

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

|                                     |   |            |
|-------------------------------------|---|------------|
| ELECTRONIC 2018 JOINT INTEGRATED    | ) |            |
| RESOURCE PLAN OF LOUISVILLE GAS AND | ) | CASE NO.   |
| ELECTRIC COMPANY AND KENTUCKY       | ) | 2018-00348 |
| UTILITIES COMPANY                   | ) |            |

COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION  
TO LOUISVILLE GAS AND ELECTRIC COMPANY  
AND KENTUCKY UTILITIES COMPANY

Louisville Gas and Electric Company (LG&E) and Kentucky Utilities Company (KU) (jointly, LG&E/KU), pursuant to 807 KAR 5:001, are to file with the Commission the original and an electronic version of the following information. The information requested herein is due on December 17, 2019. Responses to requests for information in paper medium shall be appropriately bound, tabbed, and indexed. Electronic documents shall be in portable document format (PDF), shall be searchable and shall be appropriately bookmarked.

Each response shall include the name of the witness responsible for responding to the questions related to the information provided. Each response shall be answered under oath or, for representatives of a public or private corporation or a partnership or association or a governmental agency, be accompanied by a signed certification of the preparer or the person supervising the preparation of the response on behalf of the entity that the response is true and accurate to the best of that person's knowledge, information, and belief formed after a reasonable inquiry.

LG&E/KU shall make timely amendment to any prior response if LG&E/KU obtain information which indicates that the response was incorrect when made or, though correct when made, is now incorrect in any material respect. For any request to which LG&E/KU fail or refuse to furnish all or part of the requested information, LG&E/KU shall provide a written explanation of the specific grounds for their failure to completely and precisely respond.

Careful attention shall be given to copied material to ensure that it is legible. When the requested information has been previously provided in this proceeding in the requested format, reference may be made to the specific location of that information in responding to this request. When applicable, the requested information shall be separately provided for total company operations and jurisdictional operations. When filing a paper containing personal information, LG&E/KU shall, in accordance with 807 KAR 5:001, Section 4(10), encrypt or redact the paper so that personal information cannot be read.

1. Refer to the IRP, Volume 1, Section 5, page 5-2, in which LG&E/KU state, “An understanding of the way customers use electricity is critical for planning a generation, transmission, and distribution system that can reliably serve customers in every moment.”

a. Explain how the Advanced Metering Systems (AMS) in place for residential and commercial customers have impacted the ability of LG&E/KU to understand the way customers use electricity.

b. State whether the existing AMS data provided any insights into further segmenting customer load profiles.

c. State whether the existing AMS is utilized for load profile information to aid in customer load forecasting.

d. State whether the AMS system is part of transmission and distribution system planning. If so, explain how the AMS is utilized in transmission and distribution system planning.

2. Refer to the IRP, Volume 1, Section 5, page 5-4, in which LG&E/KU state, “Renewable resources have little to no fuel or emissions costs, but their availability is uncertain during peak load conditions.”

a. Provide a list of renewable generating assets and the respective capacity value in which capacity value refers to the contributions of the power plant to reliability meet demand, expressed as a percent of nameplate capacity.

b. Provide data that illustrates the hourly generating profile of each solar and hydroelectric generating asset in LG&E/KU’s existing resource portfolio compared to LG&E/KU’s hourly load profile. Explain how much capacity from each solar and hydroelectric facility is counted towards offsetting LG&E/KU’s peak demand requirements.

3. Refer to the IRP, Volume 1, Section 5, page 5-19, in which LG&E/KU state, “A key category of risk in resource planning stems from uncertainty related to the way customers use electricity.” Confirm if the Companies have strategies or plans in place to reduce this uncertainty.

a. Confirm whether the deployment of an AMS system reduces uncertainty.

b. Confirm whether forecasting of Distributed Energy Resource adoption can reduce the risk in resource planning.

c. Confirm whether substation Supervisory Control and Data Acquisition (SCADA) systems increase visibility of the customer base to LG&E/KU.

d. What percentage of substations by LG&E/KU is visible to the LG&E/KU via SCADA technology?

4. Refer to the IRP, Volume 1, Section 5(6), page 5-40, Key Issues that Could Affect Plan Implementation:

a. Explain how LG&E/KU's parent company, PPL Corporation, addresses climate change, including any greenhouse gas reduction goals.

b. Explain how any strategy by PPL Corporation to reduce greenhouse gas emissions could affect LG&E/KU's IRP implementation.

5. Refer to the IRP, Volume 1, Section 6, and the National Renewable Energy Laboratory's published study on *Identifying Potential Markets for Behind-the-Meter Battery Energy Storage: A Survey of U.S. Demand Charges*.

a. Identify the number of customers that have adopted behind the meter energy storage, including thermal storage.

b. Demonstrate where in the IRP filing LG&E/KU evaluated the demand charges for commercial and industrial customers in order to assess the potential for behind the meter storage and impacts on demand and energy requirements.

6. Refer to the IRP, Volume 1, Section 6, relating to significant changes since October 2014.

a. Confirm whether LG&E/KU have surveyed large customers relating to the willingness to adopt energy-related technologies, sustainability plans, and long-range energy planning.

b. Confirm whether LG&E/KU maintain a list of critical facilities for power restoration priority during an emergency event.

c. Confirm whether LG&E/KU have evaluated the potential for emergency microgrids or other resilience projects at critical facilities.

7. Refer to the IRP Volume 1, Section 7, page 7-13, which states, “The Companies utilize survey data and direct feedback from large customers to understand usage. To further their knowledge and understanding, the Companies plan to conduct commercial surveys and continue residential surveys, ad hoc studies, and the online panel.”

a. Explain how the survey questions are devised and any stakeholder involvement in the survey creation.

b. Explain the survey methodology utilized for industrial and residential customers.

c. Provide a copy of the last survey for industrial and residential customers, including the date issued.

d. Summarize the survey response rate and the response results by questions for the latest industrial and residential survey completed.

8. Refer to the IRP, Volume 1, Section 8, page 8-5, in which LG&E/KU state, “The distribution system has been enhanced over the years through the construction and

enhancement of substation and distribution lines, as well as the integration of modern technology to meet growing customer loads and to improve service reliability and quality.”

- a. Explain in detail LG&E/KU’s distribution system.
- b. Confirm that “to meet growing customer loads” is one driver for distribution system enhancements and, if applicable, explain which customer load growth is driving distribution system enhancements.
- c. Detail the number of Circuits Identified for Improvement segmented by company and how many circuits, segmented by company, have been completed since the 2014 IRP.
- d. Detail the number of Customers with Multiple Interruptions and planned improvements for those customers.
- e. Explain what “modern technology” has been integrated into the distribution system and how this is contributing to improved service reliability and quality.

9. Refer to the IRP, Volume 1, Section 8, page 8-5, in which LG&E/KU state, “Loading data and other system information is used to develop a joint ten-year plan for major capacity enhancements necessary to address load growth and improve system performance.”

- a. Provide a copy of the most recent joint ten-year plan.
- b. Confirm whether the deployment of AMS is a component of the joint ten-year plan.
- c. Explain how LG&E/KU measure distribution system performance.
- d. Explain how the distribution system is performing according to the performance metrics identified.

e. Explain the expected improvement in distribution system performance in relation to the most recent ten-year plan.

10. Refer to the IRP, Volume 1, Section 8, page 8-5, in which LG&E/KU state, “The Companies have completed projects to install, upgrade, or replace distribution substation transformer in the Companies service territories to serve new customers and improve service reliability.”

a. Explain what projects have been completed and are planned relating to distribution substation transformers.

b. Explain SCADA functionality and benefits, including SCADA status of LG&E/KU’s distribution substations.

c. Explain what capital investments have been made are forecasted for LG&E/KU’s substations.

11. Refer to the IRP, Volume 1, Section 8, and Case No. 2018-00295, Exhibit LEB-5, the Distribution Reliability & Resiliency Improvement Program.

a. Explain how the Distribution Reliability & Resiliency Improvement Program is incorporated into the Integrated Resource Planning process.

b. Detail the forecasted capital investment by year in the distribution system and total distribution system expenses by year, specifically comparing distribution system investments and expenses to other capital investment and expenses within LG&E/KU.

c. Explain the changes to the Distribution Reliability & Resiliency Improvement Program since the 2014 IRP.

12. Refer to the IRP, Volume 1, Section 8, in which LG&E/KU requested and were granted a CPCN for Distribution Automation project in 2016.

- a. Explain what distribution automation projects have been completed.
- b. Explain how much LG&E/KU have invested to date in the project and how much is forecasted to be invested.
- c. Explain any system reliability and performance improvements that have resulted from the project.

13. Refer to the IRP, Volume 1, Section 8, relating to the Distribution System.

- a. Confirm whether LG&E/KU utilize Advanced Distribution Management System and, if applicable, the current status.
- b. Explain how ADMS aid in efficiency gains of the distribution system and improves system performance.
- c. Confirm whether ADMS has contributed to improvement in SAIDI and SAIFI of LG&E/KU's distribution system.
- d. Explain how distribution line reclosers work with ADMS and any estimated customer benefits.
- e. Illustrate any customer satisfaction improvements or savings that have resulted from distribution system enhancements.

14. Refer to the IRP, Volume 1, Section 8, relating to Distribution.

- a. Confirm whether LG&E/KU are aware of the Interruption Cost Estimate Calculator developed by Lawrence Berkeley National Laboratory and Nexant, Inc.

b. Confirm whether LG&E/KU have utilized the Interruption Cost Estimate Calculator

c. Explain how LG&E/KU ensure physical and cybersecurity of the distribution system and compliance with NERC standards.

15. Refer to LG&E/KU's response to Staff's Initial Request for Information (Response to Staff's Initial Request), Item 7.

a. Provide the number of Qualifying Facility (QF) interconnections by company and tariff type. Provide the total installed QF Capacity by company and tariff type.

b. State whether LG&E/KU consider the Business Solar Program a distributed generation program. Explain how LG&E/KU identify potential customers for their Business Solar Program.

c. Explain whether LG&E/KU have evaluated the potential of aggregated distributed generation as a reasonable resource option to address LG&E/KU's future capacity needs.

16. Refer to the Response to Staff's Initial Request, Item 24. The answers contained an inadequate level of detail to be responsive to the questions.

a. Explain what changes have occurred in coal supply that have negatively impacted boiler slagging and precipitator performance.

b. Explain what changes have occurred in NOx burner modifications that have negatively impacted boiler slagging and precipitator performance.

17. Refer to the Response to Staff's Initial Request, Item 35.

a. Table 1: Resource Screening Analysis Results omits an entry under Battery Storage Variable O&M using 2019 data, but the original Table 1 lists Battery Storage Variable O&M at \$2.72/MWh using 2018 data. Explain why there is an omission using 2019 data and provide the 2019 Variable O&M data, if available.

b. Comparing the approximate \$/kW for each generation technology in Figure 1: Generation Technology Cost Forecast to the Capital Cost \$/kW in Table 1, it appears that the capital cost for battery storage is overstated in the table. Provide a reconciliation of the apparent differences.

18. Refer to LG&E/KU's amended response to the Attorney General's Initial Request for Information (Attorney General's Initial Request), Item 3(e). Provide the total installed capacity of QF facilities for LG&E/KU compared to the total installed capacity of net metering facilities.

19. Provide the historical growth rates in terms of installed capacity and number of interconnections within the LG&E/KU service territory for both QF facilities and net metering facilities.

20. Refer to LG&E/KU's amended response to the Attorney General's Initial Request, Item 22. If generation is reduced in Jefferson County, where will it be increased, and would that create other environmental issues?

21. Refer to LG&E/KU's amended response to the Attorney General's Initial Request, Item 47. Explain the large decrease in forecasted and actual off-system sales from 2018 to 2019.

22. Refer to LG&E/KU's amended response to the Attorney General's Initial Request, Item 48. When will the electric bus study be completed?

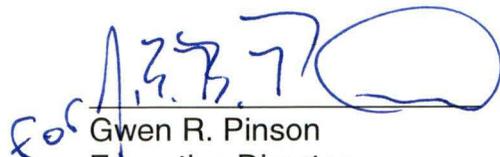
23. Refer to LG&E/KU's amended response to the Attorney General's Initial Request, Item 50. What impact has the change in underwriting for coal-based energy production has on the Companies' insurance rates?

24. Refer to LG&E/KU's response to the Attorney General's Initial Request, Item 53. Provide updates to this case throughout this proceeding.

25. Refer to LG&E/KU's amended response to the Attorney General's Initial Request, Item 58. Explain the large decrease in fixed operations and maintenance expense (O&M), variable O&M, fuel cost and capital costs from 2018 to 2019.

26. Refer to LG&E/KU's amended response to the Attorney General's Initial Request, Item 76. Explain why there were no power purchases from MISO for the years 2015 through 2018.

27. Demonstrate where in the IRP filing LG&E/KU illustrate the combined effects of all distributed energy resource currently deployed and forecasted on LG&E/KU's demand (MW) and energy (MWh) requirements where DER includes distributed generation from net metering and non-net metering sources, demand response, and transportation electrification.

  
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cc: Parties of Record

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