

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC 2021 JOINT INTEGRATED)	
RESOURCE PLAN OF LOUISVILLE GAS AND)	CASE NO.
ELECTRIC COMPANY AND KENTUCKY)	2021-00393
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) (collectively, LG&E/KU), pursuant to 807 KAR 5:001, is to file with the Commission an electronic version of the following information. The information requested is due on March 25, 2022. The Commission directs LG&E/KU to the Commission's July 22, 2021 Order in Case No. 2020-00085¹ regarding filings with the Commission. Electronic documents shall be in portable document format (PDF), shall be searchable, and shall be appropriately bookmarked.

Each response shall include the question to which the response is made and 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

¹ Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19* (Ky. PSC July 22, 2021), Order (in which the Commission ordered that for case filings made on and after March 16, 2020, filers are NOT required to file the original physical copies of the filings required by 807 KAR 5:001, Section 8).

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 a timely amendment to any prior response if LG&E/KU obtains the information that indicates 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 fails or refuses to furnish all or part of the requested information, LG&E/KU shall provide a written explanation of the specific grounds for its 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 LG&E/KU's response to Commission Staff's First Request for Information (Staff's First Request), Item 9.
 - a. Provide current industry estimates of carbon prices.
 - b. Assuming a carbon tax is implemented as the vehicle to limit carbon emitted into the atmosphere and using a \$15 per ton and a \$25 per ton carbon price,

provide an update to the sensitivity of the preferred generation portfolio with carbon taxed at each of those prices and explain how, if at all, the preferred generation mix changes.

2. Refer to LG&E/KU's response to Staff's First Request, Item 26e.

a. Confirm that the inclusion of Carbon Capture and Sequestration (CCS) for Natural Gas Combined Cycle (NGCC) units necessarily assumes that there will be a cost to emitting carbon or a mandate to limit carbon emissions because it would not be economical to include CCS for NGCC units if there is no cost or mandate and if LG&E/KU are not able to confirm, explain why they are not able to confirm.

b. If it is plausible to assume that CCS will be applied to NGCC units, explain why Simple Cycle Combustion Turbine (SCCT) units should not have been modeled with CCS for consistent application of assumptions.

c. Provide an update to the table provided in the response to Staff's First Request, Item 26h showing SCCT with CCS.

3. Refer LG&E/KU's response to Staff's First Request, Item 26h indicating that NGCC without CCS is significantly less expensive per kW than either SCCT without CCS or NGCC with CCS. Refer also to the Integrated Resource Plan (IRP), Volume I, Section 5, Plan Summary, page 43, Table 5-19. Provide an update to Table 5-19 that includes NGCC without CCS as a potential generation resource and explain the resulting changes in the least cost portfolios.

4. Refer to the IRP, RTO Membership Analysis, Introduction, pages 8–9 and the IRP, Volume I, Section 5, page 43, Table 5-19. LG&E/KU state in the Introduction that they “do not recommend RTO membership at this time,” however they also later state in part “[a]t the same time, being a member of a larger generation footprint could be

beneficial if the nation's and the Companies' future generation resources consist of large quantities of intermittent renewable technology, as RTO membership may support higher levels of renewable penetration with lower integration costs."

a. Explain this statement more fully and provide more detail, including specifically the timeline referred to, the actual penetration levels of renewable resources at which LG&E/KU see potential benefits from Regional Transmission Organization (RTO) membership, and the percentage of intermittent resources assumed in both the companies and the nation's future generation resource mix.

b. Table 5-19 indicates significantly higher levels of renewable resources are the least-cost resource under many of the scenarios modeled. Explain potential benefits from RTO membership in light of this forecast.

c. State whether LG&E/KU agrees that current federal policy, other state renewable portfolio standards or mandates, and corporate sustainability goals generally point toward the nation's future generation including more intermittent renewable technology, and explain the basis for LG&E/KU's response.

5. Refer to the IRP, Volume I, Section 8, Resource Assessment and Acquisition Plan, page 1, Table 8-1 showing that LG&E/KU's expected reserve margin for summer peak demand for 2034 to 2036 ranges from 44.9 to 47.8 percent. Refer also to LG&E/KU's response to Louisville/Jefferson County Metro Government's First Request for Information, Item 10 in which LG&E explains that this is due to the addition of significant solar generation and the need to maintain minimum generation during the winter where the expected reserve margins for the same period are much lower. Refer also to the IRP, Volume III, 2021 IRP Reserve Margin Analysis (RMA), pages 27-35.

a. Explain whether LG&E/KU's RTO analysis specifically takes into account that PJM Interconnection LLC (PJM) is summer peaking and LG&E/KU can be a winter peaking utility, including LG&E/KU's ability to sell excess summer capacity into wholesale markets to offset costs if LG&E/KU have a winter peak.

b. Explain how LG&E/KU factored the ability to sell excess capacity and energy/ancillary services, especially during the summer, into the respective wholesale markets into their RTO analysis and ultimate recommendation not to seek RTO membership.

c. Refer to the IRP, Volume I, Section 8, page 18, Table 8-11, which shows LG&E/KU's projected capacity purchases from non-utility sources.

(1) Explain whether LG&E/KU currently attempts to sell excess capacity into wholesale markets, or may do so in the future even if not an RTO member.

(2) Explain why it would not be beneficial to be an RTO member when LG&E/KU predicts they will become a net purchaser of capacity after 2028.

6. Refer to the IRP, Volume III, RTO Membership Analysis, page 9, which states: "But as the industry transitions to cleaner energy resources, RTO membership may present the best path for integrating high levels of renewable penetration if necessary changes are achieved by the RTOs to address potential shortfalls in capacity and energy adequacy and reliability." Explain the necessary changes LG&E/KU are referring to for both Midcontinent Independent System Operator (MISO) and PJM.

7. Refer to the IRP, RTO Membership Analysis, page 14, which states: "However, as more companies lean on the RTOs to integrate increasing levels of renewables and replace dispatchable generation, reliably meeting customers' energy

needs at every moment has the potential to become unsustainable. Furthermore, the RTOs themselves have considered ways to reduce CO₂, including carbon pricing, in the absence of national CO₂ regulations. Achieving CO₂ reductions with new renewables, especially wind resources, will likely require significant transmission investments to move the power from areas with high generation resources to load centers. Depending on these and other variables, it could be more cost-effective for the Companies to be on their own transition path rather than that of the RTOs.”

a. Explain whether LG&E/KU has begun planning an independent transition path to renewables in order to compare the net benefit of remaining independent against the cost of RTO membership.

b. Explain whether LG&E/KU have used a carbon price in any of their analyses in order to compare the net benefit of remaining independent against the cost of RTO membership.

8. Refer to the IRP, Volume III, RTO Membership Analysis, page 21. Explain why LG&E/KU used forecasts for market energy prices at the companies’ interfaces with MISO and PJM instead of using generator-specific or load zone-specific Locational Marginal Pricing models.

9. Refer to the IRP, Volume III, RTO Membership Analysis, pages 21–22.

a. Explain why the analysis does not incorporate any optimization of a hedging strategy against market energy and capacity risk of RTO membership relative to the LG&E/KU’s assumed capacity need beginning in 2028.

b. Explain whether the ability to sufficiently mitigate the market energy and capacity risk to customers is an essential component in the LG&E/KU's determination of whether joining an RTO is net beneficial.

10. Refer to the IRP, Volume III, RTO Membership Analysis, pages 32–35.

a. Explain how LG&E/KU would conduct an analysis using a complete RTO-wide regional market model to determine expected energy market benefits and cost which they explained would be advisable prior to deciding whether to join an RTO rather than their own models.

b. Explain whether LG&E/KU considered conducting an RTO-wide regional market model as part of this RTO analysis, and why it decided not to do so.

c. Explain when and under what circumstances LG&E/KU would seek to conduct this analysis, and state whether they would only do so when they are seriously considering joining an RTO.

d. Explain how LG&E/KU could know definitively whether joining an RTO would be net beneficial without having conducted this analysis.

11. Refer to the IRP, Volume I, Section 8, page 12, Table 8-3. Confirm that the dates in the column titled “Upgrades, Derates, Retirements” on the far right of the table all correspond to planned retirement dates for the specified generation resources. If they are not all retirements, identify and describe the upgrades or derates accordingly.

12. Refer to the IRP, Volume I, Section 8, pages 9-8, wherein discussing distributed energy resources, LG&E/KU state: “The contribution of all connected load and distributed energy resources are currently included in load forecasts at the distribution substation transformer level. These forecasts, along with other key system information,

are used to develop a joint ten-year plan for major capacity enhancements necessary to address load growth and improve system performance.”

a. Explain whether this joint ten-year plan for major capacity enhancements is included in this IRP and if so identify where. If not, provide such a plan.

b. Quantify the current total amount of distributed energy resources (DER) within the LG&E/KU service areas.

c. Describe the projected timeline of the DER interconnection portal and projected cost savings.

d. Discuss the relative benefits or detriments of being part of an RTO in regards to the imminent proliferation of DER aggregations and the management of the processes which will be necessary to interface with aggregators, DERs, and the Commission versus staying independent and managing these processes in house.

13. Refer to the IRP, Volume I, Section 8, pages 9-10. Both MISO and PJM have longstanding delays in their respective generator interconnection queues, with only a small percentage of the projects in each queue likely to be built for various reasons.

a. With the possibility that PJM may implement a two-year pause on accepting new generation projects into its generator interconnection queue, explain whether LG&E/KU have seen or expect to see any substantial change to the number of interconnection requests to its transmission system or costs for network upgrades.

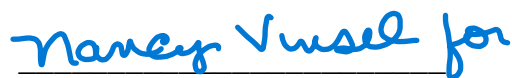
b. Explain whether the possibility for a higher than average number of interconnection requests to LG&E/KU’s transmission system was contemplated or specifically modeled in the IRP.

c. Describe the interconnection process to LG&E/KU's transmission system generally, and whether there have been any changes to the process since the last IRP in 2018.

d. Discuss the relative benefits or detriments of being part of an RTO in regards to the generator interconnection queue versus staying independent and managing LG&E/KU's own interconnection queue.

14. Refer to LG&E/KU's Response to Staff's First Request, Item 23. Explain whether limiting battery storage resources and solar and wind resources to 100 MW increments deters the acceptance of any renewable or non-renewable supply resource.

15. Refer to the IRP, Volume III, RTO Membership Analysis, page 40, where it states "[f]or RTO membership to be favorable, the expected benefits of joining the RTO should outweigh the expected range of fixed costs consistently over time and in a clear and convincing manner *because it is highly uncertain whether the Companies would be able to exit an RTO a second time.*" (Emphasis added). Fully explain the emphasized portion of this statement.



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DATED MAR 03 2022

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