

**ORIGINAL**



**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY**

**In the Matters of:**

<b>ELECTRONIC REVIEW OF THE ADEQUACY</b>	<b>)</b>	<b>Administrative</b>
<b>OF KENTUCKY'S GENERATION CAPACITY</b>	<b>)</b>	<b>Case No.</b>
<b>AND TRANSMISSION SYSTEM</b>	<b>)</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, 2022**

**ORIGINAL**

**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, 2022**

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

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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 2021. Native load is comprised of the rural  
9 and industrial load of Big Rivers' Members. Big Rivers sells its power into the  
10 Midcontinent Independent System Operator, Inc. ("MISO") market and, therefore,  
11 the off-system sales cannot be weather normalized. Off-system demand is comprised  
12 of three components: (i) forward bilateral sales which are characterized as firm, (ii)  
13 sales to Nebraska customers which are served in the SPP market and can be  
14 characterized as firm, and (iii) off-system sales due to generation clearing in the  
15 MISO market which is in excess of Big Rivers' load and are a result of Big Rivers'  
16 compliance with its MISO tariff obligations.

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1

2 **Respondent)**      Marlene S. Parsley

3

**Big Rivers Electric Corporation  
Administrative Case No. 2000-00387**

**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		Off-System Sales			
		All Firm Peak Demand		Off-System Demand			
		Actual	Weather Normalized	Firm <sup>2</sup>	Generator Sales in MISO <sup>3</sup>	Sales in SPP <sup>4</sup>	Non-Firm
Jan-21	01/29/21	524	566	389	0	29	0
Feb-21	02/19/21	596	557	371	234	45	0
Mar-21	03/02/21	462	494	235	0	40	0
Apr-21	04/01/21	414	381	358	0	39	0
May-21	05/24/21	473	467	316	284	27	0
Jun-21	06/29/21	568	559	360	145	54	0
Jul-21	07/26/21	581	598	454	0	49	0
Aug-21	08/12/21	601	609	464	54	44	0
Sep-21	09/13/21	529	542	485	45	42	0
Oct-21	10/10/21	444	454	402	320	36	0
Nov-21 <sup>5</sup>	11/23/21	475	464	362	116	34	0
Dec-21 <sup>5</sup>	12/20/21	464	512	468	368	33	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 with the monthly  
6 weather normalized native load demand for 2021.

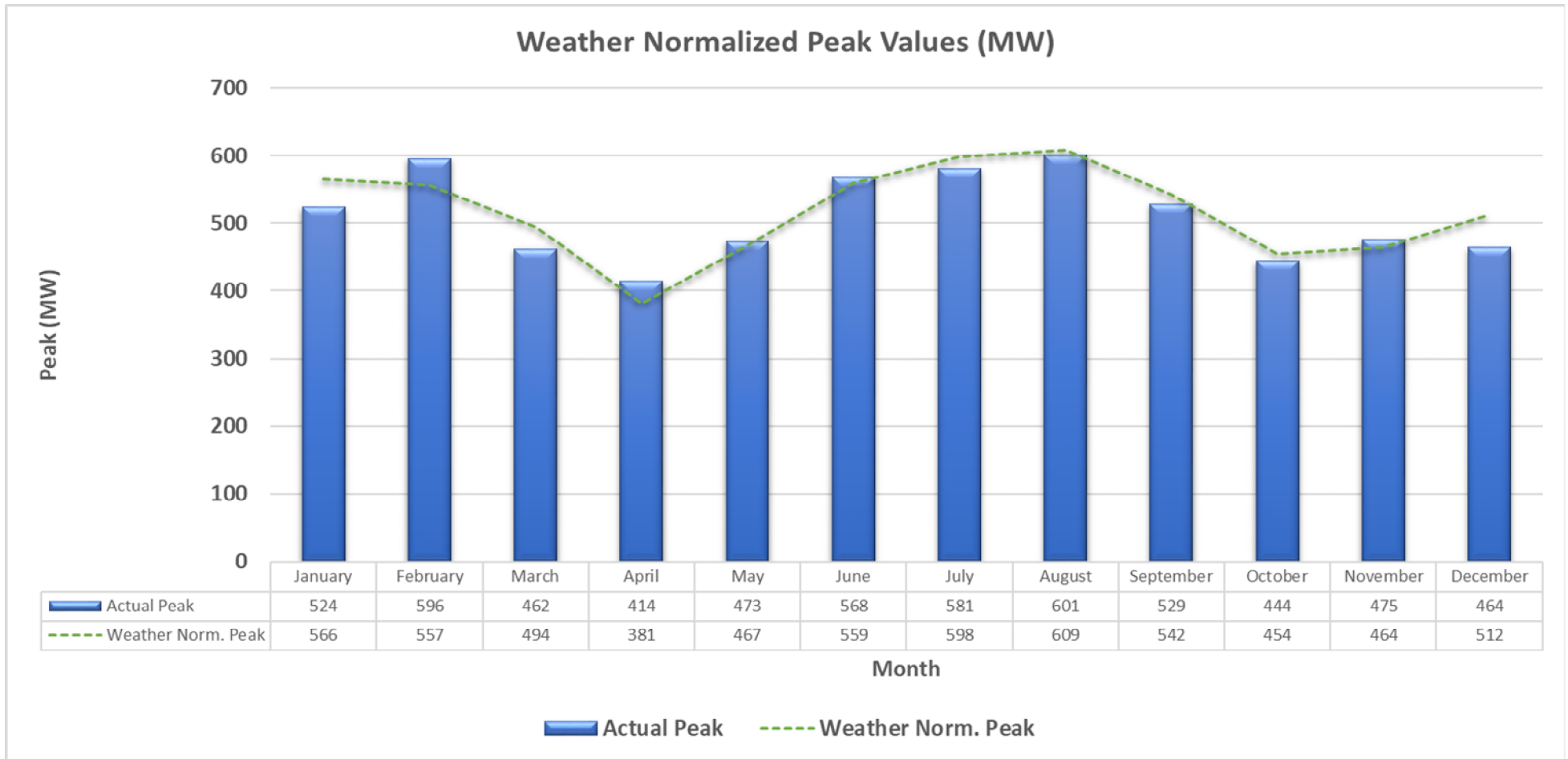
7

8

9 **Respondent)**      Marlene S. Parsley

10

**Big Rivers Electric Corporation**  
**Administrative Case No. 2000-00387**  
**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

10 **Response)** The information originally requested in the above item of Appendix G of  
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,  
13 amending the December 2001 Order in Admin. Case 387.

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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)
2022 *	596	3,472,112	847	3,948,962	321	0	321	0
2023 *	848	4,590,177	968	5,036,786	120	0	120	0
2024	850	4,793,831	970	5,175,200	205	0	205	0
2025	852	4,796,484	971	5,177,943	255	0	255	0
2026	853	4,806,371	972	5,187,086	255	0	255	0

**Notes and Assumptions**

Native Base Case:

Demand and Energy include Native Load without Transmission Losses - Note new Industrial load beginning 2022 and 2023\*

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 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

Native High Case:

Native High case represents the Extreme Weather Scenario from 2020 Long Term Load Forecast adjusted for changes in new Industrial load

Native High case Off-System Firm Demand (MW) same as Base Case

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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)** The current target reserve margin used for planning purposes is 17.9%  
6 based on Installed Capacity Ratings of resources, and 8.7% based on Unforced  
7 Capacity Ratings, as specified by MISO for the upcoming planning year effective June  
8 1, 2022. MISO annually determines a minimum Planning Reserve Margin (“PRM”)  
9 that would result in the MISO system experiencing a less than one-day loss-of-load  
10 event every 10 years per the MISO Tariff. That margin changes over time, and is  
11 shown in the Table 5-4 reproduced below, which is from the MISO 2022–2023 Loss of  
12 Load Expectation Study Report. That study includes details of how that margin is  
13 derived and used and is available at the following link:

14

15 <https://cdn.misoenergy.org/PY%202022-23%20LOLE%20Study%20Report601325.pdf>

16

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1

**Table 5-4: Future Planning Year MISO System Planning Reserve Margins <sup>1</sup>**

<b>Metric</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>
<b>ICAP (GW)</b>	154.4	156.2	158.5	161.8	162.6	163.2	163.2	163.2	163.2	163.2
<b>Demand (GW)</b>	122.1	123.3	124.6	125.8	125.8	124.0	125.5	125.9	126.4	126.8
<b>PRM<sub>ICAP</sub></b>	<u>17.9%</u>	17.4%	17.0%	<u>16.5%</u>	16.8%	<u>17.0%</u>	16.5%	16.3%	16.1%	15.9%
<b>PRM<sub>UCAP</sub></b>	<u>8.7%</u>	8.3%	7.8%	<u>7.4%</u>	7.5%	<u>7.5%</u>	7.0%	6.8%	6.5%	6.3%

2

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4 **Respondent)** Marlene S. Parsley

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<sup>1</sup> Years without underlined results indicate PRM values that were calculated through interpolation.

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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 unforced capacity of available resources minus Base Demand and net  
9 Firm Capacity Sales. The unforced capacity of Green Unit 1 and Green Unit 2 are  
10 slightly lower beginning in 2022 due to their conversion from coal to natural gas.<sup>2</sup>  
11 This projection includes new industrial load beginning in 2022 and 2023. The  
12 purchase of 260 MW of solar capacity and energy is included as a portion of available  
13 unforced capacity. Big Rivers will make bilateral capacity purchases or participate

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<sup>2</sup> See *In the Matter of: Electronic Application of Big Rivers Electric Corporation for a Certificate of Public Convenience and Necessity Authorizing the Conversion of the Green Station Units to Natural Gas-Fired Units and an Order Approving the Establishment of a Regulatory Asset*, Case No. 2021-00079 Application filed March 1, 2021; Final Order issued June 11, 2021.

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1 in the annual MISO Planning Resource Auction to alleviate any shortages and will  
2 meet the MISO Planning Reserve Margin Requirements including transmission  
3 losses. Big Rivers is not projecting any deficits.

4

**Table 1**

<b>Year</b>	<b>Reserve Margin (UCAP MW)</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>
<b>2022</b>	91	15 %	11.1 %	178		0
<b>2023</b>	40	5 %	10.7 %	178		0
<b>2024</b>	23	3 %	10.2 %	178		0
<b>2025</b>	-35	-4 %	9.8 %	178		0
<b>2026</b>	-41	-5 %	9.9 %	178		0

5

<sup>3</sup> MISO reserve margin Requirement includes transmission Losses.

<sup>4</sup> Southeastern Power Administration ("SEPA") Cumberland Hydropower allocation at full 178 MW capacity.

<sup>5</sup>

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1

2

3 **Respondent)** Marlene S. Parsley

4



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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  
10 Ordering Paragraph No. 5 of the Commission's Order dated March 29, 2004,  
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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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9

10 **Respondent)** Ronald D. Gregory

11

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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 2022 through 2026 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.

11

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1     **Wilson Unit 1**

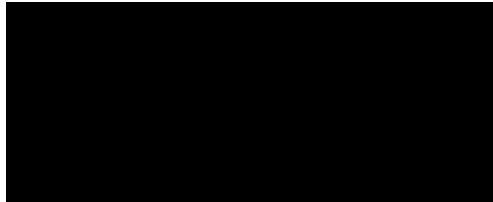
2022  
2023  
2024  
2025  
2026



2

3     **Green Unit 1**

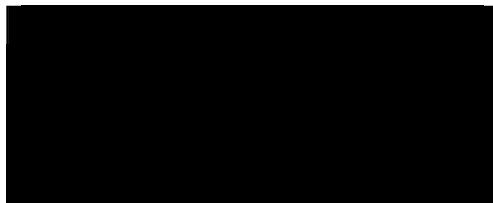
2022  
2023  
2024  
2025  
2026



4

5     **Green Unit 2**

2022  
2023  
2024  
2025  
2026



6

7

8   **Respondent)**     Ronald D. Gregory

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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)** Consistent with Big Rivers' 2020 Integrated Resource Plan ("2020 IRP")  
8 filed in September, 2020, Big Rivers' optimal (least cost) plan is for Big Rivers to (i)  
9 add three solar PPAs totaling 260 MWs of new solar capacity, (ii) add 90 MWs of a  
10 new 592 MW natural gas combined cycle unit located at Sebree (NGCC – Sebree) in  
11 2024, and (iii) idle both the Green coal units. Big Rivers' least cost plan keeps its  
12 Wilson unit as a coal-fired station, keeps its Reid CT available as a natural gas  
13 peaking unit, and stays in its contract with SEPA. Because the NGCC alternative is  
14 dependent upon participation by other counterparties, one of Big Rivers' sensitivity  
15 analyses assumed the NGCC unit was not available as a resource option. Big Rivers'  
16 subsequent analysis yielded a plan, approved by the Commission in Case No. 2021-

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1 00079,<sup>6</sup> to convert Green Unit 1 and Green Unit 2 to natural gas until such time that  
2 counterparties for the construction of the NGCC can be secured. The conversions of  
3 Green Unit 1 and Unit 2 from coal to natural gas are scheduled for Spring, 2022. The  
4 aforementioned three solar projects are currently in the DPP–2020<sup>7</sup> cycle of MISO  
5 Interconnection studies.

6 Consistent with Case No. 2021-00079 cited above, Big Rivers anticipates no  
7 base load or peaking capacity additions to meet native load requirements before 2029.  
8 When plans are secured for construction of a nominally 600 MW Natural Gas  
9 Combined Cycle unit described in the 2020 IRP optimal (least cost) plan, Big Rivers  
10 will file an application for a Certificate of Public Convenience and Necessity with the  
11 Commission.

12

13 **Respondent)** Marlene S. Parsley

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<sup>6</sup> See *In the Matter of: Electronic Application of Big Rivers Electric Corporation for a Certificate of Public Convenience and Necessity Authorizing the Conversion of the Green Station Units to Natural Gas-Fired Units and an Order Approving the Establishment of a Regulatory Asset*, Case No. 2021-00079 Application filed March 1, 2021; Final Order issued June 11, 2021.

<sup>7</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, 2022**

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

**BIG RIVERS ELECTRIC CORPORATION**

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**February 28, 2022**

1 **Response)**

2 a.

Transmission System Energy Received (MWh)

	<u>Generation</u>	<u>Interconnections</u>	<u>Total</u>
2021	5,443,780	11,056,643	16,500,423

Projected System Energy Received (MWh)

2022			16,570,000
2023			17,170,000
2024			17,170,000
2025			17,170,000
2026			17,170,000

3

4 b.

Transmission System Energy Delivered at Interconnections  
(MWh)

	<u>Total</u>
2021	7,808,188

Projected System Energy Delivered at Interconnection  
(MWh)

2022	6,000,000
2023	6,000,000
2024	6,000,000
2025	6,000,000
2026	6,000,000

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, 2022**

1 c.

Transmission Peak Capacity (MW)

2021 2,903

Projected Transmission Peak Capacity (MW)

2022 2,903

2023 2,903

2024 2,903

2025 2,903

2026 2,903

2

3 d.

Transmission System Peak Demand (MW)

	<u>Winter</u>	<u>Summer</u>
2021	1,396	1,409

Projected System Peak Demand (MW)

	<u>Winter</u>	<u>Summer</u>
2022	1,417	1,417
2023	1,684	1,682
2024	1,688	1,685
2025	1,689	1,686
2026	1,691	1,688

4

5 Respondent) Timothy J. Tapp

**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, 2022**

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 2022 through 2031 is being filed with a Motion for Confidential  
8 Treatment.

9

10

11 **Respondent)** Timothy J. Tapp

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In the Matter of:

A REVIEW OF THE ADEQUACY OF	)	Administrative
KENTUCKY'S GENERATION CAPACITY	)	Case No.
AND 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, 2022

**INFORMATION FILED 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)** This supplemental information, originally requested pursuant to a May  
6 31, 2013, letter request from Commission Staff, is no longer required pursuant to a  
7 January 13, 2017, letter from the Commission's Executive Director.

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10 **Respondent)** Marlene S. Parsley

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