COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of

ELECTRONIC APPLICATION OF KENTUCKY UTILITIES COMPANY AND LOUISVILLE GAS AND ELECTRIC COMPANY FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY AND SITE COMPATIBILITY CERTIFICATES	))))))	**CASE NO. 2025-00045**

RESPONSES OF JOINT INTERVENORS KENTUCKIANS FOR THE COMMONWEALTH, KENTUCKY SOLAR ENERGY SOCIETY, METROPOLITAN HOUSING ASSOCIATION, AND MOUNTAIN ASSOCIATION TO KENTUCKY UTILITIES COMPANY AND LOUISVILLE GAS AND ELECTRIC COMPANY'S JOINT DATA REQUESTS FOR INFORMATION DATED JUNE 23, 2025

Dated: July 3, 2025

JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY,
METROPOLITAN HOUSING ASSOCIATION,
AND MOUNTAIN ASSOCIATION

RESPONSE TO LG&E-KU'S
JOINT DATA REQUESTS FOR INFORMATION
Dated June 23, 2025

Case No. 2025-00045

Question No. 1.1

Q-1.1 [All Witnesses] In Excel spreadsheet or other format, with all formulas, columns and rows unprotected and fully accessible, please provide all workpapers and source documents not previously provided.

A-1.1 RESPONSE:

The workpapers of Dr. Stanton and Witness Eiden are attached. All links to source documents were previously provided for Witness Chiles and Witness O'Leary.

WITNESS: All Witnesses

JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY,
METROPOLITAN HOUSING ASSOCIATION,
AND MOUNTAIN ASSOCIATION

RESPONSE TO LG&E-KU'S
JOINT DATA REQUESTS FOR INFORMATION
Dated June 23, 2025

Case No. 2025-00045

Question No. 1.2

Q-1.2 Refer to Mr. O'Leary's testimony at page 17. Provide support for the statement that "higher-than-forecasted load growth would require lower-than-forecasted prices to make computing accessible to a much larger universe of users," including without limitation copies of or hyperlinks to all source documents or other information upon which Mr. O'Leary relied to make this statement.

A-1.2 RESPONSE:

The scenario suggested by the Companies – greater energy efficiency causing increased rather than decreased demand for energy – is a spectre that has occasionally been invoked over the last decade and a half. At the same time, ratings agencies, including Fitch and Moody's, have warned of overbuilding capacity, saying that "Actual loads may turn out to be significantly lower than announced loads because of technological changes and efficiency improvements that lower the power requirement for datacenters."[1] Also, we have seen earlier exaggerated claims of digital commerce's expected effects on load growth. In 1999, we were warned that the extreme energy intensity of digital commerce would greatly increase the demand for electricity.[2] However, as the digital economy and data centers have evolved, efficiency improvements have largely offset what would otherwise have been increases in electricity demand.[3]

The Companies' claim isn't just that data center energy efficiency improvements are correlated with increased energy demand, but rather, that energy efficiency improvements

[1] Allison Good, *Credit risks loom for utilities that overestimate datacenter demand*, S&P Global (Jul. 26, 2024) https://www.spglobal.com/market-intelligence/en/news-insights/articles/2024/7/credit-risks-loom-for-utilities-that-overestimate-datacenter-demand-82567534.
[2] *Dig more coal – the PCs are coming*, Forbes (May 31, 1999) https://www.forbes.com/forbes/1999/0531/6311070a.html
[3] Eric Msanet et al., *Recalibrating global data center energy-use estimates*, Science (Mar. 20, 2020) https://datacenters.lbl.gov/sites/default/files/Masanet_et_al_Science_2020.full_.pdf

could actually cause increased energy demand beyond what it would be if there were no improvements. This is an invocation of Jevon's Paradox, which observes that there are occasions in which a product's cost may be driven so low that it unleashes an avalanche of latent demand. In the real world, and particularly in energy markets, this scenario is rarely seen. More often we see a "rebound effect," in which an efficiency-driven price reduction results in some incremental unit sales, but not enough to produce a "backfire event" in which a resulting increase in demand more than negates the efficiency savings.

In their 2015 paper, "The Rebound Effect & Energy Efficiency Policy,"[4] Gilingham, Rapson, and Wagner explore what we know about the rebound effect and its likelihood of becoming so great that it produces a backfire event. The authors find that, "…the existing literature does not support claims that energy efficiency gains will be reversed by the rebound effect. Thus we would argue that the continued focus on backfire in policy debates is largely unwarranted, and is perhaps distracting attention from the most important issues, such as the welfare implications of energy efficiency policies. In most cases, the total microeconomic rebound has been found to be on the order of 20 to 40 percent when all substitution and income effects are included (and perhaps even when the embodied energy in the energy efficiency improvement is included)."

Given these findings and the fact that power availability may itself become a constraint on the growth of data center capacity, it is unlikely that increased energy efficiency will result in increased demand for electricity.

WITNESS: Sean O'Leary

[4] Gillingham, Rapson, and Wagner, *The Rebound Effect and Energy Efficiency Policy*, Yale (Sept. 25 2015) https://resources.environment.yale.edu/gillingham/GillinghamRapsonWagner_Rebound.pdf

JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY,
METROPOLITAN HOUSING ASSOCIATION,
AND MOUNTAIN ASSOCIATION

RESPONSE TO LG&E-KU'S
JOINT DATA REQUESTS FOR INFORMATION
Dated June 23, 2025

Case No. 2025-00045

Question No. 1.3

Q-1.3 Please refer to Ms. Stanton's testimony at page 46, lines 8-9.

a. Please quantify Ms. Stanton's asserted "difference in project likelihood between inquiries from real estate developers and inquiries from data center operators."

i. Please provide all workpapers in native format with formulas intact supporting Ms. Stanton's quantification.

ii. If Ms. Stanton cannot quantify the asserted difference, please explain why not.

b. Please provide copies of or hyperlinks to all source documents or other information upon which Ms. Stanton relied to assert the existence of a "difference in project likelihood between inquiries from real estate developers and inquiries from data center operators."

A-1.3 RESPONSE:

a. Different types of developers may result in different likelihoods of project completion—a consideration that warrants investigation as the Companies continue to improve on their methods for assigning probability weights to data center load forecasts. Potential sources of a difference in likelihood of project completion between projects developed by real estate developers and data center operators include the latter's firm commitment of an eventual data center tenant (itself).

For example, ERCOT president and CEO Pablo Vegas explained the decision to adjust ERCOT's forecast downward as follows:

> The base figures are inflated because of the ongoing market race to get sites prepared to offer up to industry leaders such as Google and Microsoft. The data centers themselves aren't the ones out hunting for sites, he said. It's developers – and they're often adding more than one possible site for what could be a single project.
>
> "They are scouting for and shopping for locations and sites recognizing there is going to be a huge load demand," Vegas said. "If they can have site-ready sites to then sell to an end customer, they're going to be well positioned to gain as much of that growth as possible."
>
> That means a developer could be prepping sites in multiple cities [. . .] that may never bring a signed contract or actual load on the grid.[5]

In her testimony, Dr. Stanton recommends an alternative framework for evaluating aggregate risk-weighted potential data center load and, to that end, offers suggested principles for evaluating risk. Among those principles is an accounting of any difference that might exist between the likelihood of proposed data centers coming to fruition among different kinds of project developers. Alternatively, the Companies could provide evidence that no such difference in likelihood exists.

i. The workpapers of Dr. Stanton are attached in response to LG&E-KU Q-1.1.
ii. See response to subsection (a) above.

b. See response to subsection (a) above.

WITNESS: Elizabeth A. Stanton

[5] Sara DiNatale, *ERCOT calls new demand forecast a 'sanity check' amid Texas data center boom*, San Antonio Express News (Apr. 10, 2025), https://www.expressnews.com/business/article/ercot-demand-forecast-data-centers-texas-20267820.php.

JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY,
METROPOLITAN HOUSING ASSOCIATION,
AND MOUNTAIN ASSOCIATION

RESPONSE TO LG&E-KU'S
JOINT DATA REQUESTS FOR INFORMATION
Dated June 23, 2025

Case No. 2025-00045

Question No. 1.4

Q-1.4 Please refer to Table 7 on page 40 of Ms. Stanton's testimony.

a. Has any other state or federal regulatory agency adopted Ms. Stanton's full proposed collection of 25 pass-fail criteria to evaluate data center load forecasts? If so, please state which agencies have done so, when they did so, and provide copies of or hyperlinks to all source documents or other information showing they did so.

b. For each of the 25 criteria, please list all state or federal regulatory agencies that have adopted the criterion as a probability weighting for evaluating or performing load forecasts and the probability each such agency has assigned to the criterion. Please provide copies of or hyperlinks to all supporting source documents or other supporting information.

c. Please provide copies of or hyperlinks to all source documents or other information upon which Ms. Stanton relied to assign an equal probability weighting (i.e., 4%) to each of the 25 criteria listed in the table.

A-1.4 RESPONSE:

a. No. See JI Resp. to LG&E-KU Q-1.4(b).
b. The illustrative framework included in Dr. Stanton's testimony provides a starting point for the design of a standardized methodology for probability weighted data center load forecasts, including: (1) examining an extensive set of characteristics of potential data centers (the 25 factors listed are illustrative, not comprehensive, and not definitive), and (2) assigning clear and transparent weights to relevant characteristics (in the absence of transparent assignment of differing weights, the most defensible choice is equal weighting).

A list of all state or federal regulatory agencies that have adopted each of the 25 criteria would require additional analysis. However, according to the Electric

Power Research Institute's 2024 Survey on Utility Experiences and Trends Regarding Data Centers, eight out of the twenty-four responding utilities used a derated capacity value based on specific weighting criteria when accounting for data centers in their load forecasts.[6] These utilities considered multiple factors when screening data center interconnection requests, including: whether the project was publicly announced, whether land had been acquired, the maturity of the company, whether the company was an existing customer, whether permits had been acquired, whether there is a signed agreement between the data center and the utility, whether the company was a hyperscale data center or a cryptocurrency miner, whether the company had submitted a formal connection request, and whether there was available infrastructure to support the requested capacity.[7] Based on the nature of EPRI's survey, it is possible that certain utilities considered additional weighting criteria, with one of the survey questions being whether the utility considered "[o]ther" factors when translating a data center service capacity request to the utility's load forecast.[8]

Furthermore, in its data center demand forecasting process, Dominion Energy states that it "relies upon [the following] information in roughly the following order to validate its [data center] forecast":

- Existing Electric Service Agreements;
- Contracts for the construction of electrical infrastructure;
- Customer provided forecasting information;
- Customer property purchases for Data Center projects;
- Customer provided information, e.g., layoffs, executive turnover, changes in investor capital funding, etc.;
- Substation Engineering Letters of Authorization;
- Customer provided growth plans; and
- Load letters received.[9]

AEP, meanwhile, excludes from the first five years of its load forecast all projects except for those with a letter of authorization and an energy service agreement signed or in progress within the first five years of the forecast. Beyond the first five years of its load forecast, AEP includes only 60% of the interconnection queue with land control in its forecast.[10]

---

[6] D. Larson, Electric Power Research Institute, Utility Experiences and Trends Regarding Data Centers: 2024 Survey (Sept. 2024), at 25, available at https://www.epri.com/research/products/000000003002030643.
[7] *Id*. at 26-27.
[8] *Id*. at 46.
[9] Dominion Energy, Data Center Demand Forecasting Process: Detailed Narrative Describing Each Step of the Process to Create the Dominion Energy Service Territory Data Center Block Load Adjustment Submission to PJM [Report] (July 17, 2024), at 1-2, available at https://protectpwc.org/wp-content/uploads/2024/07/Dominion-Energy-Data-Center-Demand-Forecasting-Process-071724.pdf.
[10] American Electric Power, 2024 Load Forecast Adjustments to the PJM Load Analysis Subcommittee (Oct. 25, 2024), at 3, https://www.pjm.com/-/media/DotCom/committeesgroups/subcommittees/las/2024/20241025/20241025-item-03f---aep-large-loadrequest.ashx%20slide%203.

c. All citations are listed directly under Table 7 in Dr. Stanton's testimony and all workpapers are attached in response to LG&E-KU Q-1.1. In the illustrative alternative framework presented, 4 percent was selected as the component weight for all 25 criteria, giving every criterion an equal weight in the evaluation.

WITNESS: Elizabeth A. Stanton

JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY,
METROPOLITAN HOUSING ASSOCIATION,
AND MOUNTAIN ASSOCIATION

RESPONSE TO LG&E-KU'S
JOINT DATA REQUESTS FOR INFORMATION
Dated June 23, 2025

Case No. 2025-00045

Question No. 1.5

Q-1.5 Please refer to Ms. Stanton's testimony at page 35, lines 2-5. Please quantitatively define the following terms used in the cited sentence:

a. Short-term

b. Large customer load

c. High likelihood

d. Merely speculative

e. Low likelihood

A-1.5 RESPONSE:

a. Short term: The term "short term" typically "describes a planning period in which one or more production inputs are considered fixed in quantity and the other production inputs are varied."[11] For example:

These six-year averages were used to evaluate short-term variations in the coal-to-gas price ratio.[12]

The Companies considered periods of five and six years to evaluate short-term variations in the average coal-to-gas ratio but a period of six years provides a

[11] See, e.g. Corporate Finance Institute discussion of the term "short run", at https://corporatefinanceinstitute.com/resources/economics/short-run/

[12] KY PSC Case No. 2024-00326. October 2024. *2024 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company, Volume III at 60*.

wider range of ratios.[13]

For purposes of Dr. Stanton's testimony, "short term" can be considered synonymous with the Companies' use of phrase "near term." For example, the Companies have stated that "The 1,750 MW of data center load included in the 2025 CPCN Load Forecast does not consist of specific data center projects; rather, it is a reasonable estimate of how much of the more than 6,000 MW of potential data center load in the Companies' current queue will come to fruition in the near term."[14] The Companies have further stated that "'near term' means through 2032."[15]

b. Large customer load: Following the Companies' definition, "large customer load" means a (typically) new load from a large customer:

... projected data center loads, though large…[16]

...for a large load like a data center…[17]

...the process for a large load like a data center to locate in the Companies' service territory…[18]

...the projected needs of new large, high load factor customers…[19]

c. High likelihood: "Likelihood" is the probability of an event's occurrence, where high likelihood events are more likely to occur and low likelihood events are less likely to occur. Like the Companies, Dr. Stanton recommends that high and low likelihoods for "probabilities" (see AG-KIUC 1.35 Attachment) be assigned to data centers as a means to estimating a probability weighted data center load, and not to identify individual projects as high or low likelihood. Unlike the Companies, Dr. Stanton's illustrative alternative framework assigns probabilities by specific, detailed proposed project characteristics; in contrast, the Companies assign probability by economic development stage (see AG-KIUC 1.35 Attachment). For example:

For these reasons, the Companies assign a low likelihood to the Low load forecast, which includes no economic development load growth, and focus on the Mid and High load forecasts, which include 1,050 MW and 1,750 MW of new

[13] *Id.* at footnote 74.
[14] LG&E-KU Resp. to Staff Q-1.17(a).
[15] LG&E-KU Resp. to Staff Q-2.16(a).
[16] LG&E-KU Resp. to SC Q-1.28(c).
[17] LG&E-KU Resp. to Staff Q-2.17(a).
[18] Bevington Direct at 13.
[19] Bellar Direct at 9.

data center load by 2032, respectively.[20]

d. Merely speculative: "Merely" means "only, simply, or just."[21] "Speculative" means "based on guesswork or opinions formed without all the facts."[22] In Dr. Stanton's testimony, "merely speculative" is used as a synonym to "has a low likelihood of materializing."

e. Low likelihood: See response to 5(d).

WITNESS: Elizabeth A. Stanton

[20] KY PSC Case No. 2024-00326. October 2024. *2024 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company, Volume III*, at 4.
[21] Oxford English Dictionary.
[22] Oxford English Dictionary.

VERIFICATION

The undersigned,_John Chiles_being first duly sworn, deposes and says that __he__ has personal knowledge of the matters set forth in the foregoing testimony and that the information contained therein is true and correct to the best of _his_ information, knowledge, and belief, after reasonable inquiry.

John Webster Chiles
_____

Subscribed and sworn to before me by John Webster CHILES this 3rd day of July, 2025.

Vickey Beglari
NOTARY PUBLIC
STATE OF NEVADA
Appt. No. 23-3998-01
Expires August 25, 2027

Vickey Beglari
_____
Notary Public State of Nevada, Clark County

My commission expires: 08/25/2027

Notarized remotely using audio-video communication technology via Proof.

VERIFICATION

The undersigned SEAN O'LEARY, being first duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony and that the information contained therein is true and correct to the best of his information, knowledge, and belief, after reasonable inquiry.

Sean Harold O'Leary

Sean Harold O'Leary
07/03/2025

See attached notary certificate.

DESCRIPTION OF ATTACHED DOCUMENT

Title or Type of Document: Jurat

Document Date: 07/03/2025

Number of Pages (including notarial certificate): 12

State of Florida
County of Orange
Sworn to (or affirmed) and subscribed before me by means of online notarization,
this 07/03/2025 by Sean Harold O'Leary.

___ Personally Known OR ___ ✔ Produced Identification

Type of Identification Produced Washington State Enhanced DR. License

Notary Public
Brandon Adkins

BRANDON ADKINS
Notary Public - State of Florida
Commission # HH 562547
Expires on June 17, 2028

Notarized remotely online using communication technology via Proof.

VERIFICATION

The undersigned, Andrew Eiden being first duly sworn, deposes and says that his has personal knowledge of the matters set forth in the foregoing testimony and that the information contained therein is true and correct to the best of his information, knowledge, and belief, after reasonable inquiry.

Andrew Eiden

Subscribed and sworn to before me by Andrew Eiden this 3rd day of July, 2025.

April Ridley-Cutts

Notary Public

My commission expires: 07/31/2029

Notarized remotely online using communication technology via Proof.

VERIFICATION

The undersigned, Elizabeth Anne Stanton being first duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing testimony and that the information contained therein is true and correct to the best of her information, knowledge, and belief, after reasonable inquiry.

Elizabeth Anne Stanton

Subscribed and sworn to before me by Adrian McKoy this 3rd day of July, 2025.

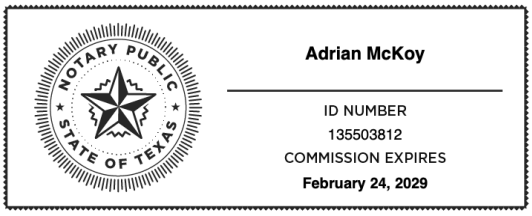
Adrian McKoy

Notary Public

My commission expires: 02/24/2029

State of Texas

County of Tarrant



Electronically signed and notarized online using the Proof platform.