Big Rivers
ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

June 21, 2021

VIA Electronic Tariff Filing System

Ms. Linda C. Bridwell
Executive Director
Public Service Commission
211 Sower Boulevard, P.O. Box 615
Frankfort, Kentucky 40601-0615

RE: ***JOINT SPECIAL CONTRACT FILING OF BIG RIVERS ELECTRIC CORPORATION AND JACKSON PURCAHSE ENERGY CORPORATION***

Dear Ms. Bridwell:

Jackson Purchase Energy Corporation ("*Jackson Purchase*"), one of Big Rivers Electric Corporation's ("*Big Rivers*") member distribution cooperatives, has entered into a retail Agreement for Electric Service (the "*Retail Agreement*") with Blockware Mining, LLC ("*Blockwar*e"), a new large industrial customer locating in Jackson Purchase's service territory. Big Rivers and Jackson Purchase executed a corresponding letter agreement (the "*Wholesale Agreement*"), under which Big Rivers will provide wholesale electric service to Jackson Purchase, for Jackson Purchase to provide retail electric service to Blockware.

Pursuant to KRS 278.160, 807 KAR 5:001 Section 13(3), and 807 KAR 5:011 Sections 2 and 13-14, Big Rivers is electronically filing the following via the Public Service Commission's Electronic Tariff Filing System:

(i) This cover letter;

(ii) The Retail Agreement, with certain confidential information redacted;

(iii) The Wholesale Agreement;

(iv) The public version of Direct Testimony of Mark J. Eacret, with Exhibits;

(v) Direct Testimony of John Wolfram, with the public version of Exhibits; and

(vi) A motion for confidential treatment of the confidential information in the Retail Agreement and the testimony (the "*Confidential Information*").

The electronic filing does not contain an unredacted copy of the Confidential Information. Pursuant to the Commission's Orders in Case No. 2020-00085, Big Rivers will file the Confidential Information with the Commission via email to PSCED@ky.gov.

Should you have any questions about this tariff filing or the other documents referenced herein, you may contact me at 270-844-6185 or at tyson.kamuf@bigrivers.com.

Sincerely yours,

/s/ Tyson Kamuf

Tyson Kamuf
Corporate Attorney

cc: Gregory H. Grissom

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

In the Matter of:

JOINT SPECIAL CONTRACT FILING OF BIG RIVERS ELECTRIC CORPORATION AND JACKSON PURCHASE ENERGY CORPORATION	**)))**	**TFS No. 2021-00____**

REQUEST FOR CONFIDENTIAL TREATMENT

1. Pursuant to KRS 61.878(1)(c), KRS 278.160(3), and 807 KAR 5:001 § 13, Big Rivers Electric Corporation ("*Big Rivers*") and Jackson Purchase Energy Corporation ("*Jackson Purchase*") hereby request that the Executive Director of the Kentucky Public Service Commission (the "*Commission*"), grant confidential protection to the confidential terms of an Agreement for Electric Service (the "*Retail Agreement*") entered into between Jackson Purchase and a new large commercial customer, Blockware Mining, LLC ("*Blockwa*re"), dated April 12, 2021, and portions of Direct Testimony and Exhibits being filed contemporaneously with the Retail Agreement.

2. The information Big Rivers seeks to protect as confidential is hereinafter referred to as the "Confidential Information." The Confidential Information consists of:

a) negotiated terms of the Retail Agreement, which are proprietary and related to Blockware's business-sensitive or otherwise private information, including the projected load requirements for its planned commercial cryptocurrency mining facility locating in Paducah, McCracken County, Kentucky, and the cost it will pay for power;

b) negotiated terms of the retail electric service agreement between Meade County Rural Electric Cooperative Corporation ("*Meade Co. RECC*") and Nucor Corporation ("*Nucor*") (the "*Nucor Contract*")[1]; and

c) Big Rivers' internal projections related to:

i. its annual capacity position;

ii. its margins and the Net Present Value of the benefits to its Members from the proposed contracts; and

iii. its marginal production energy costs.

3. Pursuant to the Commission's Emergency Orders *In the Matter of: Electronic Emergency Docket Related to the Novel Coronavirus Covid-19*, Case No. 2020-00085 (March 16, 2020 and March 24, 2020), one (1) copy of the Confidential Information highlighted with transparent ink, printed on yellow paper, or otherwise marked "CONFIDENTIAL," is being filed with this request via electronic mail sent to PSCED@ky.gov. One (1) copy of the documents with the Confidential Information redacted is also being electronically filed with this request. 807 KAR 5:001 Section 13(3)(a)(3).

4. In the event that and to the extent the Confidential Information becomes generally available to the public, whether through filings required by

---

[1]The Commission previously granted confidential treatment of the negotiated terms of the retail electric service agreement between Meade Co. RECC and Nucor for an indefinite period. *See In the Matter of: Joint Application of Big Rivers Electric Corporation and Meade County Rural Electric Cooperative Corporation for Approval of Contracts for Electric Service with Nucor Corporation*, P.S.C. Case No. 2019-00365, Orders (Jan. 22, 2020).

other agencies or otherwise, Big Rivers will notify the Commission and have its confidential status removed. 807 KAR 5:001 Section 13(10)(b),

5. Pursuant to 807 KAR 5:001 Section 13(3)(a)(1), as discussed *infra*, the Confidential Information is entitled to confidential protection and is being submitted confidentially under the purview of KRS 61.878(1)(c)(1).

I. **The Confidential Information is entitled to confidential protection based upon KRS 61.878(1)(a)**

6. KRS 61.878(1)(a) explicitly grants confidential protection to "[p]ublic records containing information of a personal nature where the public disclosure thereof would constitute a clearly unwarranted invasion of personal privacy." Here, Blockware plans to operate an energy-intensive commercial cryptocurrency mining facility in Paducah, McCracken County, Kentucky and the Confidential Information reveals proprietary, business-sensitive, and otherwise private information, including its projected energy use and the cost it will pay for power.

7. As explained in more detail in Section II i*nfra*, Blockware, a retail customer on the Jackson Purchase system, considers this information highly confidential and believes that public disclosure of this information will cause it substantial competitive harm. Because public disclosure of the Confidential Information consisting of negotiated terms of special contracts would constitute an unwarranted invasion of this customer's privacy, this Confidential Information should be granted confidential treatment. *See* Ky. Op. Atty. Gen. 96-ORD-176 (August 20, 1996) (holding Kroger Company's utility bills exempt from disclosure under KRS 61.878(1)(a)); *In the Matter of: Application of*

Kentucky Utilities Company for an Adjustment of its Electric Rates, Order, P.S.C. Case No. 2012-00221 (July 25, 2013) (holding customer names, account numbers, and usage information exempt from disclosure under KRS 61.878(1)(a)).

8. As a point of reference and consistency, Big Rivers sought, and was granted, confidential treatment for similar information relating to the retail agreement for electric service to a large industrial customer, Aleris Rolled Products, Inc. in its March 24, 2016 and April 21, 2016, petitions for Confidential Treatment filed in Case No. 2016-00117, *In the Matter of: Joint Application of Kenergy Corp. and Big Rivers Electric Corporation for Approval of Contracts.*

II. **The Confidential Information is also entitled to confidential protection based upon KRS 61.878(1)(c)(1)**

9. The Confidential Information is also entitled to confidential protection based upon KRS 61.878(1)(c)(1), which protects "records confidentially disclosed to an agency or required by an agency to be disclosed to it, generally recognized as confidential or proprietary, which if openly disclosed would permit an unfair commercial advantage to competitors of the entity that disclosed the records." *See* 807 KAR 5:001 Section 13(3)(a)(1). In support for this ground of granting confidential protection, Subsection A *infra* describes how Big Rivers operates in competitive environments; Subsection B *infra* explains that the Confidential Information is generally recognized as confidential or proprietary; and Subsection C *infra* demonstrates that public disclosure of the Confidential Information would permit an unfair commercial advantage to Big Rivers'

competitors. As such, the Commission should grant confidential treatment to the Confidential Information.

A. Big Rivers Faces Actual Competition

10. Big Rivers must successfully compete in the wholesale power market in order to sell excess energy to meet its members' needs, including competition in: term bilateral energy markets, day-ahead and real-time energy and ancillary services markets, the annual capacity market, and forward bilateral long-term wholesale agreements with utilities and industrial customers. Big Rivers' ability to successfully compete in these wholesale power markets is dependent upon an effective combination of a) obtaining the maximum price for the power it sells and the best contract terms, and b) keeping its cost of production as low as possible. Fundamentally, if Big Rivers' cost of producing a kilowatt hour or its business risk increases, its ability to sell that kilowatt hour in competition with other utilities is adversely affected.

11. Big Rivers also competes for reasonably-priced credit in the credit markets, and its ability to compete is directly impacted by the financial results it obtains and the business risks it assumes. Any event that adversely affects Big Rivers' financial results or increases its business risks may adversely affect the price it pays for credit. A competitor armed with Big Rivers' proprietary and confidential information will be able to increase Big Rivers' costs or decrease Big Rivers' revenues, which could in turn affect Big Rivers' apparent creditworthiness. Impediments to Big Rivers' obtaining the best contract terms

could likewise affect its apparent creditworthiness. A utility the size of Big Rivers that operates generation and transmission facilities will always have periodic cash and borrowing requirements for both anticipated and unanticipated needs. Big Rivers expects to be in the credit markets on a regular basis in the future, and it is imperative that Big Rivers improve and maintain its credit profile.

12. Accordingly, Big Rivers faces competition in the wholesale power and capital markets, and the Confidential Information should be afforded confidential treatment to prevent the imposition of an unfair competitive advantage to those competitors.

B. The Confidential Information is Generally Recognized as Confidential or Proprietary

13. The Confidential Information for which Big Rivers seeks confidential treatment under KRS 61.878 is generally recognized as confidential or proprietary under Kentucky law.

14. As noted above, the Confidential Information consists of confidential, negotiated terms of retail electric service agreements. KRS 278.160(3) specifically recognizes that terms of a special contract are not required to be publicly disclosed if such terms are entitled to protection under KRS 61.878(1)(c)(1).

15. Blockware's commercial cryptocurrency mining facility will operate in a highly competitive, cost sensitive, and global market. It is clear that the

Confidential Information relates to the inner workings of Blockware's organization.

16. The Confidential Information also consists of Big Rivers' projected annual capacity position; margins and Net Present Value of the benefits to its Member from the proposed contracts; and marginal energy production costs. It is clear that this information relates to the inner workings of Big Rivers.

17. The Confidential Information is not publicly available, nor is such information known or disseminated within the Blockware, Nucor, or Big Rivers organizations except to those employees and professionals with a legitimate business need to know and act upon the information. Under Kentucky law, it is well recognized that the information about a company's detailed inner workings, such as the Confidential Information, is generally recognized as confidential or proprietary. *See, e.g., Hoy v. Kentucky Indus. Revitalization Authority*, 907 S.W.2d 766, 768 (Ky. 1995) ("[i]t does not take a degree in finance to recognize that such information concerning the inner workings of a corporation is 'generally recognized as confidential or proprietary'").

18. Moreover, the Commission has previously granted confidential treatment to similar information. *See, e.g. In the Matter of: Big Rivers Electric Corporation Filing of Wholesale Contracts Pursuant to KRS 278.180 and KAR 5:001 §13,* P.S.C. Case No. 2014-00134, Order (Sept. 10, 2014) (granting confidential treatment to the confidential terms of the Nebraska contracts for an indefinite time period)*; In the Matter of: Filing of Agreement for the Purchase and*

Sale of Firm Capacity and Energy Between Big Rivers Electric Corporation and the Kentucky Municipal Energy Agency, P.S.C. Case No. 2016-00306, Order (Jan. 2, 2019) (granting confidential treatment to the confidential terms of the KyMEA contract for an indefinite time period).

19. The Commission has recognized the confidentiality of customer information, similar to Confidential Information related to Blockware's energy usage and cost of power, in previous cases. *See, eg., In the Matter of: Riverside Generating Company, LLC v. Kentucky Power Company*, Order, P.S.C. Case No. 2017-00472 (May 16, 2019) (granting confidential treatment to customer specific information relating to purchases and transmission of electricity for an indefinite period); *In the Matter of: Sanctuary of Church v. Louisville Gas and Electric Company*, Order, P.S.C. Case No. 2018-00181 (January 8, 2019) (granting confidential treatment for an indefinite period to detailed account and usage information of a non-party); and *See, In the Matter of: Electronic Application of Big Rivers Electric Corporation for Approval to Modify Its MRSM Tariff, Cease Deferring Depreciation Expenses, Establish Regulatory Assets, Amortize Regulatory Assets, and Other Appropriate Relief*, Order, P.S.C. Case No. 2020-00064 (June 30, 2020) (granting Confidential Treatment of information related to individual customer names and usage in Big Rivers' responses to the Commission Staff's First Requests for Information, Attorney General's First Set of Data Requests and KIUC's First Set of Data Requests).

20. Based on the foregoing, the Confidential Information is generally recognized as confidential or proprietary under Kentucky law.

C. Disclosure of the Confidential Information Would Permit an Unfair Commercial Advantage to Big Rivers' Competitors

21. Disclosure of the Confidential Information would permit an unfair commercial advantage to Big Rivers' competitors. As discussed *supra*, Big Rivers faces actual competition in the wholesale power and credit markets. It is likely that Big Rivers' ability to compete in these markets would be adversely affected if the Confidential Information was publicly disclosed, and Big Rivers seeks protection from such competitive injury.

22. Here, Blockware considers the Confidential Information consisting of negotiated terms of the Retail Agreement highly confidential. In Big Rivers' case, Big Rivers is actively engaged in buying and selling power in the wholesale power markets, and Big Rivers expects to engage in negotiations with counterparties in the future. If confidential treatment of the confidential terms of the Agreement is denied, potential counterparties would know that the confidential terms of their contracts would be publicly disclosed, which could reveal information to their competitors about their competitiveness. Because many companies would be reluctant to have such information disclosed, public disclosure of the Confidential Information in this case would likely reduce the pool of counterparties willing to negotiate with Big Rivers, reducing Big Rivers' ability to buy and sell power at favorable prices. Further, any competitive

pressure that adversely affects Big Rivers' revenue and margins could make the company appear less creditworthy and thus impair its ability to compete in the credit markets.

23. Blockware had choices about where it locates its commercial cryptocurrency mining facility. If Blockware knew that it would be risking the disclosure of extremely confidential project information that could endanger the ultimate competitiveness of the company, Blockware may have made a different decision about the location.

24. Public disclosure of the Confidential Information related to the negotiated terms of the Retail Agreement would provide potential purchasers of energy or capacity from Big Rivers; potential sellers of energy or capacity to Big Rivers; and other providers competing against Big Rivers for purchases or sales of energy or capacity with insight into the terms under which Big Rivers is willing to buy and sell energy and capacity. These market participants could use this information as a benchmark, leading to higher costs, lower revenues, or less favorable terms to Big Rivers, hurting Big Rivers' ability to compete in the wholesale power and credit markets.

25. Thus, Big Rivers' competitiveness will be adversely affected if other suppliers are given such an unfair competitive advantage or if potential counterparties are given a negotiating advantage. Accordingly, the public disclosure of the Confidential Information would provide competitors of Big Rivers with an unfair commercial advantage.

26. If the Confidential Information consisting of Big Rivers' projected annual capacity position; margins and Net Present Value of the benefits to its Member from the proposed contracts; and marginal energy production costs is publicly disclosed, market participants would have insight into the timing of Big Rivers' capacity needs, its cost of producing power, and the prices at which it is willing to buy and sell power. These market participants could use that information to manipulate the bidding process, leading to higher costs or lower revenues for Big Rivers and impairing its ability to compete in the wholesale power markets. Furthermore, any competitive pressure that adversely affects Big Rivers' revenue and margins could make the company appear less creditworthy and thus impair its ability to compete in the credit market

III. <u>Time Period</u>

27. Big Rivers requests that the Confidential Information consisting of negotiated terms of the Retail Agreement and the Nucor Contract remain confidential indefinitely because it reveals private customer data. *See* 807 KAR 5:001 Section 13(3)(a)(2).

28. Big Rivers requests that the remainder of the Confidential Information remain confidential for a period of five (5) years from the date of this motion, at which time the Confidential Information should be sufficiently outdated so that it could not be used to competitively disadvantage Big Rivers. 807 KAR 5:001 Section 13(3)(a)(2).

IV. Conclusion

29. Based on the foregoing, the Confidential Information is entitled to confidential protection. If the Commission disagrees that Big Rivers is entitled to confidential protection, due process requires the Commission to hold an evidentiary hearing. *See Utility Regulatory Com'n v. Kentucky Water Service Co.*, Inc., 642 S.W.2d 591 (Ky. App. 1982).

WHEREFORE, Big Rivers respectfully request that the Commission classify and protect as confidential the Confidential Information.

On this the 21st day of June, 2021.

Respectfully submitted,

/s/ Tyson Kamuf

____

Tyson Kamuf
Senthia Santana
Gregory E. Mayes, Jr.
201 Third Street, P.O. Box 24
Henderson, Kentucky 42419-0024
Phone: (270) 827-2561
Facsimile: (270) 844-6417
Email: tyson.kamuf@bigrivers.com
Email: senthia.santana@bigrivers.com
Email: gregory.mayes@bigrivers.com

Counsel for Big Rivers Electric Corporation

AGREEMENT FOR ELECTRIC SERVICE

THIS AGREEMENT FOR ELECTRIC SERVICE ("Agreement") is made and entered into as of the 12th day of April, 2021, between **JACKSON PURCHASE ENERGY CORPORATION**, a Kentucky rural electric cooperative corporation, with its principal office located at 2900 Irvin Cobb Dr, Paducah, KY 42003 ("Seller"), and **BLOCKWARE MINING, LLC**, an Illinois limited liability company ("Customer"), with a service address at the facility Customer intends to construct and operate at a parcel within 5501 Commerce Drive, Paducah, Kentucky 42001 (the "Facility"). Seller and Customer are individually referred to herein as a "Party" and collectively as the "Parties."

WHEREAS, Seller will provide retail electric service to Customer under the terms of this Agreement;

WHEREAS, Seller will purchase the electric power and energy for resale to Customer from Big Rivers Electric Corporation ("Big Rivers") under a wholesale power contract dated October 14, 1977, as has been and may be amended from time to time (the "Wholesale Power Agreement"); and

WHEREAS, Customer is agreeable to locating the Facility in the Commonwealth of Kentucky contingent upon Seller providing the electrical requirements for the Facility under the terms of this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the Parties agree as follows:

ARTICLE I
GENERAL OBLIGATIONS

1.01 Basic Obligations of the Parties. Seller shall supply, sell, and deliver to Customer, and Customer shall accept and pay for all of the electric power and energy Customer may need for the operation of the Facility, up to the Maximum Contract Demand as defined in Section 2.03(b), subject to the terms and conditions set forth herein. The electric service provided hereunder is subject to the rules, regulations, and orders of the Public Service Commission of Kentucky (the "Commission") as may be applicable and effective from time to time. Except as otherwise provided herein, this Agreement contains the exclusive terms on which Seller will provide electric service to the Facility during the term of this Agreement.

1.02 Membership. Customer shall be a member of Seller, and shall be bound by applicable rules and regulations as may from time to time be adopted by Seller.

1.03 Performance by Seller. Big Rivers shall be entitled to the benefit of each covenant undertaken by Customer in this Agreement, and Big Rivers may enforce any such covenant by action in its own name or may require Seller to enforce such covenant for and on behalf of Big Rivers.

1.04 Description of the Facility. The Facility shall consist of Customer's facilities at a parcel within 5501 Commerce Drive, Paducah, KY for the purpose of hosting mining rigs for mining Bitcoin.

ARTICLE II
SERVICE CHARACTERISTICS

2.01 Delivery Point and Character of Service. The "Delivery Point" of the electric power and energy made available under this Agreement shall be the point of connection of Customer's bus with Big Rivers' step-down transformers. The electric power and energy delivered under this Agreement will be in the form of three-phase alternating current (60 hertz) at nominal 12.470 kV voltage level.

2.02 Service Restriction. Customer shall not use the electric power and energy furnished hereunder as an auxiliary or supplement to any other source of power and shall not sell electric power and energy purchased hereunder.

2.03 Contract Demand.

(a) "Billing Demand" shall be considered equal to the highest integrated 30-minute clock-hour non-coincident peak demand during a billing month; provided, however, that the Billing Demand for any billing month shall not be less than the Peak Demand as established in Exhibit C.

(b) Customer's maximum Billing Demand in any billing month during the Term of this Agreement (the "Maximum Contract Demand") shall be as follows:

From the Effective Date of this Agreement through May 31, 2022 (the "Initial Period"), the Maximum Contract Demand shall be [redacted]

For each twelve-month period following the end of the Initial Period (each such period running from June 1 through May 31 of the following calendar year, and each such period being a "Planning Year"), the Maximum Contract Demand shall be equal to the Peak Demand for that Planning Year as established in Exhibit C.

Upon Seller providing advance written notice of at least twelve months of its desire to raise the Maximum Contract Demand above [redacted] and upon Seller installing, or causing to be installed, the facilities required for the additional capacity listed on Exhibit A, the Maximum Contract Demand after such installation shall be [redacted]

(c) After the Peak Demand for a Planning Year has been established, the parties may mutually agree to increase the Peak Demand for the Planning Year, subject to Big Rivers' consent, the availability of capacity, and the capability of Big Rivers' then-existing transmission facilities. Seller shall not be obligated under this

Agreement to supply capacity in excess of the Maximum Contract Demand, measured as specified in Section 2.03(b) of this Agreement.

2.04 System Disturbances; Obligation for Damages.

(a) A "System Disturbance" shall be deemed to exist if the use of power by Customer directly or indirectly results in a risk of harm to human beings or material damage to or substantial interference with the functioning of Big Rivers' generating system or transmission system, Seller's distribution system, or the plant, facility, equipment or operations of any customer of one of Big Rivers' distribution cooperative members. A System Disturbance includes, but is not limited to: (i) a level of current harmonic total demand distortion ("TDD") measured at the Delivery Point that exceeds the limits on TDD described in IEEE Standard 519, Section 10; and (ii) a use of capacity and energy in such a manner that causes a current imbalance between phases greater than five percent at the Delivery Point.

(b) In its role as Local Balancing Area Operator in the Midcontinent Independent System Operator, Inc. ("MISO") and reader of the meters serving Seller, Big Rivers shall have primary responsibility for determining the existence and source of System Disturbances. If Big Rivers reasonably believes that Customer is responsible for a System Disturbance, it shall provide notice to Seller and Customer, and Customer may take, but shall not be obligated to take, appropriate action at its sole expense to cure, correct or suppress such System Disturbance. If the Customer declines for any reason to take action to correct the System Disturbance, then Seller shall undertake, or cause Big Rivers to undertake, appropriate action to cure, correct or suppress such System Disturbance. If Customer is determined to be the source of the System Disturbance, Customer shall be obligated to reimburse Seller for all reasonable costs incurred by Seller or Big Rivers to cure, correct or suppress such System Disturbance.

(c) Neither Seller nor Big Rivers shall have any responsibility for damage to any property, or to any equipment or devices connected to Customer's electrical system on Customer's side of the Delivery Point to the extent that such damage results from acts or omissions of Customer, its employees, agents, contractors or invitees, or malfunction of any equipment or devices connected to Customer's electrical system on Customer's side of the Delivery Point. The electric power and energy supplied under this Agreement is supplied upon the express condition that after it passes the Delivery Point it becomes the responsibility of Customer, and neither Seller nor Big Rivers shall be liable for loss or damage to any person or property whatsoever, resulting directly or indirectly from the use, misuse or presence of said electric power and energy on Customer's premises, or elsewhere, after it passes the Delivery Point except where such loss or damage shall be shown to have been occasioned by negligence of Seller or Big Rivers, their agents or employees.

2.05 Power Factor. Customer shall maintain a power factor at the Delivery Point as nearly as practicable to unity. Power factor during normal operation may range from unity to ninety percent (90%). If Customer's power factor is less than 90% at time of maximum load, Seller reserves the right to require Customer to choose either (a) installation at Customer's expense of equipment which will maintain a power factor of 90% or higher; or (b) adjustment of the maximum monthly metered demand for billing purposes in accordance with the following formula:

$$\frac{\text{Maximum Actual Measured Kilowatts x 90\%}}{\text{Power Factor (\%)}}$$

2.06 Metering.

(a) The metering equipment necessary to register the electric demand and energy for this service shall be furnished, installed, operated, and maintained by Seller or Big Rivers, and shall be and remain the property of Seller or Big Rivers.

(b) Each meter shall be read on or about the first day of each month, or such other day as the Parties may mutually agree upon, by a representative of Seller and may be simultaneously read by a representative of Customer should Customer so elect.

(c) All inspections and testing of metering equipment shall be performed in accordance with the Commission's applicable rules and regulations.

2.07 Easements and Facilities Provided by Customer.

(a) Customer shall furnish, operate, and maintain (or cause to be furnished, operated, and maintained) such facilities and equipment as may be necessary to enable it to receive and use electric power and energy purchased hereunder at and from the Delivery Point.

(b) Customer shall provide or cause to be provided, without cost to Seller or Big Rivers, the following facilities which are or may be necessary for Seller to supply the electric consuming facilities of Customer with retail electric service and for Big Rivers to supply Seller with the corresponding wholesale electric service:

(i) Adequate sites for the construction and erection of such new substations and other facilities and future alterations to such new facilities as may from time to time be necessary to serve Customer, at such locations and of such dimensions as mutually agreed upon with the fee simple title thereto, rough graded to Seller's or Big Rivers' requirements, as may be from time to time required by Seller or Big Rivers;

(ii) Easements for rights-of-way upon Customer's property, at such locations and of such dimensions as determined by Seller and which are necessary for the construction of facilities which Seller or Big Rivers must furnish to provide electric service under this Agreement. If Customer wishes to move any such facilities in the future, Seller will cooperate in identifying alternate satisfactory locations so long as any relocation is at Customer's expense;

(iii) An easement for ingress and egress for the exercise by Seller or Big Rivers of Seller's rights under this Agreement; and

(iv) Facilities for Big Rivers' metering equipment.

2.08 Facilities Provided by Seller. Seller shall furnish or cause to be furnished, at no extra charge to Customer, all of the facilities required for the delivery of electric power and energy to the Delivery Point, including the following:

(a) The facilities listed on Exhibit A hereto; and

(b) Metering, communications, relaying, control circuits, and associated equipment necessary to properly measure, control, and coordinate the delivery of electrical power and energy between Seller's and Customer's facilities.

2.09 Operation and Maintenance of Facilities.

(a) Seller shall construct, operate, and maintain, or cause to be constructed, operated, and maintained, all facilities and equipment owned by it or by Big Rivers and required to supply retail electric service to Customer in accordance with the terms of this Agreement.

(b) Customer shall construct, operate, and maintain, or cause to be constructed, operated, and maintained, all facilities and equipment owned by it in accordance with the applicable provisions of the National Electrical Safety Code and all other applicable laws, codes, and regulations; provided, however, that Seller shall have no duty to inspect such facilities for compliance therewith.

(c) Nothing in this Agreement shall be construed to render either Party liable for any claim, demand, cost, loss, cause of action, damage, or liability of whatsoever kind or nature arising out of or resulting from the construction, operation, or maintenance of such Party's electric system or electric systems connected to such Party's electric system.

2.10 Right of Removal. Any and all equipment, apparatus, devices, or facilities placed or installed, or caused to be placed or installed, by either Party on or in the premises of the other Party shall be and remain the property of the Party owning and installing such equipment, apparatus, devices, or facilities regardless of the mode or manner of annexation or attachment to real property of the other. Upon the termination of this Agreement, the owner thereof shall have the right to enter upon the premises of the other and shall within a reasonable time remove such equipment, apparatus, devices, or facilities.

2.11 Termination Charges. If this Agreement expires or is terminated for any reason, Customer shall pay Seller, in addition to any other obligations Customer may have to Seller upon the expiration or termination of this Agreement, a "Termination Charge" and an "EDR Termination Charge" in accordance with Exhibit B hereto.

2.12 Credit Support for Termination Charges.

(a) As security for payment of the Termination Charge, Customer shall provide Big Rivers at the time this Agreement is signed and thereafter maintain a cash deposit or an irrevocable bank letter of credit acceptable to Big Rivers equal to the amount of the Termination Charge. Semi-annually, and upon the addition or truing up of any charges to the Termination Charge, the Parties shall adjust the deposit or bank letter of credit to reflect changes in the amounts of the obligations of Customer secured by the deposit or bank letter of credit.

(b) As security for payment of the EDR Termination Charge, Customer shall provide Big Rivers at the time Customer becomes entitled to an Economic Development Rate Credit and thereafter maintain a cash deposit or an irrevocable bank letter of credit acceptable to Seller equal to the total amount of the Economic Develop Rate Credits which remain subject to refund per Section C4 of Exhibit C. Annually, Customer and Big Rivers shall adjust the deposit or bank letter of credit to reflect changes in the amounts of the obligations of Customer secured by the deposit or bank letter of credit.

2.13 Ancillary Services; Transmission. Seller shall be responsible for procuring transmission and ancillary services needed to deliver capacity and energy to Customer under this Agreement, subject to the rates and other terms hereunder.

2.14 Curtailment; Interruption. [redacted]

ARTICLE III
PAYMENT

3.01 Rates. During the Term of this Agreement, Customer shall take service from Seller at the rates set forth in Exhibit C hereto and under any applicable tariffs of Seller, as they may be amended from time to time, or any successor tariff(s), all of which are incorporated herein by reference. Seller shall take service from Big Rivers under Big Rivers' Large Industrial Customer Expansion Rate ("LICX") tariff, the current version of which is attached hereto as Exhibit D, as such tariff may be amended from time to time, and any other applicable tariffs of Big Rivers, or any successor tariff(s), all of which are incorporated herein by reference. Notwithstanding the foregoing, to the extent any provision of this Agreement, including the exhibits hereto, are inconsistent with the tariffs referenced in this section, the provisions of the Agreement shall prevail.

3.02 Taxes. Customer shall pay all taxes, charges, fees, or assessments now or hereafter applicable to electric service hereunder.

3.03 Billing. Bills for service hereunder shall be paid electronically or at the office of the Seller as follows:

Such payments shall be due on the 15th day of each month for service furnished during the preceding monthly billing period (the "Due Date"). If payment in full is not paid on or before the Due Date, or if Customer fails to maintain adequate credit support or payment security as required hereunder, Seller may discontinue service to the Customer without further action on the part of Seller by giving the Customer written notice at least ten (10) calendar days in advance of its intention to do so; provided, however, that such discontinuance of service shall not relieve the Customer of any of its obligations under this Agreement or limit Seller's other remedies under this Agreement. Simple interest equal to the then-effective prime commercial lending rate as published in the "Money Rates" section of *The Wall Street Journal* plus one percent (1%) shall apply to any unpaid amounts from the Due Date until paid.

In the event any portion of the bill is in bona fide dispute, as a result of metering-related issues or otherwise, Customer shall notify Seller on or before the Due Date of the disputed amount and the reason therefor and shall pay the undisputed amount. The parties shall attempt in good faith to resolve the dispute. If the Parties are unable to agree upon a correct amount within ten (10) calendar days of Customer's written notice of the dispute, then the disputed amount shall become due on the later of the Due Date or the end of that ten (10) day period.

3.04 Credit Support for Monthly Billing Obligations

(a) Customer shall provide, prior to the Service Commencement Date defined in Section 11.01, an irrevocable bank standby letter of credit representing [redacted] of estimated billing, initially being the amount of [redacted] as security for the payment of its monthly billing obligations. In the event customer fails to pay any monthly billing invoice by the Due Date, after notifying Customer of its intent to do so Seller may, in addition to and without limiting any other remedies available to it, call on the standby letter of credit provided in this subsection or any other security deposit, payment security, or credit support on any other agreement between Customer and Seller for payment provided by Customer to satisfy any unpaid invoices. During the Initial Period, the level of credit support required by this section will be reset at the start of each calendar quarter. Thereafter, the level of credit support required by this section will be reset at the start of each Planning Year. Customer shall provide the level of credit support required by Seller within 15 calendar days after each such reset.

(b) In addition to the rights and obligations in Section 3.04(a), in the event Customer fails to pay any monthly billing invoice by the Due Date, or Customer's credit rating falls below [redacted] from S&P or Fitch, or below [redacted] from Moody's, then Customer shall provide an irrevocable bank standby letter of credit representing [redacted] of estimated billing, initially being the amount of [redacted], as security for payment of its monthly billing obligation, within 15-calendar days of such event. If Customer fails to pay any invoice for service by the Due Date, after notifying Customer of its intent to do so Seller may, in addition to and without limiting any other remedies available to it, call on the standby letter of credit provided for in this subsection or any other security deposit, payment security, or credit support on any other agreement between Customer and Seller for payment provided by Customer to satisfy that unpaid invoice. During the Initial Period, the level of credit support required by this section will be reset at the start of each calendar quarter. Thereafter, the level of credit support required by this section will be reset at the start of each Planning Year. Customer shall provide the level of credit support required by Seller within 15 calendar days after each such reset.

ARTICLE IV
CONTINUITY OF SERVICE

4.01 Continuity of Service. Seller shall use reasonable diligence to provide a constant and uninterrupted supply of electric power and energy hereunder. However, Seller does not guarantee uninterrupted service from maintenance and similar temporary outages or a Force Majeure Event, and neither Seller nor Big Rivers shall be responsible for damages to Customer occasioned by maintenance and similar temporary outages or a Force Majeure Event, as defined in Section 4.02 of this Agreement.

4.02 Force Majeure. In the event a Party's performance of this Agreement is limited or prevented in whole or in part by Acts of God, strikes, labor trouble, acts of the public enemy, wars, blockades, insurrections, riots, pandemics, epidemics, landslides, lightning, earthquakes, fires, storms, floods, washouts, arrests and restraints of the government (whether federal, state, or local, or civil or military), civil disturbances, explosions, breakage of or accident to machinery, equipment or transmission lines, or inability to obtain necessary materials, supplies, or permits due to existing or future rules, regulations, orders, laws or proclamations of governmental authorities (whether federal, state, or local, or civil or military), or any other cause beyond the reasonable control of the Parties hereto whether or not specifically provided herein (each a "Force Majeure Event"), the obligations (other than payment obligations) of both Parties shall be suspended to the extent made necessary by such Force Majeure Event; provided that the affected Party gives notice and reasonably full particulars of such Force Majeure Event, first by telephone and then confirmed in writing, to the other Party within a reasonable time after the occurrence of the Force Majeure Event. Each Party will, in the event it experiences a Force Majeure Event, use all commercially reasonable efforts to eliminate the effects of such Force Majeure Event on its performance as soon as reasonably possible; provided that nothing contained herein may be construed to require a Party to prevent or to settle a labor dispute against its will.

ARTICLE V
RIGHT OF ACCESS

5.01 Duly authorized representatives of the Seller shall be permitted to enter the Customer's premises at all reasonable times in order to carry out the provisions hereof.

5.02 Customer shall furnish to Seller such reports and information concerning the matters addressed in or matters arising out of this Agreement or any exhibit hereto as the Seller may reasonably request from time to time.

ARTICLE VI
EVENTS OF DEFAULT AND REMEDIES

6.01 Events of Default. Each of the following constitutes an "Event of Default" under this Agreement:

(a) Failure by Customer to make any payment in accordance with this Agreement within 5 days of its due date;

(b) Written notice of a Failure of a Party to perform any material duty imposed on it by this Agreement, including but not limited to the failure to maintain adequate credit support as required in Sections 2.12 and 3.04;

(c) Any attempt by a Party to transfer an interest in this Agreement other than as permitted under Article X;

(d) Any filing of a petition in bankruptcy or insolvency, or for reorganization or arrangement under any bankruptcy or insolvency laws, or voluntarily taking advantage of any such laws by answer or otherwise, or the commencement of involuntary proceedings under any such laws by a Party and such petition has not been withdrawn or dismissed within 60 days after filing;

(e) Assignment by a Party for the benefit of its creditors; or

(f) Allowance by a Party of the appointment of a receiver or trustee of all or a material part of its property and such receiver or trustee has not been discharged within 60 days after appointment.

6.02 Remedies. Following the occurrence and during the continuance of an Event of Default by either Party, the non-defaulting Party may, in its sole discretion, elect to terminate this Agreement upon written notice to the other Party, or to seek enforcement of its terms at law or in equity. Remedies provided in this Agreement are cumulative. Nothing contained in this Agreement may be construed to abridge, limit, or deprive either Party of any means of enforcing any remedy either at law or in equity for the breach or default of any of the provision herein, except as provided in Section 6.03 of this Agreement.

6.03 **LIMITATION OF DAMAGES. EXCEPT AS EXPRESSLY PROVIDED OTHERWISE IN THIS AGREEMENT, UNDER NO CIRCUMSTANCES WILL CUSTOMER OR SELLER (OR BIG RIVERS), OR THEIR RESPECTIVE AFFILIATES, DIRECTORS, OFFICERS, MEMBERS, MANAGERS, EMPLOYEES OR AGENTS BE LIABLE HEREUNDER, WHETHER IN TORT, CONTRACT, OR OTHERWISE, FOR ANY SPECIAL, INDIRECT, PUNITIVE EXEMPLARY, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS. CUSTOMER'S OR SELLER'S LIABILITY (AND THE LIABILITY OF BIG RIVERS) HEREUNDER SHALL BE**

LIMITED TO DIRECT, ACTUAL DAMAGES. THE EXCLUSION OF ALL OTHER DAMAGES SPECIFIED IN THIS SECTION IS WITHOUT REGARD TO THE CAUSE OR CAUSES RELATING THERETO. THIS PROVISION SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT.

6.04 Survival. Any obligations of a Party that have accrued under this Agreement on or before the date this Agreement is terminated or otherwise expires shall survive that termination or expiration.

ARTICLE VII
INDEMNIFICATION

7.01 Each Party shall indemnify and hold the other Party and Big Rivers harmless from and against any and all claims, demands, damages, judgments, losses or expenses, including attorney fees, asserted against the other Party and/or Big Rivers arising out of, related to or concerning damage to Big Rivers' generation or transmission facilities or the transmission facilities of any other entity resulting from the indemnifying Party's operations, activities, or usage of electric power and energy hereunder, unless said claim, demand, damage, judgments, losses or expenses arise out of the sole negligence or intentional misconduct of the indemnified Party or Big Rivers. Additionally, each Party assumes all responsibility for the electric service at and from the Party's side of the Delivery Point of electricity and for the wires and equipment used in connection therewith, and will indemnify and hold the other Party and Big Rivers harmless from any and all claims for injury or damage to persons or property occurring at and from the indemnifying Party's side of the Delivery Point of electricity, occasioned by such electricity or said wires and equipment, except where said injury or damage is occasioned solely by the negligence or intentional misconduct of the indemnified Party or Big Rivers. The obligations of the Parties under this Article shall survive the termination of this agreement.

ARTICLE VIII
NOTICE

8.01 Except as herein otherwise expressly provided, any notice, demand or request provided for in this Agreement, or served, given or made in connection with it, shall be in writing and shall be deemed properly served, given or made if delivered in person or by any qualified and recognized delivery service, or sent postage prepaid by United States certified mail, return receipt requested, to the persons specified below unless otherwise provided for in this Agreement.

TO CUSTOMER:

Blockware Mining, LLC
141 West Jackson Blvd.
Suite 104
Chicago, Illinois 60604

Attn: Michael Stoltzner
[redacted]

TO SELLER:

President and CEO
Jackson Purchase Energy Corporation
2900 Irvin Cobb Drive
Paducah, Kentucky 42003
Telephone: (270) 422-7321

Any notice from Customer to Seller shall be given concurrently to Big Rivers, using the same methods of delivery required by this Agreement for notice to Seller, at the following address:

President and CEO
Big Rivers Electric Corporation
201 Third Street
Henderson, Kentucky 42420
Telephone: (270) 827-2561

Each Party shall have the right to change the name of the person or location to whom or where notice shall be given or served by notifying the other Party of such change in accordance with this section.

ARTICLE IX
REPRESENTATIONS AND WARRANTIES

9.01 Representations of Seller. Seller hereby represents and warrants to Customer as follows:

(a) Seller is an electric cooperative corporation duly organized, validly existing and in good standing under the laws of the Commonwealth of Kentucky, and has the power and authority to execute and deliver this Agreement, to perform its obligations hereunder, and to carry on its business as such business is now being conducted and as is contemplated hereunder to be conducted during the term hereof.

(b) The execution, delivery, and performance of this Agreement by Seller have been duly and effectively authorized by all requisite corporate action.

9.02 Representations and Warranties of Customer. Customer hereby represents and warrants to Seller as follows:

(a) Customer is a limited liability company duly organized and validly existing and in good standing under the laws of the State of Illinois, is authorized to do business in the Commonwealth of Kentucky, and has the power and authority to execute and deliver this Agreement, to perform its obligations hereunder, and to carry on its business as such business is now being conducted and as is contemplated hereunder to be conducted during the term hereof.

(b) The execution, delivery, and performance of this Agreement by Customer have been duly and effectively authorized by all requisite corporate action.

(c) The rates offered to Customer and incorporated into this Agreement were a necessary factor in the decision of Customer to locate its operations in Kentucky. Customer estimates that its Facility will involve a capital investment of approximately $25 million, and employment of approximately 10 full-time persons.

ARTICLE X
ASSIGNMENT AND SUCCESSION

10.01 Neither Party shall assign its rights hereunder without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, either Party may withhold approval of a proposed assignment until it has been provided with all information it may reasonably require regarding the proposed assignee, and it has determined that the proposed assignee has the ability to fulfill assignor's obligations hereunder to the reasonable satisfaction of the Party following the proposed assignment. No assignment by a Party shall relieve the assignor of its obligations hereunder without the written consent of the other Party to accept the assignee as a substitute obligor. This Agreement shall be binding upon and inure to the benefit of the successors, legal representatives, and permitted assigns of the respective Parties hereto.

ARTICLE XI
TERM AND SERVICE COMMENCEMENT DATE

11.01 This Agreement shall become effective upon the Effective Date, and shall remain in effect for twenty years (20) years following the Initial Period.

ARTICLE XII
SUCCESSION, APPROVAL, AND EFFECTIVE DATE

12.01 The "Effective Date" of this Agreement shall be the date hereof, except that said Effective Date shall be postponed and this Agreement shall not become effective unless and until:

(a) all necessary approvals, including approvals of this Agreement, and a corresponding amendment to the Wholesale Power Agreement, are received from (i) the boards of directors of Seller, Customer, and Big Rivers; (ii) the Commission; and (iii) the Rural Utilities Service ("RUS"); or the Parties and Big Rivers waive such approvals;

(b) Seller has completed or caused to be completed the transmission system improvements, and has secured or caused to be secured the transmission service required for service to Customer hereunder up to the Maximum Contract Demand for the Initial Period; and

(c) Customer has obtained the necessary permits, including an occupancy permit, for operation of the Facility.

ARTICLE XIII
MISCELLANEOUS

13.01 Entire Agreement. The terms, covenants, and conditions contained in this Agreement, including the attached exhibits, constitute the entire agreement between the Parties and shall supersede all previous communications, representations, or agreements, either oral or written between the Parties hereto with respect to the subject matter hereof; provided, however, that service to Customer is subject to the articles, bylaws, tariffs, rules, and regulations of Seller and to the laws, rules, regulations, and lawful orders of the Commission. In the event of a conflict between this Agreement and the articles, bylaws, tariffs, rules, and regulations of Seller, this Agreement shall take precedence.

13.02 Governing Law, Jurisdiction, and Venue. All respective rights and obligations of the Parties shall be governed by the laws of the Commonwealth of Kentucky without regard to its conflicts of law rules. The courts of the Commonwealth of Kentucky will have exclusive jurisdiction over each and every judicial action brought under or in relationship to this Agreement; provided that the subject matter of such dispute is not a matter reserved by law to the Commission (in which event exclusive jurisdiction and venue will lie with the Commission), or to the U.S. federal judicial system (in which event exclusive jurisdiction and venue will lie with the U.S. District Court for the Western District of Kentucky), and the Parties shall submit to the jurisdiction of Kentucky courts for such purpose.

13.03 Waiver. The waiver by either Party of any breach of any term, covenant, or condition contained herein will not be deemed a waiver of any other term, covenant, or condition, nor will it be deemed a waiver of any subsequent breach of the same or any other term, covenant, or condition contained herein.

13.04 Amendments. This Agreement may be amended, revised, or modified by, and only by, a written instrument duly executed by both Parties and consented to by Big Rivers.

13.05 Counterparts and Electronic Signatures and Delivery. This Agreement may be executed in any number of counterparts, which together will constitute but one and the same instrument, and each counterpart will have the same force and effect as if they were one original. The counterparts of this Agreement may be executed and delivered by facsimile or other electronic signature (including portable document format) by either of the parties and the receiving party may rely on the receipt of such document so executed and delivered electronically or by facsimile as if the original had been received.

13.06 Headings. The headings contained in this Agreement are solely for convenience and do not constitute a part of the agreement between the Parties, nor should such headings be used to aid in any manner in the construction of this Agreement.

13.07 Severability. Should any provision or provisions of this Agreement be declared void or illegal by any court of competent jurisdiction, then such void or illegal provision or provisions shall be severed from this Agreement, and all other provisions hereof shall remain in full force and effect.

[SIGNATURE PAGE(S) FOLLOW]

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement all as of the day and year first above written.

JACKSON PURCHASE ENERGY
CORPORATION

By: ______________________
Greg Grissom
President and CEO

BLOCKWARE MINING, LLC

By: ______________________
Michael Stoltzer
President and CEO

EXHIBIT A

FACILITIES TO BE SUPPLIED BY SELLER

For service to Customer up to the Maximum Contract Demand for the Initial Period, Seller anticipates installing, or causing to be installed, the following facilities:

[redacted]

[redacted]

[redacted]

Customer further understands that Seller will require notice of at least twelve months to install, or cause to be installed, the facilities required for the additional capacity.

EXHIBIT B

TERMINATION CHARGES

A. <u>TERMINATION CHARGE</u>

The Termination Charge shall be equal to Big Rivers' actual cost of the transmission and other facilities ("<u>Transmission Facilities Costs</u>") constructed to provide service to Customer, reduced by $900/MW-month of demand. The Transmission Facilities Costs are estimated to initially be $1,800,000 as of February 12, 2021 for service to Customer up to the Maximum Contract Demand for the Initial Period. Big Rivers will subsequently incur additional Transmission Facilities Costs in order for Seller to be able to provide service to Customer at demands above the Maximum Contract Demand for the Initial Period. Those additional Transmission Facilities Costs are [redacted] as of [February 12, 2021. Based on load information provided by Customer, the annual increase/reduction in the Termination Charge is estimated to be:

Year	**MW-Months**	**Increase/(Reduction) of Termination Charge**
1	[redacted]	[redacted]
2	[redacted]	[redacted]
2	[redacted]	[redacted]
3	[redacted]	[redacted]
4	[redacted]	[redacted]
5	[redacted]	[redacted]
6	[redacted]	[redacted]
7	[redacted]	[redacted]
8	[redacted]	[redacted]
9	[redacted]	[redacted]
10	[redacted]	[redacted]

If this Agreement expires or is terminated for any reason prior to the completion of the transmission projects required to serve Customer, the Transmission Facilities Costs shall include all costs that Big Rivers has incurred or that are unavoidable as of the date of expiration or termination of this Agreement.

B. <u>EDR TERMINATION CHARGE</u>

The EDR Termination Charge shall equal the sum of all Economic Development Rate Credits Customer is required to refund pursuant to Paragraph C(4) of Exhibit C to this Agreement.

EXHIBIT C

RATES

During the Term of this Agreement, Customer shall take service from Seller under any applicable tariffs of Seller, and Seller shall take service from Big Rivers under Big Rivers' LICX tariff for service to Customer, as such tariffs may be amended from time to time, and any other applicable or successor tariffs; provided, however, that the following Special Contract Rates shall apply to service to Customer in lieu of any other rates in such tariffs unless provided otherwise:

A. Initial Period. The "Peak Demand" for the Initial Period shall equal the applicable Initial Period Peak, as defined below. The rates applicable during the Initial Period are as follows:

1. From the Effective Date of the Agreement through May 31, 2021, Customer shall pay Seller:

   a. A monthly Demand Charge equal to the full then-applicable demand charge under Big Rivers' Large Industrial Customer ("LIC") tariff times the applicable Initial Period Peak; plus

   b. For any Billing Demand each month in excess of the applicable Initial Period Peak and up to the Maximum Contract Demand, a monthly Demand Charge equal to the Big Rivers Adder (as defined in Paragraph E below); plus

   c. an Energy Charge calculated in accordance with Paragraph D of this Exhibit C; plus

   d. the Distribution Adder (as defined in Paragraph E below) for all MWh delivered; plus

   e. all applicable taxes and fees.

2. From June 1, 2021, through the end of the Initial Period, Customer shall pay Seller:

   a. A monthly Demand Charge equal to the full then-applicable demand charge under Big Rivers' LIC tariff times the applicable Initial Period Peak; plus

   b. For any monthly Billing Demand in excess of the Initial Period Peak and up to the Maximum Contract Demand, a monthly Demand Charge equal to the sum of (i) the Big Rivers Adder, and (ii) the Zone 6 Zonal Resource Credit ("ZRC") Auction Clearing Price ("ACP") multiplied by one plus the Planning Resource Margin and again by one plus the Planning Resource Losses percentage in the Planning Resource Auction ("PRA") for the 2021 Planning Year; plus

c. an Energy Charge calculated in accordance with Paragraph D of this Exhibit C; plus

d. the Distribution Adder for all MWh delivered; plus

e. all applicable taxes and fees.

3. If Customer's monthly peak during the Initial Period exceeds the Maximum Contract Demand, the LIC tariff rate will be applied to all load above the Maximum Contract Demand.

4. The "Initial Period Peak" during the Initial Period will be [redacted] from the Effective Date through May 31, 2022. The minimum Billing Demand during the Initial Period shall equal the applicable Initial Period Peak.

B. From the end of the Initial Period, and through the end of the Term, Customer shall pay Seller:

1. A monthly Demand Charge calculated as follows:

a. "Planning Year" means the applicable MISO planning year that begins June 1 and ends the following May 31. The 2021 Planning Year begins June 1, 2021, and ends May 31, 2022.

b. By October 1 of each calendar year beginning in 2021 and through the end of the Term, Customer shall provide Big Rivers a peak load estimate applicable to the MISO Planning Year that begins the following June 1. The peak load estimate Customer so provides for a Planning Year shall be the "Peak Demand" for that Planning Year.

c. For each Planning Year following the Initial Period, [redacted] of the Peak Demand for that Planning Year will be served under Big Rivers' LIC tariff, and will pay the full then-applicable demand charge under the LIC tariff.

d. For each Planning Year following the Initial Period, the remaining [redacted] of the Peak Demand for that Planning Year will pay a demand charge calculated as the sum of (i) the Big Rivers Adder, and (ii) the Zone 6 ZRC ACP in the PRA for that Planning Year. This demand charge will be applied to [redacted] of the Planning Year Peak Demand multiplied by one plus the Planning Resource Margin and again by one plus the Planning Resource Losses percentage. The Demand Charge calculated in this manner will be fixed for each month of a Planning Year.

e. If Customer's monthly peak during any Planning Year exceeds the Peak Load provided by Customer for that Planning Year, the LIC tariff rate will be applied to all load above the Peak Load provided.

f. Customer's minimum monthly demand will be equal to the Peak Demand.

2. less an Economic Development Rate Credit (if applicable) calculated pursuant to Paragraph C of this Exhibit C; plus

3. an Energy Charge calculated in accordance with Paragraph D of this Exhibit C; plus

4. the Distribution Adder for all MWh delivered; plus

5. all applicable taxes and fees.

C. The "Economic Development Rate Credit" for a month shall be calculated as follows:

1. Customer will receive an Economic Development Rate Credit each month equal to 90% of the demand charge applicable to the Incremental Load that is added during Planning Years 2022 through 2030 and that is served under the LIC rate, less one MW; provided, however, that the duration of the credit applicable to the Incremental Load added during a Planning Year will expire on the following schedule:

a. The Economic Development Rate Credit applicable to Incremental Load added during the 2022 Planning Year shall expire five years after the beginning of the 2022 Planning Year.

b. The Economic Development Rate Credit applicable to Incremental Load added during the 2023 Planning Year shall expire four years after the beginning of the 2023 Planning Year.

c. The Economic Development Rate Credit applicable to Incremental Load added during the 2024 Planning Year shall expire four years after the beginning of the 2024 Planning Year.

d. The Economic Development Rate Credit applicable to Incremental Load added during the 2025 Planning Year shall expire three years after the beginning of the 2025 Planning Year.

e. The Economic Development Rate Credit applicable to Incremental Load added during the 2026 Planning Year shall expire three years after the beginning of the 2026 Planning Year.

f. The Economic Development Rate Credit applicable to Incremental Load added during the 2027 Planning Year shall expire two years after the beginning of the 2027 Planning Year.

g. The Economic Development Rate Credit applicable to Incremental Load added during the 2028 Planning Year shall expire two years after the beginning of the 2028 Planning Year.

h. The Economic Development Rate Credit applicable to Incremental Load added during the 2029 Planning Year shall expire one year after the beginning of the 2029 Planning Year.

i. The Economic Development Rate Credit applicable to Incremental Load added during the 2030 Planning Year shall expire one year after the beginning of the 2030 Planning Year.

2. In accordance with the above schedule, no Economic Development Rate Credit will be paid from the beginning of the 2031 Planning Year through the end of the Term.

3. "Incremental Load" is defined as the amount by which the Peak Load estimate for a Planning Year exceeds the prior Planning Year's Peak Load estimate.

4. For any Incremental Load that is entitled to the Economic Development Rate Credit, Customer's Peak Load following the expiration of the credit for such Incremental Load must be equal to or greater than the Peak Load for the Planning Year in which such Incremental Load was added, for the same number of years that the Incremental Load earned the Economic Development Rate Credit. For example, assuming Customer earns the Economic Development Rate Credit for five years for Incremental Load added during the 2022 Planning Year, Customer's Peak Load for the next five years must then be equal to or greater than the Peak Load for the 2022 Planning Year. If Customer's Peak Load falls below this required minimum in any year, then for each such year in which the minimum is not satisfied, Customer shall refund one year's worth of the Economic Development Rate Credit that was earned for that Incremental Load.

D. The "Energy Charge" shall be calculated as follows:

a. On each business day after the Effective Date and throughout the Term, Big Rivers will provide Customer good-faith estimates of the hourly Day-Ahead ("DA") Locational

Marginal Prices ("LMP's") for each day of the following seven-day period.

b. Customer shall provide an hourly estimate of its load requirements for each Operating Day ("OD") by 6:00 AM Eastern Time on the prior day (OD-1). OD estimates for Sundays, Mondays, and the OD following holidays must be provided by 6:00 AM Eastern Time on the prior business day, but may be revised by 6:00 AM Eastern Time on each OD-1. These hourly load estimates will be incorporated into the Big Rivers MISO Demand Bid for that OD.

c. Load served under the LIC tariff will pay the full LIC energy rate, including all adders and riders (including but not limited to Big Rivers' and Seller's Fuel Adjustment Clause ("FAC"), Non-FAC Purchase Power Adjustment ("Non-FAC PPA"), and Environmental Surcharge ("ES") tariffs), except that LIC load receiving the Economic Development Rate Credit will not be eligible to receive credits under Big Rivers' or Seller's Member Rate Stability Mechanism ("MRSM") tariffs.

d. Customer will be responsible for the MISO DA energy cost of the load not served under the LIC tariff. Customer will also be responsible for any energy costs and will receive any energy benefits associated with variances between the DA load estimate and actual Real-Time load. Customer will also be responsible for any MISO market charges associated with the load not served under the LIC tariff. No other tariff adders, riders, or credits (such as the FAC, Non-FAC PPA, ES, and MRSM) shall apply to the energy not served under the LIC tariff.

e. If the energy scheduled for a given hour is less than the Initial Period Peak or the Peak Load estimate for a Planning Year, it will be assumed that LIC energy will be "first through the meter." The difference between the energy scheduled for the hour and the LIC energy will pay the energy charge under Paragraph D(d) of this Exhibit C. If energy consumed in a given hour exceeds the Maximum Contract Demand, Customer will be charged the LIC rate for all energy above the Maximum Contract Demand.

f. A material assumption of this Agreement is that Big Rivers, under the Wholesale Power Agreement, may access throughout the Term of the Agreement, the service required to provide the power to which MISO energy costs or MISO PRA costs apply. If for any reason Big Rivers' membership in

MISO is terminated or the services to provide such power to Customer are altered or are no longer available, the Parties will negotiate in good faith to amend this Agreement to provide substitute pricing.

E. The Big Rivers and Distribution Adders. The "<u>Big Rivers Adder</u>" [redacted] after the Effective Date, and then [redacted] The "<u>Distribution Adder</u>" shall [redacted] after the Effective Date, and [redacted].

EXHIBIT D

BIG RIVERS' CURRENT LARGE INDUSTRIAL CUSTOMER EXPANSION RATE TARIFF

STANDARD RATE – LICX – Large Industrial Customer Expansion **[N]**

Applicable:

In all territory served by Big Rivers' transmission system.

Availability:

This schedule is available to any of the Member Cooperatives of Big Rivers for service to certain large industrial or commercial loads as follows:

(1) To purchases made by a Member Cooperative for service to any New Customer initiating service after August 17, 2020, including New Customers with a QF as defined in Rate Schedule QFP, that either initially contracts for fifty (50) MWs or more of capacity or whose aggregate peak load at any time amounts to fifty (50) MWs or greater (including any later increases to such load) in which case the entire load shall be thereafter subject to this rate schedule.

(2) To purchases made by a Member Cooperative for expanded load requirements of Existing Customers, including Existing Customers with a QF as defined in Rate Schedule QFP, where:

(i) the customer was in existence and served under the then-effective Big Rivers Rate Schedule LIC any time during the Base Year *and*,

(ii) the expanded load requirements are increases in peak load which in the aggregate result in a peak demand which is at least fifty (50) MWs greater than the customer's Base Year peak demand.

STANDARD RATE – LICX – Large Industrial Customer Expansion – (*continued*) [N]

Availability (*continued*):

(3) To purchases made by a Member Cooperative for the expanded load requirements of Existing Customers, including Existing Customers with a QF as defined in Rate Schedule QFP, where:

- (i) the customer's load was in existence and served under the then-effective Big Rivers Rate Schedule RDS;
- (ii) the expanded load requirements are increases in peak load which in aggregate result in a peak demand which is at least fifty (50) MWs greater than the customer's Base Year peak demand; *and*
- (iii) the customer requires service through a dedicated delivery point.

For all loads meeting the availability criteria above, no other Big Rivers tariff rate will be available. To receive service hereunder, the Member Cooperative must:

(1) Obtain from the customer an executed written contract or amend an existing contract, for electric service hereunder with terms acceptable to Big Rivers.
(2) Enter into a contract with Big Rivers, or amend an existing contract with Big Rivers, to specify the terms and conditions of service between Big Rivers and the Member Cooperative regarding power supply for the customer.

STANDARD RATE – LICX – Large Industrial Customer Expansion – (*continued*) [N]

Rates and Charges:

Each month, each Member Cooperative shall be required to pay separately for each of its customers taking service under this tariff, in each case using that individual customer's contract demand (if any) or metered demand, as applicable.

For all delivery points served under this tariff, the Member Cooperative shall negotiate a "Special Contract Rate" with Big Rivers on a case-by-case basis. The Special Contract Rate shall provide a net benefit to the existing load served by the Member Cooperatives, and may consist of *one or more of the following*:

(1) the Standard Rate – LIC – Large Industrial Customer rate,
(2) market-based rates,
(3) fixed rates,
(4) time-of-use rates, *or*
(5) other negotiated rate.

For example, a Special Contract Rate based on market prices could consist of *the sum of the following*:

(1) Expansion Demand and Expansion Energy Rates:
The Expansion Demand rates, Expansion Energy rates, or both shall be established to correspond to the actual costs of power purchased by Big Rivers from Third-Party Suppliers selected by Big Rivers from which Big Rivers procures the supply and delivery of the type and quantity of service required by the Member Cooperative for resale to its customer. Such monthly costs shall include *the sum of all Third-Party Supplier charges*, including –

(i) capacity and energy charges, charges to compensate for transmission losses on Third-Party transmission systems,
(ii) all transmission and ancillary services charges on Third-Party transmission systems paid by Big Rivers to purchase such Expansion Demand and Expansion Energy and have it delivered to Big Rivers' transmission system, *and*
(iii) all MISO expenses and costs.

STANDARD RATE – LICX – Large Industrial Customer Expansion – (*continued*) [N]

Rates and Charges (*continued*):

(2) Expansion Demand Transmission Rate:
Big Rivers shall assess unbundled charges for network transmission service on the Big Rivers Transmission System according to the rates in the OATT applied to each kW taken as Expansion Demand.

(3) Ancillary Services Rates for Expansion Demand and Expansion Energy:
Big Rivers shall assess unbundled rates for all ancillary services required to serve load served under this schedule. Big Rivers shall supply the following six ancillary services as defined and set forth in the OATT –

(i) Scheduling System Control and Dispatch;
(ii) Reactive Supply and Voltage Control from Generation Sources Services;
(iii) Regulation and Frequency Response Service;
(iv) Energy Imbalance Service;
(v) Operating Reserve – Spinning Reserve Service; *and*
(vi) Operating Reserve – Supplemental Reserve Service.

(4) Big Rivers Adder:
In addition to the charges contained in Items (1), (2), and (3) of this Rates and Charges section, Big Rivers shall charge an adder determined on a case by case basis.

Metering:

Big Rivers shall provide an appropriate meter to all delivery points of Large Industrial Customer delivery point customers served under this rate schedule.

STANDARD RATE – LICX – Large Industrial Customer Expansion – (*continued*) [N]

Definitions:

Please see Section 4 for definitions common to all tariffs.

Definitions specific to this rate schedule are:

(1) "Base Year" shall mean the twelve (12) calendar months from _______ 2018 through _______ 2019.

(2) "Existing Customer" shall mean any customer of a Member Cooperative served as of _____________, 2019.

(3) "New Customer" shall mean any customer of a Member Cooperative commencing service on or after __________, 2019.

(4) "Special Contract Rate" shall mean a rate negotiated with a Member Cooperative to serve the load requirements of a New Customer or an Existing Customer.

(5) "Expansion Demand" and "Expansion Energy" *for the load requirements of a New Customer* shall be the Member Cooperative's total demand and energy requirements for the New Customer, including amounts sufficient to compensate for losses on the Big Rivers transmission system as set forth in the OATT.

(6) "Expansion Demand" *for the expanded local requirements of an Existing Customer* shall be the amount in kW by which the customer's Billing Demand *exceeds* the customer's Base Year peak demand, *plus* an additional amount of demand sufficient to compensate for losses on the Big Rivers transmission system as set forth in the OATT. *In those months in which there is Expansion Demand*, "Expansion Energy" shall be the amount in kWh by which the customer's kWh usage for the current month *exceeds* the customer's actual kWh usage for the corresponding month of the Base Year, *plus* an additional amount of kWh sufficient to compensate for losses on the Big Rivers transmission system as set forth in the OATT.

Big Rivers ELECTRIC CORPORATION
Your Touchstone Energy® Cooperative

(Name of Utility)

For All Territory Served By
Cooperative's Transmission System
P.S.C. KY. No. 27

Original SHEET NO. 30.06

CANCELLING P.S.C. KY. No.

SHEET NO.

RATES, TERMS AND CONDITIONS – SECTION 1

[N]

STANDARD RATE – LICX – Large Industrial Customer Expansion
Billing Form

INVOICE
BIG RIVERS ELECTRIC CORP. P. O. BOX 24 HENDERSON, KY 42419-0024
MONTH ENDING mm/dd/yy

TO: LARGE INDUSTRIAL CUSTOMER EXPANSION ACCOUNT
DELIVERY POINTS SERVICE FROM mm/dd/yy THRU mm/dd/yy
USAGE:

USAGE	DEMAND	TIME	DAY	METER	MULT	KW DEMAND
		00:00 A (or P)	mm/dd		1000	00,000

	BASE	PEAK	AVERAGE	kW DEMAND BILLED
POWER FACTOR				
EXPANSION DEMAND	00.00%	00.00%	00.00%	000,000

	PREVIOUS	PRESENT	DIFFERENCE	MULT.	KWH USED
ENERGY					
EXPANSION ENERGY	00000.000	00000.000	0000.000	1000	00,000,000

EXPANSION DEMAND & EXPANSION ENERGY

EXPANSION DEMAND, INCLUDING LOSSESS	kW	TIMES	$	EQUALS	$
P/F PENALTY	kW	TIMES	$	EQUALS	$
EXPANSION ENERGY, INCLUDING LOSSESS	kWh	TIMES	$	EQUALS	$
OTHER EXPANSION SERVICE CHARGES				EQUALS	$
SUBTOTAL					$

EXPANSION DEMAND TRANSMISSION
LOAD RATIO SHARE OF NETWORK LOAD $

EXPANSION DEMAND & EXPANSION ENERGY ANCILLIARY SERVICES

SCHEDULING SYSTEM CONTROL & DISPATCH SERVICE	$
REACTIVE SUPPLY & VOLTAGE CONTROL FROM GENERATION SOURCES SERVICE	$
REGULATION & FREQUENCY RESPONSIVE SERVICE	$
ENERGY IMBALANCE SERVICE	$
OPERATING RESERVE – SPINNING RESERVE SERVICE	$
OPERATING RESERVE – SUPPLEMENTAL RESERVE SERVICE	$
SUBTOTAL	$

BIG RIVERS ADDER
EXPANSION DEMAND kW TIMES $ EQUALS $

TOTAL AMOUNT DUE $

------------ LOAD FACTOR ------------

ACTUAL	BILLED	MILLS PER KWH
00.00%	00.00%	00.00

DUE IN IMMEDIATELY AVAILABLE FUNDS ON OR BEFORE THE FIRST WORKING DAY AFTER THE 24TH OF THE MONTH

DATE OF ISSUE September 3, 2020
DATE EFFECTIVE August 17, 2020

/s/ Robert W. Berry

ISSUED BY: Robert W. Berry,
President and Chief Executive Officer
Big Rivers Electric Corporation, 201 Third Street, Henderson, KY 42420
Issued by Authority of an Order of the Commission,
dated August 17, 2020, in Case No. 2019-00365

KENTUCKY
PUBLIC SERVICE COMMISSION
Kent A. Chandler
Acting Executive Director
EFFECTIVE
8/17/2020
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

EXHIBIT E

BIG RIVERS' CURRENT LARGE INDUSTRIAL CUSTOMER TARIFF

STANDARD RATE – LIC – Large Industrial Customer

Applicable:

In all territory served by Big Rivers' transmission system.

Availability:

This schedule is available to any of Big Rivers' then existing Member Cooperatives for service to Large Industrial Customers served using dedicated delivery points. Retail service by a Member Cooperative to a Large Industrial Customer served using a dedicated delivery point shall be provided pursuant to the terms of a written retail service agreement which shall be subject to Big Rivers' approval.

Term:

This rate schedule shall take effect at 12:01 AM CPT on the effective date of this tariff.

Rates:

Rates Separate for Each Large Industrial Customer:

Each month each Member Cooperative shall be required to pay separately for each of its qualifying Large Industrial Customers taking service under this tariff, in each case using that individual Large Industrial Customer contract demand (if any) or metered demand, as applicable.

STANDARD RATE – LIC – Large Industrial Customer – (*continued*)

For all Large Industrial Customer delivery points, a Monthly Delivery Point Rate consisting of:

A Demand Charge of:
All kW of billing demand at $10.7150 per kW. **[R]**

Plus,

An Energy Charge of:
All kWh per month at $0.038050 per kWh. **[I]**

No separate transmission or ancillary services charges shall apply to these rates.

Charges:

Each month, each Member Cooperative shall pay on behalf of each of its large industrial customers taking service under this rate schedule a demand charge calculated by multiplying the demand charge by the higher of the maximum integrated metered thirty-minute non-coincident peak demand or the established contact demand, if any, plus an energy charge calculated by multiplying the energy charge by the metered consumption of kWh in that month.

The Following adjustment clauses and riders shall apply to service under this tariff.

Voluntary Price Curtailable Service Rider
Renewable Resource Energy Service
Rebate Adjustment
Environmental Surcharge
Fuel Adjustment Clause
Member Rate Stability Mechanism
Unwind Surcredit
Non-Smelter Non-FAC PPA
Rural Economic Reserve Rider **[T]**

STANDARD RATE – LIC – Large Industrial Customer – (*continued*)

Billing:

Big Rivers shall bill Member no later than the first working day after the 13th of the month for the previous month's service hereunder for Large Industrial Customers. Member shall pay Big Rivers in immediately available funds on the first working day after the 24th of the month. If Member shall fail to pay any such bill within such prescribed period, Big Rivers may discontinue delivery of electric power and energy hereunder upon five (5) days written notice to Member of its intention to do so. Such discontinuance for non-payment shall not in any way affect the obligation of Member to pay the take-or-pay obligation of a particular Large Industrial Customer.

STANDARD RATE – LIC – Large Industrial Customer – (*continued*) [T]

Bill Format [T]

Please see Section 4 – Definitions for certain terms used on this Bill Format. [T]

BIG RIVERS ELECTRIC CORPORATION — INVOICE — P. O. BOX 24 — HENDERSON, KY 42419-0024
MONTH ENDING mm/dd/yy

TO: Member's Name — ACCOUNT
SUBSTATION — SERVICE FROM: mm/dd/yy THRU mm/dd/yy
SERVICE FROM: mm/dd/yy THRU mm/dd/yy — BILLED PEAK mm/dd time

USAGE	DEMAND	TIME	DAY	METER	MULT.	KW DEMAND
		00:00 A (or P)	mm/dd		1,000	00,000

POWER FACTOR	BASE	PEAK	AVERAGE	BILLED
	00.00%	00.00%	00.00%	PEAK

	PREVIOUS	PRESENT	DIFFERENCE	MULT.	KWH / USED
ENERGY	00000.000	00000.000	00000.000	1,000	00,000,000

ACTUAL DEMAND	0,000	KW times	$00.000000	EQUALS	$	00,000.00
ADJUSTMENTS / REFUNDS	0,000	KW times	$00.000000	EQUALS		00,000.00
				SUBTOTAL	$	00,000.00
ENERGY	0,000,000	KWh times	$0.000000	EQUALS	$	00,000.00
ADJUSTMENTS / REFUNDS	0,000,000	KWh times	$0.000000	EQUALS		00,000.00
				SUBTOTAL	$	00,000.00
			DEMAND AND ENERGY		$	00,000.00
FUEL ADJUSTMENT CLAUSE	0,000,000	KWh times	$0.000000	EQUALS	$	00,000.00
NON-SMELTER NON-FAC PPA	0,000,000	KWh times	$0.000000	EQUALS		00,000.00
				SUBTOTAL	$	00,000.00
ENVIRONMENTAL SURCHARGE	$00,000.00	Times	0.00%	EQUALS	$	00,000.00
POWER FACTOR PENALTY	0,000	KW times	$00.000000	EQUALS		00,000.00
UNWIND SURCREDIT	0,000,000	KWh times	$0.000000	EQUALS		00,000.00

[T]

Big Rivers ELECTRIC CORPORATION Your Touchstone Energy® Cooperative (Name of Utility)	For All Territory Served By Cooperative's Transmission System P.S.C. KY. No. 27 First Revised SHEET NO. 30 CANCELLING P.S.C. KY. No. 27 Original SHEET NO. 30

STANDARD RATE – LIC – Large Industrial Customer – (*continued*)

Bill Format (*continued*)

Please see Section 4 – Definitions for certain terms used on this Bill Format.

MRSM ADJUSTMENT						00,000.00
CURTAILABLE SERVICE RIDER						00,000.00
RENEWABLE RESOURCE ENERGY	0,000,000	KWh times	$0.000000	EQUALS		00,000.00
REBATE ADJUSTMENT						00,000.00
ADJUSTMENT	0,000,000	KWh times	$0.000000	EQUALS		00,000.00
				SUBTOTAL	$	00,000.00
				TOTAL AMOUNT DUE	$	00,000.00

[D]

- - - - - - - - LOAD FACTOR - - - - - - -		- - - - - - - - - - POWER FACTOR - - - - - - - - - -			
ACTUAL.	BILLED	BASE	AVERAGE	@ PEAK	MILLS PER KWH
00.00%	00.00%	00.00%	00.00%	00.00%	00.00

DUE IN IMMEDIATELY AVAILABLE FUNDS ON OR BEFORE THE FIRST WORKING DAY AFTER THE 24TH OF THE MONTH

DATE OF ISSUE July 15, 2020
DATE EFFECTIVE June 25, 2020

/s/ Robert W. Berry

ISSUED BY: Robert W. Berry,
President and Chief Executive Officer
Big Rivers Electric Corporation, 201 Third Street, Henderson, KY 42420
Issued by Authority of an Order of the Commission, dated June 25, 2020, in Case No. 2020-00064

KENTUCKY
PUBLIC SERVICE COMMISSION
Kent A. Chandler
Acting Executive Director

EFFECTIVE
6/25/2020
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Big Rivers
ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

April 12, 2021

Mr. Greg Grissom
President and CEO
Jackson Purchase Energy Corporation
2900 Irvin Cobb Drive
P. O. Box 4030
Paducah, KY 42002-4030

Re: Retail Electric Service Agreement
Blockware Mining, LLC

Dear Greg:

This letter agreement ("*Letter Agreement*") will evidence the concurrence of Big Rivers Electric Corporation ("*Big Rivers*") with the terms of the Agreement for Electric Service between Jackson Purchase Energy Corporation ("*Jackson Purchase*") and Blockware Mining, LLC (the "*Retail Customer*"), a copy of which is attached hereto (the "*Retail Agreement*"), and the agreement between Big Rivers and Jackson Purchase with respect thereto.

(1) **Existing Agreement and Tariffs.** The terms and conditions of the October 14, 1977, wholesale power agreement between Big Rivers and Jackson Purchase, as amended, and Big Rivers' filed tariffs shall continue in full force and effect except as expressly modified by this Letter Agreement.

(2) **Additional Rights and Obligations of Big Rivers.** Big Rivers shall make available to Jackson Purchase the electric power required during the term of the Retail Agreement to perform the power supply obligations assumed by Jackson Purchase in the Retail Agreement, and Big Rivers shall have the benefit of Retail Customer's obligations in such agreement. Big Rivers will supply the facilities required to deliver power to the delivery point, as defined in the Retail Agreement, and to meter electrical usage by Retail Customer.

(3) **Obligations of Jackson Purchase.** Jackson Purchase shall take and pay for electric power and energy delivered by Big Rivers in accordance with the Retail Agreement, with demand and energy being measured in accordance with the Retail Agreement.

(4) **Obligation of Jackson Purchase for Minimum Billing Demand and Termination Charges.** Jackson Purchase agrees to bill Retail Customer for any minimum billing demand charges in excess of measured demand, any termination charges, and any other amounts due under the Retail Agreement, and agrees to pay over to Big Rivers all funds actually collected under such billings. The terms of this paragraph do not affect the obligation of Jackson Purchase to pay Big Rivers in accordance with Big Rivers' tariff as and when billed for the wholesale charges for electric power and energy actually consumed by Retail Customer.

(5) **Division of Any Partial Payments.** Jackson Purchase will pay to Big Rivers a pro

rata share of any partial payment made to Jackson Purchase by or on behalf of Retail Customer.

(6) **RUS Collateral Assignment.** Notwithstanding any other provision of this Letter Agreement to the contrary, Big Rivers may, without the written consent of Jackson Purchase and without relieving itself from liability hereunder, assign, transfer, mortgage or pledge this Agreement or its rights under this Agreement to create a security interest for the benefit of the United States of America, acting through the Rural Utilities Service ("*RUS*"), or other secured party (directly or through an indenture trustee or other collateral agent; collectively, including such indenture trustee or other collateral agent, a "*Secured Party*"). Thereafter, a Secured Party, without the written consent of Jackson Purchase, may (i) cause this Agreement (and all obligations hereunder) to be sold, assigned, transferred or otherwise disposed of to a third party pursuant to the terms governing such security interest, or (ii) if RUS first acquires this Agreement pursuant to 7 U.S.C. § 907 or if any other Secured Party otherwise first acquires this Agreement, sell, assign, transfer or otherwise dispose of this Agreement (and all obligations hereunder) to a third party; provided, however, that in either case (A) Big Rivers is in default of its obligations that are secured by such security interest and that the applicable Secured Party has given Jackson Purchase written notice of such default; and (B) the applicable Secured Party has given Jackson Purchase not less than thirty (30) days' prior written notice of its intention to sell, assign, transfer or otherwise dispose of this Agreement (and all obligations hereunder) indicating the identity of the intended third-party assignee or purchaser.

(7) **Effective Date.** This Letter Agreement will become effective upon approval or acceptance by the Public Service Commission of Kentucky, and upon receipt of any consents or approvals required under Big Rivers' agreements with its creditors, including the RUS. Big Rivers will provide Jackson Purchase written notice when all those required consents and approvals have been received.

(8) **Entire Agreement and Amendment.** This Letter Agreement represents the entire agreement of the parties on the subject matter herein, and cannot be amended except in writing, duly authorized and signed by Big Rivers and Jackson Purchase. The Retail Agreement shall not be amended without the advance written approval of Big Rivers. Big Rivers shall have the right to approve the terms and issuer(s) of the letter(s) of credit contemplated by the Retail Agreement to secure the obligations of the Retail Customer for minimum demand charges and termination charges.

If this Letter Agreement is acceptable to Jackson Purchase, please indicate that acceptance by signing in the space provided and returning four signed counterparts to us.

Sincerely yours,

BIG RIVERS ELECTRIC CORPORATION

Robert W Berry

Robert W. Berry
President and CEO

ACCEPTED:

JACKSON PURCHASE ENERGY CORPORATION

Greg Grissom
President and CEO
Date: 4-12-21

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

JOINT SPECIAL CONTRACT FILING OF BIG RIVERS ELECTRIC CORPORATION AND JACKSON PURCHASE ENERGY CORPORATION	**)))**	**TFS No. 2021-00____**

DIRECT TESTIMONY MARK J. EACRET

I. INTRODUCTION

Q. Please state your name, your position, and give a summary of your education and work experience.

A. My name is Mark J. Eacret. I am employed by Big Rivers Electric Corporation ("*Big Rivers*" or the "*Company*"), 201 Third Street, Henderson, Kentucky 42420, as Vice President Energy Services. I report to Robert W. Berry, President and Chief Executive Officer.

As Vice President Energy Services, I am responsible for long-term energy and capacity marketing and short-term energy hedging activities at Big Rivers. I am also responsible for coordination of daily Midcontinent Independent System Operator, Inc. ("*MISO*") commercial market activities that include unit offer strategy, interface with ACES Power Marketing, and oversight of the market awards process. A staff of seven professionals report to me. Other responsibilities include scheduling

Southeast Power Administration ("*SEPA*") energy and capacity, the Company's tri-annual Integrated Resource Plan, contract management, economic development activities, interface with the MISO Independent Market Monitor, and performing a variety of official roles within the MISO structure.

I graduated from Indiana University–Purdue University Indianapolis with a Bachelor of Science in Accounting and from Indiana University with a Master of Business Administration with a concentration in Finance. I was employed by CINergy and its predecessor companies from 1980 to 1991 in the accounting function and, beginning in 1991, in the wholesale power function managing the analytical support for the company's wholesale marketing and trading functions. From 1999 through 2013, I worked for Ameren Corp where initially my team and I provided analytical support to the company's marketing and trading functions. In 2007, I assumed the additional responsibility of Controller for Ameren's merchant generation operation, Ameren Energy Resources ("*AER*"). In 2011, I became AER's Controller and Vice President of Business Services. Following Ameren's 2013 sale of its merchant generation function, I moved to Sunflower Electric Power Corporation ("*Sunflower*") in January 2014, as the Senior Manager of Market Operations and Power Contracts. At Sunflower, I was part of the team that transitioned Sunflower into the Southwest Power Pool's ("*SPP*")

Integrated Market. I assumed my current position with Big Rivers in April 2015.

Q. Have you previously testified before the Kentucky Public Service Commission (the "*Commission*")?

A. Yes. I testified on behalf of Big Rivers in Case No. 2021-00079,[1] in which Big Rivers is seeking a Certificate of Public Convenience and Necessity authorizing the conversion of the generating units at its Green Station to gas-fired units, as well as other relief. I also testified in Case No. 2020-00183[2] and in Case No. 2019-00269.[3] I sponsored responses to information requests in Case No. 2020-00299[4]; Case No. 2016-00278;[5]

---

[1] *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.

[2] *In the Matter of: Electronic Application of Big Rivers Electric Corporation for Approval of Solar Power Contracts*, P.S.C. Case No. 2018-00183.

[3] *In the Matter of: Electronic Application of Big Rivers Electric Corporation for Enforcement of Rate and Service Standards*, P.S.C. Case No. 2019-00269.

[4] *In the Matter of: Electronic 2020 Integrated Resource Plan of Big Rivers Electric Corporation*, P.S.C. Case No. 2020-00299.

[5] *In the Matter of: Application of Big Rivers Electric Corporation for a Declaratory Order*, P.S.C. Case No. 2016-00278.

Case No. 2017-00384;[6] Case No. 2019-00365;[7] and Case No. 2020-00064.[8] I have also offered direct testimony in Fuel Adjustment Clause reviews, including Case No. 2019-00007.[9] My professional experience is summarized in Exhibit Eacret-1.

Q. Are your sponsoring any exhibits?

A. Yes. I am sponsoring the following exhibits:

Exhibit Eacret-1 – Professional Summary of Mark J. Eacret

Exhibit Eacret-2 - Economic Development Rate Guidelines

Exhibit Eacret-3 – Big Rivers' Estimated Available Capacity

Exhibit Eacret-4 – Net Margins

Exhibit Eacret-5 – Big Rivers Financial Statements

Exhibit Eacret-6 - Notice to Economic Development Cabinet

Exhibit Eacret-7 – Greater Paducah Economic Development Letter

---

[6] *In the Matter of: 2017 Integrated Resource Plan of Big Rivers Electric Corporation*, P.S.C. Case No. 2017-00384.

[7] *In the Matter of: Joint Application of Big Rivers Electric Corporation and Meade County Rural Electric Cooperative Corporation for Approval of Contracts for Electric Service with Nucor Corporation and Application of Big Rivers Electric Corporation for Approval of Tariff*, P.S.C. Case No. 2019-000365.

[8] *In the Matter of: Electronic Application of Big Rivers Electric Corporation for Approval to Modify Its MRSM Tariff, Cease Deferring Depreciation Expenses, Establish Regulatory Assets, Amortize Regulatory Assets, and Other Appropriate Relief*, P.S.C. Case No. 2020-00064.

[9] *In the Matter of: Electronic Examination of the Application of the Fuel Adjustment Clause of Big Rivers Electric Corporation from November 1, 2106 through October 31, 2018*, P.S.C. Case No. 2019-0007.

II. BACKGROUND

Q. Please explain why you are filing testimony.

A. Big Rivers regularly assists its three distribution cooperative members (the "*Members*") in their economic development efforts. More specifically, Big Rivers has been working diligently with its Member Jackson Purchase Energy Corporation ("*Jackson Purchase*") and the Greater Paducah Economic Development organization to attract new load to Jackson Purchase's service territory from technology based businesses. These efforts are consistent with the Governor's and Kentucky General Assembly's policy to encourage the use and growth of blockchain technology in the Commonwealth through the location and expansion of commercial cryptocurrency mining operations in the Commonwealth, rather than in other states likewise competing for such businesses. *See* the Recitals of House Bill 230 (Effective July 1, 2021) at CHAPTER 122 (HB 230, Rudy and others) (ky.gov); *see also* Senate Bill 255 (Effective July 2021) at CHAPTER 141 (SB 255, Smith) (ky.gov).

For a number of reasons, including the recent tax incentives passed by the Kentucky General Assembly and the availability of an economic development incentive rate for power from Jackson Purchase and Big Rivers (as Jackson Purchase's wholesale electric provider), several cryptocurrency mining companies have expressed interest in locating their operations in Industrial Park West near Paducah, Kentucky.

Jackson Purchase has executed a retail service agreement (the "*Retail Agreement*") with one of these companies, Blockware Mining, LLC ("*Blockware*"). Big Rivers, Jackson Purchase, and Blockware engaged in a series of discussions regarding the contemplated facility. Through these discussions, it became apparent that the assurance of long-term competitive power pricing was a critical factor in Blockware's decision-making process in where to locate its facility, as 95% of operating expenses for a cryptocurrency mining operation is electricity costs.[10] Blockware's facility would be highly energy-intensive, initially utilizing up to [redacted] and increase up to [redacted] And once in operation, that facility would face both national and international competition including competition from cryptocurrency mining companies receiving significant incentives on their electric pricing.

Consequently, in order to secure Blockware's investment in Kentucky, Big Rivers, Jackson Purchase, and Blockware negotiated the Retail Agreement filed with this testimony. This special contract sets forth fair, just, reasonable rates, and will help to fulfill the economic development policy objectives of the Commonwealth.

This testimony is being offered in support of the Retail Agreement and a related wholesale contract letter agreement between Jackson

---

[10] *See* https://www.blockwaresolutions.com/research-and-publications/2020-halving-analysis .

Purchase and Big Rivers (the "*Wholesale Agreement*") (collective the "*Proposed Contracts*"), which is also being filed with this testimony.

Q. Who is Blockware?

A. Blockware Mining was an Illinois limited liability company, organized in 2019. On May 1, 2021, Blockware Mining completed a conversion to a Delaware C Corporation, which operates globally in Canada, China, Japan, Malaysia and United States. Blockware Mining offers access to an extensive network of commercial Data Center Facilities across North America who specialize in Hosting Services for Cryptocurrency Mining Rigs, providing guaranteed up-time and 24/7 monitoring of their customers' machines by experienced IT personnel. The Blockware facility now planned for Paducah, McCracken County, Kentucky, will host mining rigs for mining Bitcoin.

III. DESCRIPTION OF THE RETAIL AGREEMENT

Q. Are there any other noteworthy features of the Retail Agreement besides the economic development incentive rate?

A. Yes. Most notably are the ramp-up periods and the rate structure under Big Rivers' Large Industrial Customer Expansion ("*LICX*") tariff.

Q. Please explain the ramp-up periods.

A. Big Rivers will be required to install some initial transmission upgrades to be able to provide up to [redacted] of electric service to the Industrial Park

West area (the "*Phase I Transmission Upgrades*"). These upgrades are listed in Exhibit A of the Retail Agreement.

Upon receipt of all necessary approvals of the Proposed Contracts, Blockware providing the required credit support, and the installation of the Phase I Transmission Upgrades, Blockware intends to begin taking service under the Retail Agreement at an initial load of [redacted].[11] As Blockware expands the number of servers and other facilities, its load is expected to increase to [redacted] by May 31, 2022.

Blockware has the option under the Retail Agreement to expand its load even further, up to [redacted], provided Blockware gives sufficient notice to Big Rivers to allow Big Rivers to install the necessary transmission system upgrades to meet the increased demand (the "*Phase II Transmission Upgrades*"). These upgrades are also listed in Exhibit A to the Retail Agreement.

Note that, because of the need to have additional transmission system capacity at Industrial Park West available to quickly respond to other economic development prospects, and the negotiations with other cryptocurrency mining companies looking to locate at that industrial park that are currently underway, Big Rivers has decided to proceed with upgrades which will enable Jackson Purchase and Big Rivers to provide a

[11] Blockware has provided a cash deposit of $1.2 million as credit support.

total of 100 MW of electric service to Industrial Park West, as well as enhancing reliability to existing retail members (“*Revised Phase II Transmission Upgrades*”) These upgrades will require a certificate of public convenience and necessity (“*CPCN*”) from the Commission. Big Rivers expects to file an application for the CPCN in the near future. Any Large Industrial Customers locating at Industrial Park West will be required to provide a proportionate share of credit support for the Revised Phase II Transmission Upgrades to help ensure that Big Rivers recovers its investment.

Q. Please explain the LICX rate structure?

A. Under the Blockware contract, [redacted] of Blockware’s power requirements will be served under Big Rivers’ Large Industrial Customer (“*LIC*”) rate, plus a Jackson Purchase adder, and be subject to the economic development incentive rate. The remaining [redacted] of Blockware’s power requirements will be served at market-based prices, plus Big Rivers and Jackson Purchase adders.

Q. What is the purpose of this structure?

A. The primary purpose of this structure is to protect the other retail customers’ on the Big Rivers system from stranded costs. While Jackson Purchase and Big Rivers are excited that Blockware has chosen Western Kentucky to be its home, Blockware is not a traditional Large Industrial Customer. Blockware participates in a volatile industry, and the jobs and infrastructure required for Blockware's operations are small compared to its power requirements. For that reason, the Blockware Retail Agreement is designed to balance the need for incentives to attract Blockware to Kentucky with adequate protections for other retail customers.

Big Rivers' LICX tariff was put in place to specifically to address these types of risks. The LICX tariff is a mechanism that allows Big Rivers and its Members to offer reasonable rates to very large new or expanded load while protecting existing customers from potential cost risks associated with such new or expanded load. The LICX tariff also requires that customers that would be served via the LICX tariff to negotiate a special contract rate that is sufficient to ensure that the rate the new or expanded load pays provides a net benefit to existing customers.

More specifically, Big Rivers wanted to avoid having to make substantial investments to increase generation resources or to enter into long-term power purchase agreements for the full Blockware load, which Big Rivers would be left with if Blockware were to terminate the contract prior to the full term. Instead, much of Blockware's load will be served at market-based prices, with Blockware bearing the associated market risk. The Big Rivers and Jackson Purchase adders applicable to this portion of Blockware's load ensure that even this portion of Blockware's load provides benefits to the Big Rivers system.

Serving [redacted] of Blockware's load at LIC rates less the economic development incentive is equivalent to attracting a more typical Large Industrial Customer with a [redacted] to [redacted] load. This is still a valuable addition to the Big Rivers system, and as explained in the Direct Testimony of John Wolfram, will cover the cost required to serve that load, plus provide an additional contribution to Big Rivers' fixed costs.

Other provisions of the Retail Agreement also ensure Big Rivers, its Members, and the other retail customers on the Big Rivers system are protected. These provisions are not particular to Blockware, but are typical for all Large Industrial Customers on the Big Rivers system. They include the credit support required for the transmission system investments, the credit support for the economic development incentive, and the credit support for two months of estimated billing.

IV. <u>ECONOMIC DEVELOPMENT RATE</u>

Q. You mentioned above that the Blockware contract contains an economic development incentive rate. Is that correct?

A. Yes. Big Rivers has developed and currently offers an economic development rate ("*Big Rivers EDR*") to its Members for their qualifying retail members or prospective members. This is the first time a retail customer has taken advantage of the Big Rivers EDR since the Commission's first opportunity to review the Big Rivers EDR in Case No.

2016-00117, *In the Matter of: Joint Application of Kenergy Corp. and Big Rivers Electric Corporation for Approval of Contracts*.

Q. The Public Service Commission's September 24, 1990 order in the Administrative Case No. 327 (the "*Admin 327 Order*") contains 18 findings beginning on page 24 that revise and elaborate on the guidelines the Commission had previously issued regarding economic development rates. The Commission directed in the Admin 327 Order that a jurisdictional utility filing an economic development rate contract must comply with Findings 3-17 of the Admin 327 Order, as if the same were individually so ordered. Has Big Rivers complied with those findings in this Application?

A. Findings 1, 2, 17, and 18 are policy or procedural statements by the Commission rather than requirements for an EDR, and Findings 15 and 16 apply only to gas utilities. So, I will focus on Findings 3 through 14.

Q. Please review each of those findings, beginning with Finding #3, which provides that an economic development rate should be implemented by special contract negotiated between a utility and its large industrial customer. Has that been done?

A. Yes. Jackson Purchase and Big Rivers, in the respective roles, are proposing to implement the Big Rivers EDR through the Retail Agreement between Jackson Purchase and Blockware. The Big Rivers

EDR is based upon the EDR guidelines Big Rivers has established, a copy of which is attached as Exhibit Eacret-2 to my testimony.

Q. Finding #4 in the Admin 327 Order is that an EDR contract should specify all terms and conditions of service including, but not limited to (1) the applicable rate discount and other discounts provision; (2) the number of jobs and capital investments to be created as a result of the EDR: (3) customer-specific fixed costs associated with a serving a customer; (4) minimum bill; (5) estimated load; (6) estimated load factor: and (7) length of contract. Do the contracts in this case satisfy the requirements of this finding?

A. Yes. The Retail Agreement with Blockware specifies all terms and conditions of service. I will address the requirements of the Admin 327 Order's Finding #4 individually and in order.

(1) The Big Rivers EDR, including the discount, is described in detail in the Exhibit C to the Retail Agreement. The discount is 90% of the Big Rivers standard LIC tariff Demand Charge for the eligible kilowatts purchased by Blockware during the applicable incentive periods, as set forth in Exhibit C to the Retail Agreement.

(2) The number of jobs and amount of capital investments to be created by Blockware are described in Section 9.02(c) of the Retail Agreement. In that section, Blockware represents that the Paducah

facility will initially involve an estimated capital investment of approximately $25 million, and employment at its facility of approximately 10 full-time persons. According to the Greater Paducah Economic Development, Blockware will have an estimated annual recurring impact of $5.7 million per year on the Paducah community.[12]

(3) As stated in Section 2.08 and Exhibit A, "Facilities to Be Supplied by Seller," of the Retail Agreement, the customer-specific fixed costs to Big Rivers associated with serving Blockware are estimated to be $1.8 million,[13] but in the end will be the actual cost of those facilities. The most recent estimate of that cost is $1.2 million, and Blockware has provided a cash deposit of that amount as credit support. These fixed costs are related to construction of new transmission facilities and retrofitting Big Rivers' existing substation that are further described in Exhibit A to the Retail Agreement. The actual amount of the Transmission Facilities Costs becomes a "Termination Charge" in the Retail Agreement, as provided in Section 2.11 and Exhibit B to the Retail Agreement. The amount of the Termination Charge is reduced by $0.90 per kilowatt purchased and paid for by Blockware during the term of its

---

[12] *See* Exhibit Eacret-7, Letter dated June 7, 2021, from the president of the Greater Paducah Economic Development.

[13] Service beyond the Maximum Contract Demand for the Initial Period up to [redacted] is subject to additional facilities to be supplied by Big Rivers, which require notice of at least twelve months for installation.

Retail Agreement. If the Retail Agreement expires or is otherwise terminated, and the $0.90 per kilowatt credits have not eliminated the Termination Charge, Blockware is obligated to pay the remaining balance of the Termination Charge. Payment of the Termination Charge will be secured by a cash deposit or an irrevocable bank letter of credit.

(4) The minimum bill Blockware is required to pay is described in Exhibit C. In Section (A)(4) for the Initial Period, from the Effective Date through May 31, 2022, the Initial Period Peak will be [redacted] and the minimum Billing Demand during the Initial Period shall equal the applicable Initial Period Peak. Exhibit C to the Retail Agreement at Section B(1)(f) provides that following the Initial Period, from May 31, 2022 to the end of the Term, Blockware's minimum monthly demand will be equal to the Peak Demand.

(5) Blockware's estimated load is shown in the table on Exhibit B to the Retail Agreement.

(6) the estimated load factor is 90% after ramp-up.

(7) Section 11.01 of the Retail Agreement provides that the Agreement shall remain in effect for twenty years following the Initial Period, which is from the Effective Date through May 31, 2022.

Q. The Admin 327 Order provides in Finding #5 that an EDR would only be offered during periods of excess capacity. Will the load expected to be served by Jackson Purchase, and supported by

wholesale power from Big Rivers, cause Big Rivers to fall below a reserved margin that is considered to be essential for system reliability during any year of the contract period?

A. [redacted] *See* CONFIDENTIAL Exhibit Eacret-3, showing Big Rivers' currently-anticipated available capacity over the first ten years of the Blockware Special Contracts.[14] However, the expected Blockware load served with the EDR ([redacted] of Blockware's load requirement) accounts for only a small percentage of Big Rivers' total load obligation during [redacted] period. As discussed more fully below, this additional load will not affect system reliability or create a need for new plant capacity.[15]

Q. Is Big Rivers seeking a deviation from the Admin 327 Order Finding #5. If so, on what grounds?

A. Big Rivers is requesting a deviation from the strict requirement of Finding #5, with respect to the Special Contracts to the extent the Admin

---

[14] *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.

[15] *See In the Matter of: Application Of East Kentucky Power Cooperative, Inc. For Approval of an Economic Development Rider*, Case No. 2014-00034, Order at 4 (Ky. P.S.C. June 20, 2014).

327 Order requires excess capacity for each month the EDR is offered. Almost 31 years have passed since the Commission issued the Admin 327 Order, at a time preceding Regional Transmission Organizations. While CONFIDENTIAL Exhibit Eacret-3 shows projected annual available capacity, in any given year Big Rivers will have excess capacity in some months and not it others. Big Rivers sells all of its generation into MISO and purchases all of its load from MISO. Big Rivers evaluates its projected monthly on-peak and off-peak load, generation, and market price forecasts to make sound economic decisions. Given the relatively modest size of Blockware's power requirements served with the EDR, Big Rivers does not anticipate that it will be necessary to make a specific market purchase to cover the demand for that power during the [redacted] time frame.

As I stated earlier, the proposed Special Contracts provide that [redacted] of Blockware's power requirements will be served under the LICX Tariff rate structure, at market-based prices, plus Big Rivers and Jackson Purchase adders, with Blockware bearing the associated market risk. The Big Rivers and Jackson Purchase adders applicable to this portion of Blockware's load ensure that even this portion of Blockware's load provides benefits to the Big Rivers system. In fact, the net present value ("*NPV*") of the gross margins from the sale for the first ten years is [redacted]. This calculation adds the sales at LIC and at market and subtracts the market costs of the capacity and energy. These calculations are shown on CONFIDENTIAL Exhibit Eacret-4 to my testimony.

Q. The Admin 327 Order requires in Finding #6 that Big Rivers and Jackson Purchase demonstrate that the discounted rate offered to Blockware exceeds the marginal cost associated with serving Blockware. Is that the case?

A. Yes. John Wolfram, Principal with Catalyst Consulting, performed a marginal cost of service study on behalf of Big Rivers, which study is attached as Exhibit Wolfram-2 to his Direct Testimony in this matter. The study demonstrates that the discounted rate to Blockware produces revenues that exceed the marginal cost associated with serving Blockware.

Big Rivers' Member Owners will not only benefit from the [redacted] over the first ten years in gross margins over what would have been earned in the MISO market, the Revised Phase II Upgrades in the transmission infrastructure in the western edge of the Big Rivers footprint will strengthen the transmission system in that area for further development. Additionally, as noted previously, Blockware's facility will involve an initial estimated capital investment of approximately $25 million, and employment of approximately 10 full-time persons, and Blockware expects both will double.

Q. Will Big Rivers commit to file an annual report with the Commission detailing revenues received from Blockware and any other individual EDR customers and the margin costs associated with serving those individual customers as required by Commission Finding #7?

A. Yes. Big Rivers currently files this annual report, and will continue to file the report.

Q. As required by Commission Finding #8, during any rate proceedings by Big Rivers filed subsequent to the effective date of the proposed agreements related to Blockware, and during a period when Big Rivers still has an active EDR contract, will Big Rivers demonstrate through detailed cost-of-service analysis that its member distribution cooperative non-EDR rate payers are not adversely affected by the EDR rate to Blockware and any other EDR customers that may be on the Big Rivers system at that time?

A. Yes.

Q. Does the retail electric service agreement with Blockware provide for the recovery of EDR customer-specific fixed costs over the life of the contract as required by Commission Finding #9?

A. Yes. As described in my testimony, the Retail Agreement with Blockware establishes a Termination Charge that assures the recovery of EDR customer-specific fixed costs over the life of the Retail Agreement. That obligation of Blockware is secured by a letter of credit or cash deposit, as is also required in the Retail Agreement.

Q. Does the Retail Agreement impose any specific job creation and capital investment requirements on Blockware as discussed in Commission Finding #10?

A. No.

Q. Does Big Rivers commit, so long as it is providing wholesale service to one of its distribution cooperatives with an active EDR contract, that pursuant to Commission Finding #11, it will file and annual report with the Commission providing the information shown in Appendix A to the Admin 327 Order?

A. Yes.

Q. Does the EDR proposed in the Blockware Retail Agreement apply only to load which exceeds a minimum base level as required by Commission Finding #12?

A. Yes. If you will refer to Exhibit C to the proposed Retail Agreement, Section C provides that Blockware will receive an EDR credit each month equal to the 90% of the demand charge applicable to the portion of Incremental Load served at LIC rates, which is defined as the amount by which the Peak Load estimate for a Planning Year exceeds the prior Planning Year's Peak Load estimate.

Q. Is the EDR contract designed to retain the load of an existing customer, so that the requirements of Commission Finding #13 apply to this Application?

A. No. The Big Rivers EDR in the proposed Retail Agreement with Blockware is designed to encourage Blockware to locate in Kentucky. Blockware represents in Section 9.02(c) to the Retail Agreement that the rates offered and incorporated in the Retail Agreement were a necessary factor in its decision to locate its operations in Kentucky.

Q. The Admin 327 Order states in Finding #14 that the term of an EDR contract should be for a period of twice the length of the discount period, with the discount period not exceeding 5 years. It also states that during the second half of an EDR contract, the rates charged to the customer should be identical to those contained in a standard rate schedule that is applicable to the customer's rate class and usage characteristics. Does the Retail Agreement comply with these requirements?

A. Yes. If you refer to Exhibit C to the Retail Agreement, the EDR Credit enables Blockware to continue to ramp up its operations, and to receive the credit for each incremental increase in demand. The maximum incentive for any one increment is 5 years, and the incentive structure ensures that all incentives are paid within the first 10 years. No EDR Credit will be paid from the beginning of the 2031 Planning year through the end of the Term, which is 20 years from the Initial Period, which ensures that Blockware pays the full LIC rate applicable to other Large Industrial customers for the second 10 years of the contract.

To assure that Blockware pays the full rate on a number of kilowatts equal to the number of kilowatts on which it received a discount, the Retail Agreement provides that Blockware's Peak Load following the expiration of the EDR Credit for a tranche of Incremental Load must be equal to or greater than the Peak Load for the Planning Year in which that tranche of Incremental Load earned the EDR Credit, and for the same number of years that tranche of Incremental Load earned the EDR Credit.

Q. Why is Big Rivers offering an economic development rate?

A. Big Rivers is offering the Big Rivers EDR to increase economic activity in the service area of its Members, which the Commission notes on page 10 of the Admin 327 Order is the "major objective of EDRs." Big Rivers is encouraged that the Big Rivers EDR has contributed to Blockware's decision to locate its business in Jackson Purchase's service area, and hopes that it will produce further beneficial economic activity on the Big Rivers system. This benefits Big Rivers and its Members.

Q. Are there any issues with Big Rivers' finances that would cause questions about whether Big Rivers can afford to give the discount provided by the EDR?

A. No. Big Rivers' financial condition is good, as shown by a copy of Big Rivers' Financial Statements December 31, 2020 and 2019 (with Independent Auditors' Report Thereon), which is attached to my testimony as Exhibit Eacret–5. As I testified earlier, even after the EDR discount is applied the Blockware rate during the Discount Periods, Big Rivers still receives a contribution to fixed costs from the rate to Blockware.

V. <u>WHOLESALE AGREEMENT</u>

Q. Please describe the Wholesale Agreement.

A. The Wholesale Agreement is a letter agreement that supplements Big Rivers' wholesale power contract with Jackson Purchase to accommodate the issues peculiar to service to Blockware, such as the minimum demand obligations and the EDR. For several years, Big Rivers has utilized a letter agreement similar in form to the proposed letter agreement to supplement the wholesale power contract with its Members, including Jackson Purchase, for the Member's retail service to any Large Industrial Customer that is served directly from Big Rivers' transmission system. Big Rivers continues to believe that this practice is reasonable.

VI. <u>OTHER CONSIDERATIONS</u>

Q. Are Big Rivers and Jackson Purchase required to obtain any creditor approval for the Retail Agreement and the Wholesale Agreement to become effective?

A. Yes. Big Rivers must submit the Wholesale Agreement to the United States Department of Agriculture's Rural Utilities Service ("*RUS*") for review in accordance with requirements of Big Rives' loan contract with RUS. That submittal will be made on or about the date the Wholesale Agreement is filed with the Commission. The obligations of Jackson Purchase under the Retail Agreement are not effective against it, unless and until all required approvals are received, including RUS approval of the Wholesale Agreement.

Q. Did Big Rivers give notice of the filing of the application in this matter to the Kentucky Cabinet of Economic Development?

A. Yes. That notice is being given on the same day the Special Contracts are being filed with the Commission. A copy of that notice is attached as Exhibit Eacret-6 to my testimony.

VII. <u>CONCLUSION</u>

Q. Do you believe the Retail and Wholesale Agreements are reasonable?

A. Yes. The proposed Special Contracts are reasonable, and the LICX structure and EDR incentive provide an appropriate incentive for a new Large Industrial Customer that is in the best interest of all Big Rivers' Members, while at the same time providing protections against the risk of substantial stranded assets.

Q. Please summarize your conclusions and recommendations.

A. The proposed Special Contracts support economic development in Paducah, Kentucky, and the Commonwealth's interest in encouraging the development and growth of blockchain technology in Kentucky. More importantly, Big Rivers and Jackson Purchase negotiated the terms of the proposed Special Contracts to include an appropriate discounted rate to encourage Blockware to locate in the Commonwealth and appropriate performance assurance provisions to protect all Big Rivers' Members. With the exception of the minor variance discussed above regarding Finding #5, the proposed Special Contracts comply with each of the applicable findings of the Commission's September 24, 1990, Order in Administrative Case No. 327. For the above-stated reasons, the Commission should approve the Special Contracts and grant the requested deviation from Finding #5 of the Admin 327 Order.

Q. Does this conclude your testimony?

A. Yes.

BIG RIVERS ELECTRIC CORPORATION

JOINT SPECIAL CONTRACTS OF
BIG RIVERS ELECTRIC CORPORATION AND
JACKSON PURCHASE ENERGY CORPORATION

TFS No. 2021-00___

VERIFICATION

I, Mark J. Eacret, verify, state, and affirm that I prepared or supervised the preparation of the Direct Testimony filed with this Verification, and that this Direct Testimony is true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

Mark J. Eacret
Mark J. Eacret

COMMONWEALTH OF KENTUCKY)
COUNTY OF HENDERSON)

SUBSCRIBED AND SWORN TO before me by Mark J. Eacret on this the 17th day of June, 2021.

Joy P. Parsley
Notary Public, Ky. State at Large
My Commission Expires_______

Notary Public, Kentucky State-At-Large
My Commission Expires: July 10, 2022
ID: 604480

Professional Summary

Mark J. Eacret
Vice President Energy Services
Big Rivers Electric
Corp
201 Third St
Henderson, Kentucky 42420
(270) 844-6126

Professional Experience

Big Rivers Electric Corporation
Vice President Energy Services – 2015 to present

Sunflower Electric Power Corporation – 2014
Senior Manager of Market Operations and Power Contracts

Ameren Energy Resources
Vice President of Business Services and Controller 2011-2013
Controller 2007-2011
Manager of Pricing and Analysis 1999-2007

Cinergy Corporation
Various Wholesale Power Analytical Positions 1991-1999
Various Accounting Positions of increasing responsibility 1980-1991

Education

Master of Business Administration with a concentration in Finance
Indiana University-Bloomington

Bachelor Degree (Accounting Major)
Indiana University – Indianapolis

February 19, 2021

Economic Development Rate ("EDR")
Terms and Conditions Guidelines

Big Rivers and its Member Cooperatives will offer special economic development rate credits to qualifying new and expanding commercial and industrial customers in Big Rivers' Member Cooperatives' service territories. The economic development incentive will be offered through a special contract with a maximum credit period of five years. The following additional eligibility guidelines apply:

- Applies to all qualifying new or expansion load above 1,000 kW billing demand.
- The retail customer's total bill for service in a month will be credited by an amount equal to 90% of the Big Rivers standard LIC tariff Demand Rate applied to the billing demand in that month, before application of other adjustments.
- The energy rate during the term of the EDR contract that is charged by Big Rivers to its Member Cooperative related to an EDR contract, and by the Member Cooperative to the EDR contract retail customer, will be the energy rates in their respective applicable tariffs.
- Available to businesses engaged in manufacturing or similar (Division D of the Standard Industrial Classification Code) or engaged in commercial mining of cryptocurrency, as defined by House Bill 230 and Senate Bill 255.
- The term for the credit period will not exceed five (5) years.
- The minimum EDR contract term is twice the term of the credit period. Commencing with the expiration of the credit period, the retail customer will be required to pay applicable tariff demand rates, but in any event no less than the Big Rivers standard LIC tariff Demand Rate, for a period equal to the length of the credit period, with a minimum billing demand that is the greater of 60% of the contract maximum demand or the monthly average number of kilowatts on which the retail customer received a credit during the credit period. The credit period and the corresponding period at applicable tariff demand rates cannot exceed ten years.
- For expansion load, the credit will only be applicable to the incremental load of the retail customer above the "Base Demand." The Base Demand will be the average monthly demand of the retail customer during the 24 consecutive months as close as practical to the execution date of the EDR contract, plus 1,000 kW.
- A 50% minimum load factor must be achieved each month in the credit period or the applicable demand rate will apply with no credit in that month.
- If Big Rivers and the Member Cooperative agree that a retail customer may add new or expanded load in phases, each phase will be treated separately, except that any credit period provided for in an EDR contract must commence no later than three (3) years after the effective date of the EDR contract. Big Rivers' standard tariff rates apply to wholesale service provided prior to the commencement of a credit period. If a retail customer elects to postpone commencement of a credit period in order to optimize the credit; the retail customer will still be subject to all obligations/requirements.
- Additional consideration may be given for the retail customer loads that are fully or partially interruptible.

Economic Development Rate ("EDR")
Terms and Conditions Guidelines

- Customer-specific fixed cost recovery will be determined on a case-by-case basis. Preference will be given to utilizing the current methodology of providing a credit of $0.90/kW-month credit against a termination fee equal to the amount of the customer-specific fixed costs. This must be accompanied by appropriate security for the termination fee obligation. New or expanded load will be eligible for the MRSM benefit along with the EDR credit.
- The economic development incentive rate is not automatically available to any new or expanded commercial or industrial load otherwise qualifying for the incentive. The retail customer must demonstrate that the economic development rate incentive was an important factor in the retail customer's decision to locate in Kentucky or to expand its operations in Kentucky.
- The contract should contain a good faith representation by the retail customer specifying the estimated number of jobs and amount of capital investment to be created by the new or expanded operation, although achievement of those estimates is not a condition to continuing to receive the economic development incentive.
- The continued availability of the economic development incentive will depend upon the availability of economic excess capacity on the Big Rivers system.
- The retail customer must commit to provide Big Rivers on a timely basis the information that enables it to comply with the EDR contract filing and reporting requirements of the Kentucky Public Service Commission ("Commission").

The following information will be provided or evaluated to allow for reporting to the Commission on the economic development incentive on an annual basis.

- MW Size – Annual peak demand along with timing of the peak,
- Load factor – Annual load factor,
- Capital cost – Total Big Rivers capital (including transmission costs) cost/MW of peak demand,
- Economic Impact – Evaluation of potential economic impact to the western Kentucky region as a result of this load,
- Credit risk/rating – The credit risk based on the prospects credit rating and outlook,
- Rate shift – The impact on overall Member Cooperative rates, measured as the average $/MWh shift in rates for the first five years of operation.
- SIC Code and NAICS code of proposed facility.

Big Rivers will provide evidence to the Commission demonstrating it has adequate capacity to meet anticipated load growth and all marginal costs will be covered by the transaction (current marginal cost of service study required).

Big Rivers and its Member Cooperatives will use special contracts for all eligible retail customers seeking the economic development credit. It is recognized that many of the framework criteria are based on the information provided at the time of the retail customer

Economic Development Rate (“EDR”)
Terms and Conditions Guidelines

contact, not actual results. Big Rivers will seek to verify such information to the extent practical.

<u>All special contracts require Board, RUS, and PSC approval.</u>

Big Rivers Electric Corporation
Planning Reserve Margins/Load Comparison 2021-2034

Planning Year 2021 Planning Reserve Margin Requriment (PRMR) target is 10% based on unforced capacity (UCAP) 9.4% plus 1.6% Transmission Losses

Source of UCAP PRMR MISO *Planning Year 2021-2022 Loss of Load Expection Study Report available at:* https://cdn.misoenergy.org/PY%202021%2022%20LOLE%20Study%20Report489442.pdf

Planning Year	Forecasted Summer Coincident peak in megawatts (Native + 1.6% Losses)	Summer Peak plus Planning Reserve Margin of 9.4%	Capacity in megawatts	Excess over PRMR	Contracted Non-Member Sales (Net Capacity)	Excess over PRMR and Net Contracted Non-Member Sales
2021	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2022	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2023	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2026	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2027	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2028	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2029	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2030	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2031	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2032*	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2033	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2034	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

Big Rivers Electric Corporation
Planning Reserve Margins/Load Comparison 2021-2034

Planning Year 2021 Planning Reserve Margin Requriment (PRMR) target is 10% based on unforced capacity (UCAP) 9.4% plus 1.6% Transmission Losses

Source of UCAP PRMR MISO *Planning Year 2021-2022 Loss of Load Expection Study Report available at:* https://cdn.misoenergy.org/PY%202021%2022%20LOLE%20Study%20Report489442.pdf

Resource Name	Effective UCAP with Coal-Fired Green through June 2022	Effective UCAP with NG-Fired Green in 2022	Effective UCAP with Solar Additions 2024 (ELCC)	
Wilson 1	386	384	396	
Green 1	214	190	190	
Green 2	215	183	183	
Reid CT	60	58	56	
SEPA	178	178	178	
Solar Capacity**			82	
New NGCC Purchase				
Total	1054			Effective UCAP with Coal-Fired Green through June 2022
Total		993		Effective UCAP with NG-Fired Green in 2022
Total			1084	Effective UCAP with Solar Additions 2024 (ELCC)

Solar Capacity using ELCC and IHS Markit North American Market Outlook - November, 2020

Big Rivers Electric Corporation
Calculation of Member Benefit Transaction
Blockware Mining

	2021	2022	2023	2024	2025
MW	[redacted]				
Large Industrial Customer [LIC] MWh					
Market MWh					
Load Factor					
Revenue					
Large Industrial Customer [LIC]	[redacted]				
Market Pass-Through					
Energy	[redacted]				
Capacity					
MISO Market Expenses					
Jackson Purchase [JP] Adder					
Big Rivers Adder					
Total Revenue	[redacted]				

Big Rivers Electric Corporation
Calculation of Member Benefit Transaction
Blockware Mining

	2026	2027	2028	2029	2030	[redacted]
MW	[redacted]					
Large Industrial Customer [LIC] MWh						
Market MWh						
Load Factor						
Revenue						
Large Industrial Customer [LIC]	[redacted]					
Market Pass-Through						
Energy	[redacted]					
Capacity						
MISO Market Expenses						
Jackson Purchase [JP] Adder						
Big Rivers Adder						
Total Revenue	[redacted]					

Big Rivers Electric Corporation
Calculation of Member Benefit Transaction
Blockware Mining

		2021	2022	2023	2024	2025
Expenses						
Large Industrial Customer [LIC]						
Capacity		[redacted]				
	$3.80					
BREC.BREC Energy						
Energy						
Market Pass-Through						
Energy		[redacted]				
Capacity						
MISO Market Expenses						
Total Expenses		[redacted]				
Net Margin*		[redacted]				

* Includes Big Rivers' LICX Tariff Adder, JP Adder, and Gross Margin on Big Rivers' LIC Tariff sales

Big Rivers Electric Corporation
Calculation of Member Benefit Transaction
Blockware Mining

	2026	2027	2028	2029	2030	[redacted]
Expenses						
Large Industrial Customer [LIC]						
Capacity	[redacted]					
$3.80						
BREC.BREC Energy						
Energy						
Market Pass-Through						
Energy	[redacted]					
Capacity						
MISO Market Expenses						
Total Expenses	[redacted]					
Net Margin*	[redacted]					

* Includes Big Rivers' LICX Tariff Adder, JP Adder, and Gross Margin on Big Rivers' LIC Tariff sales

Initital Transmission Investment to Allocation of Upgrade [redacted] (1,200,000)

NPV [redacted]

TFS No. 2021-________
Exhibit Eacret-4

BIG RIVERS ELECTRIC CORPORATION

Financial Statements

December 31, 2020 and 2019

(With Independent Auditors' Report Thereon)

KPMG LLP
Suite 2600
400 West Market Street
Louisville, KY 40202

Independent Auditors' Report

The Board of Directors and Members
Big Rivers Electric Corporation:

Report on the Financial Statements

We have audited the accompanying financial statements of Big Rivers Electric Corporation, which comprise the balance sheets as of December 31, 2020 and 2019, and the related statements of operations, comprehensive income, equities, and cash flows for each of the years in the three-year period ended December 31, 2020, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Big Rivers Electric Corporation as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2020 in accordance with U.S. generally accepted accounting principles.

KPMG

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated March 24, 2021, on our consideration of Big Rivers Electric Corporation's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Big Rivers Electric Corporation's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Big Rivers Electric Corporation's internal control over financial reporting and compliance.

KPMG LLP

Louisville, Kentucky
March 24, 2021

BIG RIVERS ELECTRIC CORPORATION

Balance Sheets

December 31, 2020 and 2019

(Dollars in thousands)

Assets		2020	2019
Utility plant – net	$	786,622	905,086
Restricted investments – Member rate mitigation		666	1,391
Restricted investments – NRUCFC Capital Term Certificates		—	31,609
Other deposits and investments		22,377	21,474
Current assets:			
Cash and cash equivalents		20,400	30,733
Restricted cash – construction funds trustee		353	353
Short-term investments		6,603	9,437
Accounts receivable		40,736	37,266
Fuel inventory		20,391	26,965
Nonfuel inventory		17,457	24,216
Prepaid expenses and other assets		5,129	4,298
Total current assets		111,069	133,268
Deferred charges and other assets:			
Regulatory assets		435,252	250,562
Federal tax receivable		—	54
Other		2,249	5,769
Total deferred charges and other assets		437,501	256,385
Total	$	1,358,235	1,349,213
Equities and Liabilities			
Capitalization:			
Equities	$	531,539	523,164
Long-term debt		663,780	706,269
Total capitalization		1,195,319	1,229,433
Current liabilities:			
Current maturities of long-term obligations		32,962	27,673
Purchased power payable		3,713	2,702
Accounts payable		23,535	22,328
Accrued expenses		9,345	9,054
Accrued interest		903	3,279
Regulatory liabilities – member rate mitigation		12,223	—
Total current liabilities		82,681	65,036
Deferred credits and other:			
Regulatory liabilities – member rate mitigation		1,111	2,111
Regulatory liabilities – TIER credit		20,000	—
Asset retirement obligations		40,410	34,557
Deferred credits and other		18,714	18,076
Total deferred credits and other		80,235	54,744
Commitments and contingencies (note 13)			
Total	$	1,358,235	1,349,213

See accompanying notes to financial statements.

BIG RIVERS ELECTRIC CORPORATION

Statements of Operations

Years ended December 31, 2020, 2019, and 2018

(Dollars in thousands)

		2020	2019	2018
Operating revenue	$	328,708	378,727	380,205
Total operating revenue		328,708	378,727	380,205
Operating expenses:				
Operations:				
Fuel for electric generation		83,939	119,831	128,555
Power purchased and interchanged		35,756	37,893	51,910
Production, excluding fuel		40,616	45,918	47,897
Transmission and other		37,042	38,078	34,359
Maintenance		36,947	39,066	47,897
Depreciation and amortization		54,630	49,356	20,709
Total operating expenses		288,930	330,142	331,327
Electric operating margin		39,778	48,585	48,878
Interest expense and other:				
Interest		33,393	36,937	38,568
Income tax benefit		(448)	(28)	(12)
Other – net		830	696	717
Total interest expense and other		33,775	37,605	39,273
Operating margin		6,003	10,980	9,605
Nonoperating margin:				
Interest income and other		4,192	5,735	5,625
Total nonoperating margin		4,192	5,735	5,625
Net margin	$	10,195	16,715	15,230

See accompanying notes to financial statements.

BIG RIVERS ELECTRIC CORPORATION

Statements of Comprehensive Income

Years ended December 31, 2020, 2019, and 2018

(Dollars in thousands)

		2020	2019	2018
Net margin	$	10,195	16,715	15,230
Other comprehensive income (loss):				
Defined-benefit plans:				
Actuarial gain (loss)		(779)	1,506	(1,350)
Amortization of loss		296	559	804
Defined-benefit plans		(483)	2,065	(546)
Postretirement benefits other than pensions:				
Prior service cost		(112)	(414)	(138)
Actuarial gain (loss)		(1,205)	(820)	413
Amortization of gain		(20)	(198)	(30)
Postretirement benefits other than pensions		(1,337)	(1,432)	245
Other comprehensive income (loss)		(1,820)	633	(301)
Comprehensive income	$	8,375	17,348	14,929

See accompanying notes to financial statements.

BIG RIVERS ELECTRIC CORPORATION

Statements of Equities

Years ended December 31, 2020, 2019, and 2018

(Dollars in thousands)

	Retained margin	Other equities: Donated capital and memberships	Other equities: Consumers' contributions to debt service	Accumulated other comprehensive income/(loss)	Total equities
Balance – December 31, 2017	$ 486,800	764	3,681	(358)	490,887
Net margin	15,230	—	—	—	15,230
Pension and postretirement benefit plans	—	—	—	(301)	(301)
Balance – December 31, 2018	502,030	764	3,681	(659)	505,816
Net margin	16,715	—	—	—	16,715
Pension and postretirement benefit plans	—	—	—	633	633
Balance – December 31, 2019	518,745	764	3,681	(26)	523,164
Net margin	10,195	—	—	—	10,195
Pension and postretirement benefit plans	—	—	—	(1,820)	(1,820)
Balance – December 31, 2020	$ 528,940	764	3,681	(1,846)	531,539

See accompanying notes to financial statements.

BIG RIVERS ELECTRIC CORPORATION

Statements of Cash Flows

Years ended December 31, 2020, 2019, and 2018

(Dollars in thousands)

		2020	2019	2018
Cash flows from operating activities:				
Net margin	$	10,195	16,715	15,230
Adjustments to reconcile net margin to net cash provided by operating activities:				
Depreciation and amortization		55,329	49,407	24,365
Interest compounded – RUS Series A Note		—	—	26
Interest compounded – RUS Series B Note		11,557	10,911	10,300
Interest income compounded – RUS Cushion of Credit (advance payments unapplied)		(169)	(169)	(120)
Noncash member rate mitigation revenue		(9,532)	(15,578)	(5,525)
Changes in certain assets and liabilities:				
Accounts receivable		(3,470)	(3,876)	13,007
Fuel and nonfuel inventory		13,333	(1,289)	14,186
Prepaid expenses and other		(831)	2,663	(1,621)
Deferred charges		(12,042)	(13,162)	(3,239)
Purchased power payable		1,011	(2,632)	2,802
Accounts payable		(3,706)	46	1,726
Accrued expenses		(2,085)	(3,115)	2,634
Other – net		6,619	15,113	2,494
Net cash provided by operating activities		66,209	55,034	76,265
Cash flows from investing activities:				
Capital expenditures		(61,154)	(23,281)	(24,480)
Proceeds from restricted investments and deposits		43,902	21,655	1,097
Purchases of restricted investments and other deposits and investments		(12,854)	(22,462)	—
Proceeds of short-term investments		11,074	11,334	627
Purchases of short-term investments		(8,239)	(11,165)	(1,011)
Net cash used in investing activities		(27,271)	(23,919)	(23,767)
Cash flows from financing activities:				
Principal payments on long-term obligations		(141,337)	(38,495)	(93,488)
Proceeds from long-term obligations		93,241	—	43,595
Proceeds from line of credit		83,300	—	—
Payments on line of credit		(83,300)	—	(20,000)
Payments on debt issuance costs		(1,175)	—	—
Net cash used in financing activities		(49,271)	(38,495)	(69,893)
Net decrease in cash and cash equivalents		(10,333)	(7,380)	(17,395)
Cash and cash equivalents – beginning of year		31,086	38,466	55,861
Cash and cash equivalents – end of year	$	20,753	31,086	38,466
Supplemental cash flow information:				
Cash paid for interest	$	24,801	26,487	28,957
Cash paid for income taxes		—	2	1
Supplemental schedule of non-cash financing and investing activities:				
Change in regulatory assets associated with asset retirement obligations	$	13,476	2,897	5,294
Change in regulatory assets associated with utility plant		156,122	83,616	26,417
Purchases of utility plant in accounts payable		4,694	582	(1,236)

See accompanying notes to financial statements.

(1) Organization and Summary of Significant Accounting Policies

(a) General Information

Big Rivers Electric Corporation ("Big Rivers" or the "Company"), an electric generation and transmission cooperative, supplies wholesale power to its three member distribution cooperatives (Jackson Purchase Energy Corporation, Kenergy Corp. ("Kenergy"), and Meade County Rural Electric Cooperative Corporation) under all requirements contracts. Big Rivers also markets power to nonmember utilities, power marketers, and the Midcontinent Independent System Operator ("MISO"). The members provide electric power and energy to industrial, residential, and commercial customers located in portions of 22 western Kentucky counties. The wholesale power contracts with the members remain in effect until December 31, 2043. Rates to Big Rivers' members are established by the Kentucky Public Service Commission ("KPSC") and are subject to approval by the Rural Utilities Service ("RUS"). The financial statements of Big Rivers include the provisions of the Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") 980, *Regulated Operations*, and give recognition to the ratemaking and accounting practices of the KPSC and RUS.

(b) Estimates

The preparation of the financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and disclosure of contingent assets and liabilities. The estimates and assumptions used in the accompanying financial statements are based upon management's evaluation of the relevant facts and circumstances as of the date of the financial statements. Actual results may differ from those estimates.

(c) System of Accounts

Big Rivers maintains its accounting records in accordance with the Uniform System of Accounts as prescribed by RUS Bulletin 1767B-1, as adopted by the KPSC. These regulatory agencies retain authority and periodically issue orders on various accounting and ratemaking matters. Adjustments to RUS accounting have been made to make the financial statements consistent with generally accepted accounting principles in the United States of America.

(d) Revenue Recognition

Revenues generated from the Company's wholesale power sales are based on month-end meter readings and are recognized as earned when electricity is delivered. Capacity revenues are recognized in the period in which the Company provides capacity to a counterparty.

In May 2014, the FASB issued Accounting Standards Update ("ASU") 2014-09, *Revenue from Contracts with Customers (Topic 606)*. The main principle of the ASU is that an entity should recognize revenue to depict the transfer of promised goods or services to its customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. ASU 2014-09 became effective for the Company for its annual reporting period beginning on January 1, 2019.

(Dollars in thousands)

(e) Utility Plant and Depreciation

Utility plant is recorded at original cost, which includes the cost of contracted services, materials, labor, and overhead. In accordance with FASB ASC 835-20, *Interest – Capitalization of Interest,* the Company also includes capitalized interest on projects with an estimated total cost of $250 or more before consideration of capitalized interest. The interest capitalized is determined by applying the effective rate of Big Rivers' weighted average debt to the accumulated expenditures for qualifying projects included in construction in progress. Replacements of depreciable property units, except minor replacements, are charged to utility plant.

Depreciation of utility plant in service is recorded using the straight-line method over the estimated remaining service lives, as approved by the RUS and KPSC. During 2012, a depreciation study was completed to evaluate the remaining economic lives of the Company's assets and establish new depreciation rates. The study was approved by the RUS in 2012 and by the KPSC in 2014, with the rates becoming effective February 1, 2014. The annual composite depreciation rates used to compute depreciation expense are as follows:

Electric plant	0.35%–25.38%
Transmission plant	1.36%–2.29%
General plant	3.76%–9.88%

For 2020, 2019, and 2018, the average composite depreciation rates were 3.19%, 2.41%, and 2.52%, respectively. At the time utility plant is disposed of, the original cost plus cost of removal less salvage value of such utility plant is charged to accumulated depreciation, as required by the RUS. For 2020 and 2019, Big Rivers TIER credit was charged to depreciation and amortization as discussed in Note 5. There was no TIER credit in 2018.

(f) Impairment Review of Long-Lived Assets

Long-lived assets are reviewed as facts and circumstances indicate that the carrying amount may be impaired. FASB ASC 360, *Property, Plant, and Equipment*, requires the evaluation of impairment by comparing an asset's carrying value to the estimated future cash flows the asset is expected to generate over its remaining useful life. If this evaluation were to conclude that the future cash flows were not sufficient to recover the carrying value of the asset, an impairment charge would be recorded based on the difference between the asset's carrying amount and its fair value (less costs to sell for assets to be disposed of by sale) as a charge to net margin.

(g) Asset Retirement Obligations

FASB ASC 410-20, *Asset Retirement and Environmental Obligations – Asset Retirement Obligations*, requires legal obligations associated with the retirement of long-lived assets to be recognized at fair value when incurred and capitalized as part of the related long-lived asset. The liability is accreted each period based on the credit-adjusted risk-free rate of return that existed when the liability, or portion thereof, was initially measured. The period accretion is recognized as an increase in the carrying amount of the liability, and the capitalized cost is depreciated over the useful life of the related asset.

When the asset is retired, the entity settles the obligation for its recorded amount or incurs a gain or loss.

Big Rivers has recorded liabilities in its financial statements for asset retirement obligations ("AROs") related to the requirements of the U.S. Environmental Protection Agency's ("EPA") Disposal of Coal Combustion Residuals from Electric Utilities Rule ("CCR Final Rule") and Effluent Limitations Guidelines Rule ("ELG Final Rule") for the coal ash ponds located at its Green Station and the City of Henderson's Station Two ("Station Two") generating units.

The CCR Final Rule was published in the Federal Register on April 17, 2015 and provides a comprehensive set of requirements for the safe disposal of CCRs, commonly known as coal ash, from coal-fired power plants. The EPA subsequently published an update to the CCR Final Rule, effective on September 28, 2020, allowing facilities to submit a demonstration for an extension to the deadline for unlined CCR surface impoundments to stop receiving waste. The Company submitted the demonstration in November 2020 requesting approval to operate its Green Station ash pond until June 2022, with closure commencing at that time. The ELG Final Rule was published in the Federal Register on November 3, 2015, and sets limits on the levels of toxic metals in wastewater that can be discharged from power plants. See Note 3 for further discussion of the Company's AROs.

(h) Inventory

Inventories are carried at average cost and include coal, lime, limestone, oil and gas used for electric generation, and materials and supplies used for utility operations. Purchased emission allowances are recorded in inventory at actual cost by each vintage year. Allowances issued by the EPA are recorded at zero cost by each vintage year. Total purchased and EPA issued allowances are carried in inventory at a weighted average cost by each vintage year. Issuances of allowances are accounted for on a vintage basis using a monthly weighted average cost.

(i) Restricted Investments

Certain investments are restricted under KPSC order to establish reserve funds for Member rate mitigation. The 2012 loan agreement with the National Rural Utilities Cooperative Finance Corporation ("CFC") required as a condition of the extension of credit, that an equity ownership position be established by all borrowers. During 2020, the CFC agreed to Big Rivers utilizing the equity ownership position to pay off the 2012B CFC Equity Note.

The equity investments did not have readily determinable fair values and were accounted for at cost minus impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment. No impairment or observable price changes were recorded during 2020, 2019, or 2018.

(j) Cash and Cash Equivalents

Big Rivers considers all short-term, highly liquid investments with original maturities of three months or less to be cash equivalents.

(k) Restricted Cash

Big Rivers has restricted cash related to proceeds from the sale of utility plant as required by the RUS loan contract.

(l) Short-Term Investments

Short-term investments include certificates of deposits ("CDs") held for investment and investments in debt securities. Both of the aforementioned short-term investments have original maturities greater than three months and less than one year.

(m) Regulatory Assets and Liabilities

FASB ASC 980 applies to regulated entities for which rates are designed to recover the costs of providing service. In accordance with this FASB topic, certain items that would normally be reflected in the statement of operations are deferred on the balance sheet. Regulatory assets represent probable future revenues associated with certain incurred costs, which will be recovered from members through the regulated rate-making process. Regulatory assets are reduced during the period(s) in which the related costs are recovered through rates or when future recovery is no longer probable. Conversely, regulatory liabilities represent future reductions in revenues associated with amounts that are to be credited, or refunded, to members through the regulated rate-making process. Regulatory liabilities are reduced during the period(s) in which the related amounts are refunded to members through rates or when future refunding of the amounts is no longer probable.

(n) Other Deposits and Investments

Other deposits and investments consist primarily of patronage capital, cash collateral/margin call deposits, investments in associated organizations, and investments held in trust for a deferred compensation plan. Investments held in trust consist primarily of equities and money market accounts and are carried at fair value. Remaining deposits are recorded at their original cost as their cost approximates fair value due to the nature of the deposit.

(o) Income Taxes

Big Rivers was formed as a tax-exempt cooperative organization as described in Internal Revenue Code Section 501(c)(12). To retain tax-exempt status under this section, at least 85% of Big Rivers' annual income must be generated from transactions with the Company's members. In 1983, sales to nonmembers resulted in Big Rivers failing to meet the 85% requirement. Until Big Rivers can meet the 85% member income requirement, the Company will not be eligible for tax-exempt status and will be treated as a taxable cooperative.

As a taxable cooperative, Big Rivers is entitled to exclude the amount of patronage allocations to members from taxable income. Income and expenses related to nonpatronage-sourced operations are taxable to Big Rivers. Big Rivers files a federal income tax return and certain state income tax returns.

Under the provisions of FASB ASC 740, *Income Taxes*, Big Rivers is required to record deferred tax assets and liabilities for temporary differences between amounts reported for financial reporting purposes and amounts reported for income tax purposes on the tax return. Deferred tax assets and liabilities are determined based upon these temporary differences using enacted tax rates for the year in which these differences are expected to reverse. Deferred income tax expense or benefit is based on the change in assets and liabilities from period to period, subject to an ongoing assessment of realization. Tax benefits associated with income tax positions taken, or expected to be taken, in a tax return are recorded only when the more-likely-than-not recognition threshold is satisfied and measured at the largest amount of benefit that is greater than 50% likely of being realized upon settlement.

(p) Patronage Capital

As provided in the Company's bylaws, Big Rivers accounts for each year's patronage-sourced income, both operating and nonoperating, on a patronage basis. Notwithstanding any other provision of the bylaws, the amount to be allocated as patronage capital for a given year shall not be less than the greater of regular taxable patronage-sourced income or alternative minimum taxable patronage-sourced income.

(q) Derivatives

Management has reviewed the requirements of FASB ASC 815, *Derivatives and Hedging*, and has determined that certain contracts to which the Company is a party to meet the definition of a derivative under FASB ASC 815. The Company has elected the Normal Purchase and Normal Sale exception for these contracts, and therefore, the contracts are not required to be recognized at fair value in the financial statements.

(r) Fair Value Measurements

FASB ASC 820, *Fair Value Measurement*, defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal, or most advantageous, market for the asset or liability in an orderly transaction between market participants at the measurement date. ASC 820 establishes a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. This hierarchy requires entities to maximize the use of observable inputs when possible. The three levels of inputs used to measure fair value are as follows:

- Level 1 – quoted prices in active markets for identical assets or liabilities;
- Level 2 – observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data; and
- Level 3 – unobservable inputs that are supported by little or no market activity and that are significant to the fair values of the assets or liabilities, including certain pricing models, discounted cash flow methodologies, and similar techniques that use significant unobservable inputs.

(s) Deferred Loan Costs

The Company capitalizes costs incurred in connection with long-term debt. These costs are amortized using the effective interest methodover the term of the respective debt financing agreements.

In accordance with ASU 2015-03, *Interest-Imputation of Interest (Subtopic 835-30)*, deferred loan costs related to a recognized debt liability are presented on the balance sheet as a direct deduction from the carrying amount of the related debt liability instead of being presented as an asset.

(t) Deferred Credits and Other

Deferred credits and other includes employee-related benefits and capacity revenue sales billed but not yet earned. Employee related benefits include, but are not limited to, pension and post-retirement benefit costs and amounted to $18,474 and $16,403 at December 31, 2020 and 2019, respectively. Deferred capacity revenue, which will be recognized within the next year, amounted to $240 and $1,673 at December 31, 2020 and 2019, respectively.

(u) New Accounting Guidance

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* (ASU 2016-02). The main principle of this ASU requires that lessees recognize all leases (other than leases with a term of twelve months or less) on the balance sheet as lease liabilities, based upon the present value of the lease payments, with corresponding right of use assets. ASU 2016-02 also makes targeted changes to other aspects of the current guidance, including the lease classification criteria and the lessor accounting model. In May 2020, the FASB delayed the required implementation date of ASU 2016-02 for private entities by one year. The amendments in ASU 2016-02 will be effective for the Company for annual reporting periods beginning after December 15, 2021. The Company is currently assessing the impact of adopting the guidance but does not believe it will have a material effect.

(v) Reclassification

Certain items in 2019 have been reclassified on the financial statements for comparative purposes to conform with presentation in the current year financial statements. Specifically, the regulatory debit-TIER credit is reflected in depreciation and amortization on the Statements of Operations and the Statements of Cash Flows in the current year and was presented separately in the 2019 financial statements. The amount of the TIER credit is $33,334 and $27,743 in 2020 and 2019, respectively. The reclassification has no impact on net margins.

(w) Risks and Uncertainties

The outbreak of the COVID-19 pandemic has resulted in governments and customers enacting emergency measures to combat the spread of the virus. These measures have included the implementation of travel bans, self-imposed quarantine periods, social distancing, additional safety protocols, and temporary customer facility shutdowns. The KPSC ordered utilities to continue serving customers who do not pay, and subsequently issued an order requiring utilities to offer payment plans to customers with past due account balances. The Company met its financial targets in 2020 and did not experience any material adverse impacts. It is not currently possible to estimate the length, severity, or financial impact of these developments in the future. Any prolonged restrictive measures put in place in order to contain the outbreak of the virus could adversely affect the Company’s financial results.

(Dollars in thousands)

(2) Utility Plant

The Company retired Coleman Station and Reid Station Unit 1 on September 30, 2020. The utility plant associated with Coleman Station and Reid Station Unit 1 in the amount of $124,210 and $6,731, respectively, were retired and recorded in a regulatory asset. See Note 5 for further discussion of the Company's regulatory asset balances related to the Coleman Station and Reid Station Unit 1 retirement costs. At December 31, 2020 and 2019, utility plant is summarized as follows:

		2020	2019
Classified plant in service:			
Production plant	$	1,460,252	1,713,576
Transmission plant		326,898	294,407
General plant		56,845	54,416
Other		67	67
		1,844,062	2,062,466
Less accumulated depreciation		1,102,333	1,193,043
		741,729	869,423
Construction in progress		44,893	35,663
Utility plant – net	$	786,622	905,086

Big Rivers' secured long-term debt obligations and 2020 Amended and Restated Syndicated Senior Secured Credit Agreement, dated June 11, 2020, are secured under Big Rivers' Indenture dated as of July 1, 2009, as supplemented and amended (the "Indenture"), between Big Rivers and U.S. Bank National Association, as trustee (the "Indenture Trustee"). Obligations are secured under the Indenture by a mortgage lien on substantially all of Big Rivers' owned tangible, and certain intangible, properties including Big Rivers' production, transmission, general, and other Utility Plant. See Note 4 for further discussion of Big Rivers' Debt and Other Long-Term Obligations secured under its Indenture.

Depreciation expense on utility plant for the years ended December 31, 2020, 2019 and 2018, was $21,119, $20,748 and $20,709, respectively.

Interest capitalized for the years ended December 31, 2020 and 2019, was $587 and $207, respectively.

The Company has identified certain legal obligations, as defined in FASB ASC 410, *Asset Retirement and Environmental Obligations*, associated with the retirement of long-lived assets that require the recognition of a liability. See Note 3 for further discussion of the Company's asset retirement obligations.

As of December 31, 2020 and 2019, the Company had recorded an estimated $48,683 and $60,723, respectively, related to nonlegal removal costs included in accumulated depreciation as required by the RUS.

(Dollars in thousands)

(3) Asset Retirement Obligations

The Company has AROs arising from legal obligations associated with the retirements of certain long-lived assets. The liabilities were initially measured at fair value and subsequently adjusted for accretion expense and changes in estimated future cash flows. The corresponding asset retirement costs are capitalized as part of the carrying amount of the related long-lived assets and depreciated over their remaining useful lives. The following table presents the activity for the ARO liabilities for the years ended December 31, 2020 and 2019:

		2020		2019	
ARO balance at beginning of year	$	34,557		29,746	
Changes in estimated timing or cost		4,421	(a)	3,418	(b)
Accretion expense		1,732	(c)	1,528	(c)
Actual costs incurred		(300)		(135)	
ARO balance at end of year	$	40,410		34,557	

(a) During 2020, the EPA issued an update to the CCR Final Rule which shortened the deadline to close the ash pond at Green Station. In order to comply with federal regulations, the settlement date for closure of this ash pond was reduced by approximately three years. Accordingly, in 2020, Big Rivers recorded an adjustment to the Green Station ARO liability to reflect the change in the federal regulations. The revised regulations did not impact the ARO liability recorded for the ash pond located at the retired Station Two facility.

(b) During 2019, a study was completed by an independent engineering firm which provided updated settlement dates and cost estimates for the eventual closures of the ash ponds located at Big Rivers' Green Station and Station Two, for compliance with federal regulations, including the EPA's CCR Final Rule and ELG Final Rule, for which Big Rivers initially recognized ARO liabilities in 2015. The change in estimated settlement dates, as well as the updated present value of cost estimates, to close the Green Station and the Station Two ash ponds, per the 2019 studies, was higher than prior estimates completed by independent engineering firms during 2017. Accordingly, in 2019, Big Rivers recorded adjustments to its ARO liabilities to reflect the change in estimates and estimated settlement date.

(c) The 2020 and 2019 annual ARO accretion expense of $1,732 and $1,528, respectively, was deferred and included in the Regulatory Assets amount reported on the Company's balance sheet as of December 31, 2020 and 2019. The KPSC final order in Case No. 2019-00435, the Environmental Compliance Plan, approved the recovery of the capital costs for ash pond closure through the environmental surcharge mechanism ("ESM") based on non-levelized amortization of the actual ash pond closure spending-to-date, allocable over a rolling 10-year period. This method ensures that cost recovery from Members through the ESM is based on actual project spending while also allowing Big Rivers to match its amortization expense with ESM revenue.

(Continued)

(Dollars in thousands)

(4) Debt and Other Long-Term Obligations

A detail of long-term debt at December 31, 2020 and 2019 is as follows:

		2020	2019
CFC Refinance Promissory Note, Series 2012B, serial note pricing, 4.30% effective interest rate, final maturity date of May 2032	$	201,380	214,712
RUS 2009 Series B Promissory Note, stated amount of $245,530, no stated interest rate, 5.80% imputed interest rate, maturing December 2023		206,585	195,027
CoBank Promissory Note, Series 2012A, 4.30% fixed interest rate, final maturity date of June 2032		161,137	171,442
County of Ohio, Kentucky, promissory note, 6.00% fixed interest rate, maturing in July 2031		—	83,300
CFC Equity Note, Series 2012B, 5.35% fixed interest rate, final maturity date of May 2032		—	32,229
2018 RUS Guaranteed FFB Loan, W8, 2.83% fixed interest rate, final maturity date of January 2033		23,585	25,228
2018 RUS Guaranteed FFB Loan, X8, 2.94% fixed interest rate, final maturity date of December 2043		17,308	17,836
Old National Bank, Paycheck Protection Program Loan, 1.00% fixed interest rate, maturing in 18 months if determined ineligible (see Note 4(i))		9,941	—
CFC Promissory Note, Series 2020B, 2.49% fixed interest rate, final maturity date of February 2031		83,300	—
Total long-term debt		703,236	739,774
Less current maturities		32,962	27,673
Less unamortized deferred debt issuance costs		2,836	2,343
Less advance payments unapplied – RUS cushion of credit		3,658	3,489
Total long-term debt – net of current maturities, deferred debt issuance costs, and advance payments	$	663,780	706,269

(Dollars in thousands)

The following are scheduled maturities of long-term debt at December 31, 2020:

		Amount
Year:		
2021	$	32,962
2022		31,293
2023		235,783
2024		31,086
2025		31,825
Thereafter		340,287
Total	$	703,236

(a) National Rural Utilities Cooperative Finance Corporation (CFC) Refinance and Equity Promissory Notes, 2012B

In July 2012, Big Rivers issued new debt with CFC in the form of a secured term loan in the amount of $302,000 (the "Refinance Note") and a CFC Equity Note in the amount of $43,156. The Refinance Note is secured under Big Rivers' Indenture, dated July 1, 2009 between the Company and U.S. Bank National Association, and consists of twenty individual notes with different fixed interest rates ranging from 3.05% to 5.35%. The Refinance Note has an effective interest rate of 4.30% and a final maturity date of May 2032.

The Equity Note was prepaid during 2020 utilizing proceeds received from the sale of Capital Term Certificates previously held with the CFC.

(b) RUS Notes

On July 15, 2009, Big Rivers' previous RUS debt was replaced with the RUS 2009 Promissory Note Series A (the "RUS Series A Note") and the RUS 2009 Promissory Note Series B (the "RUS Series B Note").

The RUS Series B Note has no stated interest rate, is recorded at an imputed interest rate of 5.80%, and is secured under Big Rivers' Indenture. The $245,530 stated amount of the RUS Series B Note is due December 2023.

(c) CoBank, ACB (CoBank) Promissory Note, Series 2012A

In July 2012, Big Rivers issued new debt with CoBank in the form of a secured term loan in the amount of $235,000, which is secured under Big Rivers' Indenture. The loan has a fixed interest rate of 4.30% and a final maturity date of June 2032.

(d) Pollution Control Bonds

In June 2010, the County of Ohio, Kentucky, issued $83,300 of Pollution Control Refunding Revenue Bonds, Series 2010A ("Series 2010A Bonds"), the proceeds of which were supported by a promissory note from Big Rivers, bearing the same interest rate as the bonds and secured under Big Rivers' Indenture. These bonds bear interest at a fixed rate of 6.00% and mature in July 2031. These bonds were subject to an optional redemption on or after July 15, 2020, which Big Rivers exercised on July 15, 2020, utilizing proceeds from a CFC loan to pay off the bonds. See Note 4(h) for additional information regarding the 2020 CFC loan used to redeem the Series 2010A Bonds.

(e) 2018 RUS Guaranteed FFB Loan, W8

In April 2018, Big Rivers received a $25,630 loan from the Federal Financing Bank ("FFB") (the "W8 Loan") which is guaranteed by the RUS and secured under Big Rivers' Indenture. The W8 Loan is for long-term financing of capital projects included in Big Rivers' 2012 Environmental Compliance Plan ("ECP") to comply with the EPA's Mercury and Air Toxics Standards ("MATS") rule. These capital projects were completed in 2016 and were originally funded with Big Rivers' general funds. Accordingly, the proceeds of the W8 Loan were used to replenish Big Rivers' general funds. The W8 Loan has a fixed interest rate of 2.828%, which includes a 0.125% RUS administration fee, and has a final maturity date of January 2033.

(f) 2018 RUS Guaranteed FFB Loan, X8

In April 2018, Big Rivers received a $17,965 loan from the FFB, (the "X8 Loan") which is guaranteed by the RUS and secured under Big Rivers' Indenture. The X8 Loan is for long-term financing of capital projects included in Big Rivers' 2013-2015 Transmission Construction Work Plan, which were completed in 2017 and were originally funded with Big Rivers' general funds. Accordingly, the proceeds of the X8 Loan were used to replenish Big Rivers' general funds. The X8 Loan has a fixed interest rate of 2.935%, which includes a 0.125% RUS administration fee, and has a final maturity date of December 2043.

(g) Line of Credit (CFC Syndicated Line, Series 2020A)

On March 5, 2015, Big Rivers entered into a $130,000 Syndicated Senior Secured Credit Agreement (the "2015 Agreement") with CFC, CoBank, Fifth Third Bank, KeyBank National Association, and Regions Bank. In conjunction with the 2015 Agreement, Big Rivers issued secured promissory notes (the "Series 2015A Notes"), equal to each lender's commitment, which are secured under Big Rivers' Indenture.

On September 19, 2017, the 2015 Agreement was amended to, among other things, reduce the total facility amount from $130,000 to $100,000, and extend the maturity date from March 5, 2018 to September 18, 2020.

On July 11, 2020, the existing 2015 Agreement, that was previously amended and restated in 2017, was replaced with a $150,000 Syndicated Secured Credit Agreement (the "2020 Agreement") with CFC, CoBank, Fifth Third Bank, KeyBank National Association, Regions Bank, and Bank of America. In conjunction with the 2020 Agreement, Big Rivers issued secured promissory notes (the "Series 2020A Notes"), equal to each lender's commitment, which are secured under Big Rivers' Indenture.

As of December 31, 2020, Big Rivers had no outstanding borrowings under the 2020 Agreement and $4,729 in issued letters of credit outstanding, which reduced its available borrowing capacity under the 2020 Agreement from $150,000 to $145,271.

As of December 31, 2019, Big Rivers had no outstanding borrowings under the 2015 Agreement and $7,579 in issued letters of credit outstanding, which reduced its available borrowing capacity under the 2015 Agreement from $100,000 to $92,421.

(h) CFC Promissory Note, 2020B

On December 23, 2020, Big Rivers issued new debt with CFC in the form of a secured balloon note in the amount of $83,300 for the purpose of early redemption of the Series 2010A Bonds. This note is secured under Big Rivers' Indenture, with a fixed interest rate of 2.49% and a final maturity date of February 2031.

(i) Old National Bank, Paycheck Protection Program ("PPP") Note

In response to the COVID-19 pandemic, the federal government passed and signed the Coronavirus Aid, Relief, and Economic Security Act ("CARES Act) into law on March 27, 2020. This act allowed qualified businesses to borrow money through the Paycheck Protection Program administered by the Small Business Administration ("SBA) to cover payroll and other related expenses. On April 7, 2020, Big Rivers applied for PPP funds in the amount of $9,941. The unsecured loan was approved and funds were received on April 21, 2020. On August 18, 2020, Big Rivers submitted an application requesting forgiveness of the $9,941 loan. Terms of the loan are a fixed interest rate of 1.00% and monthly principal and interest payments of $559 over an 18-month period originally set to commence in November 2020. Principal and interest payments have been suspended by the lender until Big Rivers receives a decision from the SBA on the forgiveness application. No repayments were made on the loan in 2020.

(j) RUS Cushion of Credit

In 2018, Big Rivers began participating in the cushion of credit program administered by the RUS in conjunction with the execution of the 2018 W8 and X8 RUS Guaranteed FFB Loans. Under the cushion of credit program, RUS borrowers may make voluntary irrevocable deposits into the cushion of credit account which, during 2020, accrued interest at an annual rate of 4.75%. Per the terms of the RUS' commitment to guarantee Big Rivers' W8 and X8 Loans, Big Rivers agreed to make an initial deposit of $3,200 to the cushion of credit account upon receipt of the loan funds and to make additional deposits, as needed, so that the balance at the beginning of each year going forward is equal to or greater than the annual payments due on the W8 and X8 Loans during the year. The interest rate dropped from 5% to 4% on October 1, 2020 and will become a variable rate on October 1, 2021.

Big Rivers' amounts in the cushion of credit account (deposits and accrued interest) may only be used to make scheduled principal and interest payments on the W8 and X8 Loans. As of December 31, 2020 and 2019, Big Rivers' balance in the RUS cushion of credit account was $3,658 and $3,489, respectively, which is included on the Company's balance sheet as a reduction to long-term debt.

(k) Covenants

Big Rivers is in compliance with all debt covenants associated with both its long-term and short-term debt obligations. The Company's Indenture and other debt agreements require that a Margins for Interest Ratio ("MFIR") of at least 1.10 be maintained for each fiscal year. The 2020 Agreement requires that Big Rivers, throughout the duration of the agreement, maintain a minimum Members' Equities' Balance at the end of each fiscal quarter-end and as of the last day of each fiscal year in an amount at least equal to $417,000 plus 50% of the cumulative positive net margin for the period from December 31, 2019 to the end of the Borrower's most recently ended fiscal year. Big Rivers' MFIR for the fiscal year ended December 31, 2020 was 1.30, and its Equities balance was $531,539.

An MFIR of less than 1.10, per the Indenture and other debt agreements, may result in the following actions, restrictions, or consequences: Big Rivers may not secure additional debt under the Indenture; the Company must seek rates that are reasonably expected to yield a 1.10 MFIR; the Company must provide a written plan satisfactory to the RUS setting forth actions to be taken to achieve the specified MFIR on a timely basis; an event of default may occur; interest rates may increase; and its line of credit may be terminated with an acceleration of any outstanding amounts becoming due immediately.

In accordance with the amended and consolidated loan contract between Big Rivers and the United States of America (acting by and through the RUS Administrator), Big Rivers provided notification to the RUS Administrator, via letter dated February 7, 2013, of a failure to maintain two Credit Ratings of Investment Grade. In order to remain compliant under the amended and consolidated loan contract, in March 2013, the Company, prepared and presented to the RUS, its Corrective Action Plan setting forth the actions to be taken by management, that are reasonably expected to achieve two Credit Ratings of Investment Grade. The Company regularly updates the RUS on actions taken to date related to its Corrective Action Plan. On December 2, 2020, Big Rivers received its second Investment Grade Credit Rating. With that, Big Rivers has fulfilled the Corrective Plan and will no longer be required to update the plan.

(5) Rate Matters

The rates charged to Big Rivers' members consist of a demand charge per kilowatt ("kW") and an energy charge per kilowatt-hour ("kWh") consumed as approved by the KPSC. The rates include specific demand and energy charges for its members' two classes of customers, the large industrial customers and the rural customers, under its jurisdiction. For the large industrial customers, the demand charge is generally based on each customer's maximum demand during the current month. For the rural customers, the demand charge is based on Maximum Adjusted Net Local Load (as defined in Big Rivers' tariff).

The Company has certain KPSC approved tariff riders; including a fuel adjustment clause and an environmental surcharge. The net effect of these tariffs is recognized as revenue on a monthly basis with an offset to the Regulatory Liability – Member Rate Mitigation described below.

The net impact of the tariff riders to members' rates is currently mitigated by a Member Rate Stability Mechanism ("MRSM") that is held by Big Rivers as restricted investments. An offsetting regulatory liability – member rate mitigation reflects the obligation associated with the funding of these reserve accounts. As described below, on June 25, 2020, the KPSC approved several changes to the MRSM beginning in January 2021.

The KPSC entered an order on October 29, 2013, granting Big Rivers an annual revenue increase of $54,227, effective August 20, 2013 (Case No. 2012-00535). In its order, the KPSC excluded the Coleman plant depreciation from rate recovery. The KPSC directed the Company to defer this depreciation expense and record the deferred amounts in a regulatory asset account. The KPSC's order indicated this action was being taken due to the planned temporary idling of Coleman, the length of time the plant would be idled, and the impact of the rate increase on customers. As of December 31, 2020, cumulative depreciation expense of $13,870 was deferred for the Coleman plant, which includes the TIER credit reduction from 2019, as discussed below. Management believes the remaining balance is probable of recovery in future rates. The Coleman plant was retired September 30, 2020, as described below for Case No. 2020-00064.

The KPSC entered an order on April 25, 2014, granting Big Rivers an annual revenue increase of $36,160, effective February 1, 2014 (Case No. 2013-00199). In its order, the KPSC approved Big Rivers' 2012 Depreciation Study, but excluded Wilson plant depreciation from rate recovery. The KPSC directed the Company to defer the Wilson depreciation expense and record in a regulatory asset account, similar to the Coleman depreciation expense deferral per the KPSC's order in Case No. 2012-00535. As of December 31, 2020, cumulative depreciation expense of $141,353 was deferred for the Wilson plant, which is recoverable in future rates. The KPSC also approved Big Rivers' proposal to temporarily offset the rate increase by utilization of the MRSM. The KPSC further granted Big Rivers' proposed accounting treatment for transmission revenues related to the Hawesville smelter and authorized Big Rivers to pass the transmission revenues to its members through the MRSM. The net effect of this accounting treatment was the recognition of revenue on a monthly basis with an offset to the applicable regulatory liability accounts as the reserve funds were used to offset the impact of the base rate increase on the members' monthly bills.

Effective July 17, 2009, the KPSC approved the implementation of the Non-Fuel Adjustment Clause-Purchased Power Adjustment ("Non-FAC PPA") which is a rate mechanism allowing Big Rivers to recover certain costs of purchased power that are not recoverable through its Fuel Adjustment Clause ("FAC"). An accrual is recorded monthly to a regulatory asset or liability account based on the difference between the actual purchased power costs recoverable through the Non-FAC PPA and the purchased power base cost included in base rates. The balance in the regulatory asset or liability account as of June 30 each year is billed or refunded to members during the following twelve-month period beginning September 1 through August 31 of the following year.

The CCR Final Rule requires Big Rivers to address the eventual permanent closures of its Green Station coal ash pond and the coal ash pond at the City of Henderson, Kentucky's Station Two. Big Rivers recorded asset retirement obligations for its ash ponds at its Green Station and Station Two generating stations. See Note 3 for further discussion of the Company's asset retirement obligations. In accordance with FASB ASC 410-20, *Asset Retirement and Environmental Obligations – Asset Retirement Obligations* and under the RUS Uniform System of Accounts, Big Rivers initially recognized its coal ash pond AROs at fair value and subsequently adjusted for accretion expense and changes in estimated timing of pond closures and changes in estimated costs as of December 31, 2020 (Note 3).

On January 5, 2016, the KPSC issued an order in Case No. 2015-00333 approving Big Rivers' request to establish regulatory assets for the deferral of certain expenses it would incur for compliance with the CCR Final Rule, including accretion and depreciation expense related to the Green Station and Station Two ash ponds AROs and other incremental expenses.

On August 6, 2020, the KPSC approved Big Rivers' 2020 Environmental Compliance Plan ("2020 ECP"), (1) granting Big Rivers the authority to close the Green Station and Station Two ash ponds; (2) granting Big Rivers the authority to move the Coleman Station flue gas desulfurization system ("FGD") to Wilson Station to replace Wilson's FGD; (3) conditionally granting Big Rivers' request to establish regulatory assets for the accretion and depreciation expense related to the Coleman Station legacy ash ponds, should the CCR Final Rule be extended to apply to such legacy ash ponds; (4) conditionally granting Big Rivers the authority to close the Coleman Station ash ponds, should the CCR Final Rule be extended to apply to such legacy ash ponds; (5) authorizing Big Rivers to amortize the Green Station and Station Two ash pond AROs through its environmental surcharge; (6) conditionally authorizing Big Rivers to amortize the costs incurred to close the Coleman Station ash pond through its environmental surcharge should the CCR Final Rule be extended to apply to the Coleman Station ash ponds; (7) authorizing Big Rivers to amortize the regulatory asset for CCR-related expenses through its environmental surcharge; and (8) authorizing Big Rivers to establish a regulatory asset for the costs of preparing and prosecuting the 2020 ECP case, the recovery of which regulatory asset will be taken up in a subsequent proceeding.

As of December 31, 2020, the total amount of CCR-related expenses and costs for asset retirement obligations deferred and included in Regulatory Assets on the Company's balance sheet was $42,228, and the costs of preparing and prosecuting the ECP case that have been deferred and included in Regulatory Assets on the Company's balance sheet was $289.

On August 29, 2018, the KPSC entered an order (Case No. 2018-00146) (i) finding that the Station Two units were no longer capable of the normal, continuous, reliable operation for the economically competitive production of electricity; (ii) finding that the Station Two contracts, except for the Joint Facilities Agreement, have therefore terminated pursuant to their own terms; (iii) granting Big Rivers' request for authority to continue to operate Station Two under terms of the Station Two contracts for a period up to May 31, 2019; and (iv) reserving a ruling on Big Rivers' request for authority to establish a Station Two regulatory asset. The remaining issues in this case were resolved with a Settlement Agreement between the Office of the Attorney General, the Kentucky Industrial Utility Customers ("KIUC"), and Big Rivers. The Settlement Agreement provided that the KPSC would approve the Station Two regulatory asset, that Big Rivers would establish a Station Two Depreciation Credit, starting in the month that Station Two is retired, to reduce customer bills based on the revenues Big Rivers would receive associated with depreciation expense on Station Two, that Big Rivers would establish a TIER Credit to reduce existing regulatory assets in the event Big Rivers achieves a TIER in excess of 1.45 in 2019 or 2020, and that in Big Rivers' next general rate case, the intervenors would support Big Rivers' recovery of the Station Two, Wilson plant, and, conditionally, the Coleman plant regulatory assets. On October 23, 2018, the KPSC issued a final order approving the Settlement Agreement in full. RUS approved the Settlement Agreement on February 22, 2019. Big Rivers retired Station Two on January 31, 2019. On February 26, 2019, Big Rivers filed revised tariff sheets with the KPSC to incorporate the Station Two Depreciation Credit. As of December 31, 2020, the total amount of the Station Two contract termination included in the Regulatory Assets on the Company's balance sheet was $92,102. This includes Station Two assets transferred from utility plant to

(Continued)

Regulatory Assets, Station Two Depreciation Credit and the Company's portion of decommissioning costs incurred to date.

On December 12, 2018, the KPSC approved Big Rivers' request to phase out its existing Demand Side Management ("DSM") programs, to establish a new Low-Income Weatherization Program, and to establish a regulatory liability for the savings associated with the phase out of the existing DSM programs. As of December 31, 2020, the DSM savings were no longer recorded in a Regulatory Liability based on the ruling received in Case No. 2020-00064, as discussed below.

On June 25, 2020, the KPSC entered an order in Case No. 2020-00064 approving a Settlement Agreement, as modified by the Commission, between Big Rivers, KIUC and the Attorney General, which approved Big Rivers' requests to: (1) establish regulatory assets for the remaining net book value of Coleman Station and Reid Station Unit 1 at retirement, and for the costs to decommission those units; (2) cease charging DSM savings to a regulatory liability; (3) utilize the existing DSM regulatory liability in 2020 and 80% of equity headroom in 2021 to reduce certain regulatory assets (the Wilson and Coleman depreciation regulatory assets; the Coleman, Reid 1, and Station Two retirement and decommissioning regulatory assets; and a regulatory asset through which the costs related to a focused management audit were deferred); and (4) recover the amounts deferred in those regulatory assets through amortization. The KPSC also approved replacing the TIER Credit mechanism in Big Rivers' MRSM tariff with a new TIER Credit mechanism. Under the new TIER Credit, in years in which Big Rivers earns in excess of a 1.30 TIER, 40% of the excess margins will be returned to Big Rivers' members over the following year through a monthly bill credit. The remaining 60% of the excess margins will be deferred in regulatory liability accounts, with a minimum required balance of $9,000, to be utilized in a year in which Big Rivers does not achieve a 1.30 TIER or to further decrease the balance of the regulatory assets with KPSC approval. The first $700 of the bill credit each year will be allocated to Rural customers, and any bill credit over $700 will be allocated between the Rural and Large Industrial customers based on revenues.

Big Rivers' new TIER Credit was $33,334 for 2020, with 40%, or $13,334 to be returned to members over a twelve-month period beginning February 2021. This amount is recorded as a regulatory liability at December 31, 2020 presented between current and long-term maturities based on the timing of future bill credits expected to be provided to the members. The remaining 60%, or $20,000, was also deferred in regulatory liability accounts with $11,000 expected to offset the regulatory assets, as described above, and is pending KPSC approval. The remaining regulatory liability of $9,000 will remain as a minimum required balance as described above. The new TIER Credit was recorded as depreciation and amortization expense on the statement of operations.

(Dollars in thousands)

In connection with the rate matters discussed above, the following tables provide a summary of Regulatory Assets and Liabilities reflected in the Balance Sheet as of December 31, 2020 and 2019:

		Regulatory assets	
		2020	**2019**
Coleman plant deferred depreciation	$	13,870	37,245
Wilson plant deferred depreciation		141,353	120,544
Rate case expense and other		—	676
Non-FAC PPA		7,772	8,313
Asset retirement obligations		26,645	13,169
Environmental costs (CCR)		15,583	7,934
Station Two contract termination		92,102	90,424
Coleman plant retire/decommission		129,869	—
Reid 1 plant retire/decommission		7,769	—
ECP case expense		289	—
Subtotal regulatory assets		435,252	278,305
TIER Credit		—	(27,743)
Total regulatory assets	$	435,252	250,562

		Regulatory liabilities	
		2020	**2019**
Economic reserve-member rate mitigation	$	13,334	1,406
Demand side management		—	705
TIER Credit		20,000	—
Total regulatory liabilities	$	33,334	2,111

On February 26, 2021, Big Rivers filed an application with the KPSC, Case No. 2021-00061, for review of its MRSM charge for calendar year 2020. In its application, Big Rivers proposed to use the regulatory liability amount in excess of the minimum required balance of $9,000, or $11,000, that was established in Case No. 2020-00064, discussed above, to further reduce the SLM Regulatory Assets in 2021. This case is pending.

On March 1, 2021, Big Rivers filed an application with the KPSC, Case No. 2021-00079, seeking approval for a certificate of public convenience and necessity (“CPCN”) to convert Big Rivers’ two existing coal-fired generating units at its Green Station to run on natural gas, an Order authorizing that the gas conversion assets be depreciated over a seven-year period, and the establishment of a regulatory asset to defer recognition of the costs that Big Rivers expects to incur as a result of the retirement of certain Green Station assets that will no longer be utilized after the conversion. This case is pending.

(6) Income Taxes

At December 31, 2020, Big Rivers had a Non-Patron Net Operating Loss (NOL) Carryforward of approximately $40,933 expiring at various times between 2029 and 2037 which was entirely offset by a full valuation allowance.

On December 22, 2017, the U.S. government enacted comprehensive Federal tax legislation commonly referred to as the Tax Cuts and Jobs Act of 2017 (the "Tax Act"). The Tax Act significantly modified the U.S. corporate income tax system by, among other things, reducing the corporate income tax rate from 35% to 21% for tax years beginning after December 31, 2017. The income tax effects of changes in tax laws are recognized in the period when enacted. In addition to the reduction to the corporate tax rate, the Tax Act also repealed the Alternative Minimum Tax ("AMT") as well as Internal Revenue Code ("IRC") Section 168(k)(4). For tax years beginning in 2018, 2019, and 2020, to the extent that AMT credit carryovers exceed regular tax liability (as reduced by certain other credits), 50% of the excess AMT credit carryovers are refundable. Any remaining AMT credits will be fully refundable in 2021. The Tax Act also requires deferred AMT refunds previously reported on the balance sheet in Other Deferred Charges to be reported as a long-term receivable. At December 31, 2020 and 2019, Big Rivers reported $0 and $54, respectively, as Federal Tax Receivable.

On January 16, 2020, the Internal Revenue Service issued News Release IR 2020-12 announcing that it would refund all amounts sequestered from refundable AMT credits under IRC Section 168(k)(4) since 2013. The Company received a refund of $449 and recorded a benefit to federal income tax expense during 2020.

On March 27, 2020, H.R. 748, the CARES Act was signed into legislation which includes tax provisions relevant to businesses. The CARES Act provides that any unused AMT credits can be claimed fully in tax years beginning in 2018 and 2019. The Company claimed a refund of the remaining AMT credit carryforward of $107 on its 2019 federal tax return and received the refund during fiscal 2020.

(Dollars in thousands)

The components of the net deferred tax assets as of December 31, 2020 and 2019 were as follows:

		2020	2019
Deferred tax assets:			
Net operating loss carryforward	$	10,213	7,602
Fixed asset basis difference		5,906	1,730
Total deferred tax assets		16,119	9,332
Deferred tax liabilities:			
RUS Series B Note		(3,343)	(3,343)
Bond refunding costs		(56)	(62)
Total deferred tax liabilities		(3,399)	(3,405)
Net deferred tax asset (pre-valuation allowance)		12,720	5,927
Valuation allowance		(12,720)	(5,927)
Net deferred tax asset	$	—	—

A reconciliation of the Company's effective tax rate for 2020, 2019, and 2018 is as follows:

	2020	2019	2018
Federal rate	21.0 %	21.0 %	21.0 %
State rate – net of federal benefit	4.0	4.0	4.0
Permanent differences	0.2	0.5	0.3
Patronage allocation to members	(25.2)	(25.4)	(25.3)
Alternative minimum tax credit recovery	(4.6)	(0.3)	(0.3)
Effective tax rate	(4.6)%	(0.2)%	(0.3)%

The Company files a federal income tax return, as well as certain state income tax returns. The years currently open for federal income tax examination are 2017 through 2019. The major state tax jurisdiction currently open for income tax examination is Kentucky for years 2016 through 2019. The Company has not recorded any unrecognized tax benefits or liabilities related to federal or state income taxes.

The Company classifies tax-related interest and penalties as an operating expense on the statement of operations and accrued expenses on the balance sheet. No material tax-related interest or penalties have been recorded during 2020, 2019, or 2018.

(7) Pension Plans

(a) Defined-Benefit Plans

Big Rivers has a noncontributory defined-benefit pension plan covering substantially all employees who meet minimum age and service requirements and who were employed by the Company prior to the plan closure dates cited below. The plan provides benefits based on the participants' years of service and the five highest consecutive years' compensation during the last ten years of employment. Big Rivers' policy is to fund such plan in accordance with the requirements of the Employee Retirement Income Security Act of 1974.

Prior to January 1, 2014, Big Rivers had two separate defined-benefit pension plans. The salaried employees' defined-benefit plan was closed to new entrants effective January 1, 2008, and the bargaining employees' defined-benefit plan was closed to new hires effective November 1, 2008. The Company simultaneously established base contribution accounts in the defined-contribution thrift and 401(k) savings plans, which were renamed as the retirement savings plans. The base contribution account for an eligible employee, which is one who meets the minimum age and service requirements, but for whom membership in the defined-benefit plan is closed, is funded by employer contributions based on graduated percentages of the employee's pay, depending on his or her age.

In order to meet minimum participation requirements, Big Rivers' salaried employees defined benefit plan was merged into the bargaining employees defined benefit plan. The merger was effective January 1, 2014 for purposes of Internal Revenue Code and effective December 31, 2014 for all other purposes. Effective January 1, 2017, participation was frozen in the merged plan for highly compensated employees in order to comply with IRS code section 401(a)(26).

The Company has adopted FASB ASC 715, *Compensation – Retirement Benefits*, including the requirement to recognize the funded status of its pension plan and other postretirement plans (Note 11 – Postretirement Benefits Other than Pensions). ASC 715 defines the funded status of a defined-benefit pension plan as the fair value of its assets less its projected benefit obligation, which includes projected salary increases and defines the funded status of any other postretirement plan as the fair value of its assets less its accumulated postretirement benefit obligation.

ASC 715 also requires an employer to measure the funded status of a plan as of the date of its year-end balance sheet and requires disclosure in the notes to the financial statements of certain additional information related to net periodic benefit costs for the next fiscal year. The Company's pension and other postretirement benefit plans are measured as of December 31, 2020 and 2019.

The following provides an overview of the Company's noncontributory defined-benefit pension plan.

(Dollars in thousands)

A reconciliation of the Company's benefit obligations of its noncontributory defined-benefit pension plan at December 31, 2020 and 2019 is as follows:

		2020	2019
Benefit obligation – beginning of period	$	21,620	20,962
Service cost – benefits earned during the period		597	599
Interest cost on projected benefit obligation		625	834
Benefits paid		(2,194)	(2,233)
Actuarial loss (gain)		2,791	1,458
Benefit obligation – end of period	$	23,439	21,620

Big Rivers' defined-benefit pension plan provides retirees and terminated employees with a lump-sum payment option. Benefits paid in 2020 include lump-sum payments totaling $2,154 – the result of three former employees electing the lump-sum payment option. Benefits paid in 2019 include lump-sum payments totaling $2,193 – the result of five retirees or terminated employees electing the lump-sum payment option.

The accumulated benefit obligation for the defined-benefit pension plan was $18,998 and $17,545 at December 31, 2020 and 2019, respectively.

A reconciliation of the Company's pension plan assets at December 31, 2020 and 2019 is as follows:

		2020	2019
Fair value of plan assets – beginning of period	$	20,898	18,973
Employer contributions		222	—
Actual return on plan assets		3,329	4,158
Benefits paid		(2,194)	(2,233)
Fair value of plan assets – end of period	$	22,255	20,898

The funded status of the Company's pension plan at December 31, 2020 and 2019 is as follows:

		2020	2019
Benefit obligation – end of period	$	(23,439)	(21,620)
Fair value of plan assets – end of period		22,255	20,898
Funded status	$	(1,184)	(722)

(Dollars in thousands)

Components of net periodic pension costs for the years ended December 31, 2020, 2019, and 2018 were as follows:

		2020	2019	2018
Service cost	$	597	599	766
Interest cost		625	834	762
Expected return on plan assets		(1,318)	(1,194)	(1,243)
Amortization of prior service cost		(33)	(33)	(33)
Amortization of actuarial loss		41	325	304
Settlement loss		289	268	533
Net periodic benefit cost	$	201	799	1,089

A reconciliation of the pension plan amounts in accumulated other comprehensive income at December 31, 2020 and 2019 is as follows:

		2020	2019
Prior service cost	$	(11)	22
Unamortized actuarial loss		(3,068)	(2,617)
Accumulated other comprehensive income	$	(3,079)	(2,595)

In 2021, $33 of prior service credit and $85 of actuarial loss is expected to be amortized to periodic pension benefit cost.

The recognized adjustments to other comprehensive income at December 31, 2020 and 2019 are as follows:

		2020	2019
Prior service cost	$	—	—
Unamortized actuarial gain/(loss)		483	(2,065)
Other comprehensive (income)/loss	$	483	(2,065)

At December 31, 2020 and 2019, amounts recognized in the balance sheets were as follows:

		2020	2019
Deferred credits and other	$	(1,184)	(722)

(Dollars in thousands)

Assumptions used to develop the projected benefit obligation and determine the net periodic benefit cost were as follows:

	2020	2019	2018
Discount rate – projected benefit obligation	2.05 %	2.99 %	4.12 %
Discount rate – net periodic benefit cost	2.99	4.12	3.44
Rates of increase in compensation levels	4.00	4.00	4.00
Expected long-term rate of return on assets	6.50	6.50	6.50

The expected long-term rate of return on plan assets for determining net periodic pension cost for each fiscal year is chosen by the Company from a best estimate range determined by applying anticipated long-term returns and long-term volatility for various asset categories to the target asset allocation of the plan. The expected long-term rate of return on assets is based on the median expected rate of return for a passively-managed portfolio plus the incremental return from active management.

Big Rivers utilizes a third-party investment manager for the plan assets, and has communicated thereto the Company's Retirement Plan Investment Policy, including a target asset allocation mix of 50% U.S. equities (an acceptable range of 45%–55%), 15% international equities (an acceptable range of 10%–20%), and 35% fixed income (an acceptable range of 30%–40%). As of December 31, 2020 and 2019, the investment allocation was 57% and 55%, respectively, in U.S. equities, 13% and 12%, respectively, in international equities, and 30% and 33%, respectively, in fixed income. The objective of the investment program seeks to (a) maximize return on investment, (b) minimize volatility, (c) minimize Company contributions, and (d) provide the employee benefit in accordance with the plan. The portfolio is well diversified and of high quality. The average quality of the fixed income investments must be "A" or better. The equity portfolio must also be of investment grade quality. The performance of the investment manager is reviewed semiannually.

(Dollars in thousands)

At December 31, 2020 and 2019, the fair value of Big Rivers' defined-benefit pension plan assets by asset category are as follows:

	Level 1	Level 2	December 31, 2020
Cash and money market	$ 1,006	—	1,006
Equity securities:			
Common stock	9,494	—	9,494
Preferred stock	290	—	290
Mutual funds	6,025	—	6,025
Fixed:			
Tax exempt bonds and notes	—	54	54
Corporate bonds and notes	—	5,386	5,386
	$ 16,815	5,440	22,255

	Level 1	Level 2	December 31, 2019
Cash and money market	$ 607	—	607
Equity securities:			
Common stock	8,792	—	8,792
Preferred stock	538	—	538
Mutual funds	5,183	—	5,183
Fixed:			
Tax exempt bonds and notes	—	2,250	2,250
Corporate bonds and notes	—	3,528	3,528
	$ 15,120	5,778	20,898

(Dollars in thousands)

Expected retiree pension benefit payments projected to be required during the years following 2020 are as follows:

		Amount
Year ending December 31:		
2021	$	1,866
2022		1,405
2023		1,479
2024		2,372
2025		1,648
Thereafter		10,093
Total	$	18,863

(b) Defined-Contribution Plans

Big Rivers has two defined-contribution retirement plans covering substantially all employees who meet minimum age and service requirements. Each plan has a thrift and 401(k) savings section allowing employees to contribute up to 75% of pay on a pretax and/or after-tax basis, with employer matching contributions equal to 60% of the first 6% contributed by the employee on a pretax basis.

A base contribution retirement section was added and the plan name changed from Thrift and 401(k) Savings to Retirement Savings, effective January 1, 2008, for the salaried plan and November 1, 2008, for the bargaining plan. The base contribution account is funded by employer contributions based on graduated percentages of pay, depending on the employee’s age.

The Company’s expense under these plans was $4,518, $4,749, and $5,124 for the years ended December 31, 2020, 2019 and 2018, respectively, recorded as operating expenses on the statement of operations.

(c) Deferred Compensation Plan

Big Rivers sponsors a nonqualified deferred compensation plan for its eligible employees who are members of a select group of management or highly compensated employees. The purpose of the plan is to allow participants to receive contributions or make deferrals that they could not receive or make under the salaried employees qualified defined-contribution retirement savings plan (formerly, the thrift and 401(k) savings plan) as a result of nondiscrimination rules and other limitations applicable to the qualified plan under the Internal Revenue Code. The nonqualified plan also allows a participant to defer a percentage of his or her pay on a pretax basis.

The nonqualified deferred compensation plan is unfunded, but the Company has chosen to finance its obligations under the plan, including any employee deferrals, through a rabbi trust. The trust assets remain a part of the Company’s general assets, subject to the claims of its creditors. The employer contribution for December 31, 2020 and 2019 was $214 and $156, respectively, and the deferred compensation expense for December 31, 2020, 2019, and 2018 was $388, $248, and $136,

(Continued)

(Dollars in thousands)

respectively. As of December 31, 2020 and 2019, the trust assets were $1,333 and $895, and the deferred liability was $1,333 and $895, respectively.

(8) Restricted Investments

The amortized costs and fair values (Level 1 measurement) of Big Rivers' restricted investments held for Member rate mitigation at December 31, 2020 and 2019 were as follows:

		2020		2019	
		Amortized costs	Fair values	Amortized costs	Fair values
Debt securities:					
U.S. Treasury – Money Market	$	666	666	1,391	1,391
Total	$	666	666	1,391	1,391

There were no gross unrealized gains or losses on restricted investments at December 31, 2020 and 2019.

		2020		2019	
		Gains	Losses	Gains	Losses
Debt securities:					
U.S. Treasury – Money Market	$	—	—	—	—
Total	$	—	—	—	—

Debt securities at December 31, 2020 and 2019 mature, according to their contractual terms, as follows (actual maturities may differ due to call or prepayment rights):

		2020		2019	
		Amortized costs	Fair values	Amortized costs	Fair values
In one year or less	$	666	666	1,391	1,391
Total	$	666	666	1,391	1,391

(Dollars in thousands)

Gross unrealized losses on investments and the fair values of the related securities, aggregated by investment category and length of time that individual securities have been in a continuous unrealized loss position at December 31, 2020 and 2019 were as follows:

	2020		2019	
	Less than 12 months		Less than 12 months	
	Losses	Fair values	Losses	Fair values
Debt securities:				
U.S. Treasury – Money Market	$ —	666	—	1,391
Total	$ —	666	—	1,391

None of the Company's restricted investments held for Member rate mitigation were in an unrealized loss position as of December 31, 2020 or 2019.

In conjunction with the CFC $302,000 secured term loan (Note 4), Big Rivers was required to invest in CFC capital term certificates ("CTCs") equal to 14.29% of the Refinance Note. Proceeds of the Equity Note were used to purchase the investments in CTCs as required under the loan agreement. The interest rate on the CTCs was fixed at 4.28% and was equal to 80% of the Equity Note rate of 5.35%. The CTCs cannot be traded in the market, and therefore, they do not have readily determinable fair values and were accounted for at cost minus impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. During 2020, the Company sold the investments and used the proceeds to pay off the CFC Equity Note (see Note 4 (a)). The Company's investment in these CTCs at December 31, 2020 and 2019 was $0 and $31,609, respectively.

(9) Short-Term Investments

At December 31, 2020, the Company's short-term investments included $5,103 of investments in debt securities and $1,500 of investments in CDs, which are both included in the Company's balance sheet at amortized cost. At December 31, 2019, the Company's short-term investments included $5,022 of investments in debt securities and $4,415 of investments in CDs, which are both included in the Company's balance sheet at amortized cost. The investments in debt securities are classified as held-to-maturity, based on management's intent and ability to hold them to maturity. Both CDs and investments in debt securities are included in "Cash and Cash Equivalents" (if the original maturity date is less than or equal to three months) or "Short-term-investments" (if the original maturity date is greater than three months but less than one year).

(Dollars in thousands)

The amortized costs and fair values (Level 1 measurement) of Big Rivers' short-term investments at December 31, 2020 and 2019, were as follows:

		2020		2019	
		Amortized costs	Fair values	Amortized costs	Fair values
Debt securities:					
Corporate notes	$	1,201	1,196	1,223	1,226
U.S. Treasuries		3,902	3,894	3,799	3,812
Total debt securities		5,103	5,090	5,022	5,038
Other:					
Certificates of deposit		1,500	1,502	4,415	4,423
Total short-term investments	$	6,603	6,592	9,437	9,461

Gross unrealized gains and losses on short-term investments at December 31, 2020 and 2019, were as follows:

		2020		2019	
		Gains	Losses	Gains	Losses
Debt securities:					
Corporate notes	$	—	(5)	3	—
U.S. Treasuries		—	(8)	13	—
Total debt securities		—	(13)	16	—
Other:					
Certificates of deposit		2	—	8	—
Total short-term investments	$	2	(13)	24	—

(10) Fair Value of Other Financial Instruments

FASB ASC 820 defines fair value, establishes a framework for measuring fair value and expands disclosures about fair value measures. It applies under other accounting standards that require or permit fair value measurements and does not require any new fair value measurements.

The carrying value of accounts receivable and accounts payable approximate fair value due to their short maturity. At December 31, 2020 and 2019, the Company's cash and cash equivalents included short-term investments in an institutional U.S. government money market portfolio account classified as trading securities under ASC 320, *Investments – Debt and Equity Securities*, that were recorded at fair value which was determined using quoted market prices for identical assets without regard to valuation adjustment or block discount (a Level 1 measure), as follows:

(Dollars in thousands)

		2020	2019
Institutional U.S. government money market portfolio	$	11,000	28,744

It was not practical to estimate the fair value of patronage capital included within other deposits and investments due to these being untraded companies.

Big Rivers' long-term debt at December 31, 2020, consisted of CFC notes totaling $284,680, a CoBank note in the amount of $161,137, an RUS note totaling $206,585, RUS guaranteed FFB loans totaling $40,893, and Old National Bank Paycheck Protection Plan note in the amount of $9,941 (Note 4). The CFC, CoBank, RUS, FFB, and Old National Bank debt is carried at amortized cost which approximates fair value.

(11) Postretirement Benefits Other than Pensions

Big Rivers provides certain postretirement medical benefits for retired employees and their spouses. Generally, except for generation bargaining retirees, Big Rivers pays 85% of the premium cost for all retirees age 62 to 65. The Company pays 25% of the premium cost for spouses age 55 to 61. Beginning at age 65, the Company pays 25% of the premium cost if the retiree is enrolled in Medicare Part B. For each generation bargaining retiree, Big Rivers establishes a retiree medical account at retirement equal to $1.40 per year of service up to 30 years. The account balance is credited with interest based on the 10-year treasury rate subject to a minimum of 2% and a maximum of 4%. The account is to be used for the sole purpose of paying the premium cost for the retiree and spouse.

The discount rates used in computing the postretirement benefit obligation and net periodic benefit cost were as follows:

	2020	2019	2018
Discount rate – projected benefit obligation	2.44%	3.34%	4.34%
Discount rate – net periodic benefit cost	3.34	4.34	3.66

The healthcare cost trend rate assumptions as of December 31, 2020 and 2019 were as follows:

	2020	2019
Initial trend rate	5.73 %	5.98 %
Ultimate trend rate	4.50	4.50
Year ultimate trend is reached	2038	2038

(Dollars in thousands)

A one-percentage-point change in assumed healthcare cost trend rates would have the following effects:

		2020	2019
One-percentage-point decrease:			
Effect on total service and interest cost components	$	(110)	(113)
Effect on year-end benefit obligation		(1,529)	(1,321)
One-percentage-point increase:			
Effect on total service and interest cost components	$	142	143
Effect on year-end benefit obligation		1,927	1,654

A reconciliation of the Company's benefit obligations of its postretirement plan at December 31, 2020 and 2019 is as follows:

		2020	2019
Benefit obligation – beginning of period	$	14,674	13,892
Service cost – benefits earned during the period		490	447
Interest cost on projected benefit obligation		472	544
Participant contributions		340	369
Plan amendments		—	227
Plan curtailments		—	98
Special termination benefits		—	204
Benefits paid		(1,373)	(1,829)
Actuarial loss (gain)		1,205	722
Benefit obligation – end of period	$	15,808	14,674

Big Rivers revised the eligibility requirements for postretirement medical with regard to age and service. Beginning January 1, 2013, eligibility for retirement is age 62 with 10 years of service. The service requirement is waived for active employees on December 31, 2012 who will not have 10 years of service at age 62. A reconciliation of the Company's postretirement plan assets at December 31, 2020 and 2019 is as follows:

		2020	2019
Fair value of plan assets – beginning of period	$	—	—
Employer contributions		1,033	1,460
Participant contributions		340	369
Benefits paid		(1,373)	(1,829)
Fair value of plan assets – end of period	$	—	—

(Dollars in thousands)

The funded status of the Company's postretirement plan at December 31, 2020 and 2019 is as follows:

		2020	2019
Benefit obligation – end of period	$	(15,808)	(14,674)
Fair value of plan assets – end of period		—	—
Funded status	$	(15,808)	(14,674)

The components of net periodic postretirement benefit costs for the years ended December 31, 2020, 2019, and 2018 were as follows:

		2020	2019	2018
Service cost	$	490	447	551
Interest cost		472	544	530
Amortization of prior service cost		(112)	(138)	(138)
Amortization of gain		(20)	(198)	(30)
Curtailment recognized		—	(49)	—
Special termination benefits		—	204	—
Net periodic benefit cost	$	830	810	913

A reconciliation of the postretirement plan amounts in accumulated other comprehensive income at December 31, 2020 and 2019 is as follows:

		2020	2019
Prior service credit	$	493	605
Unamortized actuarial gain		737	1,963
Accumulated other comprehensive income	$	1,230	2,568

In 2021, $112 of prior service cost and $0 of actuarial gain is expected to be amortized to periodic benefit cost.

(Dollars in thousands)

The recognized adjustments to other comprehensive income (loss) at December 31, 2020 and 2019 are as follows:

		2020	2019
Prior service cost	$	(112)	(414)
Unamortized actuarial gain/(loss)		(1,205)	(820)
Amortization of net gain		(20)	(198)
Other comprehensive income/(loss)	$	(1,337)	(1,432)

At December 31, 2020 and 2019, amounts recognized in the balance sheets were as follows:

		2020	2019
Accounts payable	$	(1,424)	(1,445)
Deferred credits and other		(14,384)	(13,229)
Net amount recognized	$	(15,808)	(14,674)

Expected retiree benefit payments projected to be required during the years following 2020 are as follows:

		Amount
Year:		
2021	$	1,424
2022		1,233
2023		1,079
2024		950
2025		978
Thereafter		4,420
Total	$	10,084

In addition to the postretirement plan discussed above, Big Rivers has another postretirement benefit plan, which vests a portion of accrued sick leave benefits to salaried employees upon retirement or death. To the extent an employee's sick leave hour balance exceeds 480 hours, such excess hours are paid at 20% of the employee's base hourly rate at the time of retirement or death. The accumulated obligation recorded for the postretirement sick leave benefit is $766 and $676 at December 31, 2020 and 2019, respectively. The postretirement expense recorded was $96, $61, and $72, for 2020, 2019, and 2018, respectively, and the benefits paid were $7, $67, and $21 for 2020, 2019, and 2018, respectively.

(12) Related Parties

For the years ended December 31, 2020, 2019, and 2018, Big Rivers had tariff sales to its members of $226,152, $256,280, and $263,792, respectively. In addition, for the years ended December 31, 2020, 2019, and 2018, Big Rivers had certain sales to Kenergy for the Domtar Paper Co. load of $3,013, $4,182, and $3,833, respectively.

At December 31, 2020 and 2019, Big Rivers had accounts receivable from its members of $20,926 and $20,903, respectively.

(13) Commitments and Contingencies

Big Rivers is involved in ongoing litigation with the City of Henderson and the City of Henderson Utility Commission doing business as Henderson Municipal Power and Light (collectively, "HMP&L") in which Big Rivers is seeking damages from HMP&L relating to HMP&L's refusal to pay the costs associated with Excess Henderson Energy produced at Station Two. HMP&L has filed a counterclaim alleging that if HMP&L is required to pay the costs of the Excess Henderson Energy, it is entitled to an offset for the revenues related to that energy. In December 2017, Big Rivers and HMP&L entered into an agreement to settle all claims relating to Excess Henderson Energy. Under the settlement agreement, HMP&L agreed to be responsible for all costs related to Excess Henderson Energy generated after the effective date of the settlement agreement. Big Rivers does not dispute that HMP&L is entitled to the Excess Henderson Energy-related revenues after the payment date in the settlement agreement if it pays the costs of that energy.

On May 1, 2018, the contracts under which Big Rivers was operating Station Two terminated as a result of the Station Two units no longer being capable of the economically competitive production of electricity (Note 5). To allow HMP&L time to make alternate arrangements for its power supply, Big Rivers continued to operate the units under the terms of the Station Two contracts until the units were retired on January 31, 2019. The termination of the Station Two contracts has given rise to disputes between the parties, including (i) a declaratory judgment action HMP&L has filed relating to the interpretation of the deed to the real estate on which the Station Two units were constructed; (ii) a claim HMP&L has filed seeking amounts HMP&L claims it is owed as a result of the annual budget settlement process that occurred during the term of the Station Two contracts; (iii) a claim HMP&L filed seeking a declaratory judgment on the percentage owed by each party for the decommissioning and post-closure compliance costs for the Station Two Ash Pond; (iv) a separate action HMP&L filed seeking a declaratory order that the December 2017 settlement agreement only applies to some of the Excess Henderson Energy; and (v) a proceeding Big Rivers filed with the KPSC to resolve all outstanding disputes between it and HMP&L. The Company believes there will be no material adverse effect to its financial statements when the litigation and disputes with HMP&L are resolved.

Big Rivers is involved in other litigation arising in the normal course of business. While the results of such litigation cannot be predicted with certainty, management, based upon advice of counsel, believes that the final outcome will not have a material adverse effect on the financial statements.

(14) Subsequent Events

See Note 5 relating to Case No. 2021-00061, Application of Big Rivers Electric Corporation for Review of its MRSM Credit for Calendar Year 2020, filed with the KPSC on February 26, 2021.

See Note 5 relating to Case No. 2021-00079, 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, filed with the KPSC on March 1, 2021.

Management evaluated subsequent events up to and including March 24, 2021, the date the financial statements were available to be issued.

Big Rivers
ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
www.bigrivers.com

June 21, 2021

Hon. Terry Gill
Secretary
Cabinet for Economic Development
Old Capitol Annex
300 West Broadway Street
Frankfort, KY 40601
502-564-7140

Re: *In the Matter of Joint Special Contract Filing of Big Rivers Electric Corporation and Jackson Purchase Energy Corporation,* Tariff Filing System No. 2021-00_______

Dear Secretary Gill:

This letter is notice to the Economic Development Cabinet *("Cabinet")* that Big Rivers Electric Corporation and Jackson Purchase Energy Corporation have today filed electric service agreements with the Kentucky Public Service Commission including, among other things, an economic development rate for the electric load of Blockware Mining, LLC. *("Blockware")* related to a proposed cryptocurrency mining data facility locating in Paducah, Kentucky. A copy of the joint special contract filing of those agreements is attached for your information.

This notice is given in accordance with the September 24, 1990, order of the Kentucky Public Service Commission *("Commission")* in Administrative Case No. 327 in which the Commission notes, at page 24, the interest of the Cabinet in special contracts for retail electric service that contain an economic development rate, and grants the Cabinet no more than twenty (20) days after the filing of such a contract in which to prepare and file written comments.

Comments regarding the joint application may be submitted to the Public Service Commission through its website, or by mail to Public Service Commission, Post Office Box 615, Frankfort, Kentucky 40602

Please feel free to contact me with any questions you may have about the application.

Sincerely,

/s/ Tyson Kamuf

Tyson Kamuf
Corporate Attorney
tyson.kamuf@bigrivers.com

Enclosure

June 7, 2021

Leslye Krampe
Big Rivers Electric Corporation
201 Third Street
Henderson, KY 42420

Dear Mrs. Krampe:

On behalf of Greater Paducah Economic Development and our community, we thank you and the Big Rivers team for your support and related investment with the Blockware Mining, Inc. project. The benefits of Blockware locating within Industrial Park West will have a significant impact on the overall Paducah community. Blockware's announcement will initially bring 10 full time jobs and an initial investment of $25 million. After Big Rivers installs additional infrastructure, Blockware will add an additional 10 jobs and another $25 million in capital investment resulting in 20 full time jobs with benefits and a $50 million investment in our community. The estimated annual recurring impact from having these jobs and investment in our community is $5.7million per year.

We are seeing an increased interest in Paducah as a hotspot for cryptocurrency miners due to a relationship we have with an industry leader, our ability to offer competitive power rates, and the recently enacted legislation by the state of Kentucky. We have two additional prospects looking to locate in the same area, one within the same industrial park and the other within 5 miles. Both projects could potentially reach 100 MW each, if Big Rivers' infrastructure can support the load. However, all three projects would be served from the same Big Rivers' transmission line. That being said, we appreciate Big Rivers' analysis and investment in determining how we can grow and serve these projects as well as others.

We enjoyed working with you and your team on this project and look forward to doing many more. Again, THANKS!

Sincerely,

Bruce Wilcox
President

TFS No. 2021-________
Exhibit Eacret-7

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

JOINT SPECIAL CONTRACT FILING OF BIG RIVERS ELECTRIC CORPORATION AND JACKSON PURCHASE ENERGY CORPORATION	))))	**TFS No. 2021-00____**

DIRECT TESTIMONY OF JOHN WOLFRAM

I. INTRODUCTION

Q. State your name, occupation and business address.

A. My name is John Wolfram. I am the Principal of Catalyst Consulting LLC. My business address is 3308 Haddon Road, Louisville, Kentucky 40241.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Big Rivers Electric Corporation ("*Big Rivers*").

Q. Briefly describe your education and work experience.

A. I received a Bachelor of Science degree in Electrical Engineering from the University of Notre Dame in 1990 and a Master of Science degree in Electrical Engineering from Drexel University in 1997. I founded Catalyst Consulting, LLC in June of 2012. From March 2010 through May 2012, I was a Senior Consultant with The Prime Group, LLC. I have developed cost of service studies and designed rates for numerous electrical and gas utilities, including electric distribution cooperatives, generation and transmission cooperatives, municipal utilities and investor-owned utilities. I have performed economic analyses, rate mechanism reviews, ISO/RTO membership evaluations, and wholesale formula rate reviews. I have also been employed by the parent companies for Louisville Gas and Electric Company and Kentucky Utilities Company, by the PJM interconnection, and by the Cincinnati Gas & Electric Company. A more detailed description of my qualifications is included in Exhibit Wolfram-1.

Q. Have you ever testified before the Kentucky Public Service Commission (the "*Commission*")?

A. Yes. I have testified in numerous regulatory proceedings before the Commission. A listing of my testimony in other proceedings is included in Exhibit Wolfram-1.

II. <u>PURPOSE OF TESTIMONY</u>

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to sponsor the marginal cost analysis that Big Rivers submits with this application pursuant to the Commission's findings in its investigation into Economic Development Rates ("*EDRs*"). *See In the Matter of: An Investigation Into the Implementation of Economic Development Rates by Electric and Gas Utilities,* Administrative Case No. 327, Order dated September 24, 1990 ("*Admin 327 Order*").

Q. Are you sponsoring any exhibits?

A. Yes. I have prepared the following exhibits to support my testimony:

Exhibit Wolfram-1 – Qualifications of John Wolfram

Exhibit Wolfram-2 – Marginal Cost Analysis

Exhibit Wolfram-3 – Rate Comparison

III. <u>MARGINAL COST ANALYSIS</u>

Q. Please describe the requirement to submit a marginal cost analysis in conjunction with this filing.

A. In Admin 327 Order, the Commission noted the following in Finding #6:

> Upon submission of each EDR contract, a utility should demonstrate that the discounted rate exceeds the marginal cost associated with serving the customer. Marginal cost includes both the marginal cost of capacity as well as the marginal cost of energy. In order to demonstrate marginal cost recovery, a utility should submit, with each EDR contract, a current marginal cost-of-service study. A current study is one conducted no more than one year prior to the date of the contract.

Q. Did you perform a marginal cost analysis for Big Rivers?

A. Yes. I performed a marginal cost analysis for Big Rivers. The study is provided in Exhibit Wolfram-2.

Q. How did you perform the marginal cost analysis for Big Rivers?

A. I performed the analysis consistent with accepted industry guidelines included in the NARUC Electric Utility Cost Allocation Manual dated January 1992. I describe particular aspects of the approach in Exhibit Wolfram-2. I also relied upon information from a recent Big Rivers study related to the proposed conversion of the Green units to natural gas. *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, filed February 28, 2021 ("*Green Conversion docket*").

Q. Do the results of the analysis demonstrate that in this case, the discounted rate in the proposed special contract exceeds the marginal cost associated with serving the customer, pursuant to the requirement of the Admin 327 Order?

A. Yes. The discounted rate in the proposed special contract exceeds the marginal cost associated with serving the customer. *See* Exhibit Wolfram-3.

IV. <u>CONCLUSION</u>

Q. Please summarize your conclusion and recommendation.

A. The marginal cost analysis provided is consistent with industry standards and provides a reasonable determination of Big Rivers' marginal costs of providing service. The analysis shows that the discounted rate in the proposed special contract exceeds the marginal cost associated with serving the customer. For this reason, the Commission should find that the discounted rate meets the requirements of Finding #6 of the Admin 327 Order.

Q. Does this conclude your testimony?

A. Yes.

BIG RIVERS ELECTRIC CORPORATION

JOINT SPECIAL CONTRACTS OF BIG RIVERS ELECTRIC CORPORATION AND JACKSON PURCHASE ENERGY CORPORATION

TFS No. 2021-00___

VERIFICATION

I, John Wolfram, verify, state, and affirm that I prepared or supervised the preparation of the Direct Testimony filed with this Verification, and that this Direct Testimony is true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

John Wolfram

COMMONWEALTH OF KENTUCKY)
COUNTY OF HENDERSON)

SUBSCRIBED AND SWORN TO before me by John Wolfram on this the 17th day of June, 2021.

Joy P. Parsley
Notary Public, Ky. State at Large
My Commission Expires_______

Notary Public, Kentucky State-At-Large
My Commission Expires: July 10, 2022
ID: 604480

JOHN WOLFRAM

Summary of Qualifications

Provides consulting services to investor-owned utilities, rural electric cooperatives, and municipal utilities regarding utility rate and regulatory filings, cost of service studies, wholesale and retail rate designs, tariffs and special contracts, formula rates, and other analyses.

Employment

CATALYST CONSULTING LLC — June 2012 – Present
Principal

Provide consulting services in the areas of tariff development, regulatory analysis, economic development, revenue requirements, cost of service, rate design, and other utility regulatory areas. Provide utility clients assistance regarding regulatory policy and strategy; project management support for utilities involved in complex regulatory proceedings; process audits; state and federal regulatory filing development; cost of service development and support; the development of special rates, including economic development rates, to achieve strategic objectives; the development of rate alternatives for use with customers; and energy efficiency program development. Prepare retail and wholesale rate schedules and/or filings submitted to the Federal Energy Regulatory Commission ("FERC"), state regulators, and/or Boards of Directors for electric and gas utilities.

THE PRIME GROUP, LLC — March 2010 – May 2012
Senior Consultant

LG&E and KU, Louisville, KY — 1997 - 2010
(Louisville Gas & Electric Company and Kentucky Utilities Company)
Director, Customer Service & Marketing (2006 - 2010)
Manager, Regulatory Affairs (2001 - 2006)
Lead Planning Engineer, Generation Planning (1998 - 2001)
Power Trader, LG&E Energy Marketing (1997 - 1998)

PJM INTERCONNECTION, LLC, Norristown, PA — 1990 - 1993; 1994 - 1997
Project Lead – PJM OASIS Project
Chair, Data Management Working Group

CINCINNATI GAS & ELECTRIC COMPANY, Cincinnati, OH — 1993 - 1994
Electrical Engineer - Energy Management System

Education

Bachelor of Science Degree in Electrical Engineering, University of Notre Dame, 1990
Master of Science Degree in Electrical Engineering, Drexel University, 1997
Leadership Louisville, 2006

Associations

Senior Member, Institute of Electrical and Electronics Engineers ("IEEE")
IEEE Power Engineering Society

Expert Witness Testimony & Proceedings

FERC: Submitted direct testimony for TransCanyon Western Development, LLC in FERC Docket No. ER21-1065 regarding a proposed Transmission Formula Rate.

Submitted direct testimony for Cleco Power LLC in FERC Docket No. ER21-370 regarding a proposed rate schedule for Blackstart Service under Schedule 33 of the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff.

Submitted direct testimony for Constellation Mystic Power, LLC in FERC Docket No. ER18-1639-005 supporting a compliance filing for a cost-of-service rate for compensation for the continued operation of power plants in ISO New England.

Submitted direct testimony for DATC Path 15, LLC in FERC Docket No. ER20-1006 regarding a proposed wholesale transmission rate.

Submitted direct testimony for Tucson Electric Power Company in FERC Docket No. ER19-2019 regarding a proposed Transmission Formula Rate.

Submitted direct testimony for Cheyenne Light, Fuel & Power Company in FERC Docket No. ER19-697 regarding a proposed Transmission Formula Rate.

Supported Kansas City Power & Light in FERC Docket No. ER19-1861-000 regarding revisions to fixed depreciation rates in the KCP&L SPP Transmission Formula Rate.

Supported Westar Energy and Kansas Gas & Electric Company in FERC Docket No. ER19-269-000 regarding revisions to fixed depreciation rates in the Westar SPP Transmission Formula Rate.

Submitted direct testimony for Midwest Power Transmission Arkansas, LLC in FERC Docket No. ER15-2236 regarding a proposed Transmission Formula Rate.

Submitted direct testimony for Kanstar Transmission, LLC in FERC Docket No. ER15-2237 regarding a proposed Transmission Formula Rate.

Supported Westar Energy and Kansas Gas & Electric Company in FERC Docket Nos. FA15-9-000 and FA15-15-000 regarding an Audit of Compliance with Rates, Terms and Conditions of Westar's Open Access Transmission Tariff and Formula Rates, Accounting Requirements of the Uniform System of Accounts, and Reporting Requirements of the FERC Form No. 1.

Submitted direct testimony for Westar Energy in FERC Docket Nos. ER14-804 and ER14-805 regarding proposed revisions to a Generation Formula Rate.

Supported Intermountain Rural Electric Association and Tri-State G&T in FERC Docket No. ER12-1589 regarding revisions to Public Service of Colorado's Transmission Formula Rate.

Supported Intermountain Rural Electric Association in FERC Docket No. ER11-2853 regarding revisions to Public Service of Colorado's Production Formula Rate.

Supported Kansas Gas & Electric Company in FERC Docket No. FA14-3-000 regarding an Audit of Compliance with Nuclear Plant Decommissioning Trust Fund Regulations and Accounting Practices.

Supported LG&E Energy LLC in FERC Docket No. PA05-9-000 regarding an Audit of Code of Conduct, Standards of Conduct, Market-Based Rate Tariff, and MISO's Open Access Transmission Tariff at LG&E Energy LLC.

Submitted remarks and served on expert panel in FERC Docket No. RM01-10-000 on May 21, 2002 in Standards of Conduct for Transmission Providers staff conference, regarding proposed rulemaking on the functional separation of wholesale transmission and bundled sales functions for electric and gas utilities.

Kansas: Submitted report for Westar Energy, Inc. in Docket No. 21-WCNE-103-GIE regarding plans and options for funding the decommissioning trust fund, depreciation expenses, and overall cost recovery in the event of premature closing of the Wolf Creek nuclear plant.

Submitted direct and rebuttal testimony for Westar Energy, Inc. in Docket No. 18-WSEE-328-RTS regarding overall rate design, prior rate case settlement commitments, lighting tariffs, an Electric Transit rate schedule, Electric Vehicle charging tariffs, and tariff general terms and conditions.

Submitted direct and rebuttal testimony for Westar Energy, Inc. in Docket No. 18-KG&E-303-CON regarding the Evaluation, Measurement and Verification ("EM&V") of an energy efficiency demand response program offered pursuant to a large industrial customer special contract.

Submitted report for Westar Energy, Inc. in Docket No. 18-WCNE-107-GIE regarding plans and options for funding the decommissioning trust fund, depreciation expenses, and overall cost recovery in the event of premature closing of the Wolf Creek nuclear plant.

Submitted direct and rebuttal testimony for Westar Energy, Inc. in Docket No. 15-WSEE-115-RTS regarding rate designs for large customer classes, establishment of a balancing account related to new rate options, establishment of a tracking mechanism for costs related to compliance with mandated cyber and physical security standards, other rate design issues, and revenue allocation.

Kentucky: Submitted direct testimony and responses to data requests on behalf of sixteen distribution cooperative owner-members of East Kentucky Power Cooperative in Case Nos. 2021-00104 through 2021-00119 regarding rate design for the pass-through of a proposed wholesale rate revision.

Submitted direct testimony and responses to data requests on behalf of Kenergy Corp. in Case No. 2021-00066 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a streamlined rate case.

Submitted direct testimony on behalf of Big Rivers Electric Corporation in Case No. 2021-00061 regarding two cost of service studies in a review of the Member Rate Stability Mechanism Charge for calendar year 2020.

Submitted direct testimony and responses to data requests on behalf of Licking Valley R.E.C.C. in Case No. 2020-00338 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a streamlined rate case.

Submitted direct testimony and responses to data requests on behalf of Cumberland Valley Electric in Case No. 2020-00264 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a streamlined rate case.

Submitted direct testimony and responses to data requests on behalf of Taylor County R.E.C.C. in Case No. 2020-00278 regarding the cost support and tariff changes for the implementation of a Prepay Metering Program.

Submitted direct testimony and responses to data requests on behalf of Meade County R.E.C.C. in Case No. 2020-00131 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a streamlined rate case.

Submitted direct testimony and responses to data requests on behalf of Clark Energy Cooperative in Case No. 2020-00104 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a streamlined rate case.

Submitted direct testimony and responses to data requests on behalf of Big Rivers Electric Corporation in Case No. 2019-00435 regarding an Environmental Compliance Plan and Environmental Surcharge rate mechanism.

Submitted direct testimony and responses to data requests on behalf of Jackson Energy Cooperative in Case No. 2019-00066 regarding revenue requirements, cost of service and rate design in a streamlined rate case.

Submitted direct testimony and responses to data requests on behalf of Jackson Purchase Energy Corporation in Case No. 2019-00053 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a streamlined rate case.

Submitted direct testimony and data request responses on behalf of Big Rivers Electric Corporation in Case No. 2018-00146 regarding ratemaking issues associated with the anticipated termination of contracts regarding the operation of an electric generating plant owned by the City of Henderson, Kentucky.

Submitted direct testimony on behalf of fifteen distribution cooperative owner-members of East Kentucky Power Cooperative in Case No. 2018-00050 regarding the economic evaluation of and potential cost shift resulting from a proposed member purchased power agreement.

Submitted direct testimony on behalf of Big Sandy R.E.C.C. in Case No. 2017-00374 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a base rate case.

Submitted direct testimony on behalf of Progress Metal Reclamation Company in Kentucky Power Company Case No. 2017-00179 regarding the potential implementation of a Load Retention Rate or revisions to an Economic Development Rate.

Submitted direct testimony on behalf of Kenergy Corp. and Big Rivers Electric Corporation in Case No. 2016-00117 regarding a marginal cost of service study in support of an economic development rate for a special contracts customer.

Submitted rebuttal testimony on behalf of Big Rivers Electric Corporation in Case No. 2014-00134 regarding ratemaking treatment of revenues associated with proposed wholesale market-based-rate purchased power agreements with entities in Nebraska.

Submitted direct and rebuttal testimony on behalf of Big Rivers Electric Corporation in Case No. 2013-00199 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a base rate case.

Submitted direct and rebuttal testimony on behalf of Big Rivers Electric Corporation in Case No. 2012-00535 regarding revenue requirements, pro forma adjustments, cost of service and rate design in a base rate case.

Submitted direct and rebuttal testimony on behalf of Big Rivers Electric Corporation in Case No. 2012-00063 regarding an Environmental Compliance Plan and Environmental Surcharge rate mechanism.

Submitted direct, rebuttal, and rehearing direct testimony on behalf of Big Rivers Electric Corporation in Case No. 2011-00036 regarding revenue requirements and pro forma adjustments in a base rate case.

Submitted direct testimony for Louisville Gas & Electric Company in Case No. 2009-00549 and for Kentucky Utilities Company in Case No. 2009-00548 for adjustment of electric and gas base rates, in support of a new service offering for Low Emission Vehicles, revised special charges, and company offerings aimed at assisting customers.

Submitted discovery responses for Kentucky Utilities and/or Louisville Gas & Electric Company in various customer inquiry matters, including Case Nos. 2009-00421, 2009-00312, and 2009-00364.

Submitted discovery responses for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2008-00148 regarding the 2008 Joint Integrated Resource Plan.

Submitted discovery responses for Louisville Gas & Electric Company and Kentucky Utilities Company in Administrative Case No. 2007-00477 regarding an investigation of the energy and regulatory issues in Kentucky's 2007 Energy Act.

Submitted direct testimony for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2007-00319 for the review, modification, and continuation of Energy Efficiency Programs and DSM Cost Recovery Mechanisms.

Submitted direct testimony for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2007-00067 for approval of a proposed Green Energy program and associated tariff riders.

Submitted direct testimony for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2005-00467 and 2005-00472 regarding a Certificate of Public Convenience and Necessity for the construction of transmission facilities.

Submitted discovery responses for Kentucky Utilities in Case No. 2005-00405 regarding the transfer of a utility hydroelectric power plant to a private developer.

Submitted discovery responses for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2005-00162 for the 2005 Joint Integrated Resource Plan.

Presented company position for Louisville Gas & Electric Company and Kentucky Utilities Company at public meetings held in Case Nos. 2005-00142 and 2005-00154 regarding routes for proposed transmission lines.

Supported Louisville Gas & Electric Company and Kentucky Utilities Company in a Focused Management Audit of Fuel Procurement practices by Liberty Consulting in 2004.

Supported Louisville Gas & Electric Company and Kentucky Utilities Company in an Investigation into their Membership in the Midwest Independent Transmission System Operator, Inc. ("MISO") in Case No. 2003-00266.

Supported Louisville Gas & Electric Company and Kentucky Utilities Company in a Focused Management Audit of its Earning Sharing Mechanism by Barrington-Wellesley Group in 2002-2003.

Submitted direct testimony for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2002-00381 regarding a Certificate of Public Convenience and Necessity for the acquisition of four combustion turbines.

Submitted direct testimony for Louisville Gas & Electric Company and Kentucky Utilities Company in Case No. 2002-00029 regarding a Certificate of Public Convenience and Necessity for the acquisition of two combustion turbines.

Virginia: Submitted direct testimony for Kentucky Utilities Company d/b/a Old Dominion Power in Case No. PUE-2002-00570 regarding a Certificate of Public Convenience and Necessity for the acquisition of four combustion turbines.

Presentations

"Revisiting Rate Design Strategies" presented to APPA Public Power Forward Summit, November 2019.

"Utility Rates at the Crossroads" presented to APPA Business & Financial Conference, September 2019.

“New Developments in Kentucky Rate Filings” presented to Kentucky Electric Cooperatives Accountants' Association Summer Meeting, June 2019.

“Electric Rates: New Approaches to Ratemaking” presented to CFC Statewide Workshop for Directors, January 2019.

“The Great Rate Debate: Residential Demand Rates” presented to CFC Forum, June 2018.

“Benefits of Cost of Service Studies” presented to Tri-State Electric Cooperatives Accountants' Association Spring Meeting, April 2017.

“Proper Design of Utility Rate Incentives” presented to APPA/Area Development's Public Power Consultants Forum, March 2017.

“Utility Hot Topics and Economic Development” presented to APPA/Area Development's Public Power Consultants Forum, March 2017.

“Emerging Rate Designs” presented to CFC Independent Borrowers Executive Summit, November 2016.

“Optimizing Economic Development” presented to Grand River Dam Authority Municipal Customer Annual Meeting, September 2016.

“Tomorrow's Electric Rate Designs, Today” presented to CFC Forum, June 2016.

“Reviewing Rate Class Composition to Support Sound Rate Design” presented to EEI Rate and Regulatory Analysts Group Meeting, May 2016.

“Taking Public Power Economic Development to the Next Level” presented to APPA/Area Development's Public Power Consultants Forum, March 2016.

“Ratemaking for Environmental Compliance Plans” presented to NARUC Staff Subcommittee on Accounting and Finance Fall Conference, September 2015.

“Top Utility Strategies for Successful Attraction, Retention & Expansion” presented to APPA/Area Development's Public Power Consultants Forum, March 2015.

“Economic Development and Load Retention Rates” presented to NARUC Staff Subcommittee on Accounting and Finance Fall Conference, September 2013.

“Rates for Distributed Generation” presented to 2010 Electric Cooperative Rate Conference, October 2010.

“What Utilities Can Do to Advance Energy Efficiency in Kentucky” panel session of Second Annual Kentucky Energy Efficiency Conference, October 2007.

<u>Articles</u>

“FERC Formula Rate Resurgence” *Public Utilities Fortnightly*, Vol. 158, No. 9, July 2020, 34-37.

"Economic Development Rates: Public Service or Piracy?" *IAEE Energy Forum*, International Association for Energy Economics, 2016 Q1 (January 2016), 17-20.

Big Rivers Electric Corporation

2021 Marginal Cost Analysis

June 2021

Prepared By

CATALYST

CONSULTING LLC

TFS No. 2021-________

Exhibit Wolfram-2

Table of Contents

Page

I. Executive Summary 2
II. Introduction 2
III. Marginal Cost Theory 2
IV. Application of Marginal Cost Theory to Big Rivers 3
V. Marginal Production Demand Cost 4
VI. Marginal Production Energy Cost 5
VII. Marginal Transmission Cost 5
VIII. Summary 6
IX. Resources 7

TFS No. 2021-________
Exhibit Wolfram-2

I. Executive Summary

This report describes the methods for estimating marginal production and transmission costs for Big Rivers Electric Corporation ("Big Rivers"). For production, the fixed marginal cost and the variable marginal cost are evaluated independently. Marginal distribution costs are not calculated because Big Rivers is a Generation and Transmission cooperative ("G&T") with no distribution assets.

The analysis is largely based on a recent study related to the proposed conversion of the Green units to natural gas. 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, filed February 28, 2021 ("Green Conversion docket").

The analysis in the Green Conversion docket demonstrates that Big Rivers' marginal production demand cost is $3.80 per kW per month and the marginal production energy cost is [redacted] per kWh. Because of the existing capabilities of the electric transmission grid, as designed prior to the termination of the smelter contracts, retirement of other Big Rivers facilities and proposed conversion of the Green units, the marginal transmission cost is zero.

II. Introduction

Marginal cost is defined as the change in total cost with respect to a small change in demand. In this report "output" will be used in place of "demand" to avoid confusion with the standard way that the term "demand" is used in the industry to represent the maximum amount of power utilized during any interval over a specified period of time. Therefore, in this study, output refers to the total megawatts of capacity or megawatt-hours of energy, so that marginal cost is the change in total system cost relative to a small change in total system capacity or energy.

III. Marginal Cost Theory

Marginal cost is defined as an infinitesimal change in total cost with respect to an infinitesimal change in output. Mathematically, marginal cost can be represented as the partial derivative of total cost to output, and can be stated as follows:

$$MC = \frac{\partial C}{\partial q}$$

where

MC	=	Marginal Cost
$\partial \mathrm{C}$	=	Infinitesimal change in Total Cost
$\partial \mathrm{q}$	=	Infinitesimal change in Output

In the context of discrete cost and output, marginal cost can be *estimated* as follows:

$$MC = \frac{\Delta C}{\Delta q}$$

TFS No. 2021-________

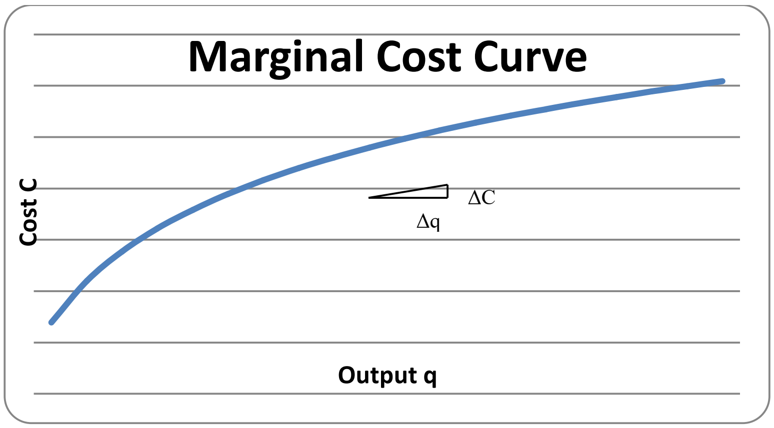
Exhibit Wolfram-2

where

MC	=	Marginal Cost
ΔC	=	Change in Total Cost
Δq	=	Change in Output

Graphically, the marginal cost is the slope of the line resulting from the graph of the total cost C and the total output q, as shown in Figure 1.

Figure 1. Cost vs. Output Curve



In the figure, "output" refers to total megawatts of capacity or megawatt-hours of energy required, so that marginal cost is the change in total system cost relative to a small change in total system output.

IV. Application of Marginal Cost Theory to Big Rivers

The application of Marginal Cost theory here is influenced by Big Rivers' present resource acquisition plans.

Big Rivers explained its current net capacity position and future net capacity position in a recent filing with the Commission. In Case No. 2021-00079, Big Rivers requested a certificate of public convenience and necessity ("CPCN") to convert Big Rivers' two existing coal-fired generating units at its Robert D. Green generating station ("Green Station") to run on natural gas.[1]

Big Rivers owns and operates the Green Station, the Robert A. Reid Plant ("Reid Station"), and the D.B. Wilson Plant ("Wilson Station"). Big Rivers retired the Reid 1 coal-fired generating unit and the three coal-fired generating units at its Kenneth C. Coleman Plant ("Coleman Station") in September 2020. With the retirement of Reid 1 and Coleman Station, Big Rivers' total power capacity is 1,114 MW. The additional 260 MW of power capacity from the three solar Power

[1] *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, February 28, 2021.

TFS No. 2021-________
Exhibit Wolfram-2

Purchase Agreements ("Solar PPAs") that the Commission recently approved will bring Big Rivers' total generation resources to 1,374 MW once the solar facilities are operational by 2024.[2]

Big Rivers' Member peak demand requirement is approximately 627 MW. The Commission recently approved Big Rivers' and Meade County RECC's joint request in Case No. 2019-00365 for approval of contracts to provide electric service to a new steel mill in Bradenburg, Meade County, Kentucky, to be owned and operated by Nucor Corporation ("Nucor"). Big Rivers' Member peak demand requirements are projected to increase from [redacted] MW in 2020 to [redacted] in 2022 with the addition of the Nucor load and then grow slowly to about [redacted] MW (including transmission losses) by the summer of 2039.[3] These amounts do not include any Planning Reserve Margins ("PRMs"), which are established at 9 percent for planning purposes.

However, Big Rivers must cease coal-fired generation at Green Station by June 1, 2022, in order to meet the October 31, 2023, deadline for the closure of the Green Station ash pond. Big Rivers idling Green Station's coal fired units [redacted], even after the Solar PPAs are added and after the termination of the Owensboro Municipal Utilities ("OMU") and Kentucky Municipal Energy Agency ("KyMEA") agreements. Post Green Station conversion, there is a small short-term capacity deficit even with the new solar contracts.

The conversion of the Green units to natural gas will provide Big Rivers over 90% of the capacity it needs through owned generation and long-term PPAs to serve its native load and to satisfy its obligations under its power sales contracts with OMU and KyMEA. Big Rivers will hedge the remaining small capacity deficit with market capacity purchases.[4]

With the conversion of the Green Station units to natural gas, Big Rivers anticipates no base load or peaking capacity additions to meet its native load requirements over the next 10 years.

The key point of this review is that Big Rivers' plan to convert the Green Station units to natural gas is the only resource acquisition anticipated to meet incremental load requirements over the next decade.

V. Marginal Production Demand Cost

The marginal demand costs for production are the changes in capacity costs associated with serving changes in demand on the electric system.

Recall that marginal cost is broadly defined as the change in total cost with respect to a small change in output--so that marginal cost is the change in total system capacity cost relative to a small change in total system demand.

Marginal production demand cost and its calculation is best looked at from the perspective of the electrical system utility planner. The planner begins by developing a schedule of resource

---

[2] See *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). Big Rivers also maintains seven small solar arrays for educational purposes, which generate a combined 165,000 kWh each year.
[3] Big Rivers 2020 IRP at page 49-50 and Table 3.4 (September 21, 2020).
[4] Case No. 2021-00079, Application Exhibit A, Direct Testimony of Michael T. Pullen, Page 9.

TFS No. 2021-________
Exhibit Wolfram-2

acquisitions which allows the utility to meet its forecasted demand obligations. The planner then must address how any incremental demand will be met. Perhaps most often, anticipated additional demand is met by taking the existing plan for generation expansion and accelerating it.[5]

Ordinarily, to evaluate the change in capacity costs, a base case is defined that specifies the capacity (and associated capacity cost) required to meet Big Rivers' base demand forecast for the planning period. Other scenarios are then developed in which the total system demand is increased by set increments, and the capacity acquisitions required to meet those incremental demands are determined. The net present value of the capacity costs in the base case is then compared to the net present value of the capacity costs for the incremental cases to determine the change in capacity cost associated with the change in total system demand. This is known as the Generation Resource Plan Expansion Method. [6]

In this case, Big Rivers' current resource plans consist only of the conversion of Green to natural gas. Thus, the marginal production demand cost is the capacity cost of the Green conversion as specified in the Green Conversion docket, or $3.80 per kW per month.

VI. Marginal Production Energy Cost

Marginal energy cost refers to the change in costs of operating and maintaining the utility generating system in response to a change in customer usage. Marginal energy costs consist of incremental fuel or purchased power costs and variable operation and maintenance expenses incurred to meet the change in customer usage.[7]

In this instance, the marginal production energy cost is derived from the projection of total system costs for Big Rivers included in the Green Conversion docket. The same seven year period used to determine the marginal production capacity cost with non-firm gas is used to determine the average annual energy cost. The annual energy cost increases from [redacted]. The average of the energy costs over this period is [redacted] Note the energy costs under the firm gas scenario is considerably lower, ranging from [redacted], with an average of [redacted] per kWh.

Based on the more conservative value consistent with the marginal production demand costs, the marginal production energy cost per kWh of additional energy is [redacted]

VII. Marginal Transmission Cost

Recall that marginal costs are defined as the change in total cost with respect to a small change in output. For discrete costs and output, the formula is:

$$MC = \frac{\Delta C}{\Delta q}$$

[5] Charles J. Cicchetti, et al, *The Marginal Cost and Pricing of Electricity: An Applied Approach* (Cambridge, MA: Ballinger Publishing Co., 1977), 8.
[6] NARUC Electric Utility Cost Allocation Manual (Washington, DC: NARUC, January 1992), 117.
[7] *Id* at 110.

TFS No. 2021-________
Exhibit Wolfram-2

where

MC	=	Marginal Transmission Cost
ΔC	=	Change in Total Cost of Transmission Plant
Δq	=	Change in system demand

Here again the current state of Big Rivers capacity and load must be considered. The Big Rivers system is currently designed to accommodate a peak load higher than that which Big Rivers anticipates through the long term planning horizon. The system was designed to accommodate supply from the Coleman Station and Reid Station that have since retired. The system was also designed to handle supply from Green Station operating on coal; with its conversion to gas-fired units, Green Station is expected to experience a capacity reduction from 454 MW to 414 MW. [8]

For this reason, any small incremental load addition will not automatically create a need for incremental plant investment.

It is possible that the particular siting of an incremental load could create transmission reliability or stability issues for Big Rivers for which investment is required. This may be characterized as a "local" issue which Big Rivers would work with the customer to resolve. Local issues of this nature are not pertinent to the calculation of an overall, system-wide marginal transmission cost.

For these reasons, Big Rivers' marginal transmission costs are effectively zero.

VIII. Summary

The marginal costs for Big Rivers for Production Demand, Production Energy, and Transmission for 2021 are summarized below.

#	Item	Amount
1	Marginal Production Demand Cost ($/kW-month)	3.80
2	Marginal Production Energy Cost ($/kWh)	[redacted]
3	Marginal Transmission Cost ($/kW-month)	0.00

[8] Green Conversion docket, Application Page 6.

TFS No. 2021-________

Exhibit Wolfram-2

IX. Resources

1) Lowell E. Alt, Jr., Energy Utility Rate Setting (Lexington, KY: Lulu.com, 2006).

2) James C. Bonbright, Albert Danielson, and David Kamerschen, *Principles of Public Utility Rates* (Arlington, VA: Public Utilities Reports, Inc., 1988) pp. 408-442.

3) Metin Celebi and Philip Q Hanser, *Marginal Cost Analysis in Evolving Power Markets,* Energy 2010 Issue 02 (Cambridge, MA: The Brattle Group, 2010).

4) Charles J. Cicchetti, et al, *The Marginal Cost and Pricing of Electricity: An Applied Approach* (Cambridge, MA: Ballinger Publishing Co., 1977).

5) Kenneth Gordon and Wayne P. Olsen, *Retail Cost Recovery and Rate Design in a Restructured Environment* (Washington DC: Edison Electric Institute, 2004).

6) Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions* (Cambridge, MA: MIT Press, 1988), pp. 67-86.

7) Jonathan A. Lesser and Leonardo R. Giacchino, *Fundamentals of Energy Regulation, 2nd Edition* (Arlington, VA: Public Utilities Reports, Inc., 2013), p. 418.

8) National Association of Regulatory Utility Commissioners, *Electric Utility Cost Allocation Manual* (Washington DC: NARUC, 1992) pp. 108-119.

9) Hethie Parmesano and William Bridgman, *The Role and Nature of Marginal and Avoided Costs in Ratemaking: A Survey* (National Economic Research Associates, Inc., 1992), pp 3-6.

10) Charles E. Phillips, *The Regulation of Public Utilities: Theory and Practice, 2nd Edition* (Arlington, VA: Public Utilities Reports, Inc., 1988), pp. 418-425.

Big Rivers Electric Corporation
TFS No. 2021-________
Rate Comparison

#	Usage			Marginal Cost				Discount	Comparison	
				3.80	[redacted]					
#	Period	Demand (MW)	Energy (MWH)	Demand ($)	Energy ($)	Total ($)	Total Rate ($/kWh)	Discounted Rate ($/kWh)	Disc less Marg Rate ($/kWh)	Disc > Marg?
1	Jun-21	[redacted]								Yes
2	Jul-21									Yes
3	Aug-21									Yes
4	Sep-21									Yes
5	Oct-21									Yes
6	Nov-21									Yes
7	Dec-21									Yes
8	Jan-22									Yes
9	Feb-22									Yes
10	Mar-22									Yes
11	Apr-22									Yes
12	May-22									Yes
13	Jun-22									Yes
14	Jul-22									Yes
15	Aug-22									Yes
16	Sep-22									Yes

Big Rivers Electric Corporation

TFS No. 2021-________

Rate Comparison

#	Usage			Marginal Cost				Discount	Comparison	
				3.80	[redacted]					
#	Period	Demand (MW)	Energy (MWH)	Demand ($)	Energy ($)	Total ($)	Total Rate ($/kWh)	Discounted Rate ($/kWh)	Disc less Marg Rate ($/kWh)	Disc > Marg?
17	Oct-22	[redacted]								Yes
18	Nov-22									Yes
19	Dec-22									Yes
20	Jan-23									Yes
21	Feb-23									Yes
22	Mar-23									Yes
23	Apr-23									Yes
24	May-23									Yes
25	Jun-23									Yes
26	Jul-23									Yes
27	Aug-23									Yes
28	Sep-23									Yes
29	Oct-23									Yes
30	Nov-23									Yes
31	Dec-23									Yes

Big Rivers Electric Corporation

TFS No. 2021-________

Rate Comparison

#	Usage			Marginal Cost				Discount	Comparison	
				3.80	[redacted]					
#	Period	Demand (MW)	Energy (MWH)	Demand ($)	Energy ($)	Total ($)	Total Rate ($/kWh)	Discounted Rate ($/kWh)	Disc less Marg Rate ($/kWh)	Disc > Marg?
32	Jan-24	[redacted]								Yes
33	Feb-24	[redacted]								Yes
34	Mar-24	[redacted]								Yes
35	Apr-24	[redacted]								Yes
36	May-24	[redacted]								Yes
37	Jun-24	[redacted]								Yes
38	Jul-24	[redacted]								Yes
39	Aug-24	[redacted]								Yes
40	Sep-24	[redacted]								Yes
41	Oct-24	[redacted]								Yes
42	Nov-24	[redacted]								Yes
43	Dec-24	[redacted]								Yes
44	Jan-25	[redacted]								Yes
45	Feb-25	[redacted]								Yes
46	Mar-25	[redacted]								Yes

Big Rivers Electric Corporation

TFS No. 2021-________

Rate Comparison

#	Usage			Marginal Cost				Discount	Comparison	
				3.80	[redacted]					
	Period	Demand (MW)	Energy (MWH)	Demand ($)	Energy ($)	Total ($)	Total Rate ($/kWh)	Discounted Rate ($/kWh)	Disc less Marg Rate ($/kWh)	Disc > Marg?
47	Apr-25	[redacted]								Yes
48	May-25									Yes
49	Jun-25									Yes
50	Jul-25									Yes
51	Aug-25									Yes
52	Sep-25									Yes
53	Bal PY 25									Yes
54	PY26									Yes
55	PY27									Yes
56	PY28									Yes
57	PY29									Yes
58	PY30									Yes