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PUBLIC SERVICE
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Your Touchstone Energy® Cooperative 

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

In the Matter of:

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION**

)
)
)

**Case No.
2017-00384**

**Responses to the Office of the Attorney General's
Initial Request for Information
dated
June 22, 2018**

FILED: July 20, 2018

ORIGINAL

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
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dated June 22, 2018**

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1 **Item 1) Refer to page 18 of the Integrated Resource Plan (“IRP”). It states**
2 **that “[t]he optimistic economy forecast scenario reflects growth for new**
3 **industrial load.” The footnote attributed to this sentence state that Big**
4 **Rivers’ projections of energy and peak demand is based in part on “new**
5 **growth corresponding to potential customers that have a high likelihood of**
6 **being served in future years.”**

7 **a. Explain how the Company determines the high likelihood of**
8 **potential customers taking service in this projection.**

9 **b. Reconcile the above statements with the tables and statements on**
10 **pages 56-58 of the IRP. The Large Commercial and Industrial**
11 **section states that “[l]arge C&I sales for Big Rivers’ three Members**
12 **are projected to be essentially flat after 2020, as the Long-Term Load**
13 **Forecast only added known, anticipated changes.”**

14 **c. Explain whether growth from potential customers was factored into**
15 **either of the Small Commercial & Industrial or the Large**
16 **Commercial & Industrial classes.**

17 **d. Explain to what extent Big Rivers works with the Area Development**
18 **Districts and/or Chambers of Commerce that exist within Big Rivers’**
19 **service territory to: (i) work to attract new commercial and**
20 **industrial load; and (ii) identify existing load the may wish to add**
21 **more load.**

22

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1 **Response)**

- 2 a. Big Rivers works with representatives from each of its Member-Owners to
3 analyze existing and potential industrial customers. A “high likelihood”
4 potential new customer is included in the forecast if the Member has
5 received a request for electric service from a potential customer or entered
6 contract discussions with a potential customer. Similarly, potential
7 additional load in future years at an existing customer is based on service
8 requests, contracts, and feedback received from a customer regarding
9 future operations. In the 2017 Load Forecast, one new customer is included
10 in the forecast at 1 MW, and additional load for two existing customers
11 totaling 36.5 MW by 2020 is included in the forecast.
- 12 b. Table 4.7 on page 58 of the IRP includes one new Large C&I customer
13 beginning in 2018. This customer was considered to be an anticipated and
14 high likelihood customer on the Kenergy system based on a service request
15 and contract discussions. The current status is that the customer has
16 obtained financing and will begin construction as planned in 2018. The load
17 forecast also dropped 3 previously existing Large C&I customers whose
18 operations ceased in 2016.
- 19 c. The Small C&I class forecast is based on regression analysis for the class
20 as a whole and includes no projections for individual existing or potential
21 customers. The Large C&I class forecast of number of customers, energy
22 sales, and peak demand is set at the most recent historical values and
23 adjusted for known, anticipated changes. As stated above, the Large C&I

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Response to AG 1-1**

**Witnesses: John W. Hutts (*a., b., and c. only*) and
Mark J. Eacret (*d. only*)**

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1 class forecast includes one new customer and additional load for two
2 existing customers.

3 d. For Big Rivers' work with the Area Development Districts and/or Chambers
4 of Commerce within Big Rivers' service territory, see Big Rivers' response
5 to Item 38 of the Commission Staff's Initial Request for Information in this
6 case.

7

8

9 **Witnesses)** John W. Hutts (*a., b., and c. only*) and
10 Mark J. Eacret (*d. only*)

11

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1 **Item 2)** *Has Big Rivers considered whether any of its current customers*
2 *may move to generate their own electricity by 2036, either through CHP or*
3 *other means?*

4 *a. If so, how has the Company planned to mitigate for this possibility?*

5 *b. If not, will the Company consider studying this in the near future?*

6 *c. If Big Rivers considers this customer self-generation/distributed*
7 *generation within its Load Mitigation Plan, identify where the Plan*
8 *does so.*

9
10 **Response)** Big Rivers always has been supportive of customers interested in
11 behind-the-meter generation. The Domtar facility, located in Hancock County, has
12 self-generated about 50 MWs with a CHP generator since 2001. Recently, Big Rivers
13 has contracted to purchase approximately 200 kW of renewable power from a retail
14 member in McCracken County.

15 *a. Retail members have the right to self-generate electricity. In Big Rivers*
16 *experience, these projects would not require mitigation.*

17 *b. Big Rivers will be directly involved in planning of large-scale facilities that*
18 *may impact the generation or transmission within Big Rivers' service area*
19 *and provide the support necessary to insure a reliable, cost-effective, and*
20 *safe power supply to its Members.*

21 *c. Big Rivers did not consider customer self-generation/distributed generation*
22 *within the Load Mitigation Plan.*

23

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1 **Witness)** Russell L. Pogue,

2

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1 **Item 3)** *Refer to pages 19 and 55 of the IRP. Provide the evidence, studies*
2 *or otherwise, which indicate that appliance efficiencies are approaching*
3 *maximum levels which will result in "relatively flat" average use per*
4 *customer beyond 2024.*

5
6 **Response)** As stated on page 19 of the IRP, the forecast is based on an assumption
7 that average appliance efficiencies are increasing at a declining rate as maximum
8 efficiencies are approached. This assumption is based on information published
9 annually by the U.S. Energy Information Administration ("EIA") in its Annual
10 Energy Outlook ("AEO"). The AEO includes projections of operating efficiencies for
11 various electric end-uses. The increases in efficiency are driven by federal standards
12 and macro-scale changes to the appliance market. The spreadsheet attached to this
13 response presents EIA's projected efficiencies for various Residential end-uses for the
14 2017 AEO.

15 As indicated on page 55 of the IRP, average use per Residential customer is
16 projected to decline through 2024 and then remain relatively flat thereafter. Through
17 2024, the impacts of increasing appliance efficiencies, [REDACTED],
18 and continued energy conservation practices, all of which decrease consumption, are
19 expected to outweigh the impacts of larger homes, positive economic growth, and
20 increases in electric end-use market shares. Beyond 2024, consumption is expected
21 to flatten as continued increases in appliance efficiencies are expected to slow relative
22 to increases prior to 2024.

23

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1

2 **Witness)** John W. Hutts

3

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1 **Item 4)** *Refer to page 28 and 46 of the IRP. Explain whether the Company*
2 *expects any further retail member-consumer owned PV generators larger*
3 *than 30 kW to come online in the next three years, or any projects that have*
4 *been announced or come online since the filing of this IRP.*

5 *a. Explain whether the seven educational solar arrays and web access*
6 *mentioned are currently operational, and whether the Company has*
7 *received feedback on this project. If so, explain the impacts so far*
8 *and the nature and extent of the feedback.*

9 *b. Explain how this project factors into the Company's projections for*
10 *possible renewable generation growth in its territory over the next*
11 *several years.*

12 *c. Explain any plans/projections for possible renewable generation*
13 *growth in the Company's territory over the next several years.*
14

15 **Response)** Big Rivers has signed a contract with a retail commercial customer who
16 recently installed a 210 kW solar generator. Big Rivers also has received one other
17 inquiry regarding the QFP/QFS Cogeneration/Small Power Production tariffs.

18 a. All seven solar arrays are operational and web access is available at
19 Solar.BigRivers.com. Big Rivers staff members have been invited to schools
20 to discuss the technology. There have been 6,900 page views of the
21 educational website since launch in March, 2018. Open houses have been
22 held at two of the sites which were well attended by members interested in
23 solar power.

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- 1 b. The purpose of the solar education project was to provide accurate and
2 transparent information about photovoltaic generation. There is no
3 assumption or expectation that the project would factor into projections of
4 possible renewable generation growth.
- 5 c. Big Rivers has not projected growth of retail member owned renewable
6 generation in the service area. Big Rivers has no plans currently to expand
7 solar power within its service area.

8

9

10 **Witness)** Russell L. Pogue

11

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1 **Item 5)** *Fully explain whether the RPS scenario described on pages 133-*
2 *134 is the only scenario in which Big Rivers would anticipate building*
3 *substantial solar generation in the near future.*

4

5 **Response)** The RPS scenario is the only scenario in the 2017 IRP where Big Rivers
6 would build substantial solar generation in the near future. It should be understood
7 that the *PLEXOS*® IRP model chooses the most economical resources, the minimum
8 cost plan, for serving Big Rivers' load. Big Rivers will continue to evaluate the
9 economics surrounding solar generation.

10

11

12 **Witness)** Duane E. Braunecker

13

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1 **Item 6)** *Reference page 40 of the IRP. Explain the specific efforts the*
2 *Company has taken toward developing in-house expertise for price*
3 *forecasting and MISO market knowledge as suggested in Recommendation 2*
4 *from the Focused Management Audit.*

5 *a. Is the restructuring of the Strategic Planning and Risk*
6 *Management Department described on page 42 a direct result of this*
7 *recommendation? Fully explain.*

8 *b. Aside from the restructuring above, have any other employees been*
9 *hired or reassigned to this end?*

10 *c. In regards to Recommendation 2, explain how the scope of the*
11 *development of the in-house expertise for price forecasting and*
12 *MISO market knowledge is limited to Big Rivers' mission and core*
13 *business.*

14

15 **Response)**

16 *a. No, the restructuring of the Strategic Planning and Risk Management*
17 *Department was not a direct result of the Focused Management Audit. Big*
18 *Rivers recognized there was a need and a benefit for enhancing its strategic*
19 *planning with the constant operational and environmental changes in our*
20 *industry. As shown on the attachment to this response, Big Rivers was*
21 *already in process of developing a modeling team for providing analyses to*
22 *aid Big Rivers with critical business decisions before the Focused*
23 *Management Audit.*

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- 1 b. No other employees have been hired or reassigned to this function aside
2 from the restructuring discussed in sub-part a. above.
- 3 c. Big Rivers utilizes the in-house expertise for price forecasting and MISO
4 market knowledge it has developed to assist it in bidding on and negotiating
5 power sales agreements, and for planning and budgeting purposes. This
6 has allowed Big Rivers to increase the amount of power sold under long-
7 term contracts (*see* Big Rivers' response to Item 5 of the Commission Staff's
8 first request for information in this case) while reducing uneconomic
9 generation (*see* Big Rivers' Application in Case No. 2018-00146), in order to
10 eliminate the excess capacity resulting from the smelter contract
11 terminations.

12

13

14 **Witness)** Robert W. Berry

15

Interoffice Memorandum

TO: Big Rivers' Employees
FROM: Bob Berry *rb*
DATE: January 12, 2015
SUBJECT: Planning Group Announced

With the constant operational and environmental changes in our industry today, Big Rivers has a number of critical business decisions that must be considered in the future. Many alternatives must be analyzed so that we can continue to make cost-effective decisions for Big Rivers and its three Member-Owners. These business decisions include: selecting the most cost-effective approach to meet pending and future environmental regulations, when should we return the Coleman plant to service, do we convert a plant or plants to gas, should we sell Coleman and/or Wilson and at what price, just to name a few of the alternatives. Due to the many possibilities that must be analyzed, along with other regular periodic requirements to develop the load forecasts and the Integrated Resource Plan (IRP), it became apparent that a dedicated planning group was needed. This planning group will report to Duane Braunecker, who was named the Director of Strategic Planning and Risk Management in November of 2014. Duane has been working to fill several open positions in this newly-formed group and as a result, please join me in congratulating the following individuals:

- Chris Warren has accepted the position of Manager of Financial Planning and Analysis in the newly-expanded Strategic Planning and Risk Management group reporting to Duane. Chris has over 18 years of experience in accounting and finance. Since joining the company over 13 years ago, he has held lead roles in budgeting and forecasting along with various other assignments including his involvement in the last two rate case proceedings. Chris holds Bachelor of Science degrees in Accounting and Business Administration from Kentucky Wesleyan College.

- Charles Jones has accepted the position of Manager of Generation Planning and Analysis in the newly-expanded Strategic Planning and Risk Management group reporting to Duane. Charles began working for the company in 2004 as a Chemical Engineer supervising the lab at Sebree Station. In 2006, he became a Production Supervisor at Green Station and then moved into the position of Performance/ Environmental Specialist in 2010. Charles received his Bachelor of Science degree in Chemical Engineering from the University of Kentucky.
- With Duane's move to Director of Strategic Planning and Risk Management, Jason Burden has accepted the position of Manager of Production Services reporting to Jim Garrett. Jason began his career with Big Rivers in 1998 working in various roles in the Production Department at HMPL Station II, Green, and Coleman Stations until 2013. During this period, Jason performed several different roles including Utility Operator, Auxiliary Operator, Control Room Operator, and Production Supervisor including employee training and implementation of Coleman Station's DCS training simulator. In 2013, Jason accepted a position in Energy Services as an Energy Services Analyst responsible for short- and medium-term load forecasting for Big Rivers and works closely with MISO and ACES Power Marketing.
- As a result of Chris's move to the new planning group, Jennifer Stone has accepted a new role in the Accounting Department. Jennifer will become the Manager of Continuous Improvement reporting directly to Lindsay Barron. This position will focus on process improvement by collaborating with employees to implement industry best practices and effective tools and technologies. Prior to joining Western Kentucky Energy in 2005, Jennifer worked in various accounting positions including auditor of utility cooperatives. She has worked in the Budgeting Department at both Headquarters and Sebree Station since joining Big Rivers. Jennifer holds a Bachelor's degree in Accounting from Southeast Missouri State University and a Master's degree in Accounting from Stetson University. She is also a Certified Public Accountant.

Please join me in congratulating these individuals. Big Rivers is positioned well for the future and will continue to improve its planning and processes with these newly-appointed roles.

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- 1 Item 7) *Reference pages 40-41 of the IRP. Explain the progress the*
2 *Company has made in commissioning a study on the future of the Coleman*
3 *plant in regards to Recommendation 3 from the Focused Management Audit.*
- 4 a. *Has the Company determined a timeline for commencing and*
5 *completing a study on Coleman?*
- 6 b. *Independent of any external study, has Big Rivers continued to*
7 *internally explore each of the options available for Coleman,*
8 *including sale, retirement, or redevelopment?*
- 9 c. *State whether Big Rivers has had any offers to purchase the*
10 *Coleman plant since the completion of its last IRP.*
- 11 d. *What factors have changed since the Company's 2014 analysis of*
12 *Coleman?*
- 13 e. *At what market prices, for both capacity and energy, would the*
14 *Company support returning Coleman to service?*
- 15 f. *Fully explain the economics of a scenario where the Company*
16 *decides to return Coleman to service.*
- 17 g. *Fully explain the steps needed to return Coleman to service.*
- 18 h. *Fully explain whether maintenance has been performed on the*
19 *plant while idle, and what deferred maintenance would need to be*
20 *done to return it to service.*
- 21 i. *Explain in full detail the environmental upgrades which would be*
22 *required to return Coleman to service and in compliance with*
23 *current standards. Include in your response the precise*

Case No. 2017-00384
Response to AG 1-7

Witnesses: Michael T. Pullen (a. thru h., and j. only) and
Dr. Thomas L. Shaw (i. only)

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1 *environmental regulations (whether state or federal) with which*
2 *each such upgrade is intended to comply.*

3 ***j. Explain in full detail the fully projected cost of returning Coleman***
4 ***to service, and separately break down the cost of maintenance and***
5 ***mandatory environmental upgrades.***

6

7 **Response)** Please see Big Rivers' response to Item 6 of the Commission Staff's first
8 request for information in this case.

9 a. See the response above.

10 b. Yes, Big Rivers is following the Kentucky Public Service Commission's
11 Recommendation 3 of the Focused Management and Operations Audit from
12 2014.

13 c. Big Rivers has not received any offers to purchase the Coleman plant since
14 the completion of its last IRP.

15 d. One of the factors that has changed since the 2014 IRP is the Clean Power
16 Plan stay by the Supreme Court and the announcement by the EPA of its
17 intent to repeal and replace the existing Clean Power Plan. This factor is
18 a significant unknown to the future plans for Coleman Station.

19 e. Big Rivers has not determined the market prices, for both capacity and
20 energy, which would support returning Coleman to service. Big Rivers
21 analysis focused on the impact of returning Coleman to service would have
22 on its Members' wholesale rates.

BIG RIVERS ELECTRIC CORPORATION

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- 1 f. The economics needed to return Coleman to service would be those
2 necessary to have a positive economic benefit to our Members either in
3 terms of reduced rates or improved net margins to the company.
- 4 g. At a minimum, Big Rivers would need to take the following steps to return
5 Coleman to service: (1) Regain interconnection to MISO, (2) acquire any
6 necessary permitting and approvals, (3) execute restoration plan, (4) install
7 and commission the appropriate environmental control technologies, (5)
8 complete turbine and boiler outages on each unit, and (6) hire to
9 appropriate staffing levels.
- 10 h. Coleman Station continues to be maintained in such a way that it can be
11 restored to service at a future date. The turbine generator and boiler
12 circuits have dehumidification units circulating dry air to prohibit
13 corrosion. Corrosion inhibitors are used on the smaller equipment. All
14 large motors have a preventative maintenance schedule in which the shafts
15 are rotated in the lubricated bearings. Turbine, generator, and boiler
16 maintenance will be required when Coleman returns to service.
- 17 i. Coleman Station must comply with the following regulations to begin
18 operations:
- 19 1. The current Kentucky Pollution Discharge Elimination System permit
20 for Coleman Station states that Big Rivers must begin a study for the
21 Clean Water Act § 316b (40 CFR 122.21(r)) within six months of
22 starting operation. The completion of the study will determine the
23 action needed to maintain compliance.

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**Witnesses: Michael T. Pullen (*a. thru h., and j. only*) and
Dr. Thomas L. Shaw (*i. only*)**

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- 1 2. To comply with the Coal Combustion Residuals (“CCR”) rule, Coleman
2 Station must comply with 40 CFR 257 Subpart D. The CCR rule
3 requires the installation of groundwater wells; studies on location
4 restrictions, design criteria, operating criteria, corrective action,
5 closure and post-closure care; and, finally, recordkeeping, notification
6 and posting of information to the internet.
- 7 3. To comply with the Effluents Limits Guidelines, Coleman Station
8 must comply with 40 CFR 423. Coleman Station will need to replace
9 the current wet ash sluicing system with a dry system and install a
10 treatment system for the scrubber blowdown water.
- 11 4. To comply with the Mercury and Air Toxics Standard (MATS),
12 Coleman Station must comply with 40 CFR Part 63, Subpart UUUU.
13 Coleman Station will need to install Activated Carbon Injection and
14 Dry Sorbent Injection.
- 15 j. See the attachment to this response.
- 16 1. Activated Carbon with Dry Sorbent Injection [REDACTED] (See Big
17 Rivers 2014 Integrated Resource Plan);
- 18 2. Physical/Chemical and Biological treatment system [REDACTED] (See
19 the CONFIDENTIAL Burns and McDonnell 2015 Environmental
20 Compliance Study provided with response);
- 21 3. Traveling Screen Conversion and 122.21(r) Study [REDACTED] (See the
22 CONFIDENTIAL Burns and McDonnell 2015 Environmental
23 Compliance Study provided with response);

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- 1 4. No capital improvements for CSAPR have been identified;
2 5. Dry Bottom and Fly ash systems [REDACTED];
3 6. Pond Closures (if required) [REDACTED] (See the CONFIDENTIAL
4 Burns and McDonnell 2015 Environmental Compliance Study
5 provided with response);
6
7
8 **Witnesses)** Michael T. Pullen (*a. thru h., and j. only*) and
9 Dr. Thomas L. Shaw (*i. only*)

Big Rivers Electric Corporation
Case No. 2017-00384
Cost to Return Coleman to Service

Projected Cost of Returning Coleman to Service		
Cost of Mandatory Environmental Upgrades	Description	\$ in millions
MATS	ACI/DSI	
CCR	Dry bottom and Fly ash systems	
CCR	Pond closures	
Effluent	FGD WWTF	
316b	Traveling Screens w/fish return	
Mandatory Environmental Upgrades Sub-Total		
Cost of Maintenance	Description	\$ in millions
Idle Restoration	Restoring systems to operating condition	
Coleman 3 Turbine/Generator Outage	Inspect/Overhaul	
Coleman 2 Turbine/Generator Outage	Inspect/Overhaul	
Coleman 1 Turbine/Generator Outage	Inspect/Overhaul	
FGD Outage	Inspect/Overhaul	
Maintenance Sub-Total		
Grand Total		

In the Matter of:

2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION

)
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CONFIDENTIAL RESPONSE

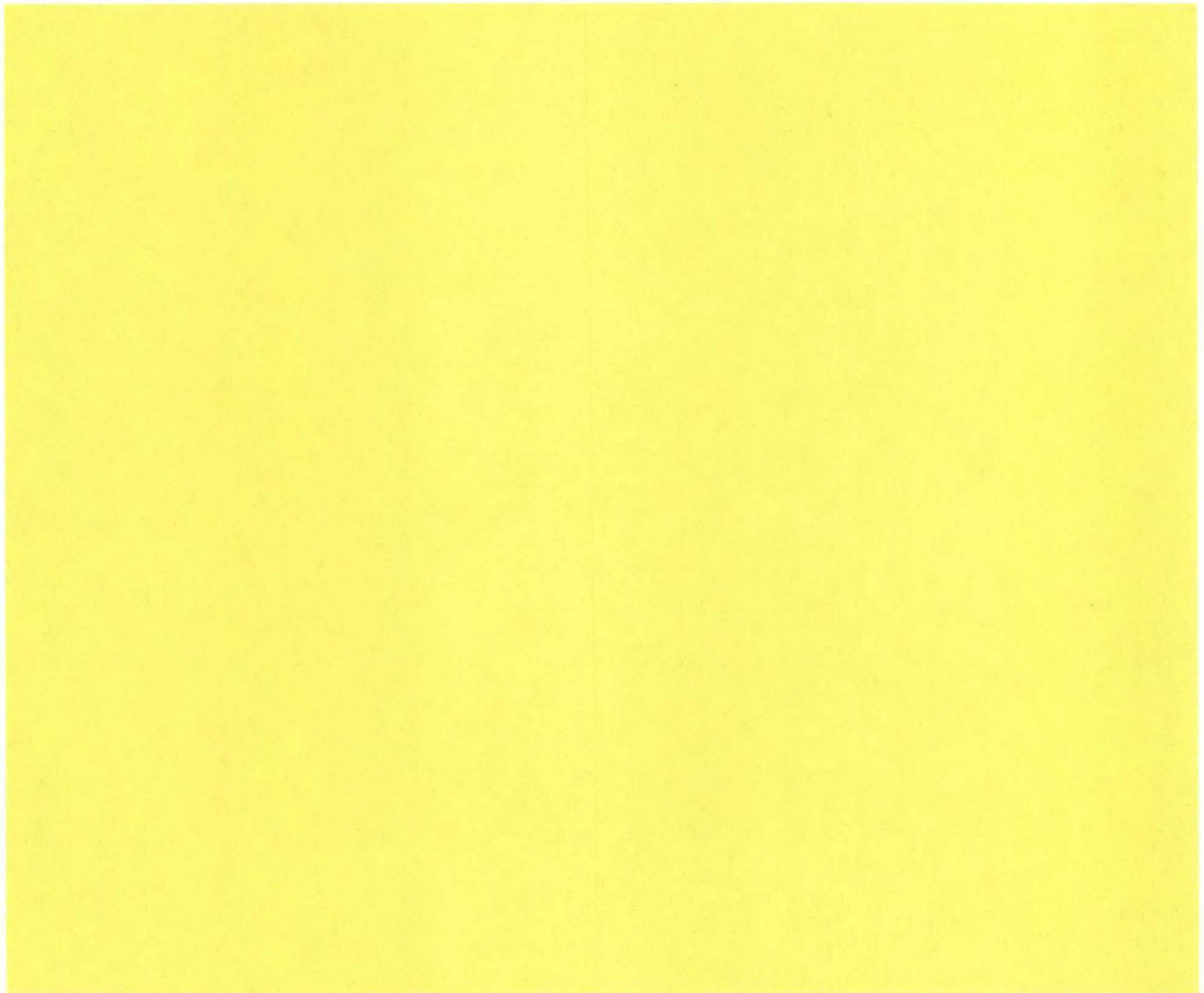
to Item 7i of the Office of the Attorney General's
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dated June 22, 2018

FILED: July 20, 2018

Burns and McDonnell Environmental Compliance Study –
May 1, 2015

**INFORMATION SUBMITTED UNDER PETITION FOR CONFIDENTIAL
TREATMENT**



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1 **Item 8)** *Fully explain whether Big Rivers intends to keep Reid Unit 1*
2 *idled or return it to service, and describe the economic market conditions*
3 *which would factor into this decision. Provide also any modelling data Big*
4 *Rivers may have produced in this regard.*

5 *a. Provide the number of hours Reid Unit 1 was operated since the*
6 *completion of Big Rivers' last IRP.*

7 *b. If Reid Unit 1 is returned to service, provide the remaining expected*
8 *lifespan, taking into consideration any repairs or modifications the*
9 *Company may make to the unit. If the remaining lifespan is*
10 *unknown, provide the lifespan for comparable units having a*
11 *similar age, run times and operating characteristics.*
12

13 **Response)** Big Rivers intends to keep Reid Unit 1 idled through 2032 or until a time
14 when returning it to service provides an economic benefit, whichever comes first.
15 Economic market conditions would have to be such, so that any necessary capital
16 expenditures would provide economic benefit to our member owners.

17 *a. Reid Unit 1 has operated 2,088.59 hours since the filing of Big Rivers' last*
18 *IRP on May 15, 2014.*

19 *b. If Reid Unit 1 is returned to service, the remaining expected lifespan would*
20 *be calculated using the expected retirement date of 2025, as stated in Table*
21 *6.2 on page 93 of Big Rivers' 2017 Integrated Resource Plan, plus any*
22 *additional years of lifespan resulting from repairs or modifications made to*
23 *the unit in the course of returning it to service.*

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1

2 **Witness)** Michael T. Pullen

3

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- 1 Item 9) *Fully explain how Big Rivers will decide whether to keep Wilson*
2 *in service as a coal-fired plant or retire it by 2020.*
- 3 a. *Describe the economic market conditions that will be required to*
4 *keep Wilson in service.*
- 5 b. *Provide any and all studies and analyses regarding Wilson's*
6 *possible retirement.*
- 7 c. *Provide a schedule of planned outages for Wilson over the next five*
8 *(5) years, including the types of O & M work planned, together with*
9 *cost estimates.*
- 10 d. *Provide the current state of the Wilson FGD's compliance, together*
11 *with any expected upgrades and cost estimates over the next five (5)*
12 *years. Include in your response any analysis regarding whether any*
13 *modification in fuel types may achieve comparable results for less*
14 *cost.*

15

16 **Response)** Analysis of the Production Cost Model (PCM) results from the
17 PLEXOS® software determined to keep Wilson in service as a coal-fired plant.

- 18 a. Wilson will remain in service as long as it provides value to our member
19 owners. Wilson is the least cost unit in Big Rivers' fleet and has the lowest
20 cost for future environmental compliance. All of those factors, as well as
21 Market Price sensitivities, were included in the PCM for analysis by the
22 PLEXOS® software for the 2017 IRP.

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOUCCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
Initial Request for Information
dated June 22, 2018**

July 20, 2018

- 1 b. Studies and analyses regarding Wilson's possible retirement were included
2 in the 2017 IRP. See Section 7.1.2 starting on page 110.
- 3 c. Planned outages are scheduled for Wilson over the next five (5) years in the
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]. Currently Big Rivers is developing the cost for the
12 [REDACTED] O&M work as part of its normal budget development.
- 13 d. The existing Wilson FGD is operated within compliance of the current
14 permit limits. Big Rivers is evaluating potential upgrades over the next
15 five (5) years including [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]. No additional analysis
19 has been performed regarding whether any modification in fuel types may
20 achieve comparable results for less cost, since the Sargent & Lundy Study
21 Supplemental: Fuel Switching that was filed in Case No. 2012-00063 as
22 Exhibit DePriest-4 to Mr. DePriest's Direct Testimony.
23

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
Initial Request for Information
dated June 22, 2018**

July 20, 2018

1

2 **Witnesses)** Michael T. Pullen (*a. thru c. only*) and
3 Dr. Thomas L. Shaw (*d. only*)

4

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
Initial Request for Information
dated June 22, 2018**

July 20, 2018

1 **Item 10)** *Provide a discussion of the effect that compliance with: (i)*
2 *CSAPR; (ii) ELG; and (iii) CCR will have on Big Rivers' fleet, together with*
3 *any and all cost projections completed since the last IRP was completed.*

4 *a. Provide copies of any studies that Big Rivers, and/or any other*
5 *entities on its behalf may have conducted in this regard.*
6

7 **Response)**

8 *a. Please refer to the studies provided in Big Rivers' response to Item 7 of the*
9 *Office of the Attorney General's initial request for information in this case.*
10

11

12

13 **Witness)** Dr. Thomas L. Shaw

14

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
Initial Request for Information
dated June 22, 2018**

July 20, 2018

- 1 Item 11) *Refer to Pg. 93, Table 6.2. The footnote regarding the Reid*
2 *Combustion Turbine expected retirement date states that it "will depend*
3 *greatly on the number of operating hours experienced over the next several*
4 *years. With relatively low operating hours and continued maintenance, it*
5 *should provide reasonably available capacity for a number of years into the*
6 *future."*
- 7 a. *Explain what the Company means by "relatively low operating*
8 *hours."*
- 9 b. *Explain what the Company means by "reasonably available*
10 *capacity".*
- 11 c. *Explain what the Company means by "a number of years into the*
12 *future".*
- 13 d. *Why can an expected retirement date not be estimated?*
- 14 e. *Provide the number of hours the Reid CT has run since the*
15 *completion of Big Rivers' last IRP.*
- 16 f. *Provide the remaining expected life span of the Reid CT. If the life*
17 *span is unknown, provide the average life span of comparable units*
18 *of that type having a similar age, run times and operating*
19 *characteristics.*
- 20 g. *Provide details regarding any upgrades or modifications Big Rivers*
21 *intends to make the Reid CT that will require any outages in excess*
22 *of one week.*

23

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
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dated June 22, 2018**

July 20, 2018

1 **Response)**

- 2 a. For the period from 1976 to 2017, the Reid CT has operated an average of
3 143 hours per year. With 8,760 possible run hours per year, the run time
4 has been an average of 1.64% per year.
- 5 b. Reasonably available capacity would be to continue to operate nominally as
6 it has for the past 42 years, running less than 2% of the time per year.
- 7 c. A number of years into the future means at least through this 2017 IRP
8 planning period.
- 9 d. Big Rivers expects the Reid CT to operate throughout this 2017 IRP
10 planning period.
- 11 e. As of June 27, 2018, at 00:00 hours (12 AM, *i.e.*, midnight), the Reid CT has
12 run 448.1 hours fired since the completion of Big Rivers' last IRP on May
13 15, 2014.
- 14 f. Assuming the Reid CT continues to operate nominally as it has for the past
15 42 years and parts are available for continued maintenance, an expected
16 life span of 60 years should be achievable for the Reid CT.
- 17 g. Big Rivers does not currently have intentions for upgrades or modifications
18 to be made to the Reid CT that will require any outages in excess of one
19 week.

20
21

22 **Witness)** Michael T. Pullen

23

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
BIG RIVERS ELECTRIC CORPORATION
CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
Initial Request for Information
dated June 22, 2018**

July 20, 2018

1 **Item 12) *Fully explain whether a recent KPDES alleged discharge***
2 ***violation and ongoing testing at the Wilson plant has altered the Company's***
3 ***plans to keep the plant coal-fired and in service or to retire it.***

4 ***a. Explain whether this has any impact on the "relative low capital***
5 ***cost" to bring Wilson in compliance with CCR and ELG regulations***
6 ***as described at page 108 of the IRP, and/or any state environmental***
7 ***regulations.***

8 ***b. Explain the Company's next steps in addressing the discharge***
9 ***violation.***

10 ***c. Explain whether the Company has or plans to contract with any***
11 ***consultants and/or engineering firms regarding the alleged***
12 ***discharge.***

13 ***d. Explain when the Company intends to conduct its next ground-well***
14 ***testing***

15

16 **Response)** The Notice of Violation was for a single event in 2016 and Big Rivers
17 has maintained compliance with the discharge limits since that single event. Big
18 Rivers plans to continue to operate the Wilson Plant as a coal fired facility and in
19 service.

20 **a.** The final treatment plan has not been completed as of the writing of this
21 answer, and the cost for the treatment cannot be determined until all of the
22 information has been gathered and the final process is approved by the
23 Division of Waste Management. However, preliminary conversations about

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
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dated June 22, 2018**

July 20, 2018

1 the final treatment do not indicate that a large capital investment will be
2 needed.

3 b. The remediation of the seeps that impacted the KPDES discharge point
4 have been isolated and are currently being treated with a commercial
5 chemical to reduce the concentration of arsenic. Big Rivers engaged
6 AECOM to provide technical support as well as develop a treatment plan.
7 An Agreed Order with the Commonwealth of Kentucky Energy and
8 Environment Cabinet's Division of Waste Management, completed May 24,
9 2018, established a timeline of 22 months to develop the Project Definition,
10 Engineering, and Construction for the treatment plan. Big Rivers is
11 currently implementing the Agreed Order. A copy of the Agreed Order is
12 an attachment to this response.

13 c. See the response to subpart b above.

14 d. The second round of groundwater sampling to comply with CCR will be
15 collected during the third quarter 2018.

16

17

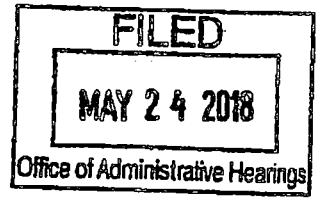
18 **Witness)** Dr. Thomas L. Shaw

19

Case No. 2017-00384

AG 1-12 (TLS)(Att) – Agreed Order with Commonwealth of Kentucky Energy & Environment Cabinet's Division of Waste Management, May 24, 2018

D. Cleveland



COMMONWEALTH OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DIVISION OF WASTE MANAGEMENT
Permit No.- SW 092-00004
AI No. 3319
FILE NO. DWM - 180044

IN RE: D.B. WILSON STATION

BIG RIVERS ELECTRIC CORPORATION
201 3rd Street
P.O. Box 24
Henderson, KY 42420

Facility/Violation Location:
Big Rivers Electric Corp. – D. B. Wilson Station
5663 State Route 85
West Centertown, KY 42328

AGREED ORDER

WHEREAS, the parties to this Agreed Order, the Energy and Environment Cabinet (hereinafter "Cabinet") and Big Rivers Electric Corporation (hereinafter "BREC"), state:

STATEMENTS OF FACT

1. The Cabinet is charged with the statutory duty of enforcing KRS Chapter 224, and the regulations promulgated pursuant thereto.
2. KRS 224.50-760 governs the disposal of special waste, including utility wastes. The Cabinet promulgated 401 KAR Chapter 45 to implement its duty to regulate the disposal of special wastes. 401 KAR 45:160 governs groundwater and surface water monitoring and corrective action at special waste landfills.

3. In 2014 the United States Environmental Protection Agency (EPA) promulgated 40 CFR 257.50 – 257.107 establishing national standards to govern the location, design, construction and operation of landfills and surface impoundments for the disposal of utility wastes known as coal combustion residuals (CCR) (hereinafter “Federal CCR Rule”). As promulgated, the Federal CCR Rule is self-implementing. In 2017, the Cabinet promulgated 401 KAR Chapter 46 to incorporate the federal standards into Kentucky regulations. 401 KAR 46:110 Sections 5 and 8 incorporate inspection, control, assessment, and corrective action requirements set forth in 40 CFR 257.81, 257.84, and 257.90 that apply to surface run-off and unauthorized surface releases from existing CCR landfills. Under the Federal CCR Rule, existing CCR landfills were authorized to continue operation without installing leachate collection systems. 80 Fed. Reg. 21302, 21370 (April 17, 2015).

4. BREC owns and operates D. B. Wilson Station, an electric power generating station located at 5663 State Route 85, West Centertown, Kentucky (the “Facility”). BREC owns and operates a special waste landfill at the Facility that was constructed in two stand-alone phases (Phase I and II) for the disposal of utility wastes including CCR (hereinafter collectively the “Wilson Landfill”). The site has been assigned AI ID No. 3319. To operate the Wilson Landfill the Cabinet’s Division of Waste Management, Solid Waste Branch (DWM), issued BREC Special Waste Permit No. SW 092-00004 pursuant to 401 KAR Chapter 45 for Phase I on March 14, 2005 (hereinafter the “SpW Permit”). The SpW Permit was modified to authorize the construction/operation of Phase II under 401 KAR Chapter 45 on October 8, 2009. Both Phases are covered by Permit No. SW 092-00004.

5. The standards of 401 KAR Chapter 46 and the Federal CCR Rule apply to "existing CCR landfills" as defined at 40 CFR 257.53, independent of 401 KAR Chapter 45 permits. The SpW Permit also continues to apply to the Wilson Landfill at this time.

6. BREC holds Kentucky Pollution Discharge Elimination System (KPDES) Permit No. KY0054836 issued by the Cabinet's Division of Water ("DOW") in 2015 (hereinafter "KPDES Permit") regulating discharges from point sources at the Facility into Waters of the Commonwealth pursuant to 401 KAR 5:055. Outfalls 002, 004, 014, and 015 are controlled by sedimentation ponds and receive CCR landfill runoff from the Wilson Landfill. Outfall 002, 004, 014, and 015 are subject to a water-quality based effluent limitation for total recoverable arsenic, a constituent of CCR leachate, of 340 ug/L.

7. BREC reported a total recoverable arsenic daily maximum discharge of 381 ug/L in excess of its 340 ug/L KPDES Permit limit for Outfall 002 in August of 2016. On November 18, 2016, after reviewing BREC's KPDES discharge monitoring reports, the Cabinet's Division of Enforcement issued a Notice of Violation (NOV) for a violation of KRS 224.70-110 for failing to comply with 40 CFR 122.41(a), as adopted by 401 KAR 5:065, Section 2(1), by exceeding KPDES Permit limits for total recoverable arsenic.

8. BREC responded to the November 18, 2016 NOV with a letter dated January 27, 2017 acknowledging receipt of the NOV. BREC noted in the response that remedial measures were implemented to ensure compliance with KPDES permit limits and that the reason for the exceedance was under investigation.

9. From October 3 through October 5, 2016, authorized representatives of DWM conducted an Operations and Maintenance Inspection of the Wilson Landfill and observed leachate outbreaks and leachate flowing in unlined ditches from the landfill toward the sediment

pond at Outfall 002. During a subsequent file review, DWM personnel identified a violation of 401 KAR 30:031 Section 4(1) by “a discharge of pollutants into waters of the Commonwealth, including wetlands, that violate any requirements of KRS Chapter 224, or the surface water standards of 401 KAR Chapter 5 or 8” which was deemed attributable to leachate outbreaks observed during the inspection and the single exceedance of the KPDES permit limit for total recoverable arsenic at Outfall 002.

10. On or about January 3, 2017 the DWM issued BREC a NOV for the violations described in paragraph 9 above. The remedial measure in the NOV requested BREC to submit a Leachate Remediation Plan. DWM also directed BREC to evaluate and address leachate outbreak sources in a Notice of Deficiency dated March 8, 2017, related to BREC’s groundwater assessment plan. BREC responded to the DWM NOV by letter dated February 9, 2017, and stated that it had implemented a chemical treatment plan for the leachate to prevent further exceedances of the KPDES permit limits for total recoverable arsenic. BREC also noted it intended to identify the cause of the leachate outbreak on Phase I of the landfill that was the subject of the NOV after a dry weather pattern returned. BREC stated the chemical treatment had been effective at preventing further KPDES permit limit exceedances.

11. BREC and DWM met on several occasions in 2017 to discuss BREC’s leachate management plans at the Facility. BREC noted that it had implemented procedures for control of leachate outbreaks and was evaluating a different leachate treatment capture system for the Phase I leachate outbreak that is the subject of the NOVs. BREC revised its run-off plan for leachate that is required by 40 CFR 257.81 and has developed standard operating procedures (“SOPs”) for leachate outbreaks that are intended to ensure compliance with 401 KAR Chapter 45 and 40 CFR 257.81, 257.84(b)(5), and 257.90(d), as incorporated in 401 KAR 46:110.

12. The Cabinet and BREC acknowledge that EPA is in the process of reconsidering the scope and applicability of response requirements for non-groundwater releases from CCR landfills. Any final amendments to those standards will automatically become effective under 401 KAR Chapter 46 due to the federal standards being incorporated by reference, and in such an event the SOPs set forth in this Agreed Order would be subject to change or amendment.

13. CCR landfill leachate outbreaks at Wilson Landfill, if not managed properly, may present a threat to human health and the environment. The Cabinet asserts that improved leachate management is necessary to ensure compliance with surface water standards, as reflected in the Facility's KPDES permit, and to reduce the risk of impacts to groundwater. As set forth herein, the parties have agreed upon remedial measures intended to ensure leachate is managed at the Wilson Landfill in a manner to comply with the facility's KPDES permit, special waste landfill permit, and applicable CCR landfill regulations.

14. To arrive at the terms of this Agreed Order, BREC submitted drafts of the SOPs, the leachate collection and treatment system plans for the Wilson Landfill, and the list of compliance milestones to the Cabinet for review, comment, and approval. The Cabinet reviewed the SOPs and determined the proposed SOPs, plans, and milestones to be acceptable response actions to address operational deficiencies or releases associated with the leachate outbreaks.

15. Based upon the leachate management plan commitments, this Agreed Order resolves the DWM objections identified in paragraph 2)a) of the March 8, 2017 NOD to the Facility's Groundwater Assessment Plan under 401 KAR Chapter 45, as amended on December 21, 2016.

16. Big Rivers neither admits nor denies the violations and assertions of the Cabinet set forth above, but agrees to resolve the NOV's and paragraph 2)a) of the March 8, 2017 Notice

of Deficiency through the development and implementation of remedial measures set forth herein to address any threat or potential threat to human health and the environment associated with management of CCR and leachate at its Facility, to ensure compliance with 401 KAR Chapter 46, and the Federal CCR Rule as incorporated thereby.

NOW THEREFORE, in the interest of settling all civil claims and controversies involving the violations and deficiencies described above, the parties hereby consent to the entry of this Agreed Order and agree as follows:

REMEDIAL MEASURES

17. BREC shall implement the SOPs set forth in Exhibit 1 to address leachate outbreaks at the Wilson Landfill.

18. BREC shall amend the run-on and run-off control system plan required by 401 KAR 46:110 Section 5 and 40 CFR 257.81(2)(c) for the Wilson Landfill to include the SOPs in Exhibit 1.

19. BREC shall install the leachate collection and treatment system set forth in Exhibit 2 for the leachate outbreak at Phase I of the Wilson Landfill that is the subject of the NOVs in paragraphs 7 and 10, above. BREC shall provide notice to the Director, Division of Enforcement at least five (5) business days prior to beginning the three (3) construction phases designated in Exhibit 2. BREC shall provide notice to the Director, Division of Enforcement of its compliance with the Project Milestones set forth in Exhibit 2, within 15 days of each milestone. Until the new system is operational, BREC shall continue to treat leachate at the source of the outbreak in a sump or tank as its interim remedial measure. BREC may dispose of

sludge from the interim and final wastewater treatment processes with CCR in the special waste landfill consistent with the Bevill Amendment. BREC shall provide DWM test data on the characteristics of the sludge generated in the leachate collection system after it becomes operational.

20. BREC may request an amendment of the accepted leachate collection system plans and compliance milestones set forth in Exhibit 2 in writing sent to Director of the Division of Enforcement at 300 Sower Blvd., 3rd Floor, Frankfort, KY 40601. The request shall state the reasons therefore and include any proposed changes to plans and specifications. The Cabinet shall review proposed amendments and may, in whole or part, 1) approve or 2) disapprove and provide comments identifying deficiencies. If granted, the Amended Exhibit(s) shall not affect any provision of this agreed order unless expressly provided for in the amendment. Amendment under this section does not require an amendment request pursuant to paragraph twenty-eight (28) below.

STIPULATED PENALTIES

21. BREC shall pay the Cabinet a stipulated penalty in the amount of five hundred (\$500), within fifteen (15) days of mailing of written notice from the Cabinet for failure to timely meet any remedial milestones required by Exhibit 2 to this Agreed Order. This penalty is in addition to, and not in lieu of, any other penalty that could be assessed. The Cabinet may, in its discretion, waive stipulated penalties that would otherwise be due.

22. Within fifteen (15) days of receipt of written demand for payment of a stipulated penalty, BREC shall submit payment of the stipulated penalty. The stipulated penalties are in addition to and not in lieu of, any other penalty that could be assessed. The payment of stipulated

penalties shall not alter in any way BREC's obligation to complete the performance of the actions described in this Agreed Order.

23. If BREC believes the request for payment of a stipulated penalty is erroneous or contrary to law, BREC may request a hearing in accordance with KRS 224.10-420(2). The request for hearing does not excuse timely payment of the penalty. If an order is entered pursuant to KRS 224.10-440 that excuses payment, the Cabinet will refund the payment. Failure to make timely payment shall constitute an additional violation.

24. Payment of stipulated penalties shall be by cashier's check, certified check, or money order, made payable to "Kentucky State Treasurer" and sent to the attention of Director, Division of Enforcement, Department for Environmental Protection, 300 Sower Blvd., Frankfort, Kentucky 40601.

MISCELLANEOUS PROVISIONS

25. This Agreed Order only resolves those violations and deficiencies specifically described above. Other than those matters resolved by entry of this Agreed Order nothing contained herein shall be construed to waive or to limit any remedy or cause of action by the Cabinet based on statutes or regulations under its jurisdiction and BREC reserves its defenses thereto. The Cabinet expressly reserves its right at any time to issue administrative orders and to take any other action it deems necessary that is not inconsistent with this Agreed Order, including the right to order all necessary remedial measures, assess penalties for violations, or recover all response costs incurred, and BREC reserves its/his defenses thereto.

26. This Agreed Order shall not prevent the Cabinet from issuing, reissuing, renewing, modifying, revoking, suspending, denying, terminating, or reopening any permit to

BREC. BREC reserves its defenses thereto, except that BREC shall not use this Agreed Order as a defense to those permitting actions.

27. BREC waives its right to any hearing on the matters resolved herein. However, failure by BREC to comply strictly with any or all of the terms of this Agreed Order shall be grounds for the Cabinet to seek enforcement of this Agreed Order in Franklin Circuit Court and to pursue any other appropriate administrative or judicial action under KRS Chapter 224 and the regulations promulgated pursuant thereto.

28. The Agreed Order may not be amended except by a written order of the Cabinet's Secretary or his designee. BREC may request an amendment by writing the Director of Division of Enforcement at 300 Sower Blvd., Frankfort, Kentucky 40601 and stating the reasons for the request. If granted, the amended Agreed Order shall not affect any provision of this Agreed Order unless expressly provided in the amended Agreed Order. The Cabinet and BREC agree that the obligations of this Agreed Order may be modified by final promulgation of EPA's Federal CCR Rule reconsideration rule setting requirements for addressing surface releases, including leachate management at existing CCR landfills, and agree obligations of this Agreed Order shall be superseded and amended by any such final rule.

29. Unless otherwise stated in this Agreed Order, all submittals required of BREC by this Agreed Order shall be sent to: Director, Division of Enforcement, 300 Sower Blvd., Frankfort, Kentucky 40601.

30. The Cabinet does not, by its consent to the entry of this Agreed Order, warrant or aver in any manner that BREC's complete compliance with this Agreed Order will result in compliance with the provisions of KRS Chapter 224; 401 KAR Chapters 30, 45, and 46; or the Federal CCR Rule. Notwithstanding the Cabinet's review and approval of any plans formulated

pursuant to this Agreed Order, BREC shall remain solely responsible for compliance with the terms of KRS Chapter 224; 401 KAR Chapters 3, 45, and 46; or the Federal CCR Rule, this Agreed Order and any permit and compliance schedule requirements.

31. BREC shall give notice of this Agreed Order to any purchaser, lessee or successor in interest prior to the transfer of ownership and/or operation of any part of its now-existing facility occurring prior to termination of this Agreed Order, shall notify the Cabinet that such notice has been given, and shall follow all statutory and regulatory requirements for a transfer. Whether or not a transfer takes place, BREC shall remain fully responsible for payment of all stipulated penalties and response costs and for performance of all remedial measures identified in this Agreed Order.

32. The Cabinet agrees to allow the performance of the above-listed remedial measures by BREC to satisfy its obligations to the Cabinet generated by the alleged violations and NODs described above.

33. The Cabinet and BREC agree that the remedial measures agreed to herein are facility-specific and designed to comply with the statutes and regulations cited herein. This Agreed Order applies specifically and exclusively to the unique facility referenced herein and is inapplicable to any other site or facility.

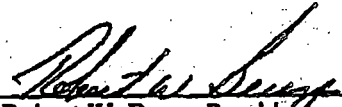
34. This Agreed Order shall be of no force and effect unless and until it is entered by the Secretary or his designee as evidenced by his signature thereon.

TERMINATION

35. This Agreed Order shall terminate upon BREC's completion of all requirements described in this Agreed Order. BREC may submit written notice to the Cabinet when it believes all requirements have been performed. The Cabinet will notify BREC in writing of

whether it intends to agree with or object to termination. The Cabinet reserves its right to enforce this Agreed Order, and BREC reserves its right to file a petition for hearing pursuant to KRS 224.10-420(2) contesting the Cabinet's determination.

AGREED TO BY:



Robert W. Berry, President and CEO
Big Rivers Electric Corporation

4-9-18
Date


HAVE SEEN:



Jack Bender, Attorney for Big Rivers Electric Corporation
Dinsmore & Shohl LLP


4-9-18
Date

APPROVAL RECOMMENDED BY:



Jon Maybriar, Director
Division of Waste Management

5/4/18
Date



Jeff Cummins, Director
Division of Enforcement

4/18/18
Date



John G. Home, II, Executive Director
Office of General Counsel

5/2/2018
Date



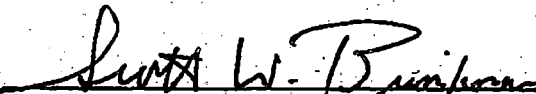
R. Bruce Scott, Deputy Commissioner
Energy and Environment Cabinet

5/18/18
Date

ORDER

Wherefore, the foregoing Agreed Order is entered as the final Order of the Energy and Environment Cabinet this 24th day of May, 20 18.

ENERGY AND ENVIRONMENT CABINET



SCOTT W. BRINKMAN, SECRETARY of the
GOVERNOR'S EXECUTIVE CABINET

CERTIFICATE OF SERVICE

I hereby certify that a true and accurate copy of the foregoing **AGREED ORDER** was mailed, postage prepaid, to the following this 24th day of May, 2018.

Hon. Jack Bender
Dinsmore & Shohl LLP
Lexington Financial Center
250 West Main Street
Suite 1400
Lexington, KY 40507

and mailed, messenger to:

Daniel Cleveland
Office of General Counsel
300 Sower BLVD, 3rd Floor

Jeff Cummins, Director
Division of Enforcement
300 Sower BLVD, 3rd Floor

Jon Maybriar, Director
Division of Waste Management
300 Sower BLVD, 2nd Floor



DOCKET COORDINATOR

Distribution:
DWM
BGD
SiH

Exhibit 1

Leachate Management Standard Operating Procedures

Wilson Landfill

Subject: Surface Seep and Leachate Outbreaks Repair

To ensure compliance with 40 CFR 257 Subpart D and 401 KAR Chapters 45 and 46, the following procedure will be utilized for identification and repair and/or response to surface seeps and leachate outbreaks at the Wilson CCR Landfill.

- An inspection by a qualified person will be conducted once per week to identify any surface seeps and leachate outbreaks at the landfill.
- Identified seeps and leachate outbreaks must be located by Global Positioning Satellite (GPS) or written description of the location in the operating log.
- Identified surface seeps and leachate outbreaks must be quantified as to the amount of standing or flowing water. Measurements or estimates of the impacted area must be included. Other information relevant to remediation of the outbreak or seep shall be included.
- Categorize the surface seep or leachate outbreak into one of three categories:
 - Category 1 - Leachate/seep flow is contained within a drainage ditch and pond system that flows to a KPDES permitted outfall and the outbreak or seep is readily repairable by excavating the impacted area and replacing the cover dirt with compacted clay, cover soil, seed and mulch.
 - Category 2 - Leachate /seep flow is contained within a drainage ditch and pond system that flows to a KPDES permitted outfall but requires more investigation and evaluation prior to any attempt at remediation.
 - Category 3 - Leachate/seep flow is not contained within the KPDES permitted ditch and pond system. Any areas identified must be either routed to the KPDES permitted ditch and pond system or actions must begin immediately to prevent a discharge to a water of the United States by remediating the outbreak or seep. Remediating or mitigating this category of outbreaks and seeps should receive top priority.
- Collect leachate wastewater samples near the source for metals, chlorides, and sulfate analysis. Metals to be analyzed include those in Appendix IV to 40 CFR Part 257 and boron.
- Place categorized information in the operating log.
- Corrective actions for repairable surface seeps and leachate outbreaks must begin as soon as reasonably feasible.
- Remediation areas outside the KPDES permitted ditch and pond system must include the installation of sedimentation controls, such as a silt fence or a capture and treatment system, for impacted areas greater than one acre.

- Cover soil and/or CCR removed during the remediation process must be placed in an active area of the CCR landfill or reused during the remediation of the unit if practicable. Materials reused during remediation may only be reused within the disposal area of the CCR landfill .
- Replacement soil must be compacted, seeded and mulched.
- Environmental Affairs shall evaluate and determine remediation plans for a surface seep/leachate outbreak that is deemed not readily repairable based upon flow and landfill conditions. Until remediation occurs at the source, leachate/seep flow shall be monitored, conveyed to a KPDES permitted outfall, and treated as necessary to ensure compliance with KPDES discharge limits and applicable water quality standards in the receiving stream. The evaluation shall include a consideration of potential impacts of the conveyance of flow on soils, and sampling to monitor any such impacts. Environmental Affairs shall submit all plans developed under this section to the DWM Solid Waste Branch.
- Notice to DWM and DOW
 - Environmental Affairs shall notify the DWM Field Office within 1 business day of identifying a Category 3 seep or leachate outbreak.
 - Environmental Affairs shall notify the DWM Field Office, DOW Surface Water Permits Branch, and the DOW Field Office of planned corrective measures for any identified Category 2 seep or leachate outbreak as soon as feasible after discovery of such a leachate outbreak or seep, but no later than ten (10) days after the discovery.
- Place appropriate documentation on the response in the operating log.

Exhibit 2

Leachate Collection and Treatment System

Wilson Landfill Phase I

Project Description

The overall objective of the project is to install a wastewater treatment system for the seep on the east side of the Phase I landfill with elevated levels of arsenic to reduce the concentrations and reliably meet the water quality-based discharge limits of the KPDES permit for the facility. Proposed phases for implementation of the project and the associated activities are described below.

Project Definition

This initial phase of the project will include the following activities.

Design Basis Development: This task involves developing a system design basis through review and analysis of the available data and supplemental sampling to develop a complete characterization of the subject leachate generation.

Bench-Scale Testing: This task involves initial screening of feasible arsenic treatment technologies followed by proof-of-concept bench-scale testing to demonstrate effectiveness for arsenic treatment.

Conceptual Alternatives Evaluation: The results of the bench-scale testing will be used to further evaluate cost effective arsenic treatment technologies including developing order of magnitude costing to identify an option for potential pilot scale demonstration.

Pilot Testing: Pilot testing of the selected technology will be performed to demonstrate long-term effectiveness for arsenic treatment under field conditions and to develop operating parameters and design criteria applicable for design and construction of a full-scale treatment system.

Engineering

Engineering and design of the arsenic treatment system are included in this phase.

Preliminary Engineering: This task includes completing the preliminary engineering design of the selected treatment technology including equipment sizing, and development of process and discipline deliverables to support a FEL-3 ($\pm 15\%$) cost estimate. BREC shall provide designs and specifications developed during this phase to DWM for review. DWM shall provide BREC with any comments on design within 30 days of receipt.

Detailed Engineering: During detailed design, the deliverables generated as part of the preliminary engineering are further developed to finalize the design to support development of bid and construction packages, along with a final cost estimate ($\pm 5\%$). BREC shall provide designs and specifications developed during this phase to DWM for review. DWM shall provide BREC with any comments on design within 30 days of receipt.

Construction

Equipment procurement, construction and start-up are included in this phase.

Equipment Procurement: This task involves releasing equipment bid packages, evaluating and selecting a vendor and issuing purchase orders for the selected equipment. Procurement schedule is primarily driven by any long-lead items that may be part of the treatment system.

Construction: Construction phases include: (1) initial grading and site preparation, (2) foundations and civil work, and (3) installation of equipment, piping, instrumentation and utility connections for the complete system to be ready for start-up, including collection, transport and treatment systems. Prior to commencing construction, BREC shall provide DWM with an anticipated construction schedule that includes an estimated completion date.

Start-up and Commissioning: This task includes initial start-up and testing of all equipment and sustained operation of the treatment system to verify target arsenic removal performance is achieved. BREC shall provide DWM with a completion report that includes test parameters and results, any adjustments or alterations made, and any schedules of routine maintenance.

Project Milestones

Key milestone dates anticipated for the project are listed below

Milestone	Date*
Completion of project definition	9 months
Completion of Engineering	13 months**
Treatment System Operation	22 months**

*: Dates shown as duration from entry of agreed order

****:** *Time spent by the Cabinet reviewing plans shall not count against the Project Milestone time*

BIG RIVERS ELECTRIC CORPORATION

**2017 INTEGRATED RESOURCE PLAN OF
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CASE NO. 2017-00384**

**Response to the Office of the Attorney General's
Initial Request for Information
dated June 22, 2018**

July 20, 2018

1 **Item 13)** *Explain whether the results of Big Rivers' most recent ground-*
2 *water/ground-well testing at the Company's ash retention ponds, landfills, or*
3 *other impoundments have led the company to revise any of its plans set forth*
4 *in the current IRP. If so, describe in complete detail how.*

5 *a. If any additional costs will be incurred to meet compliance with*
6 *state and/or federal regulations, provide cost estimates.*

7 *b. If the Company is aware of any other potential effluent discharges*
8 *that will need to be addressed in some manner, please identify each*
9 *such potential discharge including the location, and the generating*
10 *station where the potential discharge is or may be occurring.*

11 *c. Explain whether any remedial measures the Company may take to*
12 *address any such discharges may affect its ability to utilize emission*
13 *allowances anywhere within its fleet.*

14
15 **Response)** Big Rivers has not revised any of the environmental plans identified in
16 the 2017 IRP. The preliminary groundwater data does not indicate that a substantial
17 change from the corrective actions, identified in the CONFIDENTIAL Burns and
18 McDonnell Green Station Coal Combustion Residuals/Effluent Limitations
19 Guidelines Compliance report dated July 2017 provided in Big Rivers' response to
20 Item 21 of the Commission Staff's first request for information in this case, will be
21 needed.

22 *a. When data becomes available Big Rivers will determine what, if any,*
23 *additional remedial actions and associated costs will be required.*

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1 However, at the present time, Big Rivers believes it has identified the costs
2 required for compliance with State and Federal regulations and included
3 those costs in its plans.

4 b. [REDACTED]
5 [REDACTED]
6 [REDACTED].

7 c. The remedial measures taken to address discharges will not have an impact
8 on the utilization of emission allowances.

9
10
11
12

Witness) Dr. Thomas L. Shaw

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1 **Item 14) Refer to page 61 of the IRP. Fully explain the current status of**
2 **off system sales to the Missouri municipals and Nebraska, together with any**
3 **additional contracted off system sales, whether bilateral or otherwise.**

4 **a. Explain the Company's long-term economic thinking in procuring**
5 **these contracts, and whether they are achieving the results the**
6 **Company hoped for in arranging them.**

7 **b. Explain whether these sales have begun to successfully stabilize**
8 **revenue.**

9 **c. Fully explain whether anything has changed with the future KyMEA**
10 **sale.**

11
12 **Response) Please see the response to subpart b below.**

13 **a. Big Rivers' long-term goal is to grow its Member-Owner loads to offset the**
14 **load freed up from the departure of the Smelters. Until that is**
15 **accomplished, Big Rivers' Load Mitigation Plan and the Focused**
16 **Management Audit recommendations include entering into long-term**
17 **(greater than five year) contracts to stabilize revenue. These types of**
18 **contracts would replace the lost smelter load. Considering the Nebraska**
19 **contracts (about [REDACTED]), the KyMEA contract ([REDACTED]), and the**
20 **Owensboro Municipal Utilities contract (180 MW), Big Rivers has added**
21 **about 365 MW of additional long-term non-member load. As the Nebraska**
22 **contracts phase in through 2021 and the KyMEA (2019) and OMU (2020)**
23 **contracts commence, Big Rivers will see significantly reduced reliance on**

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1 volatile MISO Planning Resource Auctions for capacity and hourly energy
2 markets. Additionally, the termination of the HMPL Station Two contract
3 has eliminated an uneconomic supply source (197 MW). Combined with the
4 idling of Coleman (443 MW), the smelter load has been more than offset.

5 b. Please see the response to subpart a above. The commencement date (the
6 actual date the capacity and energy begins to be delivered) of the Nebraska
7 contracts began on January 1, 2018; however, the total volumes are phased
8 in and the full requirements will not be until January 1, 2022. Once the
9 commencement dates of the KyMEA and OMU contracts begin, and the
10 Nebraska contract is at full requirements, Big Rivers will receive the
11 benefit of more stabilized revenues. The sale to three wholesale entities in
12 Nebraska is an example of the long-term transactions that Big Rivers is
13 seeking. It is for a nine-year term beginning January 1, 2018, and the
14 contract price is tied to the tariff rate paid by Nebraska Public Power
15 District wholesale customers. The capacity sales to the Missouri
16 Municipals, which began June 1, 2017, is an example of a shorter-term
17 transaction. It fixed the price that Big Rivers receives for a portion of its
18 capacity over a period when the Zone 6 Planning Resource Auction clearing
19 price dropped from \$72.00/MW-Day for the 2016/2017 Planning Year to
20 \$10.00/MW-Day for the 2018/2019 Planning Year.

21 c. The future KyMEA sale has been supplemented with a one-month energy-
22 only short-term sale for the month of May 2019. Additionally, [REDACTED]

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[Redacted]

[Redacted]

Witness) Mark J. Eacret