



**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY**

**In the Matters of:**

<b>ELECTRONIC REVIEW OF THE ADEQUACY</b>	)	<b>Administrative</b>
<b>OF KENTUCKY'S GENERATION CAPACITY</b>	)	<b>Case No.</b>
<b>AND TRANSMISSION SYSTEM</b>	)	<b>2000-00387</b>

**SUPPLEMENTAL INFORMATION PROVIDED WITH  
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT  
PURSUANT TO ADMINISTRATIVE CASE NO. 2000-00387**

**FILED: February 28, 2023**

**BIG RIVERS ELECTRIC CORPORATION**

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GENERATION CAPACITY AND TRANSMISSION SYSTEM**

**Response to Commission Staff's Information Request  
as set forth in  
Appendix G of the Commission's Order dated December 20, 2001**

**February 28, 2023**

1 **Item 1)** *Actual and weather-normalized energy sales for the just*  
2 *completed calendar year. Sales should be disaggregated into native load*  
3 *sales and off-system sales. Off-system sales should be further disaggregated*  
4 *into full requirements sales, firm capacity sales, and non-firm or economy*  
5 *energy sales. Off-system sales should be further disaggregated to identify*  
6 *separately all sales where the utility acts as a reseller, or transporter, in a*  
7 *power transaction between two or more other parties.*

8

9 **Response)** The information originally requested in the above item of Appendix G of  
10 the Commission's Order dated December 20, 2001, in Administrative Case No. 2000-  
11 00387, ("the December 2001 Order in Admin. Case 387") is no longer required  
12 pursuant to Ordering Paragraph No. 5 of the Commission's Order dated March 29,  
13 2004, amending the December 2001 Order in Admin. Case 387.

14

15 **Respondent)** Marlene S. Parsley

16

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1 **Item 2)**     *A summary of monthly power purchases for the just completed*  
2 *calendar year. Purchases should be disaggregated into firm capacity*  
3 *purchases required to serve native load, economy energy purchases, and*  
4 *purchases where the utility acts as a reseller, or transporter, in a power*  
5 *transaction between two or more other parties.*

6

7 **Response)** The information originally requested in the above item of Appendix G of  
8 the December 2001 Order in Admin. Case 387 is no longer required pursuant to  
9 Ordering Paragraph No. 5 of the Commission's Order dated March 29, 2004,  
10 amending the December 2001 Order in Admin. Case 387.

11

12

13 **Respondent)**     Marlene S. Parsley

14

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1 **Item 3)** *Actual and weather-normalized monthly coincident peak*  
2 *demands for the just completed calendar year. Demands should be*  
3 *disaggregated into*

4 *a. native load demand (firm and non-firm) and*

5 *b. off-system demand (firm and non-firm).*

6

7 **Response)** Table 3-G shows the actual and weather normalized native load demand  
8 and the off-system coincident demand for 2022. Native load is comprised of the Big  
9 Rivers' Members' rural and industrial load served under LIC, LICSS, and LICX  
10 tariffs. Big Rivers sells its power into the Midcontinent Independent System  
11 Operator, Inc. ("MISO") market and, therefore, the off-system sales cannot be  
12 weather normalized. Off-system demand is comprised of three components: (i)  
13 forward bilateral sales which are characterized as firm, (ii) sales to Nebraska  
14 customers which are served in the SPP market and can be characterized as firm, and  
15 (iii) off-system sales due to generation clearing in the MISO market which is in excess

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1 of Big Rivers' load and are a result of Big Rivers' compliance with its MISO tariff  
2 obligations.

3

4

5 **Respondent)** Marlene S. Parsley

6

**Big Rivers Electric Corporation**  
**Administrative Case No. 387**  
**Table 3-G**  
**Native Peak and Off-System Sales**  
**Weather Normalized**

**Total Native Load and Off-System Coincident Peak Demands <sup>1</sup> (MW)**

Month	Peak Date	Native Load		Firm <sup>2</sup>	Off-System Sales		
		All Firm Peak Demand	Weather Normalized		Off-System Demand	Sales to MISO <sup>3</sup>	Sales in SPP <sup>4</sup>
Jan-22	01/26/22	558	553	429	121	55	0
Feb-22	02/14/22	513	534	497	0	35	0
Mar-22	03/12/22	464	457	291	78	43	0
Apr-22	04/19/22	405	379	209	15	46	0
May-22	05/31/22	532	529	328	0	46	0
Jun-22	06/13/22	626	608	262	0	58	0
Jul-22	07/05/22	663	631	258	4	49	0
Aug-22	08/03/22	586	602	256	0	59	0
Sep-22	09/20/22	577	556	249	122	58	0
Oct-22	10/20/22	430	465	156	0	26	0
Nov-22 <sup>5</sup>	11/21/22	516	504	167	0	34	0
Dec-22 <sup>5</sup>	12/23/22	707	597	187	0	52	0

**Notes -**

- 1.- Native Load includes Transmission Losses
- 2.- Off System Firm Sales are Pre-arranged bilateral sales
- 3.- Net Sales at generator nodes
- 4.- Off System Sales to Nebraska customers in SPP at Big Rivers' peak hour
- 5.- November and December off-system sales subject to slight change due to meter corrections

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

4

5 **Response)** Graph 4-G shows the monthly native load demand, along with the  
6 monthly weather normalized native load demand for 2022.

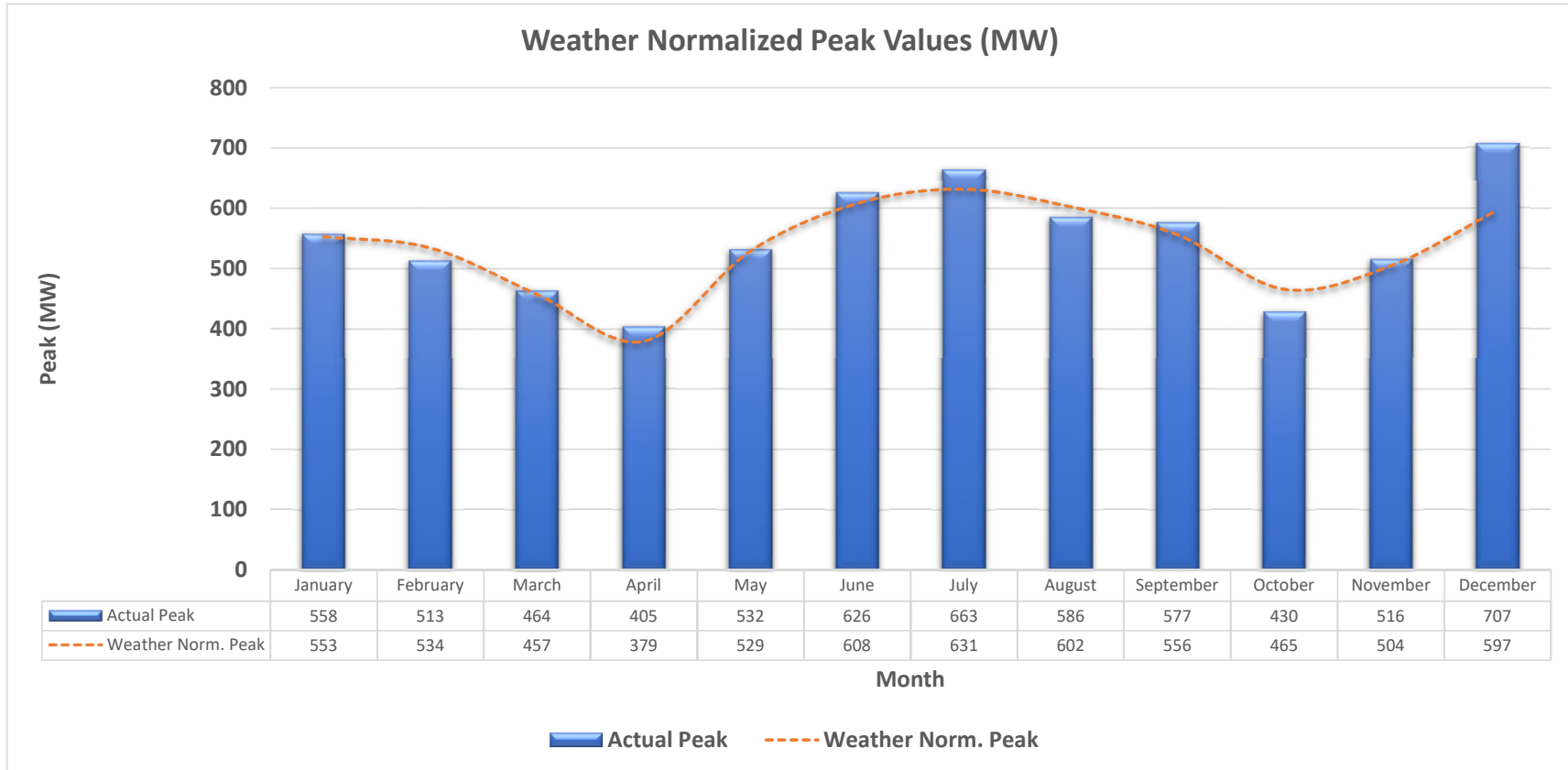
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9 **Respondent)**      Marlene S. Parsley

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**Big Rivers Electric Corporation**  
**Administrative Case No. 387**  
**Graph 4-G**  
**Actual versus Weather Normalized Peak Demand**





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1 **Item 5)**      *Load shape curves showing the number of hours that native load*  
2 *demand exceeded these levels during the just complete calendar year:*

3      *a. 70% of the sum of installed generating capacity plus firm capacity*  
4 *purchases;*

5      *b. 80% of the sum of installed generating capacity plus firm capacity*  
6 *purchases;*

7      *c. 90% of the sum of installed generating capacity plus firm capacity*  
8 *purchases.*

9

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11 the December 2001 Order in Admin. Case 387 is no longer required pursuant to  
12 Ordering Paragraph No. 5 of the Commission's Order dated March 29, 2004,  
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15 **Respondent)**      Marlene S. Parsley

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1 **Item 6)**      *Based on the most recent demand forecast, the base case demand*  
2 *and energy forecasts and high case demand and energy forecasts for the*  
3 *current year and the following four years. The information should be*  
4 *disaggregated into*

5      *a. Native load (firm and non-firm demand) and*

6      *b. Off-system load (both firm and non-firm demand).*

7

8 **Response)** Table 6-G tabulates the forecasted base case and high case demand and  
9 energy in the associated demand breakdowns as requested.

10

11

12 **Respondent)**      Marlene S. Parsley

13

**Big Rivers Electric Corporation**  
**Administrative Case No. 2000-00387**  
**Table 6-G**  
**Total Native Load and Off-System Loads**  
**Base and High Case Forecasts**

	Native Load				Off-System Load Demand			
	Base Case		High Case		Base Case		High Case	
	Demand (MW)	Energy (MWH)	Demand (MW)	Energy (MWH)	Firm Demand (MW)	Non-Firm Demand (MW)	Firm Demand (MW)	Non-Firm Demand (MW)
2023	759	3,941,566	981	4,204,729	125	0	125	0
2024	800	4,525,086	1,001	4,698,184	175	0	175	0
2025	843	4,515,904	1,007	4,729,426	250	0	250	0
2026	845	4,533,797	1,013	4,760,585	250	0	250	0
2027	845	4,530,729	1,017	4,784,132	100	0	100	0

**Notes and Assumptions**

Native Base case:

Demand and Energy include Native Load without Transmission Losses

Demand is Big Rivers' forecasted peak coincident with MISO (MISO Requirement)

Firm Off-System Load Demand consists of executed long term sales to KYMEA, OMU, and Executed Net Bilateral Short Term Capacity Transactions

Excess generation sales to MISO are not projected as they will be contingent upon unit availability at time of system peak and can vary significantly

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

4

5 **Response)** MISO's seasonal construct, case number ER22-495-000 filed by MISO in  
6 November, 2021 and accepted by FERC in September 2022, introduces seasonal  
7 requirements to the Planning Resource Auction (PRA) to account for the unique risk  
8 profile of each season. The upcoming Planning Year beginning on June 1, 2023 is the  
9 first year under this seasonal construct. The current summer target reserve margin  
10 used for planning purposes is 15.9% based on Installed Capacity Ratings of resources,  
11 and 7.4% based on Unforced Capacity Ratings, as specified by MISO for the upcoming  
12 planning year effective June 1, 2023. MISO annually determines seasonal minimum  
13 Planning Reserve Margin ("PRM") that would result in the MISO system  
14 experiencing annually a less than one-day loss-of-load event ("LOLE") every 10 years  
15 per the MISO Tariff. To determine the LOLE targets for each season that will be  
16 used to calculate the PRM and Local Reliability Requirements ("LRR"), MISO

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1 followed the process first solving the LOLE model to an annual value of 0.1 and then  
2 checking the seasonal distribution. If a season had an LOLE value of at least 0.01,  
3 then its target would be set to that LOLE. If a season had less than 0.01 LOLE,  
4 additional analysis was performed until the target of 0.01 LOLE was met. Big Rivers  
5 is located in MISO Local Resource Zone 6, and the seasonal LOLE targets determined  
6 in the Planning Year 2023-2024 LOLE study for each Local Resource Zone are shown  
7 in Table 3-6, below

The seasonal LOLE targets determined in the Planning Year 2023-2024 LOLE study are shown in Table 3-6.

Region	Summer	Fall	Winter	Spring
MISO-wide	0.1	0.01	0.01	0.01
1	0.08	0.01	0.02	0.01
2	0.1	0.01	0.01	0.01
3	0.07	0.01	0.03	0.01
4	0.04	0.01	0.04	0.01
5	0.04	0.01	0.05	0.01
6	0.05	0.01	0.04	0.01
7	0.07	0.03	0.01	0.01
8	0.01	0.01	0.08	0.01
9	0.06	0.01	0.02	0.01
10	0.05	0.04	0.01	0.01

Table 3-6: Planning Year 2023-2024 Seasonal LOLE Targets

8  
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1           The Planning Reserve margin changes over time, and it's history is shown in  
2 the Figure 4-1 reproduced below, which is from the MISO 2023–2024 Loss of Load  
3 Expectation Study Report. Forward years' projected PRM had not yet been published  
4 by MISO at the time of this response, but should be available later in 2023 as an  
5 addendum to the study including details of how that margin is derived and used  
6 available at the following link:

7 <https://cdn.misoenergy.org/PY%202023%202024%20LOLE%20Study%20Report626798.pdf>

8

9

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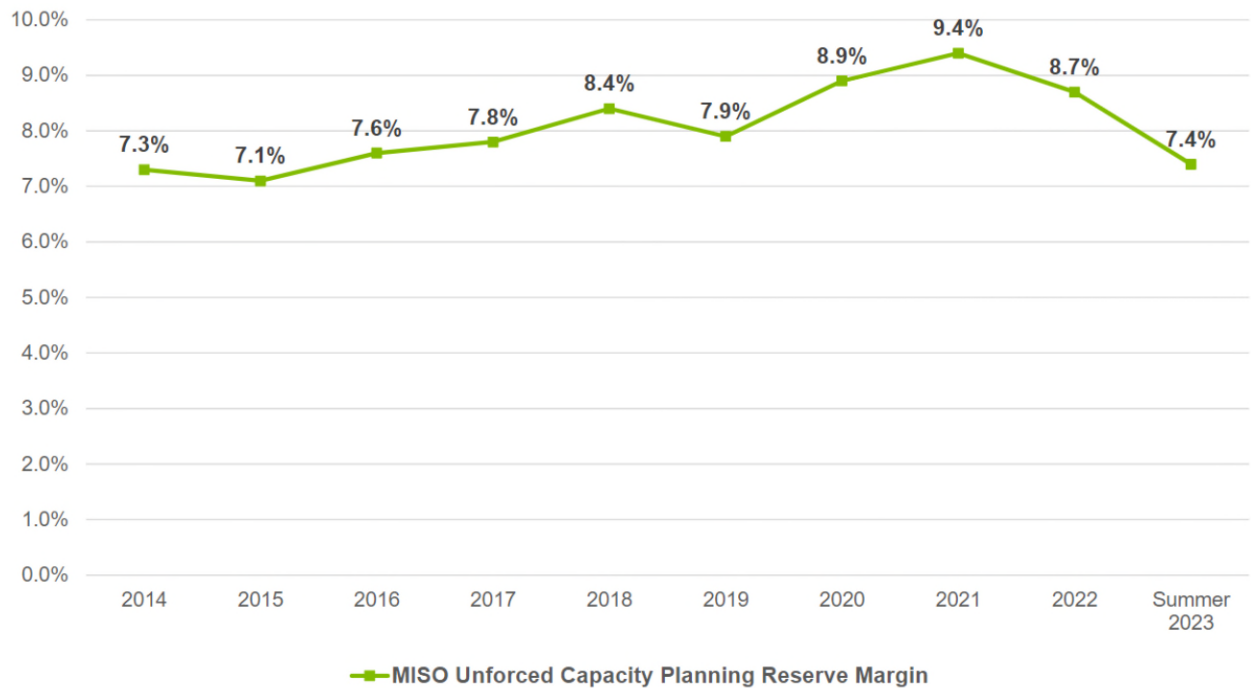
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Figure 4-1 Comparison of PRM Targets across 10 years<sup>1</sup>



3

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5 Respondent) Marlene S. Parsley

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<sup>1</sup> Figure 4-1 compares the PRM UCAP values over the last 10 Planning Years. The last endpoint of the green line shows the Planning Year 2023-2024 Summer PRM value.

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

6

7 **Response)** Please see Table 1 on the following page. Reserve Margin MWs are  
8 calculated as summer seasonally accredited capacity ("SAC") of available resources  
9 minus Base Demand and net Firm Capacity Sales. This projection includes new  
10 industrial load beginning in Fall 2023. The purchase of 160 MW of solar capacity and  
11 energy is included as a portion of available unforced capacity. Big Rivers will make  
12 bilateral capacity purchases or participate in the annual MISO Planning Resource  
13 Auction to alleviate any shortages and will meet the MISO Planning Reserve Margin  
14 Requirements including transmission losses. Big Rivers is not projecting any deficits.

15



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1

**Table 1**

<b>Year</b>	<b>Reserve Margin (Summer SAC/UCAP MW<sup>2</sup>)</b>	<b>Reserve Margin (%)</b>	<b>MISO Reserve Margin Requirement <sup>3</sup> (UCAP %)</b>	<b>Firm Capacity Purchases (MW) <sup>4</sup></b>	<b>Projected Purchases (MW) <sup>5</sup></b>	<b>Projected Deficit (MW)</b>
2023	179	24 %	10.1 %	173		0
2024	172	22 %	10.1 %	178		0
2025	82	10 %	10.1 %	178		0
2026	12	1 %	10.1 %	178		0
2027	159	19%	10.1%	178		0

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3

4 Respondent) Marlene S. Parsley

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<sup>2</sup> Summer UCAP set at Summer 2023 SAC accreditation values for all years presented

<sup>3</sup> MISO reserve margin Requirement includes transmission Losses. PRMR remains at 2023 levels for future years.

<sup>4</sup> Southeastern Power Administration ("SEPA") Cumberland Hydropower allocation at 2023 accredited capacity, expected to return to full 178 MW capacity in future years

<sup>5</sup> 

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1 **Item 9)** *By date and hour, identify all incidents during the just completed*  
2 *calendar year when reserve margin was less than the East Central Area*  
3 *Reliability Council's ("ECAR") 1.5% spinning reserve requirement. Include*  
4 *the amount of capacity resources that were available, the actual demand on*  
5 *the system, and the reserve margin, stated in megawatts and as a percentage*  
6 *of demand. Also, identify system conditions at the time.*

7

8 **Response)** The information originally requested in the above item of Appendix G of  
9 the December 2001 Order in Admin. Case 387 is no longer required pursuant to  
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14 **Respondent)** Marlene S. Parsley

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1 **Item 10)** *A list identifying and describing all forced outages in excess of*  
2 *two hours in duration during the just completed calendar year.*

3

4 **Response)** The information originally requested in the above item of Appendix G of  
5 the December 2001 Order in Admin. Case 387 is no longer required pursuant to  
6 Ordering Paragraph No. 5 of the Commission's Order dated March 29, 2004,  
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10 **Respondent)** Jeffrey S. Brown

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

3

4 **Response)** The planned maintenance outage schedule for 2023 through 2027 is  
5 being filed with a Motion for Confidential Treatment. The schedule is regularly  
6 modified based on actual operating conditions, forced outages, changes in the  
7 schedule required to meet environmental regulation compliance, fluctuation in  
8 wholesale capacity and energy prices, and other unforeseen events that may affect  
9 unit reliability or generation capacity. The scheduled outages are listed in the tables  
10 which follow.

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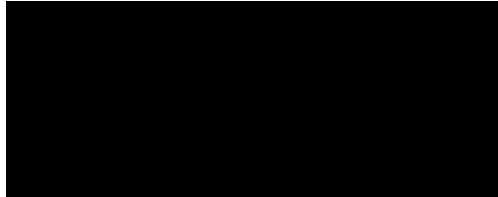
**February 28, 2023**

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**Wilson Unit 1**

2023  
2024  
2025  
2026  
2027

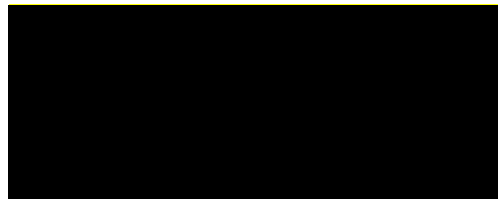


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**Green Unit 1**

2023  
2024  
2025  
2026  
2027

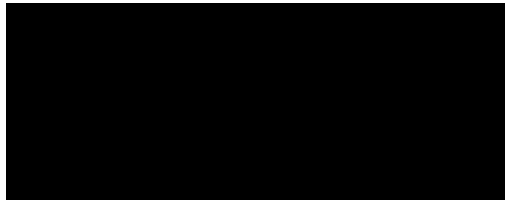


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**Green Unit 2**

2023  
2024  
2025  
2026  
2027



7

8

9 **Respondent)** Jeffrey S. Brown

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

6

7 **Response)** In Case No. 2022-00296,<sup>6</sup> Big Rivers is seeking Commission approval  
8 of an amendment to a solar purchase power agreement, the “Unbridled PPA,”  
9 approved by the Commission in Case No. 2020-00183.<sup>7</sup> The related 160 MW  
10 facility in Henderson County, Kentucky is currently in the DPP–2020<sup>8</sup> cycle of  
11 MISO Interconnection studies. Big Rivers is currently evaluating resource options  
12 in preparation of its 2023 Integrated Resource Plan.

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<sup>6</sup> *In the Matter of: Electronic Application of Big Rivers Electric Corporation for Approval of Amendment to Power Purchase Agreement*, P.S.C. Case No. 2022-00296 (filed Sept. 22, 2022).

<sup>7</sup> *In the Matter of: Electronic Application of Big Rivers Electric Corporation for Approval of Solar Power Contracts*, P.S.C. Case No. 2020-00183, Order (Sept. 28, 2020).

<sup>8</sup> DPP = Definitive Planning Phase.

**BIG RIVERS ELECTRIC CORPORATION**

**SUPPLEMENTAL INFORMATION PROVIDED WITH  
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT  
PURSUANT TO ADMINISTRATIVE CASE NO. 2000-00387 –  
A REVIEW OF THE ADEQUACY OF KENTUCKY'S GENERATION  
CAPACITY AND TRANSMISSION SYSTEM**

**Response to Commission Staff's Information Request  
as set forth in  
Appendix G of the Commission's Order dated December 20, 2001**

**February 28, 2023**

1

2 **Respondent)**      Marlene S. Parsley

3

**BIG RIVERS ELECTRIC CORPORATION**

**SUPPLEMENTAL INFORMATION PROVIDED WITH  
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**February 28, 2023**

1 **Item 13)** *The following transmission energy data for the just completed*  
2 *calendar year and the forecast for the current year and the following four*  
3 *years:*

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

6 *b. Total energy delivered to all interconnections on the transmission*  
7 *system;*

8 *c. Peak load capacity of the transmission system; and*

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

11



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**February 28, 2023**

1 **Response)**

2 a.

Transmission System Energy Received (MWh)

	<u>Generation</u>	<u>Interconnections</u>	<u>Total</u>
2022	3,215,343	12,716,480	15,981,823

Projected System Energy Received (MWh)

2023			16,941,000
2024			18,300,000
2025			18,300,000
2026			18,300,000
2027			18,300,000

3

4 b.

Transmission System Energy Delivered at Interconnections  
(MWh)

	<u>Total</u>
2022	7,195,989

Projected System Energy Delivered at Interconnection  
(MWh)

2023	6,235,000
2024	5,000,000
2025	5,000,000
2026	5,000,000
2027	5,000,000

5

**BIG RIVERS ELECTRIC CORPORATION**

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A REVIEW OF THE ADEQUACY OF KENTUCKY'S GENERATION  
CAPACITY AND TRANSMISSION SYSTEM**

**Response to Commission Staff's Information Request  
as set forth in  
Appendix G of the Commission's Order dated December 20, 2001**

**February 28, 2023**

1 c.

Transmission Peak Capacity (MW)

2022 2,903

Projected Transmission Peak Capacity (MW)

2023 2,903

2024 2,903

2025 2,903

2026 2,903

2027 2,903

2

3 d.

Transmission System Peak Demand (MW)

	<u>Winter</u>	<u>Summer</u>
2022	1,342	1,425

Projected System Peak Demand (MW)

	<u>Winter</u>	<u>Summer</u>
2023	1,308	1,713
2024	1,692	1,715
2025	1,694	1,717
2026	1,696	1,719
2027	1,696	1,719

4

5 Respondent) Jeffrey K. Fulkerson

**BIG RIVERS ELECTRIC CORPORATION**

**SUPPLEMENTAL INFORMATION PROVIDED WITH  
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT  
PURSUANT TO ADMINISTRATIVE CASE NO. 2000-00387 –  
A REVIEW OF THE ADEQUACY OF KENTUCKY'S GENERATION  
CAPACITY AND TRANSMISSION SYSTEM**

**Response to Commission Staff's Information Request  
as set forth in  
Appendix G of the Commission's Order dated December 20, 2001**

**February 28, 2023**

1 **Item 14)** *Identify all planned transmission capacity additions for the next*  
2 *ten years. Include the expected in-service date, size and site for all planned*  
3 *additions and identify the transmission need each addition is intended to*  
4 *address.*

5

6 **Response)** A confidential listing of Big Rivers' planned Transmission Capacity  
7 Additions for 2023 through 2032 is being filed with a Motion for Confidential  
8 Treatment.

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11 **Respondent)** Jeffrey K. Fulkerson

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In the Matter of:

ELECTRONIC REVIEW OF THE ADEQUACY OF ) Administrative  
KENTUCKY'S GENERATION CAPACITY AND ) Case No.  
TRANSMISSION SYSTEM ) 2000-00387

SUPPLEMENTAL INFORMATION PROVIDED WITH  
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT  
PURSUANT TO ADMINISTRATIVE CASE NO. 2000-00387

## **CONFIDENTIAL RESPONSE**

Attachment to Item 14 of the  
Commission Staff's Information Request  
as set forth in Appendix G of the  
Commission's Order dated December 20, 2001  
FILED: February 28, 2023

**INFORMATION SUBMITTED WITH  
MOTION FOR CONFIDENTIAL TREATMENT**

**BIG RIVERS ELECTRIC CORPORATION**

**SUPPLEMENTAL INFORMATION PROVIDED WITH  
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT  
PURSUANT TO ADMINISTRATIVE CASE NO. 2000-00387 –  
A REVIEW OF THE ADEQUACY OF KENTUCKY'S GENERATION  
CAPACITY AND TRANSMISSION SYSTEM**

**Response to Commission Staff's Information Request  
as set forth in  
Appendix G of the Commission's Order dated December 20, 2001**

**March 1, 2021**

1 **Supplemental Item 1)** *Provide a detailed discussion of the consideration*  
2 *given to price elasticity in the forecasted demand, energy, and reserve margin*  
3 *information above.*

4

5 **Response)** The information originally requested by letter dated May 13, 2013, in  
6 Admin. Case 387 is no longer required pursuant to Ordering Paragraph No. 2 of the  
7 Commission's Order dated April 8, 2022, relieving the parties from the annual price  
8 elasticity reporting requirement.

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11 **Respondent)** Marlene S. Parsley

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