

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

**2022 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, 2023

VERIFICATION


COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Joshua Boone**, being duly sworn, deposes and says that he is Manager – Transmission Strategy and Planning for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, 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 28th day of March 2023.



Notary Public

Notary Public ID No. KYNP53381

My Commission Expires:

July 11, 2026

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Tim A. Jones**, being duly sworn, deposes and says that he is Manager – Sales Analysis and Forecast for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, 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 24th day of March 2023.



Notary Public

Notary Public ID No. KYNP53381

My Commission Expires:

July 11, 2026

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, Michael S. Sebourn, being duly sworn, deposes and says that he is Manager – Generation Planning for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, 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
Michael S. Sebourn

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 22nd day of March 2023.

Judy Schotes
Notary Public

Notary Public ID No. KYNP53381

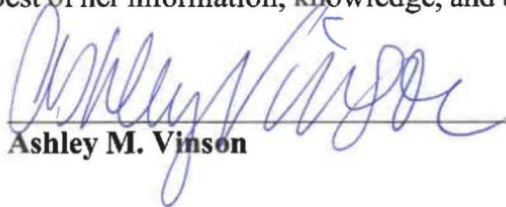
My Commission Expires:

July 11, 2026

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Ashley M. Vinson**, being duly sworn, deposes and says that she is Manager – Transmission Policy and Tariffs for LG&E and KU Services Company, 220 West Main Street, Louisville, KY 40202, 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 M. Vinson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 28th day of March 2023.


Notary Public

Notary Public ID No. KYNP53381

My Commission Expires:

July 11, 2026

KENTUCKY UTILITIES COMPANY

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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.

KENTUCKY UTILITIES COMPANY

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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 2022 (MW)

Time of Monthly Native Peak	Actual			Normal Weather (Seasonal)	Off-System ¹		
	Native Peak	Non-Firm	Firm	Native Peak	Firm	Non-Firm	Total
1/27/2022 7:00	3,844	0	3,844	4,113	0	104	104
2/15/2022 7:00	3,382	0	3,382		0	152	152
3/13/2022 8:00	3,118	0	3,118		0	150	150
4/19/2022 6:00	2,715	0	2,715		0	207	207
5/31/2022 16:00	3,216	0	3,216		0	200	200
6/15/2022 16:00	3,655	0	3,655		0	1	1
7/6/2022 14:00	3,540	0	3,540		0	4	4
8/3/2022 14:00	3,575	0	3,575	3,650	0	107	107
9/21/2022 15:00	3,413	0	3,413		0	0	0
10/20/2022 6:00	2,607	0	2,607		0	251	251
11/21/2022 7:00	3,248	0	3,248		0	118	118
12/23/2022 10:00	4,433	0	4,433		0	1	1

¹ The allocation of off-system sales between LG&E and KU is handled in the After-the-Fact Billing process in accordance with the Power Supply System Agreement between LG&E and KU. The individual company sales will include an allocation of the sales sourced with purchased power and allocated to the individual company based on each company's contribution to off-system sales.

KENTUCKY UTILITIES COMPANY

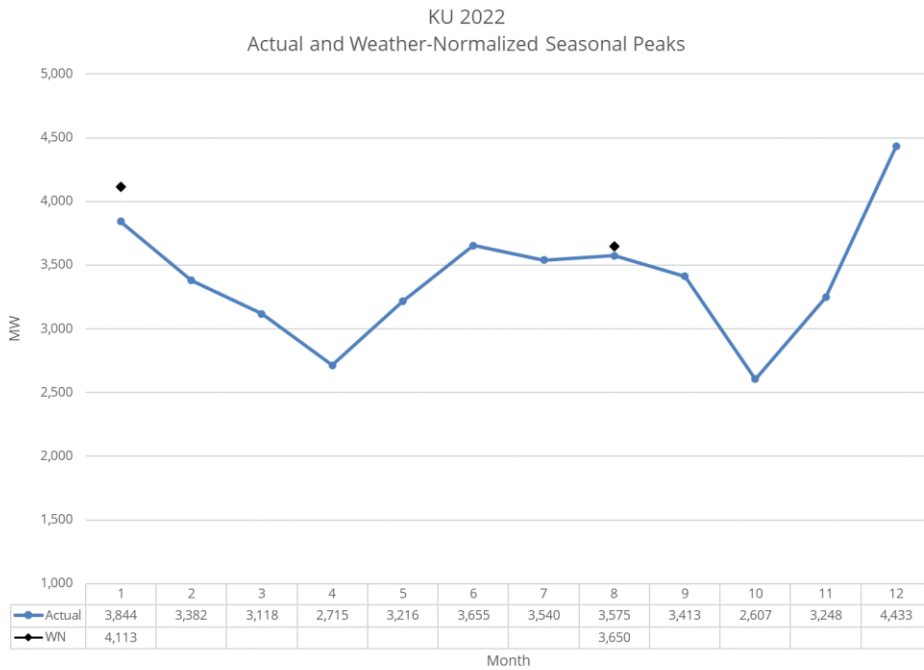
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ITEM NO. 4

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:



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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:

Table 6a – KU Demand and Energy Forecast

	2023	2024	2025	2026	2027
Base Case Energy Sales (GWh)	18,542	18,816	19,450	19,603	20,311
High Case Energy Sales (GWh)	19,125	19,452	20,117	20,263	20,957
Base Case Energy Requirements (GWh)	19,807	20,084	20,726	20,871	21,598
High Case Energy Requirements (GWh)	20,286	20,617	21,288	21,422	22,129
Base Case Native Peak Demand (MW, Winter)	4,071	4,058	4,202	4,161	4,271
High Case Native Peak Demand (MW, Winter)	4,169	4,166	4,316	4,271	4,376

Table 6b – Combined Companies' Total Base Case OSS Energy Projection (GWh)

	2023	2024	2025	2026	2027
Existing OSS	0	0	0	0	0
Wholesale OSS	460	270	325	612	782
Total OSS	460	270	325	612	782

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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:

The Companies have an optimal summer reserve margin range of 17% to 24% and winter reserve margin range of 24% to 35%. The range provides an optimum level of reliability through various system operating conditions.

As part of the 2021 Integrated Resource Plan ("2021 IRP"), the Companies established an optimal summer reserve margin range of 17% to 24% and winter reserve margin range of 26% to 35%. The 2021 IRP was filed with the Commission in October 2021.²

In the Companies' 2022 application for a certificate of public convenience and necessity and approval of a DSM plan ("2022 CPCN"), the minimum winter reserve margin target was revised from 26% to 24% based on an updated load forecast and an updated cost of SCCT capacity. The 2022 CPCN was filed in December 2022.³

² A detailed explanation of the 2021 IRP's target reserve margin is documented in the report titled, "2021 IRP Reserve Margin Analysis," included in Volume III of the Companies' 2021 IRP. *In re the Matter of: Electronic 2021 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company* Case No. 2021-00393, filed on October 19, 2021.

³ A detailed explanation of the 2022 CPCN's target reserve margin is documented in the report titled, "2022 Minimum Reserve Margin Analysis," included in Exhibit SAW-1 titled "2022 Resource Assessment." *In the Matter of: 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* Case No. 2022-00402, filed on December 15, 2022.

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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 intermittent and limited-duration resources, and the total reserve margin, which includes all resources using an expected contribution at the time of peak. No reserve margin deficits are projected. The Companies will continue to monitor load requirements and evaluate supply alternatives to address future capacity deficits. The information provided is consistent with the resource plan the Companies' proposed in the 2022 CPCN application (noted in the response to Item No. 7) and may not reflect the implementation of the recently finalized Good Neighbor Plan.

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

	2023	2024	2025	2026	2027
Peak Load	6,162	6,197	6,248	6,253	6,347
Dispatchable Generation Resources					
Existing Resources	7,583	7,612	7,612	7,612	7,612
Retirements/Additions					
Coal ⁴	-300	-300	-300	-300	-597
Large-Frame SCCTs	0	0	0	0	0
Small-Frame SCCTs ⁵	0	0	-47	-47	-47
NGCC	0	0	0	0	621
Total	7,283	7,312	7,265	7,265	7,589
Reserve Margin	1,121	1,115	1,017	1,012	1,242
Reserve Margin %	18.2%	18.0%	16.3%	16.2%	19.6%
Intermittent/Limited-Duration Resources					
Existing Resources	105	105	105	105	105
Existing CSR	128	128	128	128	128
Existing Disp. DSM ⁶	62	60	56	52	49
Retirements/Additions					
Solar ⁷	0	79	177	681	866
Battery Storage	0	0	0	125	125
Dispatchable DSM ⁶	0	36	49	66	91
Total	294	407	515	1,157	1,364
Total Supply	7,577	7,719	7,780	8,422	8,953
Total Reserve Margin	1,415	1,500	1,510	2,148	2,585
Total Reserve Margin %	23.0%	24.6%	24.5%	34.7%	41.1%

⁴ Mill Creek 1 and 2 cannot be operated simultaneously during ozone season due to NO_x limits, which results in a reduction of available summer capacity through 2024. Mill Creek 1 is assumed to be retired by the end of 2024. Mill Creek 2 is assumed to be retired in 2027.

⁵ Haefling 1-2 and Paddy's Run 12 are assumed to be retired in 2025.

⁶ Dispatchable DSM reflects expected load reductions under normal peak weather conditions.

⁷ Solar capacity values reflect 78.6% and 0% expected contribution to summer and winter peak capacity, respectively.

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

	2023	2024	2025	2026	2027
Peak Load	5,910	5,908	6,011	6,003	6,107
Dispatchable Generation Resources					
Existing Resources	7,901	7,909	7,909	7,909	7,909
Retirements/Additions					
Coal ⁴	0	0	-300	-300	-597
Large-Frame SCCTs	0	0	0	0	0
Small-Frame SCCTs ⁵	0	0	-55	-55	-55
NGCC	0	0	0	0	641
Total	7,901	7,909	7,554	7,554	7,898
Reserve Margin	1,991	2,001	1,543	1,550	1,790
Reserve Margin %	33.7%	33.9%	25.7%	25.8%	29.3%
Intermittent/Limited-Duration Resources					
Existing Resources	72	72	72	72	72
Existing CSR	128	128	128	128	128
Existing Disp. DSM ⁶	22	22	22	22	22
Retirements/Additions					
Solar ⁷	0	0	0	0	0
Battery Storage	0	0	0	125	125
Dispatchable DSM ⁶	0	13	26	40	61
Total	221	234	246	385	407
Total Supply	8,122	8,143	7,800	7,939	8,305
Total Reserve Margin	2,211	2,235	1,789	1,936	2,197
Total Reserve Margin %	37.4%	37.8%	29.8%	32.2%	36.0%

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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.

KENTUCKY UTILITIES COMPANY

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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.

KENTUCKY UTILITIES COMPANY

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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:

The planned maintenance outage schedule for 2023 through 2027 is being provided 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.

The only KU retirements assumed in the following four years are Haefling 1-2 in 2025.

The entire attachment is
Confidential and
provided separately
under seal.

KENTUCKY UTILITIES COMPANY

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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. The information provided is consistent with the resource plan the Companies' proposed in the 2022 CPCN application (noted in the response to Item No. 7) and may not reflect the implementation of the recently finalized Good Neighbor Plan.

Response:

The Companies jointly plan their generation portfolio. The Companies plan to build, own, and operate a mix of natural gas combined cycle ("NGCC"), solar, and lithium-ion battery storage over the next 10 years. Here is a summary of the planned projects:

- 621 MW NGCC in Jefferson County ("Mill Creek Unit 5") anticipated to be in service in 2027.
- 621 MW NGCC in Mercer County ("Brown Unit 12") anticipated to be in service in 2028.
- 120 MW solar facility in Mercer County anticipated to be in service in 2026.
- 120 MW solar facility in Marion County anticipated to be in service in 2027.
- 125 MW lithium-ion battery in Mercer County anticipated to be in service in 2026. This battery would be fully owned by LG&E but would serve native load energy requirements for both LG&E and KU.

In addition to the projects above, the Companies plan to purchase the energy output of the following six solar facilities in Kentucky. Each project's development is ongoing with milestones to clear before completion.

- 100 MW in Hardin County anticipated to be in service in 2024.
- 125 MW in McCracken County anticipated to be in service in 2025.
- 138 MW in Hopkins County anticipated to be in service in 2026.
- 280 MW in Hardin County anticipated to be in service in 2026.
- 104 MW in Ballard County anticipated to be in service in 2026.
- 115 MW in Ballard County anticipated to be in service in 2027.

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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 2022. The Company does not forecast this type of data; therefore, no forecast exists for 2023-2027.

- 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)	20,117,746
Net Generation-LG&E (MWH)	13,842,117
Net Generation-KU (MWH)	20,123,393
Net Generation-KMPA (MWH)	131,983
Net Generation-EKPC (MWH)	<u>205,005</u>
Total Sources (MWH)	54,420,244

- 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 18,262,107 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 7,296 MW for the peak hour of 6/15/2022 at 3:00 p.m.

The maximum winter peak transmission load for the combined LG&E/KU transmission system was 7,662 MW for the peak hour of 12/23/2022 at 6 p.m.

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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:

The requested information is being provided pursuant to a Petition for Confidential Protection.

The entire attachment is
Confidential and
provided separately
under seal.