COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC JOINT APPLICATION OF KENTUCKY UTILITIES COMPANY AND LOUISVILLE GAS AND ELECTRIC COMPANY FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY AND APPROVAL OF A DEMAND SIDE MANAGEMENT PLAN	)))))))	**CASE NO. 2022-00402**

RESPONSE OF
KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY
TO
THE KENTUCKY COAL ASSOCIATION'S
SUPPLEMENTAL REQUEST FOR INFORMATION
DATED APRIL 14, 2023

FILED: MAY 4, 2023

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Lonnie E. Bellar**, being duly sworn, deposes and says that he is Chief Operating Officer for Louisville Gas and Electric Company and Kentucky Utilities Company and an employee of LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Lonnie E Bellar

Lonnie E. Bellar

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

Caroline J. Dawson

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **John Bevington**, being duly sworn, deposes and says that he is Director – Business and Economic Development for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

John Bevington

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

Caroline J. Davison
Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Vice President, State Regulation and Rates, for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

Robert M. Conroy

Robert M. Conroy

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

TAMMY J. ELZY
COMM EXPIRES 11/09/2026
NOTARY PUBLIC
ID # KYNP61560
STATE AT LARGE, KENTUCKY

Tammy J. Elzy
Notary Public

Notary Public ID No. KYNP61560

My Commission Expires:

November 9, 2026

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Christopher M. Garrett**, being duly sworn, deposes and says that he is Vice President, Finance and Accounting, for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

Christopher M. Garrett

Christopher M. Garrett

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

TAMMY J. ELZY
COMM EXPIRES 11/09/2026
NOTARY
PUBLIC
ID # KYNP61560
STATE AT LARGE, KENTUCKY

Tammy J. Elzy
Notary Public

Notary Public ID No. KYNP61560

My Commission Expires:

November 9, 2026

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Philip A. Imber**, being duly sworn, deposes and says that he is Director – Environmental and Federal Regulatory Compliance for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Philip A Imber

Philip A. Imber

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 2nd day of May 2023.

Caroline J. Dawson

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Lana Isaacson**, being duly sworn, deposes and says that she is Manager – Emerging Business Planning and Development for Louisville Gas and Electric Company and Kentucky Utilities Company, 220 West Main Street, Louisville, KY 40202, and that she has personal knowledge of the matters set forth in the responses for which she is identified as the witness, and the answers contained therein are true and correct to the best of her information, knowledge, and belief.

Lana Isaacson

Lana Isaacson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

Caroline J. Davison

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Tim A. Jones**, being duly sworn, deposes and says that he is Manager – Sales Analysis and Forecast for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Tim A. Jones

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

Caroline J. Davison
Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Charles R. Schram**, being duly sworn, deposes and says that he is Director – Power Supply for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

Charles R. Schram

Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State this 1st day of May 2023.

Caroline J. Davison

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **David S. Sinclair**, being duly sworn, deposes and says that he is Vice President, Energy Supply and Analysis for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

David S. Sinclair

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

Caroline J. Davison
Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID #KYNP63286
STATE AT LARGE, KENTUCKY

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Stuart A. Wilson**, being duly sworn, deposes and says that he is Director, Energy Planning, Analysis & Forecasting for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

Stuart A. Wilson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of May 2023.

Notary Public

Notary Public ID No. KYNP 63286

My Commission Expires:

January 22, 2027

CAROLINE J. DAVISON
COMM EXPIRES 01/22/2027
NOTARY PUBLIC
ID # KYNP63286
STATE AT LARGE, KENTUCKY

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 1

Responding Witness: Lonnie E. Bellar

Q.1. In follow-up to the plan of retiring Mill Creek 1 and the three coal units proposed for closure in the CPCN, please provide any deactivation notices filed by the Companies (e.g. retirement being generally discussed in AG First Q-2 and KCA First 1-28).

A.1. On April 10, 2023 the Companies submitted a 30-day notice of an application for approval to retire Mill Creek Unit 1, Mill Creek Unit 2, E.W. Brown Unit 3, and Ghent Unit 2 pursuant to the new section of KRS 278.

In the Mill Creek KPDES permit application (Agency Interest #A.I. 2122), LG&E submitted a 316b Rule Unit Retirement Certification Letter. See attached.

The attachment is being provided in a separate file.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
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Case No. 2022-00402

Question No. 2

Responding Witness: Lonnie E. Bellar

Q.2. Similar and in follow-up to AG First Q-3 addressing the retirement of coal plants, the CEO of PJM, Manu Asthana, recently expressed PJM's concern about capacity shortfalls due to retirements exceeding replacements on a UCAP (unforced capacity) basis. Do the Companies share this concern? If not, please provide supporting analysis.

A.2. The Companies share this concern in the context of PJM but not in the context of their own service territories. The proposed changes to the Companies' portfolio are least-cost and will not diminish their ability to provide reliable service.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
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Case No. 2022-00402

Question No. 3

Responding Witness: Lonnie E. Bellar

Q.3. Similar to and in follow-up to KCA First 1-20 addressing the concept of overhauling E.W. Brown 3 to extend the operation of the unit, please address and identify any efforts by the Companies to sell the three coal plants it proposes to deactivate in the CPCN.

A.3. To date, the Companies have not developed any plans to sell Mill Creek Unit 2, Brown Unit 3, and Ghent Unit 2. The Companies are always seeking opportunities to lower costs for customers and the potential sale of a unit would have to be weighed against other options for future use of the site (such as siting new generation) and the salvage value should the unit(s) be demolished. It should be noted that any party that would purchase a unit would have to obtain all of the necessary permits to operate it (e.g., air and water permits), interconnect to the transmission system, and obtain transmission service to whatever market they sought to serve.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 4

Responding Witness: Stuart A. Wilson

Q.4. Please provide the five-year forward fuel price forecasts from the last five annual budget presentations (this relates to KCA First 1-57 addressing Coal-to-Gas methodology and the response).

A.4. See attached. Certain information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

The attachment is being provided in a separate file.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 5

Responding Witness: Lonnie E. Bellar

Q.5. Similar to and in follow up to AG First Q-3 addressing rolling blackouts, please confirm that issues with the 8" Texas Eastern Pipeline resulted in recent rolling blackouts? If not confirmed, please provide the cause of the recent rolling blackouts.

A.5. The Companies are unfamiliar with the referenced eight-inch Texas Eastern Pipeline. E.W. Brown is served by a 30-inch Texas Eastern Transmission pipeline. The Companies were not impacted by any issues on this pipeline in December 2022. See the responses to PSC 1-58 and AG 1-13 for an explanation of gas pressure issues during Winter Storm Elliot in December 2022.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 6

Responding Witness: John Bevington / Lana Isaacson / Tim A. Jones / David S. Sinclair / Stuart A. Wilson

Q.6. The following questions relate to the 2021 IRP referenced in and in follow up on KCA First 1-18. The Opinion in PSC Case 2021-00393 includes the Commission Staff's Report on the 2021 IRP. The following statement summarizes Staff's findings. Staff provided the following 27 recommendations (articulated below as "a – aa") addressing specific problems/deficiencies in the 2021 IRP. For each recommendation, please provide in detail to what extent the Companies have addressed the recommendations in the December 2022 Resource Assessment. For the recommendations that have not yet been addressed, please confirm the Companies' plan to do so and whether material results are expected.

Load Forecasting Recommendations

a) Companies should expand their discussion of the underlying assumptions including supporting documentation listing known facts.

b) Companies should continue to monitor and incorporate anticipated changes in EE impacts in their forecasts and sensitivity analyses. In addition, the Companies should not assume that current DSM-EE programs will not be renewed. Further, in the context of a long-range planning study, it would be reasonable for the Companies to model increased participate in current programs up to their current limits.

c) Companies should expand the discussion of DERs to identify resources other than distributed solar that could potentially be adopted by customers and explain how and why those resources are expected to affect load, if at all.

d) The Companies should expand its discussion of the projected adoption of distributed solar and its effect on load to include separate discussions of assumptions, methodology, and projections for residential, commercial, and industrial customers and separate discussions of assumptions, methodology, and projections for customers interconnected under the Companies net metering tariffs, qualifying facilities tariffs, and other similar tariffs, if any, that are adopted after this report.

e) The Companies should analyze and discuss whether and the extent to which customers that would have taken service under the Net Metering Service-2 tariff would continue to interconnect DERs even if they received no credit for energy sent back into the system because the one percent cap had been reached when they sought to connect.

Demand-Side Resource Recommendations

f) The Companies should identify and assess all potentially cost-effect demand side resource options.

g) Any changes to demand-side resources should be discussed in full including a transparent analysis of the cost and benefits inputs.

h) The Companies should describe and discuss all new demand-side resources they considered, and if a resource was considered but ultimately not included in any model or formal assessment, the Companies should explain each basis for excluding the resource.

i) The Companies should continue the stakeholder process through the DSM Advisory Group and strive to include recommendations and inputs from the stakeholders in its demand-side resource assessment.

j) The Companies should consider making AMI usage data that is more closely aligned to real-time data available to customers and should consider peak time rebate programs, time-of-use rates, and prepay options for AMI customers.

k) The Companies should consider and model more aggressive options to increase the use of the curtailable service rider and demand conservation program.

l) The Companies should consider DSM/EE programs specifically designed to shift EV charging from peak periods.

m) The Companies should continue to identify energy efficiency opportunities for large customers and continue to offer incentives that encourage them to adopt or maintain energy-related technologies, sustainability plans, and long-range energy planning.

n) The Companies should continue to define and improve procedures to evaluate, measure, and verify both actual costs and benefits of energy savings based on the actual dollar savings and energy savings.

o) The Companies should file to expand or review its current 2019-2025 DSM/EE Plan if its ongoing resource assessments indicate that doing so is the least-cost options for meeting its projected load.

Supply-Side Resources Recommendations

p) The Companies should provide a more robust discussion of supply-side resources and should assess all potentially cost-effective resources using the resource expansion model, including nuclear generation at the end of the planning period.

q) The Companies should describe and discuss all supply-side resources that were considered, including variations of the same resource (e.g., NGCC with and without CCS or traditional and small-cell nuclear), and if a resource was considered but ultimately not included in the resource expansion model. The Companies should explain each basis for excluding the resource, including the specific information used to support each basis such as cost estimates that resulted in a resource being excluded as too expensive or engineering concerns that resulted in a resource being excluded based on a determination that it is not reasonable.

r) The Companies should consider resources outside of their service territories with transmission costs based on specific updated analyses of transmission costs.

s) The Companies should consider interconnection costs and the cost of necessary network upgrades to the extent possible when assessing resources both in and outside its service territory and should describe and discuss how such costs were considered whether and how such costs were included in the resource expansion model, uncertainties associated with how such costs were considered, and if applicable, why such costs could not be included in the resource expansion model.

t) The Companies should include a more detailed and broader explanation of potential and expected carbon regulation, given the significant effects such regulation could have on future resources including a description of potential carbon regulation that would affect the useful life or cost of any resource, an explanation of how the Companies accounted for the risk of each such regulation in its assessment of resources, e.g., modeling the cost of a resource using a shorter useful life or modeling a carbon cost, and an explanation of why the Companies accounted for risk in that manner. The potential regulations discussed should include at minimum the NSPS and carbon pricing or a carbon tax.

u) The Companies should include additional discussion of transfer capabilities including a discussion of any known, significant conditions that restrict the Companies' ability to import energy and to serve projected load.

v) The Companies should consider and discuss savings, if any, that could be achieved by obtaining resources owned and operated by third parties or through partnerships.

w) The Companies should consider and discuss opportunities, if any, to partner with nearby utilities to gain experience with new generation resources, including nuclear generation.

x) The Companies should discuss recent developments regarding OVEC, including any material upgrades or changes in O&M that have or will be required, whether the Companies believe OVEC will be economical with those upgrades or changes, and any actions the Companies have taken or plan to take, though potentially limited by the contract, to avoid such costs if they would make OVEC uneconomical for the Companies.

Integration Recommendations

y) The Companies should use the model to optimize resource decisions throughout the planning period.

z) Resource acquisition plans should be developed as if they would actually be implemented to meet the Companies' projected load.

aa) The Companies should include additional scenarios that compare and contrast assumptions, especially those that turn out to be primary drivers of modeling results and hence, potential directions of future capital budgets and customer bill impacts.

A.6. Note that all references to Exhibit SAW-1 herein and throughout the Companies' responses are to the updated May 2023 Exhibit SAW-1 provided in response to JI 2-60(a).

The Companies disagree with the KCA's characterization of the Commission Staff's recommendations for the next IRP as "problems/deficiencies" with the 2021 IRP. The Commission Staff always issues a report recommending actions that utilities should consider in preparing the next IRP. This brings an element of "continuous improvement" to the IRP process, something that the Companies always incorporate into their planning efforts.

Load Forecasting Recommendations

a) See Section 3 of Exhibit TAJ-1 beginning on page 11.

b) See Sections 3.4 and 3.5 of Exhibit TAJ-1 beginning on page 16.

c) See Section 3.6.1 of Exhibit TAJ-1 beginning on page 22.

d) See Section 3.6.2 of Exhibit TAJ-1 beginning on page 26.

e) See Section 3.6.2 of Exhibit TAJ-1. Also, see the language on page 32 of Exhibit TAJ-1.

Demand-Side Resource Recommendations

f) See Exhibit JB-1; Bevington Direct Testimony; Isaacson Direct Testimony.

g) See Exhibit JB-1; Isaacson Direct Testimony.

h) See Exhibit JB-1; Isaacson Direct Testimony.

i) See Bevington Direct Testimony.

j) See Exhibit JB-1.

k) See Exhibit JB-1.

l) See Exhibit JB-1.

m) See Isaacson Direct Testimony at 12; Exhibit JB-1.

n) See Exhibit JB-1.

o) See Application; Bevington Direct Testimony.

Supply-Side Resources Recommendations

p) The Companies issued an RFP for new generation resources, thus obtaining generation resources from all of those interesting in supplying customers' future energy needs. See Mr. Sinclair's Direct Testimony, Section 8 where he discusses the current status of nuclear generation as well as the response to AG 1-57.

q) See Exhibit SAW-1.

r) See Exhibit SAW-1, Appendix B.

s) See Exhibit SAW-1.

t) See Exhibit SAW-1.

u) See Exhibit SAW-1.

v) See Exhibit SAW-1.

w) See Mr. Bellar's Direct Testimony page 26, lines 19-24 and page 27, lines 1-10.

x) See Exhibit SAW-1.

Integration Recommendations

y) See Exhibit SAW-1

z) See the entire filing this case.

aa) See Exhibit SAW-1.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 7

Responding Witness: Stuart A. Wilson

Q.7. With regard to the 2021 IRP referenced in KCA First 1-18 and in follow-up please provide, subject to the NDA in the case herein, the confidential filings by the Companies in PSC Case No. 2021-00393 (the IRP case).

A.7. See the response to JI 2-63.

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

**Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023**

Case No. 2022-00402

Question No. 8

Responding Witness: Stuart A. Wilson

Q.8. With regard to the 2021 IRP referenced in KCA First 1-18 and in follow-up, please identify how Blue Oval was considered in the IRP? Likewise, please provide any workpapers for data, results or conclusions conducted assuming the addition of 300 MW of Blue Oval subject to the NDA in the case herein as appropriate.

A.8. BlueOval was not considered in the 2021 IRP because the project had not yet been announced when the 2021 IRP load forecast was completed. BlueOval's load is included in the CPCN load forecast, which is summarized in Mr. Jones's testimony; BlueOval's forecasted summer and winter peak demands are approximately 260 and 225 MW, respectively. All results and conclusions in the 2022 Resource Assessment (Exhibit SAW-1) reflect the addition of the BlueOval load. For workpapers, see Exhibit TAJ-3 at Hourly_Forecast_Updates\MA and Exhibit SAW-2.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 9

Responding Witness: Counsel

Q.9. This relates to KCA First 1-57 addressing Coal-to-Gas methodology and forecasting and the responses, please provide, subject to the NDA in the case herein, any confidential filings by the Companies in PSC Case No. 2022-00038 (recent KU fuel adjustment case).

A.9. The requested confidential information if produced would provide the members of the KCA competitively sensitive information on the bids submitted by fuel vendors and insight into the Companies' bid analysis. Disclosure of this information to KCA will harm the Companies' competitive bid process and ability to obtain competitive bids from fuel vendors in the future. Disclosure of the information would provide members of the KCA a competitive advantage over fuel vendors who are not members of the KCA. The Companies' customers will be harmed by the disclosure through the higher fuel costs the disclosure could cause. For these reasons, the Companies decline to provide the requested information.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 10

Responding Witness: Stuart A. Wilson

Q.10. This following relates to KCA First 1-57 addressing Coal-to-Gas methodology and forecasting along with the 2021 IRP and respective responses (see, e.g. KCA First 1-18). With respect to fuel prices in the 2022 Resource Assessment versus the 2021 IRP, please provide the following information:

a) Please provide for each scenario a side-by-side comparison of the actual annual fuel prices assumed in the 2021 IRP and the fuel prices assumed in the 2022 Resource Assessment.

b) For natural gas, please provide for each scenario the assumed volatility in natural gas prices throughout each year.

c) Please provide all comments the Companies received on the fuel price methodology employed in the 2021 IRP.

d) Please provide the origin of the change in methodology for developing fuel prices that was adopted in the 2022 Resource Assessment.

e) Please provide all model results from the 2022 Resource Assessment that utilized coal and natural gas price methodology employed in the 2021 IRP.

A.10.

a) See attached. Certain information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

b) See the response to KCA 1-59. The same explanation is applicable to the Companies' 2021 IRP natural gas price forecasts. For the monthly gas price forecasts, see attached. Certain information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

c) All comments to the Companies' 2021 IRP are publicly available on the Commission's website for Case No. 2021-00393. *See* https://psc.ky.gov/Case/ViewCaseFilings/2021-00393.

d) For the 2022 Resource Assessment, which, unlike the 2021 IRP, required a comparison of coal units versus replacement resources, the Companies assessed the historical actual relationship of coal and gas prices. See sections 4.1.2 and 7.7.1 in Exhibit SAW-1 as well as section 2.2 in Appendix E of Exhibit SAW-1. See also the responses to PSC 2-2(a) and PSC 2-47.

e) The Companies do not have the requested information.

The attachments are being provided in separate files.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
Supplemental Request for Information
Dated April 14, 2023

Case No. 2022-00402

Question No. 11

Responding Witness: David S. Sinclair

Q.11. Related to Coal-to-Gas methodology referenced in KCA First 1-57 and the response thereto, please identify whether the Companies have changed their fuel procurement procedures in the last five years? If so, please provide the current procedures.

A.11. The Companies have not materially changed their fuel procurement procedures in the last five years. However, for the current procedures, see attached.

The attachments are being provided in separate files.

KENTUCKY UTILITIES COMPANY
AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Response to Kentucky Coal Association's
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Dated April 14, 2023

Case No. 2022-00402

Question No. 12

Responding Witness: Stuart A. Wilson

Q.12. Pertaining to the 2021 IRP (following up KCA First 1-18), please confirm that the Companies assumed in the 2021 IRP that a new NSPS (new source performance standard) for natural gas generation would require carbon capture for combined cycle units and that is no longer an assumption in the 2022 Resource Assessment. Please provide the specific basis for the change in assumptions.

A.12. Confirmed. The IRP assumption was based on discussion in the industry that the EPA was considering tightening CO_2 emission limits for new NGCCs that would have the effect of requiring CCS. This is the same approach that the EPA used to set NSPS CO_2 emissions standards for new coal-fired generation. This assumption was changed for the instant proceeding because no such NSPS has been promulgated.

KENTUCKY UTILITIES COMPANY
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Response to Kentucky Coal Association's
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Dated April 14, 2023

Case No. 2022-00402

Question No. 13

Responding Witness: Lonnie E. Bellar

Q.13. With regard to and follow-up on KCA First 1-24 addressing PPL net-zero carbon emissions target of 2050, please confirm that a net-zero plan could require carbon capture for all new and existing gas-fired capacity. If that is not the case, please explain why not.

A.13. Not confirmed. As stated in "Energy Forward, PPL's 2021 Climate Assessment Report" on page 23, "We view our path to net-zero emissions as a continuum, with a primary focus on eliminating our gross emissions, leveraging technology to remove emissions where they cannot be eliminated due to cost or reliability constraints, and finally, considering carbon offsets for any remaining emissions as the least-preferred option."

KENTUCKY UTILITIES COMPANY
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Response to Kentucky Coal Association's
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Dated April 14, 2023

Case No. 2022-00402

Question No. 14

Responding Witness: Lonnie E. Bellar

Q.14. With regard to and follow-up on KCA First 1-24 addressing PPL net-zero carbon emissions target of 2050, please provide an estimate of the upstream greenhouse gas emissions (including methane) on a CO2 equivalent basis for each NGCC proposed on an annual basis.

A.14. The Companies' net-zero carbon goal is not a function of Scope 3 emissions from upstream natural gas delivery related GHG emissions.

The Companies do not have estimates of the upstream greenhouse gas emissions for the production of natural gas, coal, or solar panels. For natural gas transportation, the natural gas interstate pipelines publish sustainability plans that address emissions. See the links below:

Texas Gas Transmission
https://s28.q4cdn.com/941360442/files/doc_downloads/sustainability-report/Boardwalk-2021-Sustainability-Report.pdf

Tennessee Gas Pipeline
https://www.kindermorgan.com/WWWKM/media/Safety-Environmental/documents/2021_ESG_Report.pdf

Texas Eastern Transmission
https://www.enbridge.com/~/media/Enb/Documents/Reports/Sustainability-Report-2021/Enbridge-SR-2021.pdf

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Question No. 15

Responding Witness: Stuart A. Wilson

Q.15. With respect to and follow-up on KCA First 1-26 addressing the 2022 Resource Assessment, please provide estimates of Scope 1, 2 and 3 emissions under all scenarios considered in the 2022 Resource Assessment.

A.15. The Companies' 2022 Resource Assessment only considered the Scope 1 CO_2 emissions from the Companies' generating units. See the responses to PSC 2-13(c), PSC 2-18(b), and PSC 2-19(c) for total Scope 1 CO_2 emissions across the scenarios modeled in the 2022 Resource Assessment.

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Question No. 16

Responding Witness: Charles R. Schram / David S. Sinclair

Q.16. The following questions involve the proposed solar PPAs (previously referenced in and follow-up on KCA First 1-3 and AG First Q-25).

a. Please confirm the Companies did not consider self-build for the solar projects. If not the case, please provide how self-build was considered.

b. Did the Companies consider Build-Own-Transfer (BOT) options. If not, why not. If yes, please provide the Companies analysis and workpapers of all BOT options.

c. Please identify any and all differences between the four solar PPAs produced on March 15, 2023 to the four solar PPAs initially produced on March 1, 2023.

d. Please provide for each of the four solar PPAs exactly what costs associated with the "must-take" provisions in Section 7.2 (A) were considered in the analysis. How do the Companies propose to recover said costs in rates if the "must-take" volumes exceed the amount of energy the LG&E/KU system can absorb? If these costs were not included in the Companies analyses, do the Companies have an estimate of these costs.

e. Please identify the assumed pricing (price per megawatt-hour (MWH)) for each solar PPA that the Companies assumed when they filed this CPCN request.

A.16.

a. The four solar PPAs were offered by developers in response to the Companies' 2022 RFP for capacity and energy. Therefore, self-build was not an alternative for these projects. See the response to PSC 1-26.

b. The Frontier solar project in Marion County Kentucky was offered as a Build-Transfer project by a developer in response to the Companies' 2022 RFP and was selected by the Companies.

c. The four solar PPAs have not changed since the March 1, 2023 filing. See the "Read1st" letter (https://psc.ky.gov/pscecf/2022-00402/kendrick.riggs%40skofirm.com/03152023115621/LGE-KU_Read1st.pdf) with the March 15, 2023 filing for more information.

d. The analysis included the cost of all of the energy forecasted to be produced by the projects associated with the four solar PPAs. The four PPAs total 637 MW. The Companies do not have the ability to reduce the dispatch of the solar units associated with the four PPAs unless there is a Transmission directive for reduction due to grid conditions. The Companies' minimum load is in the range of 2,700 to 3,000 MW during daylight hours, more than four times the 637 MW amount of the PPAs. Therefore, taking up to 637 MW of energy from the four solar PPAs is unlikely to pose operational problems.

e. See Proposal Nos. 7, 29, 45, and 70 in Table 42 in Appendix B of Exhibit SAW-1.

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Question No. 17

Responding Witness: Charles R. Schram / David S. Sinclair

Q.17. The following questions additionally involve the proposed solar PPAs (previously referenced in and follow-up on KCA First 1-3 and AG First Q-25).

a) Do the Companies believe that any of the projects are unlikely to proceed? If yes, which ones?

b) Have any of the counter-parties advised the Companies of likely price increases? If yes, please indicate when this occurred and provide what the current pricing is expected to be.

c) Have any of the counter-parties advised the Companies of possible schedule delays. If yes, please provide your best estimate of time of each project.

d) Please provide which party (i.e., Buyer or Seller) is responsible for the transmission interconnection costs and the expected costs with respect to the PPAs.

e) Please confirm that the Companies did not include any transmission owner interconnection costs for the Grays Branch and Nacke Pike PPAs. If not confirmed, please provide the Companies' estimates of such costs.

f) Please confirm that the Sellers in the proposed solar agreements are not liable for performance payments related to the lost energy if their facilities are damaged. If not confirmed, please describe the compensation the Companies would receive due to the Seller's inability to fully perform under the PPAs.

A.17. The following responses apply to the four proposed solar PPAs.

a) The Companies have not received information indicating that the referenced solar projects associated with the PPAs are unlikely to proceed.

b) No.

c) No.

d) See the response to PSC 1-27.

e) The developer is responsible for interconnection costs for the PPA projects.

f) A comprehensive discussion of force majeure events and their effects on the parties to the PPAs are contained in Article 14 of the filed PPAs.

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Question No. 18

Responding Witness: Philip A. Imber

Q.18. Please provide for each proposed resource in the CPCN the status of the required air permits for the NGCC's and solar projects (e.g., follow-up to solar referenced in KCA First 1-3 and NGCC permitting being discussed in KCA First 1-11)?

A.18. The Title V air permit applications for the Mill Creek and the E.W. Brown NGCC units were submitted to their respective agencies, LMAPCD and KDAQ, on December 15, 2022. No further information is available on the status of these permits. The Mercer County Solar Project does not require a Title V air permit.

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Question No. 19

Responding Witness: Lonnie E. Bellar

Q.19. Please provide all signed contracts related to the proposed solar, battery, and NGCC projects (e.g., follow-up to solar referenced in KCA First 1-3, NGCC permitting being discussed in KCA First 1-11 and battery being discussed in KCA First 1-66).

A.19. The Companies have executed Owners Engineer ("OE") contracts for the NGCC, Mercer Solar, and Brown Battery projects. See attached. Certain information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protections. The Companies do not have signed Engineering, Procurement, and Construction ("EPC") contracts for the proposed NGCC, Mercer Solar, and Brown Battery projects.

The attachments are being provided in separate files.

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Question No. 20

Responding Witness: Charles R. Schram / David S. Sinclair / Stuart A. Wilson

Q.20. With respect to the Firm Transportation (FT) Agreements (reference to and in follow-up to the response to KCA First 1-51), please provide the following:

1. the basis for the numbers provided in the Companies' confidential attachment response to KCA First 1-51,

2. whether the Companies are willing to cap the requested recovery costs for the FT at these levels,

3. please provide either a draft or an outline of the expected form of the FT agreements,

4. whether the Companies intend to include in the FT Agreements, a no-cost option to terminate if the Companies convert the NGCC plants to hydrogen or choose to shutter the NGCCs to comply with a net zero target, and

5. please provide a copy of the Firm Transportation contract for Cane Run #7.

A.20.

1. Preliminary discussions with Texas Gas Transmission were the basis for the numbers provided in the response to KCA 1-51.

2. The firm transportation agreements will not be finalized and executed until after Commission approval of the new NGCC units and will be subject to adjustments over time as allowed by their tariffs. Therefore, the Companies are not willing to cap the recovery of these costs at the levels presented in the response to KCA 1-51.

3. A draft FT agreement is not available. See the response to part (5) for a similar agreement for Cane Run 7.

4. Based on the Companies' experience with the Cane Run 7 NGCC transportation agreements, the Companies anticipate agreement terms of five to ten years that may contain certain rollover rights. It is unlikely that the firm transportation agreements will be eligible for termination within their five- to ten-year terms.

5. See attached.

The attachments are being provided in separate files.

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Question No. 21

Responding Witness: Robert M. Conroy

Q.21. In follow-up on KCA First 1-55 and the Companies' response, please confirm that the Companies are not accepting any responsibility for the actual cost of construction and operation exceeding the estimated costs put forward in the CPCN? If this is not the case, please explain what risks the Companies are accepting?

A.21. Although the phrase "accepting any responsibility" for actual project costs that exceed estimates is not clear, the Companies stand by their response to KCA 1-55. In any subsequent rate case in which rate recovery of actual project costs is sought, those actual costs could be lower than the estimates made in this matter, and, of course, the Companies would only seek recovery of those lower actual costs. Likewise, if the actual costs are higher than the estimated costs, the Companies would likely seek recovery of that excess as long as the resulting rates are fair, just, and reasonable. The Commission would make that decision after examining why the excess occurred. The Companies will take all reasonable steps to manage and control costs for the projects in this case just as they always do when executing on any project necessary to provide safe, reliable and affordable energy for which rate recovery will be sought.

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Question No. 22

Responding Witness: Philip A. Imber

Q.22. Please confirm your understanding that the Good Neighbor Rule (GNR) rule cannot be challenged until after it is published in the Federal Register (see, e.g., KCA 1-9).

A.22. Confirmed.

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Question No. 23

Responding Witness: Philip A. Imber

Q.23. Please indicate whether the Companies will participate in any challenges to the GNR (See, KCA First 1-7). If no, please explain the basis for this decision.

A.23. Challenges need to be filed within 60 days of publication to the Federal Register. The final rule has not been published to the Federal Register. The Companies are reviewing the matter and have not made a decision at this time on whether to participate in any challenges to the GNR.

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Question No. 24

Responding Witness: Philip A. Imber

Q.24. Are the Companies still members of the Midwest Ozone Group (see, KCA First 1-7)? If not, please explain why.

A.24. Yes.

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Question No. 25

Responding Witness: Philip A. Imber

Q.25. Please provide your understanding as to the differences between the proposed and promulgated GNR, specifically as to how the Companies are affected (see, KCA First 1-9)?

A.25. See the response to AG 2-4.

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Question No. 26

Responding Witness: Lonnie E. Bellar

Q.26. In follow-up to Response to KCA First 1-4, please provide a redacted copy of the FEED proposal.

A.26. The Prime Performer and applicant for United States Department of Energy, National Energy Technology Laboratory Agreement FE0032223, entitled "CO2 Capture at Louisville Gas & Electric Cane Run Natural Gas Combined Cycle Power Plant" is the Electric Power Research Institute ("EPRI"). The Companies do not have a copy of, and do not own the rights to, this application.

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Question No. 27

Responding Witness: Philip A. Imber

Q.27. In follow-up to Response to KCA First 1-8, please confirm that the Companies have no documentation/notes from the referenced meeting.

A.27. To the best of my knowledge, the Companies, UIEK, or MOG did not have meetings specifically with the KEEC regarding development of the Kentucky SIP. The Midwest Ozone Group (MOG) hosted a webinar regarding ozone transport program design to which KEEC and agencies from several other states were invited. Attachment 1 is the MOG webinar presentation and Attachment 2 is the attendee list from the February 28, 2018 event. MOG .

The attachments are being provided in separate files.

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Question No. 28

Responding Witness: Lonnie E. Bellar

Q.28. In follow-up to Response KCA First 1-25, please provide a list of the PPL facilities.

A.28. The following data are the 2022 CO2e emissions reported under the Greenhouse Gas Reporting Rule for PPL generation facilities:

Generation Facility	2022 CO2e (metric tons)
E.W. Brown	1,378,692
Cane Run	1,658,232.9
Ghent	9,887,784.9
Mill Creek	7,066,313
Paddy's Run	54,576.4
Trimble County	8,708,531.9

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Question No. 29

Responding Witness: Robert M. Conroy / Christopher M. Garrett

Q.29. In follow-up to Response KCA First 1-28, please confirm that the investments reflect both the remaining investments in plant as well as the Environmental Cost Recovery (ECR) dollars transferred to base rates and provide the remaining period for the expected recovery to occur.

A.29. Confirmed. The expected remaining recovery periods are as follows:

Mill Creek Unit 2: July 2027 – June 2037
Brown Unit 3: July 2028 - June 2038
Ghent Unit 2: July 2028 – June 2038

Note: The associated recovery periods were utilized in the RARR calculations provided in the attachment to the response to KCA 1-29.

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Question No. 30

Responding Witness: Counsel

Q.30. In follow-up to Response KCA First 1-29, the question was earnings on all undepreciated capital not only on the three units the Companies are proposing to retire. Please provide, as requested, the projected earnings on all undepreciated capital under all scenarios considered.

A.30. The requested information for the scenarios does not exist, requires original work to create, and otherwise is not relevant to the issues in this proceeding. The Companies' portfolio is the least cost option from the customers' perspective.

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Question No. 31

Responding Witness: Lonnie E. Bellar

Q.31. In follow-up to Response KCA First 1-31, please confirm the Companies are unaware of the status of the FEED study.

A.31. Not confirmed. The status of the FEED study is that the project is ongoing. The project team including the Companies, the Electric Power Research Institute ("EPRI"), the University of Kentucky, Vogt Power, and Bechtel Engineering, meet weekly and are actively working on the project. Representatives from the Companies attend weekly meetings and are providing the project team with data and engineering support. The project kickoff meeting with the Department of Energy was January 31, 2023. The planned project duration is until June 30, 2024. Deliverables related to the FEED study will be posted publicly on the project landing page: https://netl.doe.gov/project-information?p=FE0032223

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Question No. 32

Responding Witness: Lonnie E. Bellar / David S. Sinclair

Q.32. In follow-up to Responses KCA First 1-35 through KCA First 1-39, please confirm the Companies are not pursuing options for the utilization of CO2 if it cannot be sequestered. If not the case, please summarize current efforts. If confirmed, please explain what options the Companies would have to continue to operate the new NGCC's if a federal or Corporate Net Zero 2050 target is established and conversion to hydrogen is not economic.

A.32. Confirmed. There are currently no laws or regulations that require the sequestration of CO_2 from existing generation units and the Companies are not pursuing opportunities for the commercial sale of CO_2 at scale as part of on-going operations but are open to reviewing proposals from any entity that would wish to purchase CO_2. See response to Question No. 13 regarding the Corporate Net Zero 2050 target. Any actions the Companies would take with respect to future federal regulations will depend on the requirements of those regulations and the technology options available to reliably serve customers' energy needs at the lowest reasonable cost.

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Question No. 33

Responding Witness: Lonnie E. Bellar / David S. Sinclair

Q.33. In follow-up to Response KCA First 1-40, please provide a workable URL or the document. In addition, please confirm that the Companies have done no analysis of Section 45Q tax credits following passage of the Inflation Reduction Act which increased and extended the credits. If not the case, please provide the updated analysis.

A.33. The two URLs in KCA 1-40 work for the Companies either by directly clicking on them or by pasting the links into a browser.

The Companies are aware that the IRA altered Section 45Q tax credits, and they confirm they have not performed an in-depth analysis related to those credits because such an analysis is not necessary at this time. Today, the Companies do not have an obligation to retrofit existing generating units with CCS equipment. Obtaining Section 45Q tax credits for sequestered or reused CO_2 emissions at scale would require investing hundreds of millions of dollars. The prudence of such a speculative, purely tax-credit-driven investment would be uncertain at best when there is no operational necessity for it. If future regulations require CCS at existing generating units, the Companies will certainly factor into their analysis all relevant tax credits for each alternative.

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Question No. 34

Responding Witness: Lonnie E. Bellar / David S. Sinclair

Q.34. In follow-up to Response KCA First 1-43, please confirm that the Companies do not believe that the potential for either carbon capture or green hydrogen conversion are relevant to a decision to pursue this CPCN for two NGCC plants in this proceeding? If confirmed, are the Companies agreeing to waive any remaining recovery in the NGCC plants if required by law or Corporate action to retire the plants before the 40-year depreciation period is completed.

A.34. The Companies confirm the potential for carbon capture or green hydrogen are not relevant to a decision to pursue this CPCN for two NGCC plants for compliance with the Good Neighbor Plan. Greenhouse gas New Source and Existing Source Performance Standards for natural gas electric generating units do not currently require carbon capture or green hydrogen. Carbon capture and green hydrogen are not achievable or adequately demonstrated technologies for utility scale electric generating unit new source and existing source greenhouse gas standards. The Companies do not have an opinion on how fast these technologies will develop nor the cost of these technologies upon adequate demonstration. The Companies are required to make compliance decisions today to meet the Good Neighbor Plan. The portfolio proposed in the CPCN is the safe, reliable, and cost-effective solution under the current regulations. Future changes in applicable law will be evaluated when promulgated. The Companies expect to utilize cost recovery tools available at the time of implementing compliance programs.

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Question No. 35

Responding Witness: Lonnie E. Bellar

Q.35. In follow-up to Response KCA First 1-45, please confirm that the Companies' representation that the proposed NGCC plants will be "designed to combust hydrogen in the future" is based solely on the promotional material provided by two vendors. If not confirmed, please provide the full range of information considered including relevant site-specific factors, proposals to the Companies incorporating this option, and the expected incremental costs.

A.35. Not confirmed. The Companies have had, and continue to have, substantive discussions with OEM suppliers of this technology regarding their specific capabilities to combust hydrogen. Those capabilities vary widely across suppliers, but all outpace current, or reasonably envisioned, supply of commercially available quantities of hydrogen. The RFP for this equipment includes option pricing for a variety of hydrogen blends so that the Companies can make the most cost-effective decision which balances probability of use and minimizes likely necessary upgrades in the future. Incremental costs will be known once the suppliers submit their proposals. There are no site-specific factors associated with the equipment.

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Question No. 36

Responding Witness: Stuart A. Wilson

Q.36. In follow-up to Responses KCA First 1-57 and KCA First 1-58, please confirm that you cannot identify any party that uses a coal-to-gas (CTG) methodology for forecasting coal prices. To be clear, the issue is not inter-relatedness of the energy industries, it is specifically related to fuel price forecasting methodology. If not confirmed, please provide third party support for using a different methodology from the 2022 Resource Assessment. Also, please also confirm that this methodology has not been previously used by the Companies.

A.36. The response to KCA 1-58 is confirmed. The Companies have not performed this research. The Companies have not previously used this methodology but continually endeavor to improve their planning methods and tools whenever possible.

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Question No. 37

Responding Witness: Charles R. Schram / David S. Sinclair

Q.37. In follow-up to Response KCA First 1-60, the question did not ask about the availability of pipeline capacity. Rather it asked about natural gas availability. Please confirm that the Companies have not performed any analysis as to future natural gas availability. If not the case, please provide such analyses.

A.37. The Companies do not perform analyses related to the potential exploration and production of natural gas or estimated reserves. According to EIA, "The U.S. Energy Information Administration estimates in the Annual Energy Outlook 2023 that as of January 1, 2021, there were about 2,973 trillion cubic feet ("Tcf") of technically recoverable resources ("TRR") of dry natural gas in the United States. Assuming the same annual rate of U.S. dry natural gas production in 2021 of about 34.52 Tcf, the United States has enough dry natural gas to last about 86 years."[1] EIA notes that from 2022 to 2050, domestic production of natural gas outpaces domestic consumption across all cases considered.[2] Additional information related to natural gas production in the Gulf Coast region and from shale resources can be found in EIA's Annual Energy Outlook narrative.[3]

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[1] https://www.eia.gov/tools/faqs/faq.php?id=58&t=8
[2] Annual Energy Outlook 2023: Narrative (eia.gov), pg. 27.
[3] Annual Energy Outlook 2023: Narrative (eia.gov), pg. 27-29.

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Question No. 38

Responding Witness: Stuart A. Wilson

Q.38. In follow-up to Response KCA First 1-63, please explain why the annual costs of FT are not included in the cost of the new NGCC plants when the Companies discuss the cost of the two NGCC plants as this is a cost tied to the plants not the usage of the plants.

A.38. KCA 1-63 asks the Companies to "confirm that the costs of the FT agreements are not included in the capital cost assumptions for the proposed NGCCs [emphasis added]." The annual cost of firm gas transportation is not included in the capital cost of the new NGCC plants because it is an operating expense, not a capital expense.

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Question No. 39

Responding Witness: Lonnie E. Bellar

Q.39. In follow-up to Response JI First 1-15, please provide the current estimate of the all-in costs for each of the proposed NGCCs including capital, pipeline upgrades, FT costs, transmission upgrades and interconnections.

A.39. The respective all-in costs for the Mill Creek NGCC and Brown NGCC are $661,325,346 in nominal dollars and $699,382,414 in nominal dollars. These costs include capital, pipeline upgrades, and direct interconnections. The cost of transmission system upgrades is tied to the overall transmission system and not to a specific unit but are $3,420,000 in 2022 dollars. Regarding FT costs, see the response to Question No. 38.

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Question No. 40

Responding Witness: Lonnie E. Bellar

Q.40. In follow-up to the prior question, please indicate which components of the current NGCC price have the greatest price uncertainty.

A.40. As a result of the Class 3 engineering study performed by our Owner's Engineer, the Companies would not highlight any components of the current NGCC price as having great price uncertainty. NREL capital cost estimates for similar installations support this as those estimates differ by less than 1% from the current NGCC price. See the response to PSC 2-21(a).

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Question No. 41

Responding Witness: Robert M. Conroy / Stuart A. Wilson

Q.41. In follow-up to Response JI First 1-17, please provide assumptions in the CPCN as to the cost of capital? Have the Companies revised any of its analyses to reflect higher costs of capital since the analysis was performed.

A.41. Financial inputs including cost of capital assumed in the CPCN analysis can be found in Table 41 in Appendix A of Exhibit SAW-1. No additional analyses have been performed to reflect any revisions to these assumptions.

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Question No. 42

Responding Witness: Lana Isaacson

Q.42. In follow-up to Response JI First 1-129, please indicate whether the Companies have performed any additional analyses to reflect higher inflation rate assumptions.

A.42. No. The Companies have not performed additional analyses to reflect higher inflation rate assumptions.

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Question No. 43

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

Q.43. In follow-up to Response Staff First 1-42, please provide the Companies' assumptions regarding the costs for the SCR (selective catalytic reduction) retrofits on Mill Creek 2 and Ghent 3. If these estimates are based upon firm bids, please provide. If from some other source, please provide supporting documentation.

A.43. The Companies assume the reference to Ghent 3 is intended to mean Ghent 2. See Exhibit SAW-1 at page 4 and the response to PSC 2-52(e).

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Question No. 44

Responding Witness: Stuart A. Wilson

Q.44. Please explain in detail how the FT (see, KCA First 1-51) transportation costs are modeled in the Companies' analysis? In other words, are they included as an operating cost and are they included in dispatch decisions?

A.44. The firm gas transportation costs are modeled as a fixed operating cost. They are included in O&M costs within PLEXOS and the Financial Model, but do not affect dispatch decisions because the costs are unchanged by unit operating levels.

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Question No. 45

Responding Witness: Stuart A. Wilson

Q.45. In follow up to Response KCA First 1-65, please confirm that your economic analysis does not consider undepreciated capital for the plants the Companies propose to retire in the NPV analyses. If not the case, please point to where these costs can be found in the documents produced by the Companies.

A.45. Not confirmed. Revenue requirements for past investments in these units are included in the analysis, but the present value of these revenue requirements is the same in all cases. See the Financial Model files at "\04_FinancialModel\CONFIDENTIAL_20221209_FinancialModel_0308_Ph1_D01.xlsx" and "\04_FinancialModel\CONFIDENTIAL_20221209_FinancialModel_0308_Ph2_D01.xlsx" in Exhibit SAW-2, and the updated attachment "2023-03 UPDATE CONFIDENTIAL_20221209_FinancialModel_0308_Ph3_D01.xlsx" provided in response to PSC 1-47(a). Revenue requirements for past investments in Mill Creek Unit 2, Ghent Unit 2, and Brown Unit 3 can be found in rows 1800, 1804, and 1809, respectively, of the Detail tab. Revenue requirements for past investments for all units can be found in row 185 of the Model tab.

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Question No. 46

Responding Witness: Robert M. Conroy

Q.46. In follow-up to Response KCA First 1-69, please confirm the Companies are unwilling to perform a residential rate analysis. If confirmed, please explain why not evaluating the impact of the CPCN on residential rates is in the best interest of the residential ratepayers.

A.46. Not confirmed. It is not that the Companies are simply unwilling to perform a residential rate analysis, but rather that such an analysis is not appropriate and would not provide meaningful information at this time.

As stated in the response to KCA 1-68 (which KCA 1-69 references), the appropriate analysis in this proceeding is to determine whether the proposed projects constitute the least reasonable cost to customers of meeting their electricity needs. The financial effect to customers of the projects in this case is measured by the present value revenue requirements the Companies have already submitted. Revenue requirements are the first phase of a general rate case, used to determine the total amount of revenue required to cover the costs of service provided by a utility. Rate design, or the determination of how costs should be allocated among customer classes and across components of customer rates, is the second phase of a general rate case. The former has always been used by the Commission to assess the relative cost of investment alternatives in a CPCN proceeding. The latter is not performed outside of a general rate case and is often the product of alternative analyses presented by the Companies and intervening parties which become the subject of significant debate and is ultimately ruled on by the Commission.

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Question No. 47

Responding Witness: Robert M. Conroy / Tim A. Jones

Q.47. In follow-up to KCA First 1-68 and the response addressing a lack of a residential rate analysis, please confirm that according to the Direct Testimony of Tim A. Jones, the use of an assumed 2% per year growth in rates is being used solely for the purpose of developing a load growth forecast, not a forecast of the growth in rates. (Jones Testimony, Page 29, Lines 2-10) If that is not the case, please provide all information used to calculate the 2% per year. Also, please confirm that the Companies are not forecasting a 2% per year increase in rates.

A.47. On the issue of whether there should be a "residential rate analysis" in this matter, see the response to Question No. 46.

Confirmed. The models referenced use nominal rates as an input, so a 2% average inflation figure is assumed for load forecasting purposes only.

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Question No. 48

Responding Witness: Robert M. Conroy

Q.48. In follow-up to KCA First 1-68 and the response addressing a lack of a residential rate analysis, please provide average residential customer rates for each of the last five years.

A.48. On the issue of whether there should be a "residential rate analysis" in this matter, see the response to Question No. 46. See the table below for the average rate for the residential revenue class for calendar years 2018 through 2022.

Utilities	2018-2022 Average Rate for Residential Revenue Class				
	2018	2019	2020	2021	2022
Kentucky Utilities (KU)					
Annual Revenues	$ 612,929,492	$ 620,789,920	$ 632,660,966	$ 662,393,290	$ 752,019,440
Annual Usage (per kWh)	6,320,045,976	6,080,135,788	5,968,339,429	5,983,639,376	6,169,015,392
Average Rate (per kWH)	$ 0.10	$ 0.10	$ 0.11	$ 0.11	$ 0.12
Louisville Gas and Electric (LG&E - Elec.)					
Annual Revenues	$ 451,172,021	$ 460,595,502	$ 465,439,678	$ 479,087,634	$ 522,265,454
Annual Usage (per kWh)	4,370,390,818	4,229,047,796	4,122,472,974	4,193,141,957	4,230,691,399
Average Residential Rate (per kWH)	$ 0.10	$ 0.11	$ 0.11	$ 0.11	$ 0.12

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Question No. 49

Responding Witness: Stuart A. Wilson

Q.49. In follow-up to Response KCA First 1-70. If the earnings are not readily available, please provide the undepreciated capital by year under each plan.

A.49. The table below contains estimated undepreciated capital from the Financial Model for investments in Brown 3, Ghent 2, and Mill Creek 2 as of December 31, 2021, the values of which are identical for each portfolio modeled in the Resource Assessment. These values do not reflect the impact of capital investments in 2022 and beyond.

Undepreciated Capital As of End of Year ($M)

Year	Brown 3	Ghent 2	Mill Creek 2
2022	598.0	202.4	255.9
2023	552.0	185.6	234.6
2024	506.0	168.7	213.3
2025	460.0	151.8	192.0
2026	414.0	135.0	170.6
2027	368.0	118.1	149.3
2028	322.0	101.2	128.0
2029	276.0	84.3	106.6
2030	230.0	67.5	85.3
2031	184.0	50.6	64.0
2032	138.0	33.7	42.7
2033	92.0	16.9	21.3
2034	46.0	0.0	0.0
2035	0.0	0.0	0.0

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Question No. 50

Responding Witness: Robert M. Conroy

Q.50. Please confirm that the Companies have not performed an analysis of the rate impact of its CPCN per its response to KCA First 1-71 beyond what it provided related to the rate impact for the 2024-2030 Demand-Side Management and Energy Efficiency Program Plan filed for approval pursuant to KRS 278.285 and for specific cost recovery through the Demand-Side Management Cost Recovery Mechanism as part of this proceeding.

A.50. See the responses to KCA 1-68 and Question No. 46.

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Question No. 51

Responding Witness: Lonnie E. Bellar

Q.51. In follow-up to Commission Staff First 1-1, Staff asked whether dual fuel capability was included in the cost estimate for the proposed NGCC units. The Companies' response was "dual fuel capability was not specifically included in the cost estimate developed for the proposed NGCC units. Dual fuel capability will be requested in the Request for Proposals to NGCC unit vendors as an alternative to single fuel capability." Please address the following:

a. How the cost estimates for dual fuel capability in the CPCN were developed,

b. The expected date of the new RFP,

c. Will the NGCC filing be put on hold until there is better clarity as to the costs for the proposed NGCC's.

d. What the Companies expect to require vis-à-vis dual fuel capability (e.g., percentage blending capability, derates at maximum blending, and costs with and without blending), and

e. Why it is prudent for the Commission to approve a blank check for the NGCC's with dual-fuel capability when that information is obtainable now.

A.51.

a. Dual fuel capability was not a component of the initial estimate for either NGCC referenced in the CPCN. The estimates for both projects include prudent contingency, and this contingency may adequately fund this component dependent upon i) final decision as to the necessity for dual fuel as a component of fuel resiliency mitigation, ii) the quantity of on-site fuel oil and associated emission control demineralized water required for that mitigation, and iii) other project contingency requirements.

b. The EPC RFP for the NGCC units was issued to the OEM bidders on 4/25/2023 with a due date of 8/28/2023. See attached.

c. No. The current cost estimates are reasonable for purposes of this proceeding.

d. If the Companies exercise a dual fuel option, the affected unit will either run on 100% natural gas or 100% fuel oil. The two are not blended. Fuel oil capability will likely carry a minor reduction across the load range when compared to performance on natural gas. The extent will not be known until the OEM's submit their proposals.

e. The Companies are not asking for the Commission to "approve a blank check." The Companies are currently obtaining the necessary information via the RFP process. If a fuel oil option is deemed necessary and incremental funding is required to satisfy that option, the recovery of that cost would be the subject of a future rate proceeding and would not be addressed in this matter.

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Question No. 52

Responding Witness: Lonnie E. Bellar

Q.52. In follow-up to Commission Staff First 1-5:

a. Please confirm that all references to "hydrogen" are in fact to "green hydrogen". If not the case, please identify which references are not to "green hydrogen."

b. Please confirm that the Companies have not represented how they would define what is a "cost-effective hydrogen resource." If not the case, please provide what the Companies believe would be a "cost-effective hydrogen resource" on a dollars per MMBtu basis.

c. Please confirm that no OEMs are guaranteeing 100% hydrogen conversion capabilities. If not confirmed, please identify OEM's that are representing 100% conversion and, if available, the expected costs of such conversion and the expected derates with such conversion.

d. Please confirm that if green hydrogen is produced on site, FT would not be required. If not the case, please explain.

A.52.

a. Not confirmed. However, the Companies acknowledge that only green or pink hydrogen appear reasonable as other hydrogen sources require greater carbon emissions (unless captured and sequestered, Blue hydrogen) for hydrogen production than would have otherwise been emitted if that same fuel source had directly generated electric power.

b. Confirmed. A cost-effective analysis can only be conducted in the context of alternatives unless H2 was lower cost in absolute dollar terms than natural gas.

c. Confirmed.

d. Not confirmed as FT is required at anything less than a 100% hydrogen. The NGCCs are not currently capable of combusting 100% hydrogen, as a result FT is required.

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Question No. 53

Responding Witness: Philip A. Imber / Stuart A. Wilson

Q.53. In follow-up to Commission Staff 1-9, please provide an update to the response given the changes in the promulgated GNR.

A.53. See the response to AG 2-4.

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Question No. 54

Responding Witness: Philip A. Imber

Q.54. In follow-up to Commission Staff 1-13:

a. Do the Companies believe that greenhouse gas (GHG) emissions associated with the production and transport of natural gas are not relevant to determining the Companies' compliance with its Net Zero targets?

b. Do the Companies believe they will not be required to report Scope 3 emissions at some point in the future? If not, explain why not?

A.54.

a. The Companies do not include GHG emissions associated with 40 CFR 98 Subpart W - Petroleum and Natural Gas Systems nor 40 CFR 98 Subpart NN – Suppliers of Natural Gas and Natural Gas Liquids in its Net Zero target.

b. The Companies do not have an opinion on future reporting requirements of Scope 3 emissions which would apply to all suppliers, not just natural gas.