

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

ELECTRONIC INVESTIGATION OF)	
LOUISVILLE GAS AND ELECTRIC)	
COMPANY AND KENTUCKY UTILITIES)	CASE No. 2023-00422
COMPANY SERVICE RELATED TO)	
WINTER STORM ELLIOT)	

**POST-HEARING BRIEF OF JOINT INTERVENORS
METROPOLITAN HOUSING COALITION,
KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY, AND
MOUNTAIN ASSOCIATION**

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I. INTRODUCTION

Come the Joint Intervenors Metropolitan Housing Coalition, Kentuckians for the Commonwealth, Kentucky Solar Energy Society, and Mountain Association (“Joint Intervenors”), and in accordance with the June 4, 2024 Order of the Kentucky Public Service Commission (“Commission”) establishing an opportunity to file a post-hearing brief in support of their post-hearing positions on or before August 30, 2024, herewith file for the Commission’s consideration, their joint position regarding the issues raised in the *Electronic Investigation of Louisville Gas and Electric Company and Kentucky Utilities Company Service Related to Winter Storm Elliot* (“Winter Storm Elliot Investigation”).

This investigation of Louisville Gas and Electric Company (“LG&E”) and Kentucky Utilities Company’s (“KU”) (collectively, “LG&E-KU” or “the Companies”) performance during Winter Storm Elliot (“WSE” or “the Storm”) has never been about perfection. Perfection sailed when the Companies found themselves in the position of firm load shedding, cutting power to 54,637 Kentuckians just before Christmas. While the Companies’ performance was evidently imperfect, that is no excuse for an inadequate response. The standard continues to be whether the Companies provided adequate, efficient, and reasonable service, and that standard requires that the Companies do a full accounting of everything that went wrong, to carefully evaluate ways to address each problem, and to promptly take all reasonable steps to improve their ability to operate a resilient and reliant system. But that is where the Companies continue to fall short of a reasonable and adequate response.

The Commission must ensure that the Companies fully evaluate and take action to address each factor that contributed to bulk power system stress. Unfortunately, as this investigation comes to a close, the Companies continue to downplay the many factors that contributed to the load shed event, and it remains unclear that the Companies will, without a

Commission order, meaningfully address some of the factors that contributed to the load shed event. Both shortcomings are discussed in turn in the following sections.

II. LG&E-KU CONTINUE TO DOWNPLAY THE MULTIPLE FACTORS THAT CONTRIBUTED TO THE WINTER STORM ELLIOT ROLLING BLACKOUTS

Between December 21 and 26, 2022, extreme cold weather during Winter Storm Elliot caused 90,500 MW of coincident unplanned generating unit outages and a total of over 5,400 MW of firm load shed.¹ On December 23, 2023, 54,637 Kentuckians experienced rolling blackouts due to the inability of LG&E-KU to provide adequate electric service to their customers.² Despite the Companies' failure to provide service to such a large number of their customers, leaving them without power just before the Christmas holiday, the Companies continue to downplay the importance of carefully evaluating and addressing the weaknesses in their own system that were revealed by Winter Storm Elliot. Instead, the Companies claim they took all "reasonable and prudent" steps to prepare for the Storm,³ and focus on blaming a drop in gas pressure on a Texas Gas Transmission ("TGT") pipeline as the primary, but-for cause of blackouts throughout the LG&E-KU service area.⁴ However, as the Companies are reluctant to acknowledge, there were multiple failures in the Companies' own system and operations leading up to the loss of load on December 23. Failure to identify and address these failures would be a

¹ FERC, NERC, & Regional Entity Staff, *Inquiry into Bulk-Power System Operations During December 2022 Winter Storm Elliot*, at 5–6 (Oct. 2023) [hereinafter "FERC/NERC Report"].

² *Electronic Joint Application of Kentucky Utilities Company and Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Site Compatibility Certificates and Approval of a Demand Side Management Plan and Approval of Fossil Fuel-Fired Generating Unit Retirements*, Case No. 2022-00402, Companies' Response to AG 1-13 (LG&E-KU Winter Storm Elliot Interim Report) (Mar. 10, 2023).

³ *Electronic Investigation of Louisville Gas and Electric Company and Kentucky Utilities Company Service Related to Winter Storm Elliot*, Case No. 2023-00422, Post-Hearing Brief of Louisville Gas and Electric Company and Kentucky Utilities Company at 6 (Aug. 9, 2024) [hereinafter "Companies' Post-Hearing Brief"].

⁴ Companies' Post-Hearing Brief at 2, 13–14 (claiming that "[h]ad the anomalous issue with TGT's gas pressure not occurred, the Companies would not have had to shed load," and that "[b]ut for the gas pressure issue, load shedding would not have been necessary").

missed opportunity to help ensure that the Companies provide more resilient and reliable service to their customers in the future.

A. LG&E-KU’s coal units experienced more outages and derates than gas units in the hours leading up to the load shed event.

The Companies describe Winter Storm Elliot as the “perfect storm” – a number of challenges in rapid succession that resulted in load shed⁵ – to suggest that the challenges leading up to load shedding were outside of LG&E-KU’s control. While the Companies maintain that gas pressure issues ultimately forced the Companies to begin curtailments, the Companies shy away from discussing the multiple failures of their coal-fired generation. In their eagerness to pin the blame for the rolling blackouts on the TGT gas pipeline issue, the Companies continue to ignore the fact that they had more coal capacity offline because of forced outages and derates than gas capacity.

At approximately 11:00 a.m. on December 23, 2022, the gas pressure on the TGT pipeline supplying gas to the Companies’ Cane Run and Trimble County generating stations began to drop.⁶ TGT informed the Companies that the gas pressure situation “might” be resolved at any time.⁷ Over two-and-a-half hours after LG&E-KU first became aware of the gas pressure issue on the TGT pipeline, at 1:36 p.m., the Companies declared a level three Energy Emergency Alert (“EEA-3”).⁸ Due to dropping gas pressure, Trimble County 5 experienced a 179 MW derate at 1:08 p.m., followed by a derate of 253 MW at Cane Run 7 at 1:47 p.m.⁹ At 1:48 p.m., the operating gas turbines at Trimble County collectively took a 439 MW derate to

⁵ Companies’ Post-Hearing Brief at 12.

⁶ *Id.* at 9; May 23, 2024 HVT 9:32 a.m. (Bellar).

⁷ Companies’ Post-Hearing Brief at 9–10; May 23, 2024 HVT 9:32 a.m. (Bellar).

⁸ Case No. 2023-00422, Attachment to Companies’ Response to AG 1-2, at 5 (Feb. 16, 2024); May 23, 2024 HVT 9:32 a.m. (Bellar).

⁹Case No. 2023-00422, Attachment to Companies’ Response to AG 1-2, at 5 (Feb. 16, 2024).

manage dropping gas pressure.¹⁰ In total, the gas plant derates and outages from the low-pressure issue totaled approximately 688-846 MW.¹¹ However, by 2:52 p.m., the LG&E-KU system had begun to stabilize and the LG&E-KU balancing authority status improved to EEA-2.¹² After returning to EEA-2 status, the Companies had 243 MW available to supply to the joint contingency reserve sharing group with Tennessee Valley Authority (“TVA”), should it be needed.¹³

Shortly thereafter, however, the system began de-stabilizing again, this time because of significant outages at the Companies’ coal-fired generating units. First, at 3:48 p.m., a frozen boiler feed pump at Trimble County 2 resulted in a 269 MW derate.¹⁴ Then, shortly after at 4:13 p.m., Mill Creek 4 experienced a coal feeder failure caused by frozen coal that resulted in an additional 120 MW derate.¹⁵ These two issues alone contributed to an additional loss of 390 MW.¹⁶ However, these were not the only coal outages on the LG&E-KU system at that time. Trimble County 1 had been offline throughout the day due to a pre-existing mechanical issue, representing a loss of approximately 375 MW.¹⁷ E.W. Brown 3 was also experiencing derates within the range of 56-70 MW.¹⁸ And lastly, further contributing to the shortfall, was the interruption in energy deliveries from Ohio Valley Electric Corporation, which was projected to supply 156 MW on December 23rd, but in fact its supply ranged from 91 MW to as little as 6

¹⁰ *Id.*

¹¹ May 23, 2024 HVT 11:15–11:18 a.m. (Bellar).

¹² Case No. 2023-00422, Attachment to Companies’ Response to AG 1-2, at 5 (Feb. 16, 2024); Companies’ Post-Hearing Brief at 11; May 23, 2024 HVT 9:33 a.m. (Bellar).

¹³ Case No. 2023-00422, Attachment to Companies’ Response to AG 1-2, at 5 (Feb. 16, 2024); May 23, 2024 HVT 11:16 a.m. (Bellar).

¹⁴ Companies’ Post-Hearing Brief at 11; May 23, 2024 HVT 9:33 a.m. (Bellar).

¹⁵ Companies’ Post-Hearing Brief at 11; May 23, 2024 HVT 9:33 a.m. (Bellar).

¹⁶ May 23, 2024 HVT 9:33–9:34 a.m. (Bellar).

¹⁷ *Id.* at 11:18–11:20 a.m.

¹⁸ *Id.*

MW.¹⁹ With this combination of coal failures, caused by both cold weather and pre-existing issues, the Companies' witness Bellar admitted LG&E-KU had a larger deficit of coal capacity than gas capacity, with over 900 MW of coal capacity offline at the time of load shed.²⁰ With 390 MW of coal derates occurring after the LG&E-KU system had stabilized, at hearing, Bellar agreed that in terms of proximate cause, the coal derates were closer in time to the load shed than the derates caused by the loss of pressure on the TGT system.²¹

Following the derates from the Companies' coal-fired generation, PJM curtailed a 400 MW export to the Companies at 4:30 p.m.²² After this total loss of 790 MW caused by the Companies' coal outages and PJM's curtailment, the Companies' balancing area reentered EEA-3 status at 4:45 p.m.²³ To help restore some of the Companies lost capacity, TVA was able to provide 400 MW of emergency energy to the Companies.²⁴ However, this relief was short-lived, as TVA entered EEA-3 status at 5:18 p.m. and notified the Companies that it was going to curtail its 400 MW export at 6:00 p.m.²⁵ At 5:58 p.m., LG&E-KU began firm load shed of 317 MW.²⁶

While the Companies point to gas pressure issues on the TGT system as the primary cause of their load shed, the outages and derates at their coal-fired generating units were ultimately closer in time to the Companies' load shed. LG&E-KU began curtailments at 6 p.m. – nearly seven hours after gas pressure began to drop at 11 a.m. and five hours after LG&E-KU

¹⁹ Case No. 2023-00422, Attachment to Companies' Response to AG 1-2, at 2 (Feb. 16, 2024); May 23, 2024 HVT 11:18–11:20 a.m. (Bellar).

²⁰ *Id.* at 11:20 a.m. (Bellar).

²¹ *Id.*

²² Companies' Post-Hearing Brief at 11; May 23, 2024 HVT 9:33–9:34 a.m. (Bellar).

²³ Companies' Post-Hearing Brief at 11; May 23, 2024 HVT 9:34 a.m. (Bellar).

²⁴ Companies' Post-Hearing Brief at 11; May 23, 2024 HVT 9:34 a.m. (Bellar).

²⁵ Companies' Post-Hearing Brief at 11–12; May 23, 2024 HVT 9:34–9:35 a.m. (Bellar).

²⁶ Companies' Post-Hearing Brief at 12; FERC/NERC Report at 11, 14; May 23, 2024 HVT 9:35 a.m. (Bellar).

first experienced derates from low gas pressures at 1 p.m. Indeed, after significant derates at both the Trimble County and Cane Run gas turbines, the Companies were able to recover and decreased their energy emergency alert status from EEA-3 to EEA-2. By contrast, after the loss of capacity from the coal-fired generation at Trimble County 2 and Mill Creek 4 and the curtailment by PJM, LG&E-KU entered EEA-3 status and customer curtailments followed soon after. Notably, the Companies agree that if the Trimble County and Mill Creek coal-fired generating units had been available at full load for the entirety of Winter Storm Elliot, additional generating capacity would have been available.²⁷

B. LG&E-KU's lack of RTO membership meant weathering the storm alone.

As the Commission well knows, LG&E-KU is not part of a larger regional transmission authority (“RTO”) such as PJM or MISO, but instead acts as its own balancing authority, and primarily relies on its own generation portfolio to ensure the reliable provision of electric service to its customers. During Winter Storm Elliott, not only did the Companies experience rolling blackouts affecting over 54,000 customers, other similarly situated utilities in the Southeast that act as their own smaller balancing authorities also experienced firm load shed.²⁸ By contrast, utilities that had a larger and more diverse pool of resources to draw from – including utilities within PJM and MISO – did not experience any rolling blackouts during the storm.²⁹

As Sierra Club / Louisville & Lexington witness Michael Goggin testified during last year’s CPCN hearing, RTOs fared better than smaller balancing authorities because of their larger footprint and geographic diversity, which reduced the strength of the correlations between

²⁷ Case No. 2023-00422, Companies’ Response to JI 2-9 (Mar. 15, 2024).

²⁸ *See, e.g.*, FERC/NERC Report at 69 (noting that the TVA, DEC, DEP, DESC, and Santee Cooper BAs all shed firm load on December 24, 2022).

²⁹ FERC/NERC Report at 9–11 (noting that SPP, MISO, and PJM did not need to shed firm load during the storm).

correlated outages: even during the most extreme cold weather, it is unlikely that the entire area of a large RTO will be hit at the same time, thereby reducing the risk of supply inadequacy.³⁰

The diversity of PJM and MISO is further enhanced by the greater depth of wind and solar resources on their systems.³¹ Moreover, as Sierra Club / Louisville & Lexington witness Andrew Levitt pointed out in his direct testimony in last year's CPCN case, RTO membership facilitates integration of and access to wind and solar, by balancing operations to reduce the variability of such resources, mitigate reliability concerns, and lower costs.³²

According to the Companies, however, RTOs' known reliability benefits cannot be real because neighboring RTOs curtailed exports at various points during this winter storm.³³ It is true that neighboring RTOs PJM and MISO had their own challenges during the storm and at various times would not export power to LG&E-KU, which makes sense: LG&E-KU are not members of either RTO. It is also true that, as LG&E-KU needed to cut power, both RTOs (as well as SPP) maintained reliable service and kept the lights on for all of their member utilities throughout the event.³⁴ Because LG&E-KU was not a member of either PJM or MISO during the storm, their customers lost out on real reliability benefits.

C. LG&E-KU failed to make timely public appeals to reduce load.

Although the Companies attempt to downplay the level of load shed attributable to their service territory as "only" 317 MW, for impacted customers, any load shed reflects a failure of a utility's duty to provide reliable service. The Companies claim they took all necessary and prudent steps to serve their customers during Winter Storm Elliot,³⁵ but that claim is belied by

³⁰ Case No. 2022-00402, Aug. 29, 2023 HVT at 1:20–1:22 p.m. (Goggin).

³¹ *Id.* at 1:07 p.m.

³² Case No. 2022-00402, Direct Testimony of Andrew Levitt, at 37 (July 14, 2023).

³³ *E.g.*, Companies' Post-Hearing Brief at 11–12; May 23, 2024 HVT at 8:32–8:35 p.m. (Sinclair).

³⁴ *See* FERC/NERC Report at 9–11.

³⁵ Companies' Post-Hearing Brief at 2.

reality. One clear error is the Companies' failure to appeal to their customers to curb energy consumption. Instead of appealing to their customers to minimize potential load shed, the Companies' untimely actions contributed to LG&E-KU customers finding themselves without power during life-threatening severe winter weather.

Before the Storm hit, the Companies had ample opportunity to notify customers to prepare for the impending severe cold weather yet chose not to do so. Several days prior to Winter Storm Elliot, the Companies forecasted higher loads during the morning of December 23, 2022.³⁶ On December 20, 2023, the Companies issued a "Cold Weather Alert" for their service territories effective December 22nd.³⁷ Yet in the days leading up to Winter Storm Elliot, the Companies made no public service announcements or other public messaging requesting customers to voluntarily reduce energy consumption.³⁸

On the evening of December 22, 2022, temperatures dropped rapidly, with conditions deteriorating overnight and into the morning of December 23rd.³⁹ As temperatures fell, the Companies claim that customer demand increased, likely due to electric heating.⁴⁰ Then, as LG&E-KU generating units began to experience derates and outages, the Companies went into an internal "Alert Status," requesting that plant personnel avoid any unnecessary risks.⁴¹ By 9 a.m., the Companies issued curtailment orders to Curtailable Service Rider customers.⁴² With

³⁶ *Id.* at 7.

³⁷ Case No. 2023-00422, Companies' Response to KCA 1-2 at 1 (Feb. 16, 2024).

³⁸ *See* Case No. 2023-00422, Companies' Response to PSC 1-11 (Feb. 16, 2024), (attachments including December 22, 2022 social media posts and LG&E-KU's December newsletter that included, among other things, tips to prepare for winter weather but no request to lower energy consumption).

³⁹ Companies' Post-Hearing Brief at 9.

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Id.*

Winter Storm Elliot in full swing and challenges to the LG&E-KU system apparent, the Companies still did not appeal to their customers for a reduction in consumption.

Late in the evening on December 23, 2022, after several hours of rolling blackouts, the Companies finally issued a public appeal for customers to voluntarily reduce usage. At 8:55 p.m., LG&E-KU added a red warning card and red alert bar on their website with a link to an LG&E-KU press release.⁴³ The Companies claim that LG&E-KU “used a host of communication channels requesting customers reduce their energy consumption and notify them about the brief service interruptions.”⁴⁴ However, none of these communications occurred prior to the commencement of load shed at 6:00 p.m.⁴⁵

In their After Action Review, the Companies identified the failure to issue a public appeal until after the load shed rollouts were implemented as one of the things that “did NOT go well” in their response to Winter Storm Elliott.⁴⁶ Yet at hearing and in their post-hearing brief, the Companies attempt to waive this failure off as a non-issue. For example, the Companies claim they were unable to issue public appeals before load shedding began because by the time they realized load shedding was unavoidable, it was too late for public appeals to be issued.⁴⁷ That is nonsense.

As summarized above, there was ample time for the Companies to make a public appeal for conservation. The problem was the Companies did not think of a public appeal as a tool to diminish or delay possible load shedding until the load shed was inevitable,⁴⁸ and never

⁴³ Companies’ Response to PSC 1-63. The home page card stated as follows: “LG&E and KU performing service interruptions; need customers’ help. Extreme cold pressures on the regional grid are resulting in scattered power outages. We need your help in reducing energy consumption.”

⁴⁴ Companies’ Response to PSC 1-64.

⁴⁵ Companies’ Response to PSC 1-11, 1-62, 1-63, 1-64.

⁴⁶ After Action Review, Attachment to Companies’ Response to PSC 1-85, at 2 (Dec. 23, 2022).

⁴⁷ Companies’ Post-Hearing Brief at 14.

⁴⁸ *Id.* at 13–14.

considered a public appeal as a tool to minimize the need for high-priced energy imports during the storm event.⁴⁹ It was nonsensical for the Companies to wait until load shedding was unavoidable before making a public appeal for conservation: The point of a public appeal is to avoid reaching the point of inevitability. The Companies were remiss in not issuing a public appeal for conservation earlier on the day of December 23rd, at the latest, and failed to recognize the potential for public appeals to reduce dependence on high-priced energy imports.

The Companies further claim that there is no evidence to suggest that public appeals would have resulted in any reduction in load during Winter Storm Elliot.⁵⁰ But, as LG&E-KU themselves admit, the Companies have not estimated the extent to which public messaging results in a reduction in demand because they believe any such estimates “would not be useful or reliable given the difficulty in establishing a causal connection between messaging and any reduction in demand at the relevant time.”⁵¹ Instead, the Companies speculate that if an appeal is sent out too broadly or too soon, some customers would increase load in anticipation of their power going out. This speculation is backed by zero empirical evidence, and is contradicted by the Companies’ decision to belatedly send out a broad public appeal to all of their customers – on social media, their website, and over media engagement, to the tune of 249 stories with an estimated reach of 109 million people.⁵² If the Companies truly believed that public appeals would increase load, then why did they eventually send out a public appeal and conclude in their internal After Action Review that the failure to send out such appeal earlier was a shortcoming in their response to WSE? Moreover, the Companies point to increases in the system’s load for several hours after curtailments began, even after the Companies had issued public appeals, to

⁴⁹ May 23, 2024 HVT at 2:39–2:42 p.m. (Bellar).

⁵⁰ Companies’ Post-Hearing Brief at 14.

⁵¹ Companies’ Response to PSC 1-11.

⁵² Companies’ Response to PSC 1-62.

suggest that appeals to voluntarily reduce usage are not effective.⁵³ But of course, LG&E-KU's public appeals were not issued until after curtailments had commenced, and the correlation between increasing load and public appeals while rolling blackouts swept through LG&E-KU's service territory has neither been analyzed nor substantiated. To the extent to which LG&E-KU's public appeals can be said to be ineffective, it would be due to the fact that the Companies failed to warn customers of imminent load shed and failed to issue any public appeals calling for the reduction of energy consumption before curtailments began.

D. LG&E-KU's curtailable service rider customers failed to timely reduce load.

LG&E-KU offer incentives for demand response to certain large customers (>1,000 kVA) under Curtailable Service Riders 1 and 2 (CSR-1 & CSR-2). Riders CSR-1 and CSR-2 set up a system of incentives, buy-throughs, and penalties for qualifying customers to agree to curtail their load when called upon. Under different conditions in CSR-1 and CSR-2, the Companies may request a physical curtailment, either with or without a buy-through option. The Companies can make these requests for up to 375 hours per year, with 100 hours per year potentially not allowing for a buy-through option. Due to the broader range of situations during which the Companies may request curtailment under CSR-2, greater incentives are offered under that rider. However, under both riders, a non-compliance charge of \$16/kVA applies during either the 100 hours per year when a buy-through is not allowed, or after all buy-through has been consumed by a customer.⁵⁴ Both riders were closed to new contracts in 2017.⁵⁵

LG&E-KU have eight total customers on rider CSR-2.⁵⁶ On both December 23 and 24, multiple customers on the LG&E-KU system "were out of compliance on their contracted

⁵³ Companies' Post-Hearing Brief at 13.

⁵⁴ LG&E and KU Tariffs, P.S.C. Electric No. 13 & 20, Original Sheet No. 50 & 51.

⁵⁵ *Id.*; May 23, 2024 HVT 2:30–2:32 p.m. (Bellar).

⁵⁶ Companies' Response to PSC 1-49(a).

physical curtailment.”⁵⁷ It is not clear from the record whether the same customers were out of compliance on each day. Ultimately, if these customers had curtailed, the Companies would have seen an additional reduction in load of 283 to 1,200 kVA.⁵⁸ During testimony at hearing, the Companies’ witness Bellar stated that he was not aware of any recent evaluation of whether these riders should be opened to new participants, but that such an evaluation should occur during the Companies’ IRP planning process.⁵⁹ Bellar also stated that the \$16/kVA penalty was almost certainly lower than the Companies’ value of lost load.⁶⁰

III. THE COMMISSION SHOULD URGE COMPANIES TO FULLY EVALUATE A RANGE OF STEPS TO IMPROVE THE RELIABILITY AND RESILIENCE OF ITS SYSTEM

There are reasonable, prudent, and deliberate steps the Companies can still take to learn from the Winter Storm Elliot experience and the specific shortcomings and problems discussed above. Joint Intervenors offer five suggestions: (a) fully and fairly accounting for reliability benefits in resource planning; (b) fully and fairly evaluating quantifiable reliability benefits of RTO membership; (c) promptly addressing the inability to acquire emergency energy from MISO; (d) improving the use of public appeals for conservation; and (e) improving the Curtailable Service Rider to ensure better performance.

A. LG&E-KU should fully account for reliability benefits and performance of resources in its upcoming IRP.

In their post-hearing brief, the Companies point to various operational changes and studies they have undertaken since Winter Storm Elliott to contend that they are working to “continue improving the resiliency and reliability of the Companies’ systems.”⁶¹ Notably absent

⁵⁷ Companies’ Response to PSC 1-49(b).

⁵⁸ Companies’ Response to PSC PH 1-3(a-b).

⁵⁹ May 23, 2024 HVT at 2:32 p.m. (Bellar).

⁶⁰ *Id.* at 1:51–1:55 p.m.

⁶¹ Companies’ Post-Hearing Brief at 16–18.

from the Companies’ brief, however, is any reference to any consideration of the roles that increased pursuit of battery storage, transmission, demand response, enhanced energy efficiency programs, and other resources can play in helping achieve a more resilient and reliable system. Such an absence is surprising given that, as detailed in Section II.A above, the two types of resources that make up the overwhelming majority of the Companies’ system – gas and coal – experienced significant performance failures during Winter Storm Elliott. In total, more than 900 MW of coal capacity and between 688 and 846 MW of gas capacity were unavailable at the time that the Companies’ customers needed them the most. Given such performance, one would expect that the potential to bolster the reliability and resilience of the Companies’ system with other resources would be thoroughly evaluated.

In response to discovery, the Companies stated that it will analyze “further potential options for fleet modifications” in its upcoming Integrated Resource Plan (“IRP”) to be submitted in October 2024,⁶² and that such analysis “will likely” include battery storage, demand response, transmission, and other options.⁶³ Such statements are encouraging, but it is critical that the Companies ensure that in the 2024 IRP they are fully accounting for the reliability, resilience, and other benefits of different mixes of resources. Testimony in last year’s CPCN docket suggests that the Companies have not done this to date. For example, Joint Intervenors’ witness Anna Sommer explained that while much-improved in comparison to the 2021 IRP, the modeling the Companies did for the CPCN failed to compare the reliability impacts of significantly different potential resource plans.⁶⁴ In addition, the Companies’ modeling did not account for the incremental outage rates that can occur during extreme cold or hot weather, such

⁶² Companies’ Response to JI 1-16(b)(i).

⁶³ Companies’ Response to JI 1-19.

⁶⁴ Case No. 2022-00402, Direct Testimony of Anna Sommer, at 4–5 (July 14, 2023).

as that experienced during Winter Storm Elliott.⁶⁵ We urge the Companies to correct these shortcomings in its modeling to ensure that a more complete and accurate reliability picture is presented in the 2024 IRP.

The importance of fully valuing the reliability, resilience, and other benefits of potential resources especially applies with regards to battery storage. As follow-up to a hypothetical posed by the Attorney General comparing the value of 1,000 MW of coal to solar capacity during extreme winter conditions, the Companies' witness Bellar acknowledged at hearing that 1,000 MW of fully charged battery storage would have enabled the Companies to avoid the need to shed load during Winter Storm Elliott.⁶⁶ In fact, given that the total load shed was approximately 317 MW, far less than 1,000 MW of storage could have achieved that result. The Companies further acknowledge that battery storage can ramp up more quickly than even combined-cycle gas plants,⁶⁷ and have previously noted its benefits in reliably integrating increasing levels of renewable penetration, moving energy during short duration periods, and meeting spinning reserve operational requirements.⁶⁸ Yet, while the Companies claim that they look at those attributes in evaluating whether or how much storage to pursue, at least some of those attributes are not reflected in the modeling that the Companies perform.⁶⁹ In addition, the modeling of storage that the Companies did carry out in the CPCN proceeding was flawed, as the Companies used the wrong settings in the SERVIM model, and underestimated the capacity value

⁶⁵ *Id.* at 8–9; Case No. 2022-00402, Direct Testimony of Michael Goggin, at 29–38 (July 14, 2023).

⁶⁶ May 23, 2024 HVT at 11:45 a.m. (Bellar).

⁶⁷ *Id.* at 12:06–12:07 p.m.

⁶⁸ Case No. 2022-00402, Direct Testimony of Charles Schram, at 9 (Dec. 15, 2022).

⁶⁹ May 23, 2024 HVT at 12:06 p.m. (Bellar).

of storage.⁷⁰ These issues must be addressed to help ensure that the full benefits to system reliability and resilience of additional battery storage are reflected in the 2024 IRP.

B. LG&E-KU’s upcoming RTO Membership Analysis must objectively evaluate quantifiable reliability benefits of RTO membership.

The Companies’ upcoming annual RTO Membership Analysis filing provides a further opportunity to address the reliability and resilience of LG&E-KU’s system, by analyzing what additional reliability benefits might be gained by joining PJM or MISO, and what the costs and tradeoffs of RTO membership might be. In past analyses, the Companies have refused to acknowledge that there are reliability benefits from RTO membership, including stating in a filing just weeks before Winter Storm Elliott that “[n]othing . . . suggests that there is reason to believe that overall customer reliability would improve by joining an RTO.”⁷¹ At the hearing in this case, the Companies’ witness Sinclair acknowledged that this conclusion would be re-evaluated in its next RTO Membership Analysis filing, stating that the Companies “will be looking at all the data and information” and consideration of the reliability benefits of joining a RTO “will be part of the discussion.”⁷²

Unfortunately, LG&E-KU in this case does not appear to be taking seriously the lessons from Winter Storm Elliott that greater interconnections to a larger system will increase reliability. In last year’s order on the Companies’ application for CPCNs to construct new generation, the Commission “exhort[ed] LG&E-KU to study the value and opportunities that transmission (regional and interregional) and imports provide in their next IRP,” because “[i]n their past IRPs, any serious consideration or discussion of transmission has been notably

⁷⁰ Case No. 2022-00402, Direct Testimony of Anna Sommer, at 10–11 (July 14, 2023); Case No. 2022-00402, Direct Testimony of Michael Goggin, at 23–26 (July 14, 2023).

⁷¹ Case No. 2022-00402, Attachment to Companies’ Response to Sierra Club 2-26(b), at 33.

⁷² May 23, 2024 HVT at 8:32–8:35 p.m. (Sinclair).

absent.”⁷³ And yet in this case, LG&E-KU did not offer testimony from *any* witnesses who could speak in detail about transmission and imports – a deficiency that surfaced repeatedly during the hearing.⁷⁴

Despite the clear evidence discussed above that RTOs performed better than smaller balancing authorities such as LG&E-KU during Winter Storm Elliott, the Companies’ witnesses were dismissive of the idea that joining an RTO would provide reliability benefits to the Companies’ customers. In response to questions from Commissioner Hatton, witness Bellar stated that he “didn’t really think of joining a RTO as a real solution” to improve reliability.⁷⁵ In fact, witness Bellar further testified that the Companies “have always talked about one of the benefits of not being a member of a RTO” is that they prefer to have greater “control” over their own assets.⁷⁶ And witness Sinclair refused to acknowledge the basic concept that being a part of a system with a larger and more diverse footprint would increase reliability.⁷⁷

The record in this case indicates that the Companies, even after their experience during Winter Storm Elliott, are approaching their upcoming annual RTO Membership Analysis filing with the presumption that joining an RTO is not in their interest. The Commission should not allow LG&E-KU to stand on this presumption as a justification for not conducting a focused, quantitative analysis of the potential reliability benefits to the Companies’ customers of RTO membership. The Companies have not done this type of analysis in their previous RTO Membership Analysis filings. For example, as noted above, the Companies’ 2022 RTO

⁷³ Case No. 2022-00402, Nov. 6, 2023 Order at 95.

⁷⁴ See, for example, the discussion in Section III.C below about the Companies’ witnesses’ inability to explain their own After Action Report’s reference to the lack of a “BA/BA Agreement” with MISO contributing to the challenges the Companies faced during Winter Storm Elliott.

⁷⁵ May 23, 2024 HVT at 2:18 p.m. (Bellar).

⁷⁶ *Id.* at 2:18–2:20 p.m.

⁷⁷ *Id.* at 8:35–8:38 p.m. (Sinclair).

Membership Analysis – which was filed just weeks before Winter Storm Elliott – focused on the cost to customers of joining a RTO while stating, without supporting analysis, that there would be no reliability benefits to doing so.⁷⁸ In their most recent, 2023 RTO Membership Analysis, the Companies did not even address this key question at all, focusing instead on further detailing the Companies’ concerns about future coal and gas retirements in PJM and MISO.⁷⁹ As Sierra Club witness Michael Goggin testified during last year’s CPCN hearing, these concerns are unfounded, because the PJM and MISO capacity markets are by their nature self-correcting and have successfully navigated previous periods of significant generation retirements.⁸⁰

Ultimately, the Companies should be required to follow the guidance provided by a focused, objective analysis of whether joining an RTO in the short-to-medium term would provide their customers with quantifiable reliability benefits. Undertaking this additional analysis – and allowing its results to guide the Companies’ future actions – is the least that the Companies can do for their customers, particularly the over 54,000 customers who experienced blackouts during Winter Storm Elliott while customers in neighboring RTOs did not.

C. LG&E-KU should promptly address the MISO BA/BA Agreement issue that prevented the import of emergency energy.

Although the Companies insist that they have taken reasonable steps after Winter Storm Elliott,⁸¹ at the close of this investigation, it is not clear what prevented energy purchases from MISO during the load shed event, and it is not clear that LG&E-KU understand or have taken reasonable steps to correct their inability to import emergency energy from neighboring regions. According to the Companies’ own After Action Report, the absence of a BA/BA agreement

⁷⁸ Case No. 2022-00402, Attachment 1 to Companies’ Response to Sierra Club 2-26(b), at 33.

⁷⁹ See LG&E-KU, 2023 RTO Membership Analysis, Case No. 2020-00349 (Oct. 31, 2023), *cited in* Case No. 2023-00422, Companies’ Response to JI 1-6(b) (Jan. 26, 2024).

⁸⁰ Case No. 2022-00402, Aug. 29, 2023 HVT at 11:30–11:32 a.m. (Goggin).

⁸¹ Companies’ Post-Hearing Brief at Sec. VI.

contributed to the problem, but neither LG&E-KU data responses nor witness testimony could answer what is needed so that emergency energy can be available to LG&E-KU going forward. LG&E-KU's failure to put forward clear and adequate evidence on this issue is unreasonable.

The Companies have emphasized that they were able to purchase energy from MISO during Winter Storm Elliott,⁸² but not when it mattered most: not in the hours before or during the load shed event.⁸³ The After Action Report notes that the “[a]bility to purchase power in an emergency situation” was something that “did NOT go well,” adding that “MISO said we could not buy from them since we did not have a BA/BA agreement. (Will follow up with Policy and Tariffs).”⁸⁴ The next section of the After Action Report, titled “**Comments/Suggestions to Improve** (Identify what can be done to improve things that did or did not go well . . .),” suggests the Companies should “[w]ork on BA/BA agreements with MISO on being able to purchase emergency power. (Owner: Jackson/Ramos).”⁸⁵

Although identified as an issue, the Companies did not offer a witness able to address the need for a BA/BA agreement in this investigation docket. The witnesses at the hearing passed this issue like a hot potato. First, when asked to explain the need for a BA/BA agreement with MISO, Mr. Bellar passed the question to Mr. Schram: “I would direct that question to Mr. Schram He manages that area and would be aware. I wouldn't want to guess at what that means.”⁸⁶ Then, Mr. Schram clarified that he was “unsure what the BA to BA agreement

⁸² *E.g.*, Companies' Response to PSC PH 1-5(a); May 23, 2024 HVT at 7:51–7:53 p.m. (Sinclair) (“We interact with MISO all the time so there was nothing unique from our energy marketing perspective...”).

⁸³ May 23, 2024 HVT at 11:21–11:22 a.m. (Bellar) (explaining that no purchases from MISO were made during load shed event); Attachment to Companies' Response to PSC 1-36 (reporting MISO purchases sometime in the range of 22:00 to 24:00 on December 23).

⁸⁴ After Action Review, Attachment to Companies' Response to PSC 1-85, at 2 (Dec. 23, 2022).

⁸⁵ *Id.* at 2–3.

⁸⁶ May 23, 2024 HVT at 10:44–10:46 a.m. (Bellar); *id.* at 11:22 (again “I would direct that question to Mr. Schram”).

means”⁸⁷ and was “not familiar with the balancing authorities’ agreements and what the potential for those are with MISO.”⁸⁸ Mr. Sinclair was similarly at a loss, appearing to explain that, at the time, he had no knowledge of the contractual issue with MISO identified in the After Action Report, and he has not learned more about the stated issue in the months since.⁸⁹ If Mr. Sinclair had read the After Action Report, he did not concern himself with the absence of an adequate BA/BA agreement with MISO.⁹⁰ Mr. Conroy offered with some confidence that identification of the BA/BA agreement issue with MISO would be “a transmission statement.”⁹¹ Perhaps the Commission would need to hear from someone on the transmission side of the business,⁹² but such a witness was not made available.

According to post-hearing responses, LG&E-KU still have not clearly articulated or resolved the issue(s) preventing the purchase of energy from MISO during some hours of the winter storm.⁹³ LG&E-KU waited until August 2023 to receive a draft BA/BA agreement from MISO.⁹⁴ After sitting idle for the better part of the year, LG&E-KU concluded that MISO’s draft BA/BA agreement would not change the Companies’ ability to make bilateral transactions with MISO.⁹⁵ As of early July 2024, LG&E-KU are still “evaluating” whether to offer revisions to

⁸⁷ May 23, 2024 HVT at 4:50–4:52 p.m. (Schram) (“I’m unsure what the BA to BA agreement means since I’m not the BA responsible person. I am presuming that’s some kind of emergency agreement between BAs”).

⁸⁸ *Id.* at 7:06 p.m.

⁸⁹ *Id.* at 9:07–9:13 p.m. (Sinclair).

⁹⁰ *Id.* at 9:11–9:12 p.m. (asked whether he had seen the After Action Report before hearing day, Sinclair answered, “not in the context of this BA/BA thing, and if I did, I didn’t focus on it because it is not my area”).

⁹¹ *Id.* at 9:20–9:21 p.m. (Conroy) (“my interpretation of that is that it’s a transmission statement that’s in there”).

⁹² *E.g., id.* at 4:51–4:52 p.m. (Schram) (“someone on the transmission side of the business” may be able to explain BA/BA Agreement with MISO).

⁹³ Companies’ Response to PSC PH 1-5(b).

⁹⁴ *Id.*

⁹⁵ *Id.* (“This draft was significantly different from what LG&E-KU was expecting and does not appear to permit the purchase of emergency energy without demonstrated available transfer capability, and, as such,

MISO's BA/BA agreement and/or re-engage on a Joint Reliability Coordination Agreement ("JRCA"), which would be delayed further due to "the need to evaluate the impact of several" FERC rulemaking proceedings.⁹⁶ Meaning, the Companies may not have started to negotiate any type of agreement to address this known issue.⁹⁷ As recently as July 2024, LG&E-KU still had only an intention to follow up with MISO about a JRCA-type agreement and BA/BA arrangements for emergency energy.⁹⁸

In short, almost nineteen months after Winter Storm Elliott, LG&E-KU still cannot assure this Commission that it has resolved the issue preventing the import of emergency power from neighboring MISO. That is dilatory, inadequate, and unreasonable. The Commission should order the Companies to ensure that all necessary agreements for the Companies and/or the LG&E-KU Balancing Area to import power from MISO during emergency conditions are in place within 90 days, and file in this docket a report documenting that they have done so.

D. LG&E-KU needs to provide assurance that it is committed to effective use of public appeals for conservation.

As discussed in Section II.C above, the Companies acknowledged in their After Action Review that one shortcoming in their response to Winter Storm Elliott was a failure to issue any appeals to the public to reduce their energy consumption until after the load shedding had begun. The Companies' response to post-hearing data requests suggests that they have taken some steps to avoid such an inadequate response in the future. In particular, the Companies produced a

does not appear to afford any benefits over existing agreements that enable bilateral transactions with MISO.").

⁹⁶ *Id.*

⁹⁷ Companies' Response to PSC PH 1-5(d) ("the JRCA or any BA/BA agreement between MISO and LG&E-KU would be a negotiated agreement. As such, its scope and parameters would be dependent on which matters the parties could come to mutual agreement."); Companies' Response to PSC PH 1-5(b) (LG&E-KU still considering whether to propose edits to draft agreement provided by MISO in August 2023).

⁹⁸ Companies' Response to PSC PH 1-5(a).

16-page document entitled “Customer Experience Energy Conservation Procedures” that sets forth energy conservation messaging to be sent out to customers at four different levels of extreme weather conditions.⁹⁹ Notably, the Procedures call for public appeals when there are forecasts, watches, or warnings of extreme winter weather, rather than only when load shedding is imminent or already underway.¹⁰⁰

While on initial review the Procedures document appears to be an encouraging step forward on the issue of public appeals, further scrutiny is warranted for at least two reasons. First, while the Procedures document was initially completed in January 2024 and revised in March 2024, it was not disclosed to the parties until after the hearing. As such, there has been little time to evaluate the document and no opportunity to question the Companies about its contents or how it would be implemented. Second, at both the hearing and in its post-hearing brief, the Companies have sought to dismiss the importance and value of public appeals, going as far as to offer unsupported speculation that public appeals could actually lead to an increase in energy demand. This raises concerns about how effectively the Procedures might be implemented in practice. As such, the Companies should be required to explain how the Procedures would be implemented and provide assurance of organizational support for such implementation.

E. LG&E-KU’s Curtailable Service Rider needs improvement to realize the benefits of effective demand response.

As made clear during the hearing in this matter, improvements are needed to the Companies’ demand response riders, CSR-1 and CSR-2. It was also made clear during the

⁹⁹ Attachment to Companies’ Response to PSC-PH 4.

¹⁰⁰ *Id.* at 3–6.

hearing that such demand response programs, properly formulated and implemented, could play an important role in response to future events.

CSR-1 and CSR-2 are both voluntary programs, both at the enrollment level as well as in implementation. They were open to any customer who contracts for greater than > 1,000 kVA individually. Once enrolled, Companies may call on CSR customers to curtail under certain circumstances, and customers have the option to “buy through” such voluntary requests. Even after all buy through options, customers on the riders are still able to ignore curtailment requests and are assessed a penalty if they do.¹⁰¹ This leaves an essentially economic question for customers on either CSR rider – is it more advantageous to curtail and avoid penalties, or is there more money to be made by continuing to operate and paying the penalty?

As highlighted at hearing, in addition to leaving an economic decision for CSR customers, curtailing those customers is also essentially an economic decision made by Companies on behalf of all other customers – and perhaps incorrectly. The \$16/kVA penalty in each rider is almost certainly lower than the Companies’ value of lost load.¹⁰² It was not clear, however, why this was or what was being done about having a penalty structure that so understates the Companies’ value of lost load. During the hearing, Bellar stated it would be his preference to simply have a “button to push, so to speak” that would allow Companies to force curtailment as a condition of CSR.¹⁰³ The Companies should be required, as a part of the IRP process, to report on these options – namely, either a change to the penalty to match the Companies’ value of lost load, or requirements of the riders allowing physical curtailment by the Companies.

¹⁰¹ LG&E and KU Tariffs, P.S.C. Electric No. 13 & 20, Original Sheet No. 50 & 51.

¹⁰² May 23, 2024 HVT at 1:51–1:55 p.m. (Bellar).

¹⁰³ *Id.* at 1:55–1:56 p.m.

With conditions such as those in place, curtailable service riders could be an important part of a comprehensive strategy to deal with events such as Winter Storm Elliot. In response to questioning from counsel for Kentucky Industrial Utilities Customers (“KIUC”), Bellar stated that implementation of the riders did contribute approximately a 130 MW reduction in load during the event, reducing load that needed to be shed by approximately 40%.¹⁰⁴ The Companies should also be required, as a part of their upcoming IRP, to evaluate re-opening these riders, with amendments, or creating new curtailable service riders, which (if properly drafted and implemented), could protect more vulnerable customers from load shed by curtailing customers who have that ability and “won’t be left in the cold,” so to speak, by the reduction or loss of electrons flowing to their facilities.

IV. CONCLUSION

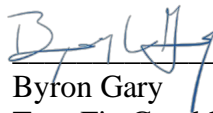
For the reasons laid out above, Joint Intervenors respectfully request that the Commission direct the Companies to take all reasonable steps to address factors that contributed to the most significant load shed event in the Companies’ history, including:

- (1) The Companies should fully and fairly account for the reliability benefits and performance of resource alternatives in future integrated resource plans;
- (2) The Companies’ future RTO Membership Analyses should fully and fairly account for reliability benefits of RTO membership;
- (3) The Companies should promptly resolve the contractual issue limiting their ability to acquire emergency energy from MISO;

¹⁰⁴ *Id.* at 1:49–1:51 p.m.

- (4) The Companies should explain how its new public appeals Procedures would be implemented, and provide assurance of organizational support for such implementation; and
- (5) The Companies should reevaluate and redesign the Curtailable Service Rider to expand participation and better incent performance.

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CERTIFICATE OF SERVICE

In accordance with the Commission’s July 22, 2021 Order in Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19*, this is to certify that the electronic filing was submitted to the Commission on August 30, 2024; that the documents in this electronic filing are a true representations of the materials prepared for the filing; and that the Commission has not excused any party from electronic filing procedures for this case at this time.


Byron Gary