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February 29, 2016

Via Federal Express

Mr. Jeff D. Cline
Executive Director
Public Service Commission
211 Sower Boulevard, P.O. Box 615
Frankfort, Kentucky 40602-0615

Re: Big Rivers Electric Corporation's Annual Financial
and Statistical Report Pursuant to Administrative
Case No. 387

Dear Mr. Cline:

Enclosed for filing are Big Rivers Electric Corporation's supplemental information to its annual financial and statistical report required by the Public Service Commission's orders in Administrative Case No. 387, and an original and ten (10) copies of a petition for confidential treatment. Please call if you have any questions.

Sincerely,



Tyson Kamuf
Counsel for Big Rivers Electric Corporation

TAK/lm
Enclosures

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MAR 01 2016

PUBLIC SERVICE
COMMISSION

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MAR 01 2016

PUBLIC SERVICE
COMMISSION

Your Touchstone Energy® Cooperative 

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

In the Matters of:

A REVIEW OF THE ADEQUACY OF)	Administrative
KENTUCKY'S GENERATION CAPACITY)	Case No.
AND TRANSMISSION SYSTEM)	387

SUPPLEMENTAL INFORMATION PROVIDED WITH
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT
PURSUANT TO ADMINISTRATIVE CASE NO. 387

FILED: March 1, 2016

ORIGINAL

BIG RIVERS ELECTRIC CORPORATION

**SUPPLEMENTAL INFORMATION PROVIDED WITH
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PURSUANT TO ADMINISTRATIVE CASE NO. 387 –
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, 2016

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*
4 *disaggregated into full requirements sales, firm capacity sales, and non-*
5 *firm or economy energy sales. Off-system sales should be further*
6 *disaggregated to identify separately all sales where the utility acts as a*
7 *reseller, or transporter, in a power transaction between two or more other*
8 *parties.*

9

10 **Response)** The information originally requested in the above item of Appendix G
11 of the Commission's Order dated December 20, 2001, in Administrative Case No.
12 387, ("the December 2001 Order in Admin. Case 387") is no longer required
13 pursuant to Ordering Paragraph No. 5 of the Commission's Order dated March 29,
14 2004, amending the December 2001 Order in Admin Case 387.

15

16

17 **Respondent)** Marlene S. Parsley

18

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**Response to Commission Staff's Information Request
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March 1, 2016

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
8 of 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

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13 **Respondent)** Marlene S. Parsley

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March 1, 2016

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

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

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

7

8 **Response)** Table 3-G shows the actual and weather normalized native load
9 demand and the off-system coincident demand for 2015. Native load is comprised
10 of the rural and industrial load of Big Rivers' Members. Some items of note
11 include that the peak hours in February and March occurred on days where
12 average temperatures were over 16 degrees below normal average, and
13 conversely, Big Rivers' peak day in December was 12 degrees above normal. Big
14 Rivers sells its power into the Midcontinent Independent System Operator, Inc.
15 ("MISO") market and therefore the off-system sales cannot be weather
16 normalized. Off-system demand is comprised of two components: forward
17 bilateral sales which are characterized as firm, and off-system sales due to
18 generation clearing in the MISO market which is in excess of Big Rivers' load.
19 These sales are not "non-firm," rather are a result of Big Rivers' compliance with
20 MISO tariff obligations.

21

22

23 **Respondent)** Marlene S. Parsley

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 ¹ (MW)

Month	Peak Date	Native Load		Off-System Sales		
		All Firm Peak Demand		Off-System Demand		
		Actual	Weather Normalized	Firm	Sales to MISO ²	Non-Firm
Jan-15	01/08/15	688	683	400	94	0
Feb-15	02/19/15	673	579	500	15	0
Mar-15	03/06/15	609	501	300	257	0
Apr-15	04/09/15	398	398	300	114	0
May-15	05/29/15	472	511	300	159	0
Jun-15	06/15/15	575	567	300	330	0
Jul-15	07/29/15	642	660	300	0	0
Aug-15	08/03/15	606	622	300	0	0
Sep-15	09/04/15	581	551	300	101	0
Oct-15	10/07/15	476	514	300	0	0
Nov-15	11/23/15	477	519	300	231	0
Dec-15	12/04/15	494	575	300	0	0

Notes -

- 1.- Without Transmission Losses
- 2.- Sales to MISO at generator nodes

Administrative Case No. 387

Respondent: Marlene S. Parsley

Attachment for Response to Appendix G Item 3

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March 1, 2016

1 **Item 4)** *Load shape curves that show actual peak demands and*
2 *weather-normalized peak demands (native load demand and total*
3 *demand) on a 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 2015.

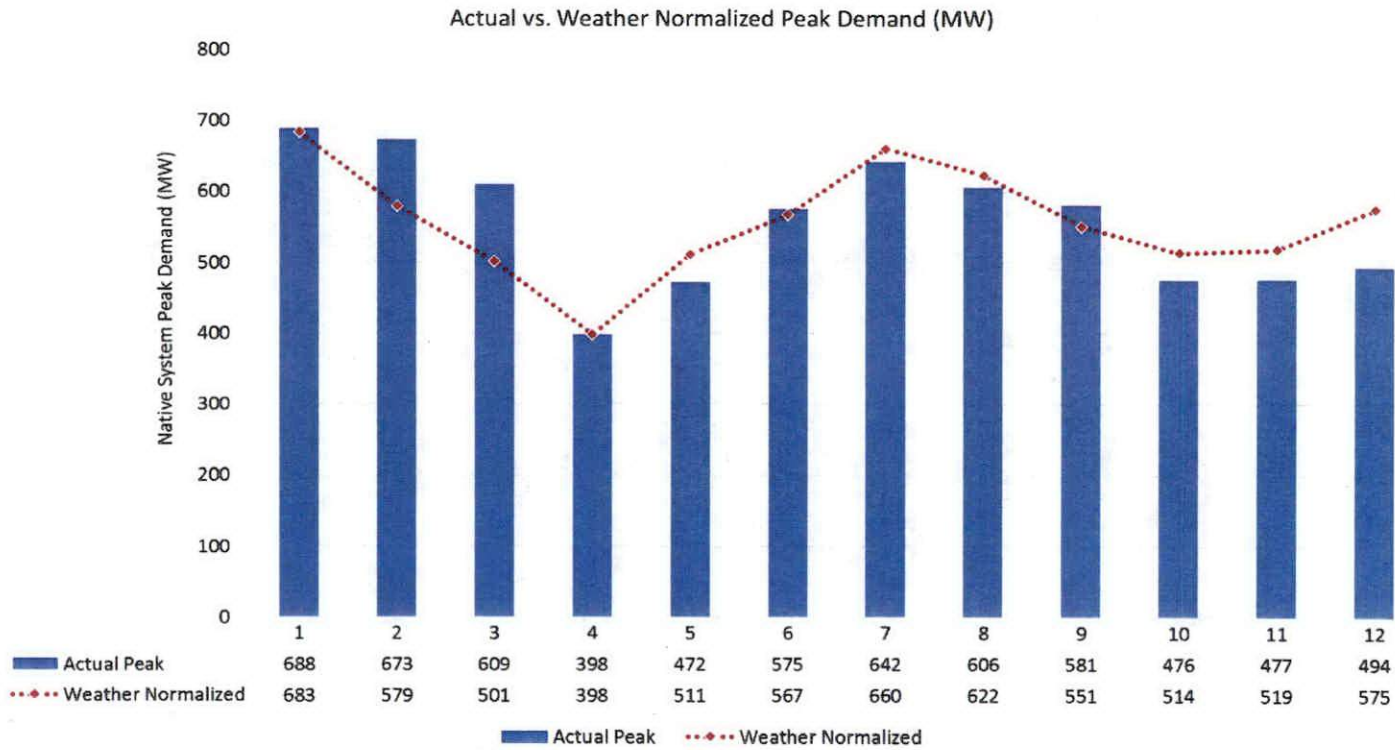
7

8

9 **Respondent)** Marlene S. Parsley

10

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



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March 1, 2016

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

3

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

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

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

10

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

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March 1, 2016

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

5

6

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

7

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

8

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

11

12

13 **Respondent)** Marlene S. Parsley

14

**Big Rivers Electric Corporation
Administrative Case No. 387
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)
2016	667	3,412,508	758	3,663,522	0	0	0	0
2017	675	3,452,338	772	3,739,188	0	0	0	0
2018	677	3,469,428	825	4,108,686	64	0	14	0
2019	679	3,485,697	928	4,806,515	186	0	32	0
2020	681	3,496,263	1,030	5,495,320	291	0	36	0

Notes and Assumptions -

1. - Demand and Energy without Transmission Losses

2. - Native Base Case:

Except for internal load growth, replacement of load previously consumed by the smelters and included in Big Rivers' business case is projected as firm off-system sales.

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

3. - Native High Case:

High case represents the optimistic economy scenario for energy, and Extreme Winter Weather Scenario for Demand.

Except for pending Firm sale to Nebraska, replacement of load previously consumed by the smelters and included in Big Rivers' business case is assumed to be sold entirely within Big Rivers' territory, in addition to high growth of existing load.

4. - Base Case Firm Demand includes Nebraska (NeNPPD, Wayne, Wakefield) and other non-native sales in business plan

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Respondent: Marlene S. Parsley

Attachment for Response to Appendix G Item 6

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March 1, 2016

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

4
5 **Response)** The current target reserve margin used for planning purposes is
6 15.2% based on Installed Capacity Ratings of resources as specified by MISO for
7 the upcoming planning year effective June 1, 2016. MISO annually determines a
8 minimum planning reserve margin that would result in the MISO system
9 experiencing a less than one-day loss of load event every 10 years per the MISO
10 Tariff. That margin changes over time, and is shown in the table reproduced
11 below, which is from the MISO 2016 Loss of Load Expectation Study. That study
12 includes details of how that margin is derived and used and is available at the
13 following link:

14
15 [https://www.misoenergy.org/PLANNING/RESOURCEADEQUACY/Pages/
16 ResourceAdequacyStudies.aspx](https://www.misoenergy.org/PLANNING/RESOURCEADEQUACY/Pages/ResourceAdequacyStudies.aspx)

17
18 **Table 5.3-1: Future Planning Year MISO System Planning Reserve Margins**

Metric	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
PRM _{ICAP}	<u>15.2%</u>	15.1%	15.0%	14.9%	<u>14.8%</u>	14.8%	14.7%	14.7%	14.6%	<u>14.6%</u>
PRM _{UCAP}	<u>7.6%</u>	7.5%	7.4%	7.4%	<u>7.3%</u>	7.3%	7.3%	7.3%	7.2%	<u>7.2%</u>

18

19

20 **Respondent)** Marlene S. Parsley

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March 1, 2016

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*
4 *each year identify the level of firm capacity purchases projected to meet*
5 *native load demand.*

6

7 **Response)** As shown in Table 1 below, Big Rivers is not projecting any deficits.

8

Table 1

<u>Year</u>	<u>Reserve Margin (MW)</u>	<u>Reserve Margin (%)</u>	<u>Firm Capacity Purchases (MW)</u>	<u>Projected Deficit</u>
2016	649	83%	154 *	0
2017	636	80%	154 *	0
2018	560	64%	154 *	0
2019	532	53%	178 *	0
2020	410	36%	178 *	0

9

10 * Southeastern Power Administration ("SEPA") is at reduced capacity
11 until late in 2018, and scheduled to resume full capacity in 2019 and
12 beyond following its expected return from Force Majeure status.
13 Coleman Station is excluded from reserve margin calculations since it
14 was idled in May 2014. Reid Station Unit 1 is excluded from reserve
15 margin calculation for years 2016-2018 due to its planned idling in

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1 April 2016 as noted in Big Rivers' response to Item 11. Big Rivers also
2 filed this information in its Attachment Y notification to MISO.

3

4

5 **Respondent)** Marlene S. Parsley

6

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March 1, 2016

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

8

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

13

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15 **Respondent)** Marlene S. Parsley

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March 1, 2016

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
5 of 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,
7 amending the December 2001 Order in Admin Case 387.

8

9

10 **Respondent)** Lawrence V. Baronowsky

11

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March 1, 2016

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)** There are no retirements of generating capacity anticipated through
5 2020 at this time. Coleman Units 1 – 3 were idled in May 2014, due to the
6 Century Aluminum power sales contract terminations and cessation of the MISO
7 System Support Resource ("SSR") agreement applicable to the Coleman units.
8 Due to economic reasons, Big Rivers has delayed plans to convert its Reid Unit 1
9 boiler to burn natural gas. Without the gas conversion, Reid Unit 1 is not
10 compliant with the Mercury and Air Toxics Standards. Consequently, Big Rivers
11 plans to temporarily idle Reid Unit 1 in April 2016.

12 The planned maintenance outage schedule for 2016 through 2020 is
13 being provided pursuant to a petition for confidential treatment. The schedule is
14 regularly modified based on actual operating conditions, forced outages, changes
15 in the schedule required to meet environmental regulation compliance, fluctuation
16 in wholesale capacity and energy prices, and other unforeseen events that may
17 affect unit reliability or generation capacity. The scheduled outages for all units
18 are listed below:

19
20

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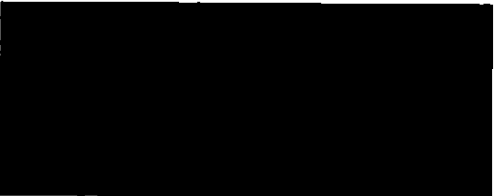
March 1, 2016

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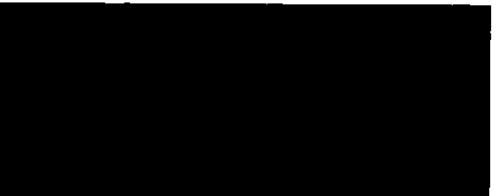
Wilson Unit 1

2016	
2017	
2018	
2019	
2020	

Green Unit 1

2016	
2017	
2018	
2019	
2020	

Green Unit 2

2016	
2017	
2018	
2019	
2020	

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March 1, 2016

1

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HMP&L Unit 1

2016
2017
2018
2019
2020



3

4

HMP&L Unit 2

2016
2017
2018
2019
2020



5

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7

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March 1, 2016

1

2

Coleman Unit 1

2016
2017
2018
2019
2020



3

4

Coleman Unit 2

2016
2017
2018
2019
2020



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6

Coleman Unit 3

2016
2017
2018
2019
2020



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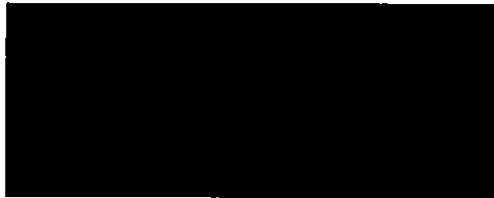
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March 1, 2016

1
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Reid Unit 1

2016
2017
2018
2019
2020



Reid Combustion Turbine

2016
2017
2018
2019
2020



Respondent) Lawrence V. Baronowsky

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

6

7 **Response)** Big Rivers presently has no plans to make base load or peaking
8 capacity additions to meet native load requirements for the years 2016 through
9 2026.

10

11

12 **Respondent)** Marlene S. Parsley

13

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March 1, 2016

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

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

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

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

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

12

13 **Response)**

14

a.

Transmission System Energy Received (MWh)

	<u>Generation</u>	<u>Interconnections</u>	<u>Total</u>
2015	7,249,534	10,765,821	18,015,355

Projected System Energy Received (MWh)

2016			17,000,000
2017			19,000,000
2018			19,000,000
2019			19,000,000
2020			19,000,000

15

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1

b.

**Transmission System Energy Delivered at Interconnections
(MWh)**

	<u>Total</u>
2015	7,243,848

**Projected System Energy Delivered at Interconnection
(MWh)**

2016	7,200,000
2017	7,200,000
2018	7,289,000
2019	7,412,000
2020	7,443,000

2

3

c.

Transmission Peak Capacity (MW)
2015 2,903

Projected Transmission Peak Capacity (MW)

2016	2,903
2017	2,903
2018	2,903
2019	2,903
2020	2,903

4

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BIG RIVERS ELECTRIC CORPORATION

**SUPPLEMENTAL INFORMATION PROVIDED WITH
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT
PURSUANT TO ADMINISTRATIVE CASE NO. 387 -
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, 2016

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	<u>Transmission System Peak Demand (MW)</u>	
	<u>Winter</u>	<u>Summer</u>
2015	1,701	1,597

	<u>Projected System Peak Demand (MW)</u>	
	<u>Winter</u>	<u>Summer</u>
2016	1,327	1,357
2017	1,612	1,636
2018	1,615	1,639
2019	1,617	1,641
2020	1,620	1,644

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Respondent) Christopher S. Bradley

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

5

6 **Response)** A CONFIDENTIAL listing of Big Rivers' planned Transmission
7 Capacity Additions for 2016 through 2025 is being submitted with a Petition for
8 Confidential Treatment.

9

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11 **Respondent)** Christopher S. Bradley

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In the Matter of:

A REVIEW OF THE ADEQUACY OF)	Administrative
KENTUCKY'S GENERATION CAPACITY)	Case No.
AND TRANSMISSION SYSTEM)	387

SUPPLEMENTAL INFORMATION PROVIDED WITH
BIG RIVERS' ANNUAL FINANCIAL AND STATISTICAL REPORT
PURSUANT TO ADMINISTRATIVE CASE NO. 387

CONFIDENTIAL RESPONSE

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: March 1, 2016

INFORMATION SUBMITTED UNDER PETITION
FOR CONFIDENTIAL TREATMENT

BIG RIVERS ELECTRIC CORPORATION

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

4
5 **Response) Big Rivers works with and relies on GDS Associates ("GDS") in**
6 **developing a formal load forecast every two years. Big Rivers' most recent load**
7 **forecast was performed in 2015 and includes the impacts of retail prices on rural**
8 **energy consumption and peak demand. The forecast reflects an increase in the**
9 **nominal price of retail electricity to rural system customers. Retail price**
10 **projections were developed for each Member and are represented in the**
11 **forecasting models as the quotient of annual revenue and annual kWh, by**
12 **customer class. Projected retail prices reflect changes in Big Rivers' wholesale**
13 **power cost to Members and changes in distribution system related costs at the**
14 **Member level. For residential customers, the elasticity of energy consumption**
15 **with respect to price is -0.19 and was derived using the regression models for each**
16 **Member cooperative. The forecast reflects no direct decreases in energy sales and**
17 **peak demand for the small and large commercial classes resulting from price**
18 **increases expected over the near term. The impact of real retail price on peak**
19 **demand was assumed at half of the impact measured for energy sales.**

20 **The impact of price on Big Rivers' reserve margin is consistent with**
21 **the price impact on peak demand. As price elasticity impacts demand, this would**
22 **flow through the calculation and impact the resulting reserve margin.**

23

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2 **Respondent)** Marlene S. Parsley

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