bellar**

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

A-1.150. See the response to LFUCG/Louisville Metro 1-1. See also the response to LFUCG/Louisville Metro 1-6 which states PPL's corporate goals relating to carbon emissions in generation through 2050. The Companies are aligned with those goals and the need to continue to maintain reliability and affordability. While those goals are not part of the economic analysis for the proposals in this matter, the goals are not inconsistent with the proposals. As demonstrated in Exhibit SAW-1, the proposals in this case will achieve reliable service at the least reasonable cost.

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**Case No. 2022-00402**

**Question No. 1.151**

**Responding Witness: Lonnie E. Bellar**

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

A-1.151. The Companies always issued RFPs for new generation resources to a broad range of developers, marketers, and utilities prior to any generation resource decision. Historically, the Companies have received some responses related to assets outside its service area and/or not directly connected to its transmission system. The economic analysis of these responses must consider the transmission cost necessary to deliver the energy to the Companies' customers in real-time. The Companies have no geographic generation strategy that would prioritize or de-emphasize the location of future generation assets.

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**Question No. 1.152**

**Responding Witness: David S. Sinclair**

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

- a. Please confirm that the proposed battery energy storage facility will be located at a Kentucky Utilities Company facility in Mercer County, Kentucky. If not confirmed, please explain in full.
- b. Please confirm that Mercer County is a county served by Kentucky Utilities Company and is not a county served by Louisville Gas and Electric Company. If not confirmed, please explain in full.
- c. If “successful operation experience with the Brown BESS asset would potentially enable the retirement of one” of the “Companies existing 11N2 gas turbine fleet that is also located at Brown,” please state why Kentucky Utilities Company will not share in any ownership of the Brown BESS asset.
- d. If “the optimal ownership allocation for the Brown BESS is 100% to LG&E to better balance the Companies’ summer reserve margins,” please state how the operation and use of the Brown BESS will benefit LG&E in meeting LG&E’s summer reserve margin.
- e. If “it is essential that the Companies have day-to-day operational experience at scale with the technology before they transition to relying on batteries for system reliability,” please state why Kentucky Utilities Company will not share in any ownership of the Brown BESS asset.

A-1.152.

- a. Confirmed.

- b. Confirmed.
- c. See Exhibit SAW-1, Section 6.2.3. Actual retirements of any of the 11N2 SCCTs at E.W. Brown, of which Brown 5 is jointly owned by the Companies, would inform the ownership assignments of any new peaking resources that are added thereafter.
- d. It will add 125 MW of capacity to LG&E's summer reserve margin.
- e. See the responses to part (c) and AG 1-28(h)(i).

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**Question No. 1.153**

**Responding Witness: Stuart A. Wilson**

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

A-1.153. Fuel price volatility was considered by developing three natural gas price scenarios and four coal-to-gas price ratios. See, e.g., Wilson Direct Testimony, pages 13-36 and Exhibit SAW-1, Section 7.7.1 and Appendix E.

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**Question No. 1.154**

**Responding Witness: Lonnie E. Bellar / Robert M. Conroy / Tim A. Jones**

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

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

A-1.154.

- a. The Companies assumed no contribution to the grid from EV batteries in this load forecast, but the Companies did assume predominantly overnight EV charging to reduce peak summer and winter loads. It is too early to rely upon this as a distributed energy resource for numerous reasons, including: (1) the technology to do this is still in the infancy stage; (2) there are relatively few EVs in the Companies' service territories both today and in the forecast by 2030; and (3) it is unclear what the magnitude and usefulness of this resource for a given number of EVs would be due to uncertainties surrounding EVs connected to the grid at a given time, the charge levels of those EVs at a given time, the extent to which such EVs' owners would be willing to allow their EVs batteries to serve as utility resources, and the extent to which EVs are connected in areas where additional energy is needed or can be moved to areas where it is needed. In sum, it is at best a highly uncertain resource at this time and for the foreseeable future, and the Companies' assumption about it for the purposes of the 2022 CPCN Load Forecast was reasonable.

- b. Smaller customers (<50 kW) with distributed energy resources can take advantage of the Companies' optional Residential and General Service Time-of-Day rate schedules (RTOD-E, RTOD-D, GTOD-E, or GTOD-D)<sup>11</sup>, which each have higher demand and/or energy rates during peak periods. This incentivizes customers to use their distributed energy resource during periods of high demand (peak periods) to reduce the demand and/or energy portions of their bill. Larger customers are already assigned to rate schedules that have demand charges (PS, TODS, TODP, RTS), which incentivizes customers to reduce peak demands as the demand charges during peak hours are higher than non-peak hours.
- c. The Companies made no specific assumptions about DERMS in this filing.
- d. The Companies do not incentivize one type of distributed energy resource over another. As mentioned above in part b), customers with any type of distributed energy resource can take advantage of the Companies' various time-of-use tariffs to reduce their bill by reducing demand and/or energy use during peak time periods.

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<sup>11</sup> GTOD-E and GTOD-D rate schedules are only available to GS customers participating in the current DSM program titled "Non-Residential Advanced Metering Systems Incentive" on Sheet No. 86.6.

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**Question No. 1.155**

**Responding Witness: Tim A. Jones**

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

A-1.155. While there may be a variety of reasons outside of economics that factor into this decision, the referenced text is primarily referring to customers' environmental objectives or sustainability goals.



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**Question No. 1.156**

**Responding Witness: Robert M. Conroy**

- Q-1.156. Please refer to the Direct Testimony of Lana Isaacson at page 1. Do the Companies ever directly or indirectly propose solar programs and services for residential, commercial, and industrial customers? If yes, please fully explain how the Companies develop such programs and services and thereafter propose them. If no, explain why not.
- A-1.156. The Companies have developed a variety of solar and renewable offerings within the existing tariffs. These provide a range of programs that differ in size and cost to cover a variety of customer renewable demands. These include Net Metering Services, Qualifying Facilities, Solar Share, and the three options under the Green Tariff. The Green Tariff's Option #1 Renewable Energy Credits (REC), Option #2 Business Solar, and Option #3 Renewable Purchase Agreement cover a wide spectrum of renewable opportunities for customers of all sizes.

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**Question No. 1.157**

**Responding Witness: David S. Sinclair**

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

A-1.157. Per the U.S. Energy Information Administration, “Firm power: Power or power-producing capacity, intended to be available at all times during the period covered by a guaranteed commitment to deliver, even under adverse conditions.”<sup>12</sup>

The energy provided via the solar PPAs and short-term energy purchases do not fit this definition of firm power, hence their characterization as non-firm power. The only differences between the non-firm energy from a solar PPA and an hourly market purchase is the PPA price is locked in for the term of the PPA and the Companies must take the energy regardless of their real-time marginal cost.

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<sup>12</sup> [Glossary - U.S. Energy Information Administration \(EIA\)](#)

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**Question No. 1.158**

**Responding Witness: John Bevington**

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

A-1.158. The details of the research have not yet been determined but as stated, would likely include determining feasibility and regulatory approval within a DSM Mechanism, possible modified cost-effectiveness analysis, and various implementation methods. The Market Research budget is approximately \$7 million. This budget will allow the Companies to research various new technologies that may arise over the next few years, which could potentially include rooftop solar applications, and potentially pilot new projects.

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**Question No. 1.159**

**Responding Witness: David S. Sinclair**

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

A-1.159. See the response to AG 1-50(a).

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**Question No. 1.160**

**Responding Witness: Lonnie E. Bellar**

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

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

A-1.160.

- a. The advantage to the Mercer County solar facility is that the interconnection agreement has been executed and the impacts to the transmission system are

known. There are no disadvantages to locating the solar facility at this location as it relates to the transmission system.

- b. The Companies are unable to answer this question as the interconnection agreement is the responsibility of the developer.
- c. The Companies evaluated the availability of land to support a minimum of 100 MWac of solar that is less than 1-mile from existing transmission infrastructure.
- d. Yes, co-location of operations and maintenance resources and access to existing transmission infrastructure are advantages.
- e. There are no discernable advantages or disadvantages to locating a solar facility in the Companies' certified territories as long as there is adequate land to support a minimum of 100 MWac of solar generation and is within 1-mile of our existing transmission infrastructure.

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**Question No. 1.161**

**Responding Witness: David S. Sinclair**

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

A-1.161. The Resource Assessment in Exhibit SAW-1 did not contemplate an operating life less than the 40-year book depreciation life. As Mr. Sinclair discusses in his Direct Testimony on page 31, lines 22-23 and page 32, lines 1-13, future developments in technology and energy markets would certainly impact the Companies' remaining 3,200 MW of coal capacity long before they would impact the economic life of the Companies' newest, most efficient, and environmentally cleanest generating unit proposed in this CPCN. See also the response to Question No. 1-162.

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**Question No. 1.162**

**Responding Witness: David S. Sinclair / Stuart A. Wilson**

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

A-1.162. See Exhibit SAW-1, Section 4.4.3 concerning SCR investment related to Ghent unit 2. See also Table 13 in Section 4.5.2 that demonstrates the generation portfolio proposed in this CPCN is the lowest cost across both CO<sub>2</sub> price sensitivities as well as a future world with no CO<sub>2</sub> price.



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**Question No. 1.163**

**Responding Witness: Charles R. Schram**

- Q-1.163. Please refer to the Direct Testimony of Charles R. Schram at page 12. Please confirm the identity of each pipeline proposed for service to each facility and, by pipeline, please identify that pipeline's operational status, including pressure and utilization rate, from December 20, 2022, through December 28, 2022.
- A-1.163. Consistent with the information in Mr. Schram's testimony, natural gas for the Mill Creek NGCC will be transported by Texas Gas Transmission and gas for the Brown NGCC will be transported by either the Tennessee Gas Pipeline or Texas Eastern Transmission. The Companies experienced pressures ranging from 424-648 psig on the Texas Gas Transmission pipeline at Trimble County and 433-652 psig at Cane Run during the December 20-28, 2022 period. The Texas Eastern pipeline pressure ranged from 563-873 psig at the E.W. Brown purchase point during this period. Pressures observed at the Tennessee Gas purchase point at E.W. Brown ranged from 643-874 psig, but the Brown CTs were not operated on the Tennessee Gas Pipeline during this period. The Companies do not have utilization rate data for any of the interstate pipelines.

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**Question No. 1.164**

**Responding Witness: Lonnie E. Bellar / David S. Sinclair / Charles R. Schram**

Q-1.164. For each utility, please separately state:

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

A-1.164. Data for the responses to parts (b) through (d) are reported on a combined utility basis due to the joint-dispatch operation of the LG&E/KU generation system.

- a. See attachment being provided in Excel format.
- b. See attachment being provided in Excel format, highlighting the extreme weather period of December 23-24, 2022.
- c. See attachment being provided in Excel format.
- d. See attachment being provided in Excel format.

The attachments are  
being provided in  
separate files.

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**Question No. 1.165**

**Responding Witness: David S. Sinclair**

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

A-1.165. The CPCN analysis does not include short-term, non-firm energy purchases or sales with unspecified third parties, including via SEEM. This is consistent with past generation CPCN cases. The Companies do not believe that it is prudent to make long-term reliability driven asset decisions based on speculation about electricity prices associated with short-term, non-firm sales and purchase opportunities that may or may not materialize. The Companies consider the potential for off-system purchases in determining minimum reserve margin targets.

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**Question No. 1.166**

**Responding Witness: David S. Sinclair**

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

A-1.166. The SEEM market has been in operation since November 2022. From the market's inception through February 2023, the Companies have been net sellers. For the November 2022 through February 2023 period, the Companies sold 38,042 MWh and purchased 1,004 MWh in the SEEM market. The total volume of transactions in the SEEM market for this period was 145,807 MWh.

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**Question No. 1.167**

**Responding Witness: Tim A. Jones**

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

A-1.167. See the hourly load forecast file located at:  
Hourly\_Forecast\_Updates\CPCN\_Hourly\_Forecast\_20221026.xlsx.

For Figure 3 (p. 9) and Figure 8 (p. 13), see the response to Question No. 36.

For Figure 4 (p. 10) along with Figures 5 and 6 (p. 11), see the first and last tabs of the file located in Exhibit TAJ-3 at:  
Hourly\_Forecast\_Updates\Testimony\_Support\HourlyProfile\_LDC\_2023BP\_2028.xlsx. To note, any references to the 2023BP in the filename or in cells of the file itself denote the CPCN hourly forecast – 2023BP is a mislabeling. All data in this file and used in the referenced figures is consistent with the CPCN hourly forecast.

Figure 7 (p. 12) is based upon historical data and can be found in Exhibit TAJ-3 at: Hourly\_Forecast\_Updates\Testimony\_Support\PolarVortex2014.

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**Question No. 1.168**

**Responding Witness: Christopher M. Garrett / David S. Sinclair**

Q-1.168. Please refer to Mr. Sinclair's Direct Testimony at pages 28–29. Mr. Sinclair's testimony discussing a pumped storage option includes the statement that "the economics as proposed were not competitive with other peaking resources, including lithium-ion batteries."

- a. Please identify each element composing "the economics as proposed";
- b. By year, beginning with 2017 through the year to date, please state the number of days each month that the Kentucky Utilities Company's Dix Dam Generating Station generated electricity;
- c. Please state the current cost on a dollar per megawatt hour basis for generation through the Dix Dam facility;
- d. Please state whether the current cost identified in sub-part c above includes recovery of capital costs for the Dix Dam facility;
- e. Please state whether the Dix Dam Generating Station is operated to meet (i) peak summer needs and/or (ii) peak winter needs, if yes, then please explain how;
- f. By year, beginning with 2017 through the year to date, please state the number of days each month that the Louisville Gas and Electric Company's Ohio Falls Generating Station generated electricity;
- g. Please state the current cost on a dollar per megawatt hour basis for generation through the Ohio Falls facility;
- h. Please state whether the current costs identified in sub-part g above includes recovery of capital costs for the Ohio Falls facility; and

- i. Please state whether the Ohio Falls Generating Station is operated to meet (i) peak summer needs and/or peak winter needs, if yes, then please explain how.

A-1.168.

- a. The Companies evaluate the pumped hydro proposal’s fixed PPA costs as proposed, which were higher than any other PPA proposed.

b.

| <b>Dix Dam - Days with Generation</b> |             |             |             |             |             |             |             |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                       | <b>2017</b> | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> |
| <b>Jan</b>                            | 30          | 22          | 31          | 31          | 23          | 31          | 24          |
| <b>Feb</b>                            | 12          | 28          | 28          | 29          | 28          | 19          | 20          |
| <b>Mar</b>                            | 16          | 31          | 31          | 31          | 31          | 31          | NA          |
| <b>Apr</b>                            | 12          | 30          | 18          | 22          | 13          | 13          | NA          |
| <b>May</b>                            | 7           | 15          | 3           | 26          | 2           | 2           | NA          |
| <b>Jun</b>                            | 9           | 16          | 19          | 11          | 3           | 2           | NA          |
| <b>Jul</b>                            | 12          | 22          | 1           | 3           | 15          | 1           | NA          |
| <b>Aug</b>                            | 12          | 9           | 0           | 2           | 5           | 11          | NA          |
| <b>Sep</b>                            | 11          | 16          | 0           | 19          | 9           | 22          | NA          |
| <b>Oct</b>                            | 17          | 27          | 1           | 16          | 25          | 0           | NA          |
| <b>Nov</b>                            | 21          | 24          | 18          | 5           | 23          | 0           | NA          |
| <b>Dec</b>                            | 15          | 31          | 31          | 22          | 29          | 3           | NA          |

- c. Dix Dam’s 2022 production cost averaged \$10.47/MWh. See attached for the components of this calculation.
- d. It does not.
- e. Dix Dam Generating Station is economically dispatched to meet both peak summer and peak winter needs, subject to water levels in Lake Herrington.



f.

| <b>Ohio Falls - Days with Generation</b> |             |             |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|  | <b>2017</b> | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> |
| <b>Jan</b>                               | 13          | 22          | 7           | 20          | 17          | 17          | 14          |
| <b>Feb</b>                               | 28          | 9           | 5           | 15          | 20          | 8           | 19          |
| <b>Mar</b>                               | 22          | 16          | 19          | 12          | 17          | 11          | NA          |
| <b>Apr</b>                               | 18          | 4           | 20          | 20          | 14          | 28          | NA          |
| <b>May</b>                               | 9           | 28          | 27          | 13          | 20          | 24          | NA          |
| <b>Jun</b>                               | 26          | 29          | 20          | 30          | 30          | 30          | NA          |
| <b>Jul</b>                               | 31          | 30          | 31          | 31          | 25          | 28          | NA          |
| <b>Aug</b>                               | 31          | 31          | 31          | 31          | 31          | 31          | NA          |
| <b>Sep</b>                               | 23          | 15          | 25          | 26          | 28          | 28          | NA          |
| <b>Oct</b>                               | 29          | 28          | 28          | 31          | 31          | 30          | NA          |
| <b>Nov</b>                               | 23          | 4           | 30          | 30          | 30          | 30          | NA          |
| <b>Dec</b>                               | 31          | 9           | 21          | 26          | 29          | 31          | NA          |

- g. Ohio Falls' 2022 production cost averaged \$6.59/MWh. See the response to part (c).
- h. It does not.
- i. Ohio Falls Generating Station is dispatched based on water levels in the Ohio River.

The attachment is being  
provided in a separate  
file.