



**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY**

**In the Matter of:**

**ELECTRONIC TARIFF FILING OF BIG )  
RIVERS ELECTRIC CORPORATION )  
FOR APPROVAL OF PROPOSED )  
CHANGES TO ITS QUALIFIED )  
COGENERATION AND SMALL POWER )  
PRODUCTION FACILITIES TARIFFS )**

**Case No.  
2023-00102**

**Response to the Commission Staff's  
Second Request for Information**

**dated May 12, 2023**

**FILED: May 26, 2023**

**BIG RIVERS ELECTRIC CORPORATION**

**ELECTRONIC TARIFF FILING OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF PROPOSED CHANGES TO ITS QUALIFIED COGENERATION AND SMALL POWER PRODUCTION FACILITIES TARIFFS**

**CASE NO. 2023-00102**

**VERIFICATION**

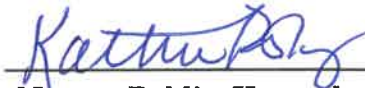
I, Ronald R. Repsher, verify, state, and affirm that the data request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



\_\_\_\_\_  
Ronald R. Repsher

COMMONWEALTH OF KENTUCKY )  
COUNTY OF DAVIESS )

24<sup>th</sup> SUBSCRIBED AND SWORN TO before me by Ronald R. Repsher on this the  
day of May, 2023.



\_\_\_\_\_  
Notary Public, Kentucky State at Large

Kentucky ID Number

KYNP16841

My Commission Expires

October 31, 2024

**BIG RIVERS ELECTRIC CORPORATION**

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**VERIFICATION**

I, John Wolfram, verify, state, and affirm that the data request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

\_\_\_\_\_  
John Wolfram *John Wolfram*

COMMONWEALTH OF KENTUCKY )  
COUNTY OF JEFFERSON )

SUBSCRIBED AND SWORN TO before me by John Wolfram on this the 17<sup>th</sup> day of May, 2023.

*Corey Scott Jones*  
\_\_\_\_\_  
~~Corey Scott Jones~~

**COREY SCOTT JONES**  
Notary Public - State at Large  
Kentucky  
My Commission Expires Apr. 08, 2026  
Notary ID KYNP48750

Notary Public, Kentucky State at Large  
Kentucky ID Number KYNP48750  
My Commission Expires 04/08/2026



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1 **Item 1)**      *Refer to BREC's response to Commission Staff's First Request for*  
2 *Information (Staff's First Request), Item 1, page 3, footnote 1. Explain the*  
3 *reasons the Kentucky National Guard (KYNG) did not want to sell the*  
4 *capacity from its qualifying facility (QF) to BREC and, to the extent known*  
5 *by BREC, how KYNG plans to sell the QF capacity.*

6

7 **Response)** Big Rivers is unaware of the reasons the KYNG chose not to sell the  
8 capacity from its QF to Big Rivers or whether the KYNG plans to sell its QF capacity  
9 elsewhere.

10

11 **Witness)**      Ronald R. Repsher

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1 **Item 2)**      *Refer to BREC's response to Staff's First Request, Item 2, page 1,*  
2 *lines 6–10.*

3      *a. State when the referenced study will be completed and explain*  
4 *what additional generation BREC is evaluating when determining*  
5 *future capacity needs.*

6      *b. State whether BREC has entered the Midcontinent Independent*  
7 *System Operator (MISO) queue to build any additional generation.*

8

9 **Response)**

10      a. Big Rivers expects to complete the study by September 2023. Additional  
11 generation that Big Rivers is currently evaluating includes natural gas combined  
12 cycle units, natural gas simple cycle units, solar, solar plus storage, and stand- alone  
13 storage.

14      b. Big Rivers submitted a natural gas combined cycle unit into MISO's  
15 generation interconnection queue for the DPP-2022 cycle.

16

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1 **Witness)** Ronald R. Repsher

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1 **Item 3)**      *Explain whether a utility is required to build generation or*  
2 *could withdraw its request if that utility that has been approved by MISO to*  
3 *build additional generation.*

4

5 **Response)** Submitting a new generator into the MISO generation interconnection  
6 queue does not result in a firm obligation to build the generation. The interconnection  
7 request can be withdrawn throughout the process and/or after approval by MISO.

8

9

10 **Witness)**      Ronald R. Repsher

11

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1 **Item 4)**      *Refer to BREC's response to Staff's First Request, Item 4, page 2,*  
2 *lines 9–14. Explain why Wilson had a lower avoided cost compared to*  
3 *BREC's other generation units.*

4

5 **Response)** Wilson's fuel cost, which can serve as a proxy for the avoided cost, is  
6 lower than the other units primarily because of lower delivered fuel cost. Wilson is a  
7 coal fired unit. The other units are natural gas fired units. Wilson's delivered cost of  
8 coal is much lower than the delivered cost of natural gas at the other units. Delivered  
9 cost takes into account not only the cost of the commodity, but also the cost of the  
10 various transportation charges, such as barging/trucking for coal and pipeline fees  
11 for natural gas.

12

13

14 **Witness)**      Ronald R. Repsher

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1 **Item 5)**      *Refer to BREC's response to Staff's First Request, Item 4, page 3,*  
2 *lines 7– 9.*

3      *a.      For the period April 2022 through May 2023, state which*  
4 *month(s) had the highest day ahead and real locational marginal*  
5 *price (LMP).*

6      *b.      Discuss the impact Winter Storm Elliot had on BREC's*  
7 *generation units as well as its capacity and energy purchases.*

8      *c.      Also refer to lines 4–6. Explain the circumstance where a*  
9 *generation unit would have a negative value LMP and explain*  
10 *BREC's evaluation process when considering purchasing energy in*  
11 *this scenario.*

12

13 **Response)**

14      *a.      The highest DA LMP was in June 2022. The highest RT LMP was in*  
15 *December 2022.*

16

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1           b.       Prior to the arrival of Winter Storm Elliott, Wilson station  
2                    experienced a motor failure on # 2 ID fan (12/19/2022 through  
3                    1/2/2023) which derated the capacity by over 200 MW's. During  
4                    Winter Storm Elliott, Wilson experienced wet/frozen coal issues that  
5                    ultimately tripped the unit offline on 12/22/2022 for 2.6 hours. Had # 2  
6                    ID fan been available and running when Winter Storm Elliott arrived  
7                    Wilson would have had the spare pulverizer online and the unit would  
8                    not have experienced the outage or a derate as the other 4 pulverizers  
9                    with all fans available would have compensated for the wet fuel  
10                  issues. The Reid CT experienced two starting failures (total of 8 hours)  
11                  during Winter Storm Elliott, both were mechanical part failures not  
12                  related to the cold weather event.

13                        Big Rivers' capacity and energy purchases were largely  
14                        unaffected by Winter Storm Elliot. MISO experienced tight operating  
15                        conditions, and market prices were elevated as a result.

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1           c.       Differences in LMPs across an RTO market footprint are a result of  
2                    congestion on the transmission system. Congestion occurs when the  
3                    transmission system infrastructure (wires, switches, transformers, etc.)  
4                    is operating at or near its physical limits. To prevent any transmission  
5                    elements from going over their maximum limit, adjustment to power  
6                    flow across the transmission system is often needed. Many RTO  
7                    markets run a security constrained economic dispatch (SCED) that  
8                    dispatches generation in a manner that honors all transmission limits.  
9                    The SCED model also calculates the LMPs at each node, incorporating  
10                  the impact of the congestion on the transmission system.

11                    LMPs can vary widely during times of high congestion: from large  
12                    positive values to large negative values. If a transmission constraint is  
13                    either being violated or in danger of being violated, negative LMPs can  
14                    result. If a negative LMP occurs at a generator node, that price signal  
15                    is incentivizing the generator to reduce or eliminate generation, because

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1 the generator's output is contributing to a transmission constraint being  
2 violated, or in danger of being violated.

3 Big Rivers' participation in MISO's energy market is optimized  
4 when our generators are following the MISO dispatch signals. During  
5 times of negative LMPs at generator nodes, MISO will likely provide an  
6 instruction to dispatch to a minimum value, and Big Rivers strives to  
7 follow this dispatch accordingly. Big Rivers' forecasted load is bid into  
8 the Day Ahead market. In the Real Time market, the actual load on the  
9 system occurs, which can be different from the forecasted load. The vast  
10 majority of Big Rivers' load is not responsive to price signals. Therefore,  
11 the periods of negative LMPs do not materially change the volume of Big  
12 Rivers' energy purchases from the MISO market.

13

14 **Witness)** Ronald R. Repsher

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1 **Item 6)**      *Refer to BREC's response to Staff's First Request, Item 5b, page*  
2 *3, lines 3–9. Explain whether BREC has discussed with its QF customers*  
3 *whether they would agree to undertake the obligations inherent in*  
4 *registering the QF's capacity with MISO and, if so, the results of those*  
5 *discussions.*

6

7 **Response)** Big Rivers has not had any discussions with its QF customers on  
8 whether they would agree to undertake the obligations inherent in registering the  
9 QF's capacity with MISO.

10

11

12 **Witness)**      Ronald R. Repsher

13

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1 Item 7) *Refer to BREC's response to Staff's First Request, Item 5c, PSC\_1-*  
2 *5\_(Attachment\_to\_Subpart\_c).*

3 a. *Refer to the Load Forecasting tab. Provide BREC's annual peak*  
4 *demand load forecast from 2023–2040.*

5 b. *Refer to the Generation tab. Provide the current retirement*  
6 *dates of BREC's current generation facilities and the generation*  
7 *resources total supply from 2023– 2040. Include in the response*  
8 *whether BREC has any intentions of changing the retirement dates.*

9  
10

11 **Response)**

12 a. See the attached Excel file on the Load Forecasting tab.

13 b. See the attached Excel file on the Generation tab. Pursuant to Big Rivers' most  
14 recent Depreciation Study, the Wilson station's estimated retirement date is  
15 2045 and the Reid-CT unit's retirement date is 2031. With the conversion of  
16 Green Station's units to burn natural gas, the depreciation schedule for the

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1 Green Station's units estimates their retirement in 2029.<sup>1</sup> The generation  
2 supply is reflected in the table. Big Rivers is performing a study to determine  
3 future changes to its portfolio, whether retirement of existing resources or the  
4 addition of new resources. The results of that study will guide future actions.

5

6

7 **Witness)** Ronald R. Repsher

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<sup>1</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*, P.S.C. Case No. 2021-00079, Order June 11, 2021 (Authorizing Big Rivers to depreciated the converted Green Station over seven years).

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**LOAD FORECAST**

Load Forecast (MW)	2023	2024	2025	2026	2027	2028	2029	2030	2031
Native Load - Annual Peak	887	909	911	912	918	919	920	921	922



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**LOAD FORECAST**

Load Forecast (MW)	2032	2033	2034	2035	2036	2037	2038	2039	2040
Native Load - Annual Peak	924	925	926	927	927	928	929	930	931

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**GENERATION**

Unit Name (Nameplate MW)	Fuel Type	2023	2024	2025	2026	2027	2028	2029	2030	2031
Wilson1	Coal	417	417	417	417	417	417	417	417	417
Green1*	Gas	231	231	231	231	231	231	231	0	0
Green2*	Gas	223	223	223	223	223	223	223	0	0
Reid **	Gas	65	65	65	65	65	65	65	65	65
SEPA Cumberland	Hydro	178	178	178	178	178	178	178	178	178
Solar PPA Henderson	Solar	0	160	159	158	158	157	156	155	154
Demand Side Management	DSM	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>1,114</b>	<b>1,274</b>	<b>1,273</b>	<b>1,272</b>	<b>1,272</b>	<b>1,271</b>	<b>1,270</b>	<b>815</b>	<b>814</b>

<b>Fuel Type</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>
Coal	417	417	417	417	417	417	417	417	417
Gas	519	519	519	519	519	519	519	65	65
Hydro	178	178	178	178	178	178	178	178	178
Solar	0	160	159	158	158	157	156	155	154
DSM	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1,114</b>	<b>1,274</b>	<b>1,273</b>	<b>1,272</b>	<b>1,272</b>	<b>1,271</b>	<b>1,270</b>	<b>815</b>	<b>814</b>

\* Reflects the estimated retirement date of the Green Station units per the depreciation schedule approved by the Commission in Case No. 2021-00079.

\*\* Reflects the estimated retirement date of the Reid-CT per Big Rivers' most recent Depreciation Study

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**GENERATION**

Unit Name (Nameplate MW)	Fuel Type	2032	2033	2034	2035	2036	2037	2038	2039	2040
Wilson1	Coal	417	417	417	417	417	417	417	417	417
Green1*	Gas	0	0	0	0	0	0	0	0	0
Green2*	Gas	0	0	0	0	0	0	0	0	0
Reid **	Gas	0	0	0	0	0	0	0	0	0
SEPA Cumberland	Hydro	178	178	178	178	178	178	178	178	178
Solar PPA Henderson	Solar	154	153	152	151	151	150	149	148	148
Demand Side Management	DSM	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>749</b>	<b>748</b>	<b>747</b>	<b>746</b>	<b>746</b>	<b>745</b>	<b>744</b>	<b>743</b>	<b>743</b>

<b>Fuel Type</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>
Coal	417	417	417	417	417	417	417	417	417
Gas	0	0	0	0	0	0	0	0	0
Hydro	178	178	178	178	178	178	178	178	178
Solar	154	153	152	151	151	150	149	148	148
DSM	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>749</b>	<b>748</b>	<b>747</b>	<b>746</b>	<b>746</b>	<b>745</b>	<b>744</b>	<b>743</b>	<b>743</b>

\* Reflects the estimated retirement date of the Green Station units per the depreciation schedule approved by the Commission in Case No. 2021-00079.

\*\* Reflects the estimated retirement date of Reid-CT per Big Rivers' most recent Depreciation Study.

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1 **Item 8)**      *Refer to BREC's response to Staff's First Request, Item 7, page 4,*  
2 *lines 3– 8. Explain why BREC's capacity obligation is limited to one year.*

3

4 **Response)** The capacity obligation is not strictly “limited” to one year; rather, it is  
5 a one-year obligation that may renew from year to year. Big Rivers' capacity  
6 obligation is a one-year obligation because under the proposed QF tariff, the contract  
7 with the QF Member has a term of one year, and each year the contract may be  
8 cancelled or renewed at the discretion of the QF Member.

9

10

11 **Witness)**    John Wolfram

12

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1 **Item 9)**      *Refer to BREC's response to Staff's First Request, Item 7, page 3,*  
2 *lines 7-10.*

3      *a.      State whether BREC is required to have the required amount of*  
4 *capacity either through its own generating assets or through a long*  
5 *term power purchase agreement as a part of its participation in the*  
6 *annual MISO Planning Resource auction (PRA).*

7      *b.      If BREC is short on capacity relative to its required MISO*  
8 *obligation, provide the amount of time BREC can purchase market*  
9 *priced capacity to fulfill its obligation before a physical asset is*  
10 *constructed and brought online.*

11

12 **Response)**

13      a.      No.

14      b.      To my knowledge, there is no time limit as defined by MISO on how  
15              long Big Rivers can purchase market priced capacity to fulfill its MISO  
16              obligation before a physical asset is constructed and brought online.

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2 **Witness)** Ronald R. Repsher

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1 Item 10) *Refer to BREC's response to Staff's First Request, Item 7, page 4,*  
2 *lines 12– 13 and the October 26, 2021 Order in Case No. 2021-00198<sup>2</sup> (October*  
3 *26, 2021 Order) referenced in BREC's response. The October 26, 2021 Order*  
4 *stated that “until next year’s COGEN/SPP tariff filing update, the Commission*  
5 *finds that the use of the most recent BRA capacity market clearing price is*  
6 *more appropriate and should be used as the proxy for the avoided capacity cost*  
7 *component of the COGEN/SPP tariffs.” The Order goes on to state, “[h]owever,*  
8 *in future filings, the Commission expects EKPC to develop a robust record upon*  
9 *which avoided costs can be calculated. In those future filings, EKPC should*  
10 *provide the most recent BRA results and the actual cost for a unit of physical*  
11 *capacity, both if the capacity was purchased or built.” Finally, footnote 10 of*  
12 *the same Order stated in part, “Thus, should a capacity deficit occur, or is*  
13 *anticipated to occur, it is the replacement capacity cost of the next unit built,*

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<sup>2</sup> See Case No. 2021-00198, *Electronic Tariff Filing of East Kentucky Power Cooperative, Inc. and Its Member Distribution Cooperatives for Approval Of Proposed Changes to Their Qualified Cogeneration and Small Power Production Facilities Tariffs* (Ky. PSC Oct. 26, 2021).

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QUALIFIED COGENERATION AND SMALL POWER PRODUCTION  
FACILITIES TARIFFS  
CASE NO. 2023-00102**

**Response to the Commission Staff's  
Second Request for Information  
dated May 12, 2023**

**May 26, 2023**

1 *or the cost of firm bilateral capacity that should form the basis for avoided*  
2 *capacity values, not a market clearing price.”*

3 *a. Explain in additional detail how BREC’s proposal conforms to*  
4 *the Commission’s intent as set forth in the October 26, 2021 Order.*

5 *b. BREC’s Integrated Resource Plan (IRP) stated that its next*  
6 *generation asset would be a natural gas combined cycle (NGCC) unit.<sup>3</sup>*  
7 *Provide the QF rate calculation based upon BREC’s NGCC unit*  
8 *anticipated in BREC’s most recent IRP using the National Renewable*  
9 *Energy Laboratory (NREL) Annual Technology Baseline (ATB) or a*  
10 *similar transparent public source. Include in the response an*  
11 *explanation of the calculation.*

12

13 **Response)** Big Rivers objects to this request on the grounds that Big Rivers was  
14 not a party to Case No. 2021-00198, and therefore, the findings in that case are not  
15 applicable to Big Rivers. Big Rivers further objects to any requirement to satisfy

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<sup>3</sup> See Case No. 2020-00299, *Electronic 2020 Integrated Resource Plan of Big Rivers Electric Corporation* (filed Sep. 21, 2020), Chapter 9, at 176.



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1 findings in a case to which it was not a party and that did not go through the proper  
2 rulemaking process. Without waiving these objections, Big Rivers responds as  
3 follows:

4 a. The proposed QF tariff complies with the ideas in the Commission's  
5 October 26, 2021 Order ("EKPC Order") because (a) the QF tariff language  
6 very closely mirrors what the Commission approved for EKPC's QF Tariff in  
7 the EKPC Order and (b) under Big Rivers' proposed QF Tariff, there is no  
8 dependence on the market for generation or capacity for any sustained period  
9 of time. The EKPC Order stated in footnote 10 that "[t]his Commission has  
10 no interest in allowing our regulated, vertically-integrated utilities to  
11 effectively depend on the market for generation or capacity for any sustained  
12 period of time" and under Big Rivers' proposed QF tariff, the QF Member is  
13 obligated to enter into a contract with the Member Cooperative and Big  
14 Rivers. That contract has an initial contract term of one year that continues  
15 from year-to-year thereafter unless cancelled by a party after giving proper  
16 notice. This means that the capacity obligation of the QF Member is a one-

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1 year obligation, not a long-term obligation. Thus, the QF capacity is not a  
2 resource upon which Big Rivers may depend "for a sustained amount of time"  
3 and does not replace "steel in the ground" or long-term Power Purchase  
4 Agreement assets. All of this is consistent with the concepts set forth in the  
5 EKPC Order.

6 b. See attached. The calculation of avoided capacity and energy charges  
7 are derived from the costs included for the NGCC unit cited in Big Rivers'  
8 2020 IRP.

9 As noted in the 2020 IRP on page 146, for the new natural gas  
10 resources, Big Rivers utilized EIA data for estimated fixed O&M expenses  
11 and vendor-supplied information for natural gas supply lines and firm gas  
12 supply costs. Vendor estimates were used for build costs of the NGCC units  
13 at either the Sebree site or Coleman site. Big Rivers used the EIA Capital  
14 Cost Estimates for Utility Scale Electricity Generating Plants report dated  
15 February 2020 for providing cost for the NGCT unit.<sup>4</sup> Since that February

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<sup>4</sup> See [https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capital\\_cost\\_AEO2020.pdf](https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capital_cost_AEO2020.pdf)

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1 2020 report did not provide information on the Advanced CC unit, Big Rivers  
2 utilized the EIA update from January 2019 for the fixed O&M and variable  
3 O&M costs for the Advanced NGCC unit.

4 The avoided energy costs for each year are the total generation costs in  
5 \$/MWh for the NGCC Sebree unit as modeled in the IRP. The avoided  
6 capacity costs for each year are the total fixed and capital costs for the NGCC  
7 Sebree unit, offset by the capacity revenues that the NGCC Sebree unit  
8 would yield at projected MISO capacity auction pricing, divided by the firm  
9 capacity forecast for the NGCC Sebree unit.

10

11

12 **Witness)** John Wolfram

13

In the Matter of:

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PRODUCTION FACILITIES TARIFFS**

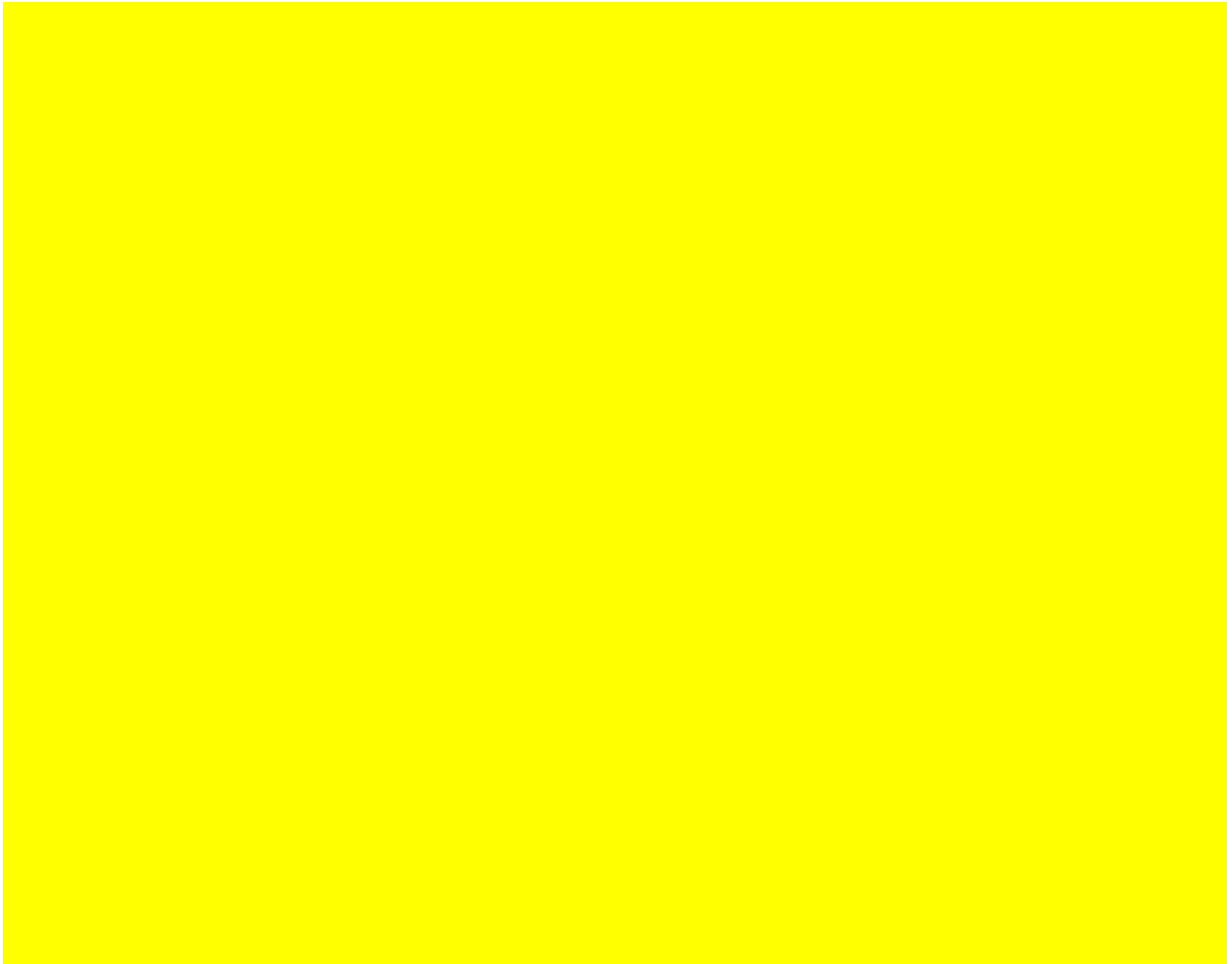
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**CASE NO.  
2023-00102**

## **CONFIDENTIAL**

**Attachment to Item 10(b) of the Commission Staff's  
Second Request for Information  
dated May 12, 2023  
FILED: May 26, 2023**

**INFORMATION SUBMITTED UNDER  
MOTION FOR CONFIDENTIAL TREATMENT**



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1 Item 11) *Refer to BREC's response to Staff's First Request, Item 7, page 4,*  
2 *lines 14– 16. Refer also to BREC's response to Staff's First Request, Item 7,*  
3 *page 5, lines 2–4.*

4 a. *Confirm that it is BREC's position that the MISO PRA Auction*  
5 *Clearing Price (ACP) is more appropriate for setting the QF rate*  
6 *because the QF contracts are one-year contracts renewable annually*  
7 *and that if the contract term was longer, then an avoided cost*  
8 *calculated on a future generating unit or bilateral capacity contract*  
9 *would be appropriate.*

10 b. *Explain the basis for BREC's assertion that a short-term solution*  
11 *is reasonable when determining avoided cost rates as compared with*  
12 *determining avoided cost rates based on a proxy unit.*

13

14 **Response)**

15 a. Not confirmed. It is Big Rivers' position that the MISO PRA ACP is  
16 more appropriate for setting the QF rate because the QF contracts are one-  
17 year contracts renewable annually *and* because the auction price is volume-

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1 independent. The term of the contract is one factor, but the volume of  
2 capacity provided by the QF is another. If the contract term was longer, then  
3 an avoided cost calculated on a future generating unit or bilateral capacity  
4 contract could still be inappropriate if the capacity of the QF is not large  
5 enough to permit Big Rivers to avoid the construction of a new unit.

6 b. A short term solution is reasonable for determining avoided cost rates  
7 because the term of the actual avoided costs under the proposed QF tariff is  
8 short. In other words, it is reasonable because it aligns with the actual PRA  
9 capacity costs that Big Rivers will avoid. The capacity costs of a proxy unit  
10 are long term costs, which differ from the capacity costs avoided by QF  
11 contracts with a duration of one year renewable in one-year increments. The  
12 PRA provides a more accurate avoided cost price signal because the time  
13 period of the auction aligns with the effective time period of the QF contract.

14

15 **Witness)** John Wolfram

16