COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

In the Matter of:

A REVIEW OF THE ADEQUACY OF	**)**	
KENTUCKY'S GENERATION CAPACITY	**)**	**ADMINISTRATIVE**
AND TRANSMISSION SYSTEM	**)**	**CASE NO. 387**

2024 ANNUAL RESOURCE ASSESSMENT FILING OF KENTUCKY UTILITIES COMPANY PURSUANT TO APPENDIX G OF THE COMMISSION'S ORDER DATED DECEMBER 20, 2001 AS AMENDED BY THE COMMISSION'S ORDER DATED MARCH 29, 2004

FILED: MARCH 31, 2025

VERIFICATION

COMMONWEALTH OF KENTUCKY)

)

COUNTY OF JEFFERSON)

The undersigned, **Joshua Boone**, being duly sworn, deposes and says that he is Senior Manager – Transmission Strategy and Planning for LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

Joshua Boone

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 25th day of March 2025.

Caroline J. Davison
Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

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

Tim A. Jones

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 25th day of March 2025.

Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Michael S. Sebourn**, being duly sworn, deposes and says that he is Senior Manager – Generation Planning & Analysis for LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge, and belief.

Michael S. Sebourn

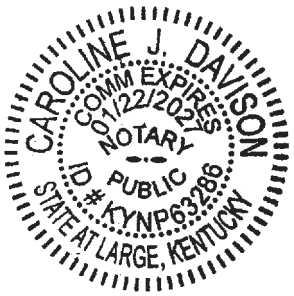
Subscribed and sworn to before me, a Notary Public in and before said County and State, this 25th day of March 2025.

Caroline J. Davison
Notary Public

Notary Public ID No. KYNP63286

My Commission Expires:

January 22, 2027



VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Ashley M. Vinson**, being duly sworn, deposes and says that she is Senior Manager – Transmission Policy and Tariffs for LG&E and KU Services Company, and that she has personal knowledge of the matters set forth in the responses for which she is identified as the witness, and the answers contained therein are true and correct to the best of her information, knowledge, and belief.

Ashley Vinson
_____
Ashley M. Vinson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this _26th_____day of ___March_____ 2025.

Caroline J. Davison
_____
Notary Public

Notary Public ID No. KYNP63286___

My Commission Expires:

_January 22, 2027_____

KENTUCKY UTILITIES COMPANY

2024 ANNUAL RESOURCE ASSESSMENT FILING
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ITEM NO. 1

The information originally requested in Item 1 of Appendix G of the Commission's Order dated December 20, 2001, in Administrative Case No. 387, is no longer required pursuant to the Commission's Order of March 29, 2004, amending the previous Order.

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ITEM NO. 2

The information originally requested in Item 2 of Appendix G of the Commission's Order dated December 20, 2001, in Administrative Case No. 387, is no longer required pursuant to the Commission's Order of March 29, 2004, amending the previous Order.

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ITEM NO. 3

RESPONDENT: Tim Jones / Michael Sebourn

3. Actual and weather-normalized monthly coincident peak demands for the just completed calendar year. Demands should be disaggregated into (a) native load demand (firm and non-firm) and (b) off-system demand (firm and non-firm).

Response:

See Table 3, which shows the actual and weather-normalized native Kentucky Utilities Company ("KU") peak demands. The normalized native KU stand-alone peak demands are available only on a seasonal (summer/winter) basis.

Table 3: KU Native and Off-System Demands for 2024 (MW)

	Actual			Normal Weather (Seasonal)	Combined Companies Off-System		
Time of Monthly Native Peak	Native Peak	Non-Firm	Firm	Native Peak	Firm	Non-Firm	Total
1/17/2024 9:00	4,474	0	4,474	**4,135**	0	306	306
2/19/2024 8:00	3,238	0	3,238		0	201	201
3/11/2024 8:00	2,998	0	2,998		0	2	2
4/15/2024 18:00	2,658	0	2,658		0	55	55
5/21/2024 17:00	3,092	0	3,092		0	200	200
6/17/2024 15:00	3,524	0	3,524		0	0	0
7/15/2024 17:00	3,569	0	3,569		0	0	0
8/6/2024 17:00	3,538	0	3,538	**3,611**	0	0	0
9/19/2024 17:00	3,159	0	3,159		0	231	231
10/4/2024 17:00	2,684	0	2,684		0	152	152
11/21/2024 20:00	2,802	0	2,802		0	2	2
12/6/2024 8:00	3,674	0	3,674		0	74	74

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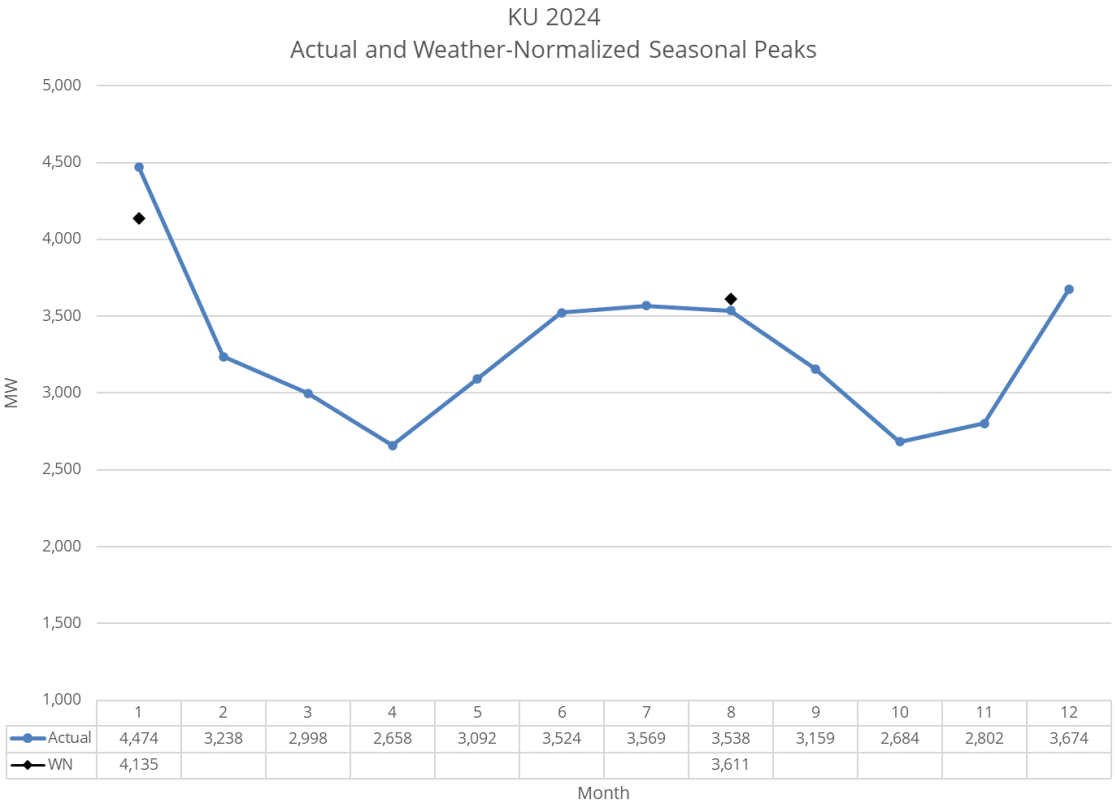
ITEM NO. 4

RESPONDENT: Tim Jones

4. Load shape curves that show actual peak demands and weather-normalized peak demands (native load demand and total demand) on a monthly basis for the just completed calendar year.

Response:

Figure 4: 2024 KU Actual and Weather-Normalized Seasonal Peaks



	1	2	3	4	5	6	7	8	9	10	11	12
Actual	4,474	3,238	2,998	2,658	3,092	3,524	3,569	3,538	3,159	2,684	2,802	3,674
WN	4,135							3,611				

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ITEM NO. 5

The information originally requested in Item 5 of Appendix G of the Commission's Order dated December 20, 2001, in Administrative Case No. 387, is no longer required pursuant to the Commission's Order of March 29, 2004, amending the previous Order.

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ITEM NO. 6

RESPONDENT: Tim Jones / Michael Sebourn

6. Based on the most recent demand forecast, the base case demand and energy forecasts and high case demand and energy forecasts for the current year and the following four years. The information should be disaggregated into (a) native load (firm and non-firm demand) and (b) off-system load (both firm and non-firm demand).

Response:

See the tables below. The Base Case is the 2025 CPCN load forecast. The Resource-Constrained Base Case is a modified version of the 2025 CPCN load forecast that reflects the load that can be reliably served with the existing and proposed resources in the 2025 CPCN.[1] The High Case is the IRP high load forecast.

[1] See Case No. 2025-00045, Exhibit SAW-1, Section 4.6 at page 34.

Table 6a: KU Demand and Energy Forecast

	2025	2026	2027	2028	2029
Base Case Energy Sales (GWh)	19,833	19,934	19,891	20,331	21,540
Resource-Constrained Base Case Energy Sales (GWh)	19,833	19,934	19,891	20,331	21,246
High Case Energy Sales (GWh)	19,973	20,125	20,135	20,628	21,882
Base Case Energy Requirements (GWh)	20,954	21,057	21,010	21,462	22,701
Resource-Constrained Base Case Energy Requirements (GWh)	20,954	21,057	21,010	21,462	22,399
High Case Energy Requirements (GWh)	21,102	21,259	21,269	21,777	23,063
Base Case Native Peak Demand (MW, Winter)	4,289	4,306	4,322	4,361	4,468
Resource-Constrained Base Case Native Peak Demand (MW, Winter)	4,289	4,306	4,322	4,361	4,468
High Case Native Peak Demand (MW, Winter)	4,322	4,352	4,382	4,434	4,553

Table 6b: Combined Companies' Constrained Base Case OSS Energy Projection (GWh)

	2025	2026	2027	2028	2029
Existing OSS	0	0	0	0	0
Wholesale OSS	604	611	666	543	633
Total OSS	604	611	666	543	633

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ITEM NO. 7

RESPONDENT: Michael Sebourn

7. The target reserve margin currently used for planning purposes, stated as a percentage of demand. If changed from what was in use in 2001, include a detailed explanation for the change.

Response:

In their 2024 IRP, the Companies developed minimum reserve margin constraints for resource planning of 29% in the winter and 23% in the summer based on the resource adequacy standard of one day in 10 years LOLE and using a load forecast with less economic development load than current expectations. As demonstrated in Case No. 2025-00045, with the addition of non-weather sensitive economic development loads, the level of generation reserves required to ensure reliable service, which is computed as a percent of peak demand under normal peak weather conditions, is slightly lower at 28% in the winter.[2]

Prior to the 2024 IRP, the Companies' minimum reserve margin constraints of 24% in the winter and 17% in the summer were developed in their 2022 application for a certificate of public convenience and necessity and approval of a DSM plan filed in December 2022 ("2022 CPCN") based on economic reserve margin. The increase from the 2022 CPCN to 2024 IRP minimum reserve margin constraints is due to alignment with the 1-in-10 LOLE standard instead of economic reserve margin.[3]

[2] See Case No. 2025-00045 Exhibit SAW-1 Resource Assessment, Section 4.5.
[3] See 2024 IRP Volume III Resource Adequacy.

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ITEM NO. 8

RESPONDENT: Michael Sebourn

8. Projected reserve margins stated in megawatts and as a percentage of demand for the current year and the following 4 years. Identify projected deficits and current plans for addressing these. For each year identify the level of firm capacity purchases projected to meet native load demand.

Response:

See Tables 8a and 8b for the combined Companies. These tables show for each peak season the dispatchable reserve margin, which excludes renewable and limited-duration resources, and the total reserve margin, which includes all resources using an expected contribution at the time of peak. The information provided is consistent with the 2025 CPCN Load Forecast with data center load constrained to an amount that maintains 1-in-10 LOLE annually, and assumes approval of resources proposed in the Companies' Case No. 2025-00045.[4] The peak load forecasts reflect the base load forecast that can be reliably served with existing and proposed resources, which is reflected in the Resource-Constrained Base Case forecast in Question No. 6. As the Companies transition from lower economic reserve margin targets to higher targets developed to reduce the loss of load expectation to one day in ten years, they will not meet the new targets until Mill Creek Unit 5 is online in 2027. Furthermore, the projected total winter reserve margins in 2027 and 2029 reflect the 1-in-10 LOLE standard and do not represent capacity deficits even though they are lower than the minimum winter reserve margin constraint of 29% computed for the 2024 IRP.[5] The Companies will continue to monitor load requirements and evaluate supply alternatives to address future capacity deficits.

[4] See Case No. 2025-00045 Exhibit SAW-1 Resource Assessment, Section 4.6.
[5] See the response to Item No. 7.

Table 8a: Winter Peak Demand and Resource Summary (MW)[6]

	2025	2026	2027	2028	2029
Peak Load	6,146	6,150	6,227	6,481	6,851
Fully Dispatchable Generation Resources					
Existing Resources	7,909	7,909	7,977	7,977	7,977
Retirements/Additions					
Coal[7]	-300	-300	-300	-597	-601
Large-Frame SCCTs	0	0	0	0	0
Small-Frame SCCTs[8]	0	-55	-55	-55	-55
NGCC	0	0	0	660	660
Total	7,609	7,554	7,622	7,985	7,981
Reserve Margin	1,463	1,404	1,395	1,504	1,130
Reserve Margin %	23.8%	22.8%	22.4%	23.2%	16.5%
Renewable/Limited-Duration Resources					
Existing Resources	72	72	72	72	72
Existing CSR	111	111	111	111	111
Existing Disp. DSM[9]	24	60	82	110	124
Retirements/Additions					
Solar[10]	0	0	0	0	0
BESS[11]	0	0	125	125	465
Dispatchable DSM[9]	0	0	0	1	1
Total	206	242	389	418	772
Total Supply	**7,815**	**7,796**	**8,011**	**8,403**	**8,753**
Total Reserve Margin	**1,669**	**1,646**	**1,784**	**1,922**	**1,903**
Total Reserve Margin %	**27.2%**	**26.8%**	**28.7%**	**29.7%**	**27.8%**

[6] The peak load forecast reflects the Resource-Constrained base load forecast that can be reliably served with existing and proposed resources.

[7] Mill Creek 1 was retired at the end of 2024. Mill Creek 2 will be retired after Mill Creek 5 is commissioned in 2027. The Ghent 2 SCR is assumed to be in-service in March 2028.

[8] Due to their age and relative inefficiency, the Companies do not perform major maintenance on their small-frame SCCTs, Paddy's Run Unit 12 and Haefling Units 1-2, but continue to operate them until they are uneconomic to repair. This response assumes they will be retired in 2026 for planning purposes.

[9] Dispatchable DSM reflects expected load reductions under normal peak weather conditions. New dispatchable DSM reflects 39% capacity contribution.

[10] This response assumes 120 MW of company-owned solar capacity is added in December 2026, and an additional 120 MW of company-owned solar capacity is added in June 2027. Solar capacity values reflect 0% expected contribution to winter peak capacity.

[11] Brown BESS is assumed in-service in January 2027. Cane Run BESS is assumed in-service in March 2028 and reflects 85% capacity contribution.

Table 8b: Summer Peak Demand and Resource Summary (MW)

	2025	2026	2027	2028	2029
Peak Load[12]	6,230	6,242	6,434	6,795	6,951
Fully Dispatchable Generation Resources					
Existing Resources	7,612	7,618	7,618	7,618	7,618
Retirements/Additions					
Coal[13]	-300	-300	-597	-601	-601
Large-Frame SCCTs	0	0	0	0	0
Small-Frame SCCTs[14]	0	-47	-47	-47	-47
NGCC	0	0	645	645	645
Total	7,312	7,271	7,619	7,615	7,615
Reserve Margin	1,082	1,029	1,185	820	664
Reserve Margin %	17.4%	16.5%	18.4%	12.1%	9.5%
Renewable/Limited-Duration Resources					
Existing Resources	106	107	107	107	107
Existing CSR	107	107	107	107	107
Existing Disp. DSM[15]	69	97	119	150	166
Retirements/Additions					
Solar[16]	0	0	201	201	201
BESS[17]	0	0	125	465	465
Dispatchable DSM[15]	0	0	0	1	1
Total	282	310	659	1,030	1,046
Total Supply	**7,594**	**7,581**	**8,278**	**8,645**	**8,661**
Total Reserve Margin	**1,364**	**1,340**	**1,844**	**1,850**	**1,710**
Total Reserve Margin %	**21.9%**	**21.5%**	**28.7%**	**27.2%**	**24.6%**

[12] The peak load forecast reflects the Resource-Constrained base load forecast that can be reliably served with existing and proposed resources.

[13] Mill Creek 1 was retired at the end of 2024. Mill Creek 2 will be retired after Mill Creek 5 is commissioned in 2027. The Ghent 2 SCR is assumed to be in-service in March 2028.

[14] Due to their age and relative inefficiency, the Companies do not perform major maintenance on their small-frame SCCTs, Paddy's Run Unit 12 and Haefling Units 1-2, but continue to operate them until they are uneconomic to repair. This response assumes they will be retired in 2026 for planning purposes.

[15] Dispatchable DSM reflects expected load reductions under normal peak weather conditions. New dispatchable DSM reflects 39% capacity contribution.

[16] This response assumes 120 MW of company-owned solar capacity is added in December 2026, and an additional 120 MW of company-owned solar capacity is added in June 2027. Solar capacity values reflect 83.7% expected contribution to summer peak capacity.

[17] Brown BESS is assumed in-service in January 2027. Cane Run BESS is assumed in-service in March 2028 and reflects 85% capacity contribution.

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ITEM NO. 9

The information originally requested in Item 9 of Appendix G of the Commission's Order dated December 20, 2001, in Administrative Case No. 387, is no longer required pursuant to the Commission's Order of March 29, 2004, amending the previous Order.

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ITEM NO. 10

The information originally requested in Item 10 of Appendix G of the Commission's Order dated December 20, 2001, in Administrative Case No. 387, is no longer required pursuant to the Commission's Order of March 29, 2004, amending the previous Order.

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ITEM NO. 11

RESPONDENT: Michael Sebourn

11. A list that identifies scheduled outages or retirements of generating capacity during the current year and the following four years.

Response:

See attachment being provided in a separate file. The planned maintenance outage schedule for 2025 through 2029 is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection. The schedule is regularly modified based on actual operating conditions, forced outages, changes in the schedule required to meet environmental compliance regulations, fluctuations in wholesale prices, and other unforeseen events.

KU's only retirements assumed in the following four years are Haefling 1-2 in 2026.

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ITEM NO. 12

RESPONDENT: Michael Sebourn

12. Identify all planned base load or peaking capacity additions to meet native load requirements over the next 10 years. Show the expected in-service date, size and site for all planned additions. Include additions planned by the utility, as well as those by affiliates, if constructed in Kentucky or intended to meet load in Kentucky.

Response:

The Companies jointly plan their generation portfolio.

The Companies received approval in Case No. 2022-00402 to build, own, and operate a mix of natural gas combined cycle ("NGCC"), solar, and lithium-ion battery storage over the next 10 years. The following is a summary of these projects:

- 125 MW lithium-ion battery in Mercer County anticipated to be in service in 2027. This battery will be fully owned by LG&E but will serve native load energy requirements for both LG&E and KU.
- 120 MW solar facility in Mercer County anticipated to be in service in 2026.
- 645 MW NGCC unit in Jefferson County ("Mill Creek 5") anticipated to be in service in 2027.
- 120 MW solar facility in Marion County anticipated to be in service in 2027.

The Companies requested approval in Case No. 2025-00045 to build, own, and operate additional resources, summarized as follows:

- 400 MW lithium-ion battery in Jefferson County anticipated to be in service in 2028.
- 645 MW NGCC unit in Mercer County ("Brown Unit 12") anticipated to be in service in 2030. This unit will be fully owned by LG&E but will serve native load energy requirements for both LG&E and KU.
- 645 MW NGCC unit in Jefferson County ("Mill Creek 6") anticipated to be in service in 2031. This unit will be fully owned by LG&E but will serve native load energy requirements for both LG&E and KU.

In Case No. 2022-00402, the Companies also received approval to enter into four solar PPAs in Kentucky through a PPA rider. Prior to that, the Companies entered into two solar PPAs as part of the Green Tariff Option 3. The table below provides a status update on the development of these solar PPAs.

ibV Rhudes Creek • 100 MW in Hardin County • COD Q1 2025 (only with near-term local approvals) • 75% to two RPA customers; 25% to all LKE customers	• PPA executed 11/2019. • KY Siting Board approved Jan 2023, contingent on local approvals. • ibV awaiting updated Hardin County planning/zoning guidelines. • Received updated pricing in Q1 2024, 20-year PPA prices increased by slightly more than 100% compared to the original price; the two Green Tariff Option 3 customers are currently considering whether to accept the higher pricing.
BrightNight Ragland • 125 MW in Ballard County • COD 12/31/2026 • 100% to five RPA customers	• PPA executed 10/2021. • Location changed from McCracken to Ballard County, adjacent to Gage project (development is independent of Gage). • No local approvals or Siting Board application. • BrightNight proposed a significantly higher price. • The project developer terminated the Ragland PPA because the developer could not construct the project for the 2021 PPA price, and the five participating Green Tariff Option 3 customers would not agree to the developer's new price, which was over twice the original price.
Clearway Song Sparrow • 104 MW in Ballard County • COD 12/31/2027 • 100% to all LKE customers	• PPA executed Q1 2023. • KY Siting Board approved Feb 2024, contingent on local approvals. • Terminated by developer 2/28/2024.
BrightNight Gage • 115 MW in Ballard County • COD 12/31/2026 • 100% to all LKE customers	• PPA executed Q1 2023. • Filed notice of intent with KY Siting Board Nov 2023. • The Companies terminated the Gage PPA because, after engaging in negotiations under the PPA's price reopener provision that the developer exercised, the Companies would not agree to a price that was approximately 60 percent higher than the original price.
ibV Nacke Pike • 280 MW in Hardin County • COD 1/15/2026 • 100% to all LKE customers	• PPA executed Q1 2023. • Awaiting Hardin County planning/zoning guidelines. • No local approvals or Siting Board application. • Seller/buyer price reopener.
ibV Grays Branch • 138 MW in Hopkins County • COD 1/15/2026 • 100% to all LKE customers	• PPA executed Q1 2023. • Located on reclaimed coal mining land. • Anticipate permits and Siting Board application by end of 2025. • Seller/buyer price reopener.

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ITEM NO. 13

RESPONDENT: Ashley Vinson

13. The following transmission energy data for the just completed calendar year and the forecast for the current year and the following four years:

    a. Total energy received from all interconnections and generation sources connected to the transmission system.

    b. Total energy delivered to all interconnections on the transmission system.

    c. Peak load capacity of the transmission system.

    d. Peak demand for summer and winter seasons on the transmission system.

Response:

Data exists for 2024. The Company does not forecast this type of data; therefore, no forecast exists for 2025-2029.

a. LG&E and KU operate as a single NERC Balancing Area that contains several generators not owned by LG&E and KU, which are also included as sources below:

Tie Lines Received (MWH)	19,733,381
Net Generation-LG&E (MWH)	13,019,533
Net Generation-KU (MWH)	19,684,702
Net Generation-KYMEA (MWH)	759
Net Generation-KMPA (MWH)	105,267
Net Generation-EKPC (MWH)	125,396
Total Sources (MWH)	52,669,038

b. LG&E and KU operate as a single Balancing Area; the amount of energy delivered at the interconnections of the single Balancing Area was 17,354,832 MWH(s).

c. There is no set number for peak load capacity for the transmission system. The system is built to support Network Service and long-term firm Point-to-Point customers in accordance with the LG&E/KU Transmission Planning Guidelines. Actual transmission capacity available for Network Customers, import, export or thru flow will vary depending on which facilities (generation, load or transmission) in the interconnected transmission system of the eastern interconnect are connected and operated at any given time.

d. The maximum summer peak transmission load for the combined LG&E/KU transmission system was 7,333 MW for the peak hour of 7/15/2024 at 5:00 p.m.

   The maximum winter peak transmission load for the combined LG&E/KU transmission system was 7,755 MW for the peak hour of 1/17/2024 at 9:00 a.m.

KENTUCKY UTILITIES COMPANY

2024 ANNUAL RESOURCE ASSESSMENT FILING
PURSUANT TO APPENDIX G OF THE COMMISSION'S ORDER
DATED DECEMBER 20, 2001, IN ADMINISTRATIVE CASE NO. 387
AS AMENDED BY THE COMMISSION'S ORDER DATED MARCH 29, 2004
FILED MARCH 31, 2025

ITEM NO. 14

RESPONDENT: Josh Boone

14. Identify all planned transmission capacity additions for the next 10 years. Include the expected in-service date, size and site for all planned additions and identify the transmission need each addition is intended to address.

Response:

See attachment being provided in a separate file. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.