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Your Touchstone Energy® Cooperative 

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JUL 06 2012

PUBLIC SERVICE
COMMISSION

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

In the Matter of:

APPLICATION OF BIG RIVERS ELECTRIC)
CORPORATION FOR APPROVAL OF ITS)
2012 ENVIRONMENTAL COMPLIANCE)
PLAN, FOR APPROVAL OF ITS AMENDED)
ENVIRONMENTAL COST RECOVERY)
SURCHARGE TARIFF, FOR CERTIFICATES)
OF PUBLIC CONVENIENCE AND)
NECESSITY, AND FOR AUTHORITY TO)
ESTABLISH A REGULATORY ACCOUNT)

Case No.
2012-00063

Response to the Sierra Club's
Third Request for Information
Dated June 27, 2012

FILED: July 6, 2012

ORIGINAL

SULLIVAN, MOUNTJOY, STAINBACK & MILLER PSC

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C. Ellsworth Mountjoy

Susan Montalvo-Gesser

Mary L. Moorhouse

July 6, 2012

Via Federal Express

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

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JUL 06 2012

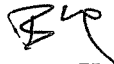
PUBLIC SERVICE
COMMISSION

Re: *In the Matter of: Application of Big Rivers Electric Corporation for Approval of its 2012 Environmental Compliance Plan, for Approval of its Amended Environmental Cost Recovery Surcharge Tariff, for Certificates of Public Convenience and Necessity, and for Authority to Establish a Regulatory Account, P.S.C. Case No. 2012-00063*

Dear Mr. DeRouen:

Enclosed for filing are an original and ten copies of Big Rivers Electric Corporation's (i) response to the Public Service Commission's second request for information, (ii) response to the Attorney General's second request for information, (iii) response to Kentucky Industrial Utility Customers' second request for information, (iv) response to Sierra Club's second request for information, (v) response to Kentucky Industrial Utility Customers' third request for information, (vi) response to Sierra Club's third request for information, (vii) a petition for confidential treatment for certain documents being filed with the responses, and (viii) a motion to deviate from the requirement that all documents filed in response to requests for information be furnished in paper form. Copies of this letter and all enclosures have been served on each of the persons listed on the attached service list. A copy of the information for which confidential treatment is sought has also been served on each party that has entered into Big Rivers' confidentiality agreement.

Sincerely yours,



Tyson Kamuf

TAK/ej
Enclosures

cc: Mark A. Bailey
Albert Yockey

Telephone (270) 926-4000

Facsimile (270) 683-6694

100 St. Ann Building
PO Box 727
Owensboro, Kentucky
42302-0727

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PSC Case No. 2012-00063

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BIG RIVERS ELECTRIC CORPORATION

THE APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR
APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN AND
REVISIONS TO ITS ENVIRONMENTAL SURCHARGE TARIFF, FOR
CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY, AND FOR
AUTHORITY TO ESTABLISH A REGULATORY ACCOUNT

CASE NO. 2012-00063


VERIFICATION

I, Robert W. Berry, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.


Robert W. Berry

COMMONWEALTH OF KENTUCKY)
COUNTY OF HENDERSON)

3rd SUBSCRIBED AND SWORN TO before me by Robert W. Berry on this the
day of July, 2012.


Notary Public, Ky. State at Large
My Commission Expires _____

Notary Public, Kentucky State-At-Large
My Commission Expires: July 3, 2014
ID 421951

BIG RIVERS ELECTRIC CORPORATION

**THE APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR
APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN AND
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CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY, AND FOR
AUTHORITY TO ESTABLISH A REGULATORY ACCOUNT**

CASE NO. 2012-00063

VERIFICATION


I, David G. Crockett, verify, state, and affirm that I prepared or supervised the preparation of my data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



David G. Crockett

COMMONWEALTH OF KENTUCKY)
COUNTY OF HENDERSON)

SUBSCRIBED AND SWORN TO before me by David G. Crockett on this the 3rd day
of July, 2012.



Notary Public, Ky. State at Large
My Commission Expires 1-12-13


BIG RIVERS ELECTRIC CORPORATION

THE APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR
APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN AND
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CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY, AND FOR
AUTHORITY TO ESTABLISH A REGULATORY ACCOUNT

CASE NO. 2012-00063


VERIFICATION

I, Mark A. Hite, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.


Mark A. Hite

COMMONWEALTH OF KENTUCKY)
COUNTY OF HENDERSON)

SUBSCRIBED AND SWORN TO before me by Mark A. Hite on this the 3rd
day of July, 2012.


Notary Public, Ky. State at Large
My Commission Expires 1-12-13

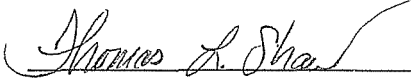
BIG RIVERS ELECTRIC CORPORATION

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VERIFICATION

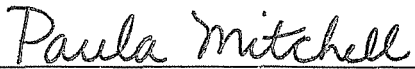
I, Thomas L. Shaw, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



Thomas L. Shaw

COMMONWEALTH OF KENTUCKY)
COUNTY OF HENDERSON)

SUBSCRIBED AND SWORN TO before me by Thomas L. Shaw on this the
3rd day of July, 2012.



Notary Public, Ky. State at Large
My Commission Expires 1-12-13

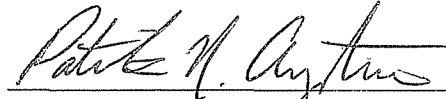
BIG RIVERS ELECTRIC CORPORATION

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CASE NO. 2012-00063


VERIFICATION

I, Patrick N. Augustine, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.


Patrick N. Augustine

COMMONWEALTH OF VIRGINIA)
COUNTY OF FAIRFAX)

SUBSCRIBED AND SWORN TO before me by Patrick N. Augustine on this
the 2 day of July, 2012.


Notary Public, Commonwealth of
Virginia
My Commission Expires June 30, 2013
7251149

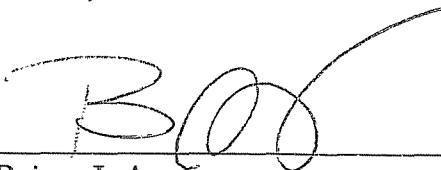
BIG RIVERS ELECTRIC CORPORATION

THE APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR
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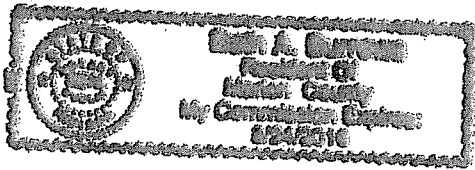
I, Brian J. Azman, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.




Brian J. Azman

STATE OF INDIANA)
)
COUNTY OF HAMILTON)

SUBSCRIBED AND SWORN TO before me by Brian J. Azman on this the
2nd day of July, 2012.





Beth A. Burrows, Notary Public

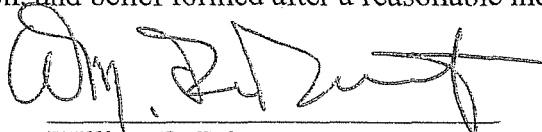
BIG RIVERS ELECTRIC CORPORATION

THE APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN AND REVISIONS TO ITS ENVIRONMENTAL SURCHARGE TARIFF, FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY, AND FOR AUTHORITY TO ESTABLISH A REGULATORY ACCOUNT

CASE NO. 2012-00063

VERIFICATION


I, William DePriest, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.



William DePriest

STATE OF ILLINOIS)
COUNTY OF COOK)

June ⁽¹⁵⁾ SUBSCRIBED AND SWORN TO before me by William DePriest on this the 28th day of July, 2012.



Notary Public,
State of Illinois
My Commission Expires 5/4/2015


BIG RIVERS ELECTRIC CORPORATION

THE APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN AND REVISIONS TO ITS ENVIRONMENTAL SURCHARGE TARIFF, FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY, AND FOR AUTHORITY TO ESTABLISH A REGULATORY ACCOUNT

CASE NO. 2012-00063

VERIFICATION


I, John Wolfram, verify, state, and affirm that I prepared or supervised the preparation of the data responses filed with this Verification, and that those data responses are 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 3rd day of July, 2012.



Notary Public, Ky. State at Large
My Commission Expires 1-12-13

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
FOR APPROVAL OF ITS AMENDED ENVIRONMENTAL COST
RECOVERY SURCHARGE TARIFF, FOR CERTIFICATES OF PUBLIC
CONVENIENCE AND NECESSITY, AND FOR AUTHORITY TO
ESTABLISH A REGULATORY ACCOUNT
CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

- 1 **Item 1)** *Refer to your response to SC 1-3, which gives annual capital*
2 *and O&M expenditures by plant:*
3
4 *a. Please provide the annual non-environmental capital*
5 *expenditures expected or projected to be made by year, by*
6 *unit, and by expenditure type for each of the years listed*
7 *in your response.*
8 *b. Please provide annual fixed O&M costs by year, by unit for*
9 *the environmental controls requested in this CPCN.*
10 *c. Please provide annual fixed O&M costs by year, by unit for*
11 *all other equipment.*
12 *d. Please provide annual variable O&M costs by year, by unit*
13 *for the environmental controls requested in this CPCN.*
14 *e. Please provide annual variable O&M costs by year, by unit*
15 *for all other equipment.*
16
17 **Response)**
18 a. Please see the CONFIDENTIAL table which Big Rivers is
19 providing with a Petition for Confidential Treatment.
20 b. Please see the CONFIDENTIAL table which Big Rivers is
21 providing with a Petition for Confidential Treatment.

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
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CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

- 1 c. Please see the CONFIDENTIAL table which Big Rivers is
2 providing with a Petition for Confidential Treatment.
3 d. Please see the CONFIDENTIAL table which Big Rivers is
4 providing with a Petition for Confidential Treatment.
5 e. Please see the CONFIDENTIAL table which Big Rivers is
6 providing with a Petition for Confidential Treatment.
7
8
9 Witness) Robert W. Berry
10

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
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CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

- 1 Item 2) *Please confirm or deny the following:*
2
3 a. *BREC is requesting environmental surcharge and CPCN*
4 *for environmental retrofits with capital and O&M*
5 *estimates developed only by Sargent & Lundy and*
6 *presented in Exhibit Berry-2.*
7 i. *If environmental surcharge and/or CPCN capital*
8 *and/or O&M estimates have been developed or vetted*
9 *by any other party aside from Sargent & Lundy,*
10 *please provide such estimates and the source*
11 *documentation and work papers from which those*
12 *estimates are derived.*
13 b. *To date, BREC has not contracted for engineering services*
14 *for any of the environmental retrofits.*
15 i. *If BREC has contracted for engineering services,*
16 *please provide the name of each engineering*
17 *services contractor, the date engineering services*
18 *were contracted, the specific services and retrofits*
19 *for which BREC has contracted, and any reports or*
20 *files delivered to date by each such contractor.*
21 c. *The estimated environmental retrofit capital costs do not*
22 *include owner's costs.*

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
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CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

- 1 *d. The estimated environmental retrofit capital costs do not*
2 *include AFUDC.*
3 *e. To date, BREC has not contracted for procurement*
4 *services for any of the environmental retrofits.*
5 *i. If BREC has contracted for procurement services,*
6 *please provide the name of each procurement*
7 *services contractor, the date procurement services*
8 *were contracted, the specific retrofits for which*
9 *services were contracted, and any reports or files*
10 *delivered to date by each such contractor.*

11

12 **Response)**

- 13 a. Sargent & Lundy developed the capital and O&M estimates
14 used in the filing.
15 b. Big Rivers entered into a contract with Burns and McDonnell for
16 engineering services to develop an RFP for the replacement
17 Wilson FGD. There have been no reports or files delivered at
18 this time.
19 c. Big Rivers interprets owner's cost to include the following:
20 ■ Permit modification
21 ■ Specification development
22 ■ Bid review and evaluation assistance

BIG RIVERS ELECTRIC CORPORATION

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CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

- 1 ▪ Design review
- 2 ▪ Construction management
- 3 ▪ Start up support.

4 Although S&L states these costs were not included in its
5 estimates, Big Rivers considers this to be part of project
6 contingency included in the estimate. As such, Big Rivers
7 believes these costs are included in the \$283.49 million capital
8 estimate of its ECP filing. Please see Item 18a of these
9 responses for more details.

- 10 d. These estimated capital costs do not include AFUDC. However,
11 capitalized interest is included in the financial model
12 calculations.
- 13 e. Other than as stated in part b above, Big Rivers has not
14 contracted for procurement services of any of the environmental
15 retrofits.

16
17
18
19

Witness) Robert W. Berry

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
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CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

- 1 **Item 3)** *Regarding the estimated capital expenditures for each*
2 *environmental control contemplated in this proceeding:*
3
4 *a. Please define the error range (in % +/- or \$ +/-) of the*
5 *estimates for each of the environmental controls;*
6 *b. State whether BREC considers each of these estimates*
7 *preliminary, developing, or final (i.e. contractually*
8 *certain)? If BREC uses other terminology to define this*
9 *stage of estimate development, please provide the*
10 *appropriate terminology.*
11 *c. Please provide the estimated annual capital outlay for*
12 *each of the environmental controls, without AFUDC, in*
13 *nominal dollars. Please provide in electronic spreadsheet*
14 *form.*
15 *d. Please provide the estimated annual AFUDC for each of*
16 *the environmental controls. Please provide in electronic*
17 *spreadsheet form.*
18 *e. Will BREC return to this Commission for an*
19 *environmental surcharge adjustment if the capital and/or*

Case No. 2012-00063

Response to SC 2-3

Witnesses: William DePriest (a., b., c., and d.),

Robert W. Berry (b.), and

John Wolfram (e. and f.)

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BIG RIVERS ELECTRIC CORPORATION

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**Response to the Sierra Club's
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July 6, 2012

- 1 *O&M costs of the environmental retrofit projects are*
2 *higher than predicted by S&L? If so, when?*
3 *f. Will BREC return to this Commission for an*
4 *environmental surcharge adjustment if the capital and/or*
5 *O&M costs of the environmental retrofit projects are lower*
6 *than predicted by S&L? If so, when?*

7

8 **Response)**

- 9 a. Please see Exhibit DePriest-2 to the Direct Testimony of
10 William DePriest (Application Exhibit 5), at page 5-1, section
11 5.1.1.
12 b. Big Rivers considers each of the estimates preliminary.
13 c. Please see the Excel file on the USB drive accompanying these
14 responses. Note that this cash flow differs from the one cited in
15 AG 1-84. The original cash flow was based on receiving a 4th
16 year for the Mercury and Air Toxics Standard ("MATS")
17 compliance from the state environmental regulatory authorities.
18 The current cash flow is based on the 3 year compliance time
19 frame.

Case No. 2012-00063

Response to SC 2-3

**Witnesses: William DePriest (a., b., c., and d.),
Robert W. Berry (b.), and
John Wolfram (e. and f.)**

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BIG RIVERS ELECTRIC CORPORATION

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July 6, 2012

- 1 d. The estimated 2012 Environmental Compliance Plan capital
2 cost of \$283.49 million does not include AFUDC or Interest
3 Charged to Construction (*i.e.*, capitalized interest). Capitalized
4 interest is estimated to be \$18.30 million, resulting in total
5 environmental compliance plan capitalized cost of \$301.79
6 million. The estimated environmental compliance plan capital
7 expenditures and the associated capitalized interest is found on
8 the ECP tab, lines 5 through 41, of the Build Case financial
9 model.
- 10 e. and f.
- 11 No. If the Commission approves Big Rivers' 2012
12 Environmental Compliance Plan and proposed changes to Big
13 Rivers' environmental surcharge tariff ("ES Tariff"), the actual
14 capital and O&M costs incurred by Big Rivers for the approved
15 projects will be included in Big Rivers' determination of the
16 monthly environmental surcharge factor filed with the
17 Commission and included on member billings, on a monthly
18 basis, pursuant to the ES Tariff. Historically, when approving
19 projects of this sort, the Commission has not prohibited
20 applicants from incurring costs that vary from the estimated

Case No. 2012-00063

Response to SC 2-3

Witnesses: William DePriest (a., b., c., and d.),

Robert W. Berry (b.), and

John Wolfram (e. and f.)

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BIG RIVERS ELECTRIC CORPORATION

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1 amounts. Instead, the Commission reviews the reasonableness
2 of the actual costs included in the ES Tariff pursuant to the
3 procedure set forth in KRS 278.183(3), which provides:
4

5 The amount of the monthly environmental surcharge
6 shall be filed with the commission ten (10) days
7 before it is scheduled to go into effect, along with
8 supporting data to justify the amount of the
9 surcharge which shall include data and information
10 as may be required by the commission. At six (6)
11 month intervals, the commission shall review past
12 operations of the environmental surcharge of each
13 utility, and after hearing, as ordered, shall, by
14 temporary adjustment in the surcharge, disallow any
15 surcharge amounts found not just and reasonable
16 and reconcile past surcharges with actual costs
17 recoverable pursuant to subsection (1) of this section.
18 Every two (2) years the commission shall review and
19 evaluate past operation of the surcharge, and after
20 hearing, as ordered, shall disallow improper

Case No. 2012-00063

Response to SC 2-3

Witnesses: William DePriest (a., b., c., and d.),

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John Wolfram (e. and f.)

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July 6, 2012

1 expenses, and to the extent appropriate, incorporate
2 surcharge amounts found just and reasonable into
3 the existing base rates of each utility.

4

5 **Witnesses)** William DePriest (a., b., c., and d.),

6 Robert W. Berry (b.), and

7 John Wolfram (e. and f.)

Case No. 2012-00063

Response to SC 2-3

Witnesses: William DePriest (a., b., c., and d.),

Robert W. Berry (b.), and

John Wolfram (e. and f.)

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BIG RIVERS ELECTRIC CORPORATION

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1 **Item 4)** *Please provide a record of each major capital project (i.e.,*
2 *individual projects over \$20 million) at each of BREC's coal-fired*
3 *generating units from 2000-2012, inclusive. For each project, please*
4 *provide the year, descriptive title, unit or units applicable, the estimated*
5 *capital cost at this stage of development (as defined in request 3b, above),*
6 *the final capital cost, and the capital amount approved for recovery from*
7 *Kentucky ratepayers (exclusive of returns on investment). Please provide*
8 *in electronic spreadsheet form.*

9
10 **Response)** Please see the table on the following page, which identifies the Big
11 Rivers individual projects in excess of \$20 million from 2000-2012.

12

BIG RIVERS ELECTRIC CORPORATION

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1

Big Rivers Electric Corporation Projects over \$20 Million - 2000-2012			
Year	Description	Units	Final Capital Costs
2004	HMP&L Station Two SCR*	HMP&L 1 HMP&L 2	30,579,829.58
2003	Wilson SCR	Wilson 1	65,348,330.70
2004	Green Over Fired Air	Green 1 Green 2	22,643,561.23
2007	Coleman Scrubber	Coleman 1 Coleman 2 Coleman 3	98,500,000.00
* Amount reflects only Big Rivers' Share of the Capital Costs			
Note: The " Final Capital Costs" shown above were approved by the PSC to be recovered through Big Rivers' base rates (as depreciation expense) in Case No. 2011-00036 (Order issued November 17, 2011)			

2

3

4

5 Witness) Robert W. Berry

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- 1 Item 5) *With respect to BREC unit equivalent availability, forced*
2 *outage rates, and heat rates:*
3
4 a. *State whether BREC expects constant, increasing, or*
5 *decreasing unit availability for each of the environmental*
6 *retrofit units.*
7 b. *Please provide an annual forecast for unit availability for*
8 *each of the environmental retrofit units through 2026.*
9 *Please provide in electronic spreadsheet form.*
10 c. *State whether BREC expects constant, increasing, or*
11 *decreasing forced outage rates for each of the*
12 *environmental retrofit units.*
13 d. *Please provide an annual forecast for forced outage rates*
14 *each of the environmental retrofit units through 2026.*
15 *Please provide in electronic spreadsheet form.*
16 e. *State whether BREC expects constant, increasing, or*
17 *decreasing heat rates for each of the environmental*
18 *retrofit units.*
19 f. *Provide an annual forecast for heat rates for each of the*
20 *environmental retrofit units through 2026.*

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1 *g. Please provide any work papers or studies documenting*
2 *expected future unit availability, equivalent forced outage*
3 *rates, or heat rates at the BREC units through 2026.*

4
5 **Response)**

- 6 a. Big Rivers expects constant unit availability for each of the
7 environmental retrofit units.
8 b. Please see the Excel file provided on the CONFIDENTIAL USB
9 accompanying these responses, and which is submitted with a
10 Petition for Confidential Treatment. The spreadsheet within
11 this file displays unit availability, forced outage rates, and unit
12 net heat rates for all Big Rivers units.
13 c. Big Rivers expects constant forced outage rates for each of the
14 environmental retrofit units.
15 d. Please see Excel file referenced in response b., above.
16 e. Big Rivers expects constant heat rates for each of the
17 environmental retrofit units.
18 f. Please see Excel file referenced in response b., above.
19 g. There are no studies documenting expected unit availability,
20 equivalent forced outage rates or heat rates on the Big Rivers
21 units through 2026. The work papers are the unit inputs used

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for the model runs that have been summarized in the Excel file
referenced in part b., above.

Witness) Robert W. Berry

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1 **Item 6)** *Refer to Exhibit Berry-2:*

2

3 *a. State whether BREC expects that the emission control*
4 *projects shown in Exhibit Berry-2 will have any impact on*
5 *unit heat rates.*

6 *b. Please identify any changes in unit heat rates that might*
7 *be expected as a result of emissions control projects.*

8 *c. Please provide the work papers detailing expected*
9 *changes in unit heat rates with the addition of emissions*
10 *control projects.*

11

12 **Response)**

13 a. No material heat rate impacts are expected on any units.

14 b. No material heat rate impacts are expected on any units.

15 c. There are no work papers detailing expected changes in unit
16 heat rates with the addition of emission control projects.

17

18

19 **Witness)** Robert W. Berry

20

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- 1 Item 7) *Refer to p. 27 line 18 to p. 28 line 3 of the testimony of Robert*
2 *Berry.*
3
4 *a. State whether the Company is aware of the President's*
5 *statement dated September 2011 on the delay of the ozone*
6 *NAAQS to 2013?*
7 *b. Please explain, in detail, the discrepancy between the*
8 *President's commitment to reconsider the ozone standard*
9 *in 2013 and the Company's assertion that "potential*
10 *NAAQS reductions are not expected to be published until*
11 *2016."*
12 *c. State whether the Company is aware of the "Draft*
13 *Regulatory Impact Analysis Final National Ambient Air*
14 *Quality Standard for Ozone" issued by the EPA, dated*
15 *July 2011*
16 (<http://www.epa.gov/airquality/ozonepollution/pdfs/201107>
17 [OMBdraft-OzoneRIA.pdf](http://www.epa.gov/airquality/ozonepollution/pdfs/201107))?
18 *d. At what level does the Company expect new primary ozone*
19 *NAAQS, if issued, to be set (in parts per million)?*
20
21

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1 **Response)**

- 2 a. Big Rivers is aware of the President's statement regarding
3 delay of the ozone National Ambient Air Quality Standard
4 ("NAAQS") to 2013.
- 5 b. States have up to 3 years after the promulgation of a national
6 primary or secondary air quality standard to adopt the standard
7 in a state implementation plan under Title 42 §7410. Thus, if
8 the ozone NAAQS is finalized during 2013 and the full 3 years
9 are available to the state, it is reasonable to expect a compliance
10 date after 2016.
- 11 c. Big Rivers is aware of the Regulatory Impact Analysis.
- 12 d. It is expected that the 8-hour primary ozone NAAQS, if issued,
13 will be set between 60 to 70 ppb as indicated in Section 3.5.2 of
14 Appendix 4 of Exhibit DePriest-2 of the Direct Testimony of
15 William DePriest (Application Exhibit 5), consistent with what
16 the United States Environmental Protection Agency ("EPA")
17 proposed in January 2010.

18
19
20 **Witnesses)** Thomas L. Shaw (a., b., and c.) and
21 William DePriest (d.)

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1 **Item 8)** *Refer to p. 27 line 18 to p. 28 line 3 of the testimony of Robert*
2 *Berry, and to the responses to SC 1-19 and SC 1-20:*

- 3
- 4 *a. If more stringent ozone NAAQS reductions are indeed*
5 *promulgated in 2016 and require compliance by 2018,*
6 *would BREC apply for a CPCN from the Commission for*
7 *any required emissions control projects?*
- 8 *b. If so, when does the Company expect it would need to file*
9 *its application?*
- 10 *c. Would BREC expect to recover capital cost expenditures*
11 *incurred as a result of ozone NAAQS compliance?*
- 12 *d. Has BREC quantified the rate increase that might be*
13 *expected if advanced low NOx burners are installed at the*
14 *Coleman units? If so, please identify the expected rate*
15 *increase resulting from installation advanced low NOx*
16 *burners at the Coleman units.*
- 17 *e. Please provide any work papers that detail the*
18 *calculations behind the expected rate increase associated*
19 *with the advanced low NOx burners at the Coleman units.*
- 20 *f. Has BREC quantified the rate increase that might be*
21 *expected if an SCR is installed at Green Unit 1? If so,*

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1 *please identify the expected rate increase resulting from*
2 *installation of an SCR at Green Unit 1.*

3 *g. Please provide any work papers that detail the*
4 *calculations behind the expected rate increase associated*
5 *with the installation of an SCR at Green Unit 1.*

6

7 **Response)**

- 8 a. The need to apply for a Certificate of Public Convenience and
9 Necessity ("CPCN") would be contingent upon the details of the
10 final NAAQS ozone limits, which are unknown at this time.
11 b. If a CPCN is required, Big Rivers would file its application once
12 it has more certainty as to the requirements of the new
13 regulation.
14 c. Yes.
15 d. Big Rivers has not quantified the rate increase associated with
16 installing low NO_x burners at its Coleman Plant.
17 e. Not applicable.
18 f. Big Rivers has not quantified the rate increase associated with
19 installing an SCR on its Green Unit 1.
20 g. Not applicable.

21

22 **Witness)** Robert W. Berry

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- 1 Item 9) *Refer to the Company's response to SC 1-35:*
2
3 *a. For what purpose did the Company choose to retrofit the*
4 *burners at HMP&L 1 & 2 and Wilson? Please provide a*
5 *detailed description.*
6 *b. Please provide citations to regulatory requirements or*
7 *other decisions requiring such retrofits.*
8 *c. Please provide air and construction permits issued by the*
9 *Kentucky Department for Environmental Protection (KY*
10 *DEP).*
11 *d. Please provide applications or notices provided by the*
12 *Company to the KY DEP requesting such permits.*
13 *e. Please provide documentation and/or workpapers*
14 *supporting the decision to retrofit the burners at HMP&L*
15 *1 & 2, and Wilson. Provide any spreadsheets in original,*
16 *electronic format.*
17 *f. Please provide the schedule associated with the capital*
18 *expenditures for the low NOx burner (LNB) upgrades at*
19 *the HMP&L and Wilson units, by year and by unit, which*
20 *gives a timeline detailing capital that has already been*

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Response to SC 2-9

Witnesses: Robert W. Berry (a., e. through j.) and
Thomas L. Shaw (b., c., and d.)

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- 1 *spent, as well as capital that has yet to be spent. Please*
2 *provide schedule in electronic spreadsheet form.*
3 *g. Please provide a schedule of cancellation fees for the LNB*
4 *projects.*
5 *h. What percentage of capital expenditures could be avoided*
6 *if the HMP&L and/or Wilson LNB projects were to be*
7 *canceled as of July 1st, 2012?*
8 *i. What percentage of capital expenditures could be avoided*
9 *if the HMP&L and/or Wilson units were to retire in 2013?*
10 *j. What percentage of capital expenditures could be avoided*
11 *if the HMP&L and/or Wilson units were to retire in 2015?*
12

13 **Response)**

- 14 a. At HMP&L ("Station Two") Units 1 and 2, Big Rivers is
15 currently firing higher BTU coal mixtures (12,200 btu/lb) with
16 primary air supply pressure set higher than normal in order to
17 achieve full net rated capacity. In this situation, the boilers are
18 not operating optimally from an energy efficiency standpoint.
19 The existing low NO_x burners ("LNBS") create high air flow
20 velocities within the furnace resulting in flame impingement on
21 the waterwalls and superheater elements of the boiler. This

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**Witnesses: Robert W. Berry (a., e. through j.) and
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1 flame impingement causes undue tube wear and reduces the life
2 of the furnace. The high velocities also contribute to poor or
3 incomplete combustion, which results in high loss of ignition
4 (“LOI”), heavy slagging, and opacity issues. To solve this issue,
5 Big Rivers plans to replace the existing LNBs with ones that
6 have a better, more efficient design, which will allow Big Rivers
7 to fire lower BTU coal mixture (~11,400 Btu/lb) with lower
8 primary air supply pressure in order to achieve the same energy
9 output while decreasing combustion byproducts (CO, HCs, NO_x,
10 *etc.*).

11 At Wilson, the existing LNBs in the Wilson boiler are very
12 high maintenance equipment and need to be replaced every four
13 years, whereas the normal life expectancy of typical LNBs is at
14 least fifteen years. The Wilson boiler is currently operating with
15 two burners out of service due to premature failure, awaiting
16 the next maintenance outage to replace them. Operating the
17 boiler at full net rated capacity with two burners out of service
18 produces some efficiency loss. Big Rivers plans to replace the
19 existing burners at the next normal cycle with LNBs that have a
20 better, more efficient design in an effort to reduce future
21 maintenance cost and improve boiler efficiency.

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**Witnesses: Robert W. Berry (a., e. through j.) and
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- 1 b. There were no regulatory requirements requiring Big Rivers to
2 replace the burners. It was a financial decision.
- 3 c. There are none. No such permits were required for the retrofit.
- 4 d. See part c, above.
- 5 e. Please see the files provided in the folder labeled "SC 2-9e –
6 LNB WPs" provided on the CONFIDENTIAL USB drive
7 accompanying these responses, and submitted with a Petition
8 for Confidential Treatment, for the Business Case, Financial
9 Analysis, New Source Review Routine Maintenance Repair and
10 Replacement Analysis, and the Authorization for Investment
11 Proposal for the HMP&L LNB project. These documents have
12 not yet been prepared for the Wilson project.
- 13 f. The new LNBS were installed in HMP&L Unit 1 in May 2012 at
14 a cost of approximately \$1.5 million. The new LNBS are
15 scheduled to be installed in HMP&L Unit 2 in April 2013 and
16 are also budgeted at \$1.5 million. The new LNBS are scheduled
17 to be installed in the Wilson boiler in October 2015 at a
18 budgeted cost of \$8 million. A \$2 million milestone payment is
19 due in October 2014, and the final payment of \$6 million is
20 budgeted for October 2015.

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**Witnesses: Robert W. Berry (a., e. through j.) and
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- 1 g. There are currently no burners on order, and as such, there
2 currently are no cancellation fees that Big Rivers is subject to
3 for the LNB projects.
- 4 h. 82.4% (\$7 million) of the capital expenditures budgeted for the
5 LNB projects could be avoided if the HMP&L Unit 2 and Wilson
6 LNB projects were cancelled as of July 1, 2012. (\$1.5 million
7 has already been spent.)
- 8 i. If the decision to retire HMP&L Unit 2 and Wilson is made
9 before September 2012, 82.4% of the capital expenditures
10 budgeted for the LNB projects can be avoided. After September
11 2012, Big Rivers may be committed to spend up to \$1.5 million
12 depending on the terms of the purchase contract for the HMP&L
13 Unit 2 LNBs. Thus, depending on the terms of the purchase
14 agreement, somewhere between 82.4% and 64.8% of the capital
15 expenditures budgeted for the LNB projects can be avoided if
16 HMP&L Unit 2 and Wilson are retired in 2013.
- 17 j. If the decision to retire Wilson Unit 1 is made before October
18 2014 and HMP&L Unit 2 is not retired, 64.8% of the capital
19 expenditures budgeted for the LNB projects can be avoided.
20 After October 2014 but before October 2015, Big Rivers may be
21 committed to spend up to \$2.5 million depending on the terms of

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**Witnesses: Robert W. Berry (a., e. through j.) and
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1 the purchase contract for the Wilson Unit 1 LNBs. Thus,
2 depending on the terms of the purchase agreement somewhere
3 between 64.8% and 35.3% of the capital expenditures budgeted
4 for the LNB projects can be avoided if the decision to retire
5 Wilson is made prior to October 2015. If the decision to retire
6 Wilson Unit 1 is made after October 2015, 0.0% of the capital
7 expenditures can be avoided.

8
9
10 **Witnesses)** Robert W. Berry (a., e. through j.) and
11 Thomas L. Shaw (b., c., and d.)
12

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- 1 **Item 10) Refer to Company's response to SC 1-40:**
2
3 **a. With respect to ESP upgrades:**
4 **i. When does BREC expect to test the effect of dry**
5 **sorbent injection on ESP performance? If BREC does**
6 **not expect to conduct such a test, explain why not.**
7 **ii. If ESP upgrades are in fact required at any of BREC's**
8 **units, does the Company expect to apply for a CPCN**
9 **from the Commission for these projects?**
10 **iii. If BREC expects to apply for a CPCN for such ESP**
11 **upgrades, when does the Company expect it would**
12 **need to file its application?**
13 **iv. Would BREC expect to recover capital cost**
14 **expenditures incurred as a result of ESP upgrades?**
15 **v. Has BREC quantified the rate increase that might be**
16 **expected if ESP upgrades are necessary?**
17 **vi. Please identify the expected rate increase resulting**
18 **from any ESP upgrades.**
19 **vii. Please provide any work papers that detail the**
20 **calculations behind the expected rate increase**
21 **associated with the ESP upgrades.**
22 **b. With respect to polishing baghouse technology:**

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- 1 *i. If BREC determines that ESP upgrades are still not*
2 *sufficient for MATS compliance at one or more units,*
3 *does the Company plan to evaluate polishing*
4 *baghouse technology?*
- 5 *ii. If BREC determines that a polishing baghouse is*
6 *necessary at one or more units, does the Company*
7 *expect to apply for a CPCN from the Commission?*
- 8 *iii. If BREC expects to apply for a CPCN for such*
9 *polishing baghouse upgrades, when does the*
10 *Company expect it would need to file its application?*
- 11 *iv. Would BREC expect to recover capital cost*
12 *expenditures incurred as a result of polishing*
13 *baghouse upgrades?*
- 14 *v. Would BREC expect to recover capital cost*
15 *expenditures incurred as a result of polishing*
16 *baghouse installation?*
- 17 *vi. Has BREC quantified the rate increase that might be*
18 *expected if a polishing baghouse is necessary at one*
19 *or more units?*
- 20 *vii. Please identify the expected rate increase resulting*
21 *from any polishing baghouse installations.*

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- 1 *viii. Please provide any work papers that detail the*
2 *calculations behind the expected rate increase*
3 *associated with a polishing baghouse at one or more*
4 *units.*
- 5 *c. With respect to full baghouse technology:*
- 6 *i. If BREC determines that ESP upgrades are still not*
7 *sufficient for MATS compliance at one or more units,*
8 *does the Company plan to evaluate full baghouse*
9 *technology?*
- 10 *ii. If BREC determines that a full baghouse is necessary*
11 *at one or more units, does the Company expect to*
12 *apply for a CPCN from the Commission?*
- 13 *iii. If BREC expects to apply for a CPCN for such full*
14 *baghouse upgrades, when does the Company expect it*
15 *would need to file its application?*
- 16 *iv. Would BREC expect to recover capital cost*
17 *expenditures incurred as a result of full baghouse*
18 *upgrades?*
- 19 *v. Would BREC expect to recover capital cost*
20 *expenditures incurred as a result of full baghouse*
21 *installation?*

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- 1 *vi. Has BREC quantified the rate increase that might be*
2 *expected if a full baghouse is necessary at one or more*
3 *units?*
4 *vii. Please identify the expected rate increase resulting*
5 *from any full baghouse installations.*
6 *viii. Please provide any work papers that detail the*
7 *calculations behind the expected rate increase*
8 *associated with a full baghouse at one or more units.*
9
10
11

12 **Response)**

- 13 a.
14 i. Big Rivers expects to test the effect of dry sorbent injection
15 systems during the 4th quarter of 2012.
16 ii. Yes.
17 iii. Any filing would come after Big Rivers tests the effect of
18 dry sorbent systems and determines there is a need for
19 such a system. If required, the filing is not anticipated to
20 occur until early 2013.
21 iv. Yes.
22 v. No.

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- 1 vi. Not applicable.
- 2 vii. Not applicable.
- 3 b.
- 4 i. Yes.
- 5 ii. Yes.
- 6 iii. Any filing would come after Big Rivers determines there is
- 7 a need for such a system. If required, the filing is not
- 8 anticipated to occur until early 2013.
- 9 iv. Yes.
- 10 v. Yes.
- 11 vi. No.
- 12 vii. Not applicable.
- 13 viii. Not applicable.
- 14 c.
- 15 i. Yes.
- 16 ii. Yes.
- 17 iii. Any filing would come after Big Rivers determines there is
- 18 a need for such a system. If required, the filing is not
- 19 anticipated to occur until early 2013.
- 20 iv. Yes.
- 21 v. Yes.
- 22 vi. No.

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1 vii. Not applicable.

2 viii. Not applicable.

3

4

5 **Witness)** Robert W. Berry

6

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1 **Item 11)** *Refer to your response to Staff 1-3:*

2

3 *a. Are the market energy purchases that will be made during*
4 *the time Wilson is offline taken into account in BREC's*
5 *calculations of revenue requirements and NPVRR?*

6 *b. Please provide the quantities of market purchases and*
7 *associated prices that are expected to occur while Wilson*
8 *is offline.*

9

10 **Response)**

11 a. Yes. All of the planned outages at Wilson are included in the
12 data input into the ACES Power Marketing ("APM") Planning
13 and Risk ("PaR") model, along with the conventional inclusion of
14 a forced outage rate for modeling unplanned outages at Wilson.
15 The PaR model then incorporates any Wilson outages into the
16 dispatch. The PaR model reflects the fact that Big Rivers sells
17 all of its generation into the Midwest Independent Transmission
18 System Operator, Inc. ("MISO") market and purchases all of the
19 energy needed to meet its load from the MISO market. All of
20 the costs from the PaR runs are then included in the cost-
21 effectiveness evaluations referenced in the direct testimony of

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1 Mark A. Hite and provided electronically on April 26, 2012, with
2 Big Rivers' response to KIUC's Motion to Dismiss. Thus,
3 because (i) any Wilson outages are included in the model runs,
4 (ii) Big Rivers purchases all of its energy requirements from
5 MISO, and (iii) the costs determined in the PaR model are
6 incorporated into Big Rivers' cost-effectiveness evaluation, then
7 any market energy purchases made during any Wilson outages
8 are included in Big Rivers' determination of revenue
9 requirements and NPVRR. Note that Wilson is not expected to
10 be offline any additional time for the new scrubber retrofit. Big
11 Rivers will make the necessary Wilson scrubber tie-ins during
12 the normal planned outage cycle and during opportunities while
13 Wilson may be offline for a forced outage or poor market
14 conditions.

15 b. As noted above, Big Rivers purchases all of the energy needed to
16 meet its load from the MISO energy market. The PaR model
17 reflects this by dispatching Big Rivers' units against the
18 wholesale energy price and by purchasing energy at market
19 prices up to the amount needed to serve Big Rivers' load.
20 Because Big Rivers purchases all of its load every hour from

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1 MISO, unit outages have no impact on the amount of energy
2 purchased.

3

4

5 **Witnesses)** Robert W. Berry and

6 Mark A. Hite

7

8

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1 **Item 12)** *Refer to your response to Staff 1-37:*

2

3 *a. Are the market energy purchases that will be made during*
4 *the time the BREC units are offline taken into account in*
5 *BREC's modeling and calculations of revenue*
6 *requirements and NPVRR?*

7 *b. Please provide the quantities of market purchases and*
8 *associated prices that are expected to occur while the*
9 *BREC units are offline.*

10

11 **Response)**

12 a. and b.

13 Please see Big Rivers' response to Item 11 of these responses.

14

15

16 **Witnesses)** Robert W. Berry and

17 Mark A. Hite

18

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1 **Item 13)** *Refer to your response to Staff 1-19, which states that “there is*
2 *no capital cost component associated with increasing the limestone*
3 *quality”:*

- 4
- 5 *a. State whether there is an O&M cost component associated*
6 *with increasing the limestone quality.*
- 7 *b. If so, is that included in the O&M cost estimate shown in*
8 *Exhibit Berry-2?*
- 9 *c. Please provide an estimate of the O&M cost of increasing*
10 *the limestone quality, by year.*
- 11 *d. State whether limestone of better quality has been tested*
12 *in the Coleman units to ensure that it does in fact improve*
13 *the performance of the scrubber.*
- 14 *e. If so, please provide the results of those tests.*
- 15 *f. If not, explain why not.*
- 16

17 **Response)**

- 18 a. Yes.
- 19 b. No.
- 20 c. The estimated O&M cost increases, from utilizing higher quality
21 limestone at Coleman, are included in the model runs that have
22 been previously provided.

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- 1 d. Yes.
- 2 e. Tests of different limestone quality and suppliers are currently
- 3 being conducted at Coleman. Final results are not available but
- 4 preliminary results have shown about a 1% improvement in SO₂
- 5 removal efficiency. During the first three - four years of
- 6 operation, higher quality limestone was blended with lower
- 7 quality stone for the Coleman scrubber. Due to economics, the
- 8 higher quality stone was phased out and 100% of the lower
- 9 quality limestone was utilized. There were no formal tests
- 10 performed, but the table below displays the last five years of
- 11 Coleman scrubber SO₂ removal efficiency (figures do not include
- 12 any scrubber bypass emissions).
- 13

Coleman Scrubber Performance					
Year	2007	2008	2009	2010	2011
FGD SO ₂ Removal Efficiency (%)	98.7	97.7	97.5	95.9	96.1

- 14
- 15 f. Not applicable.
- 16
- 17 **Witness)** Robert W. Berry

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1 **Item 14)** *Refer to p. 8 lines 4-11 of the testimony of William DePriest,*
2 *which describes the types and quantities of projects for which S&L has*
3 *provided, or is providing, engineering services.*

- 4
- 5 *a. State whether S&L is providing or has provided*
6 *engineering services for any projects relating to the Coal*
7 *Combustion Residuals rule.*
- 8 *b. If so, how many?*
- 9 *c. If not, how many utilities have asked S&L for estimates of*
10 *the expected cost of compliance with the CCR rule?*
- 11 *d. State whether S&L is providing or has provided*
12 *engineering services for any projects relating to the 316(b)*
13 *rule?*
- 14 *e. If so, how many?*
- 15 *f. If not, how many utilities have asked S&L for estimates of*
16 *the expected cost of compliance with the 316(b) rule?*

17

18 **Response)**

- 19 a. Yes.
- 20 b. Twenty-four.
- 21 c. Not applicable.
- 22 d. Yes.

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- 1 e. Twenty.
2 f. Not applicable.
3
4
5 **Witness)** William DePriest
6

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1 Item 15) *Refer to p. 15 lines 11-22 of the testimony of William DePriest,*
2 *which recommends low NOx burners at the Coleman units in order to*
3 *reduce the burden of purchasing allowances to comply with CSAPR, but*
4 *states that “future allowance pricing will play a role in whether this*
5 *recommendation is exercised.”*

6

7 a. *When does BREC expect to make a decision as to whether*
8 *low NOx burners will be installed at the Coleman units?*

9 b. *What is the allowance price at which BREC believes low*
10 *NOx burners on the Coleman units become the more*
11 *economic choice for NOx compliance?*

12

13 **Response)**

14 a. All three Coleman units have low NO_x burners with overfire air
15 (OFA) systems installed. Mr. DePriest was referring to
16 advanced low NO_x burners where NO_x emit rates would be
17 lower. In Coleman's case, the NO_x emit rates would improve
18 10% from the current NO_x emit rate of 0.33 lb/MMBtu to 0.30
19 lb/MMBtu. Big Rivers currently has no plans to install
20 advanced NO_x burners at Coleman.

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William DePriest (b.)

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1 Big Rivers will be compliant in NO_x emissions after the
2 Green 2 SCR is in operation. A 10% reduction in NO_x emit rate
3 from Coleman will lower emissions by 550 NO_x tons per year.
4 The budget estimate to install advanced low NO_x burners at
5 Coleman is \$4.5 million. In order to achieve a two year pay
6 back, the NO_x allowance prices would need to average over
7 \$4,000 per ton ($\$4,500,000 / 2 \text{ years} / 550 \text{ tons} = \$4,090$ per NO_x
8 ton).

9 b. See also "Break Even Credit Cost" on tab "NPV (Tech)" of S&L
10 Excel spreadsheet "Capital & O&M.xls" and Tables 5-4 and 5-5
11 in Exhibit DePriest-2 attached to the Direct Testimony of
12 William DePriest (Application Exhibit 5).

13

14

15 **Witnesses)** Robert W. Berry (a. and b.) and

16 William DePriest (b.)

17

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1 **Item 16)** *Refer to p. 20 lines 13-16 of the testimony of William DePriest,*
2 *which states that BREC will have the option of purchasing NOx*
3 *compliance allowances in lieu of using low NOx burners at the Coleman*
4 *units. Are these NOx allowance purchases taken into account in BREC's*
5 *modeling and calculations of revenue requirements and NPVRR?*

6

7 **Response)** Yes.

8

9

10 **Witness)** Mark A. Hite

11

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1 **Item 17)** *Refer to p. 21 lines 12-23 of the testimony of William DePriest,*
2 *which states that the Wilson FGD and Green 2 SCR projects will not be*
3 *completed in time to meet current CSAPR requirements in 2014.*

- 4
- 5 *a. Has BREC quantified and modeled the SO₂ and NO_x*
6 *allowances that it expects to have banked in 2014?*
- 7 *b. Has BREC quantified and modeled the SO₂ and NO_x*
8 *allowances that it expects to need to purchase from 2014*
9 *until the time these projects are completed?*
- 10 *c. Does BREC expect that the emissions control projects*
11 *necessary to comply with the MATS rule will be completed*
12 *by the compliance deadline?*
- 13 *d. If not, how does BREC expect to comply with the MATS*
14 *rule?*

15

16 **Response)**

- 17 a. Yes, the SO₂ and NO_x allowance surplus and deficits are
18 identified in the Production Cost Model (Big Rivers 2012-2026
19 (CAIR) Base Case exhibits determin (2-2-12).xlsx). Plant
20 emissions, allowances allocated, and emission pricing from the

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1 Production Cost Model are fed into the PCM tab lines 81
2 through 94 of the financial model net of the City of Henderson's
3 share of HMP&L Station 2. Tracking of allowances banked,
4 purchased, and sold can be found on lines 98 through 117 of the
5 PCM tab of the financial model. An effort was made to maintain
6 the same allowance bank at the end of the 15-year period as
7 existed in the beginning in each scenario so that the scenarios
8 are comparable. The current delay in the CSAPR regulation has
9 created uncertainty as to the actual implementation date of
10 Phase I and Phase II of the CSAPR regulations.

- 11 b. Please see part a, above.
12 c. Yes. Big Rivers fully expects to have MATS emission control
13 projects completed in time to meet the MATS compliance
14 deadline.
15 d. Not applicable.

16
17
18 **Witnesses)** Robert W. Berry,
19 Mark A. Hite, and
20 Brian J. Azman

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1 Item 18) *Refer to Exhibit DePriest-2, page 5-1, which states that capital*
2 *cost estimates for emission control projects do not include owner costs or*
3 *AFUDC.*

4

5 a. *Please provide estimates of owner costs for each of the*
6 *emission control projects examined by Sargent & Lundy in*
7 *this study, including those not selected by BREC for*
8 *installation.*

9 b. *Please provide estimates of AFUDC for each of the*
10 *emission control projects examined by Sargent & Lundy in*
11 *this study, including those not selected by BREC for*
12 *installation.*

13

14 **Response)**

15 a. Estimates of owner's cost for the capital projects are shown in
16 the table on the following page. These amounts were considered
17 to be part of the contingency included in the S&L estimates.

18

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1

Owner's Cost for Capital Projects		
Wilson	Engineering	\$ 1,030,000
	Construction Management	2,535,000
Green SCR	Engineering	400,000
	Construction Management	1,229,000
HMPL	Engineering	250,000
	Construction Management	351,000
Reid	Engineering	150,000
	Construction Management	176,000
MATS and Precip testing	Engineering	1,100,000
	Construction Management	975,000
Total		\$ 8,195,000

2

3

4

5

6

7

8

9

The total amount represents 2.9 % of the overall cost estimate. Big Rivers has not calculated Owners Costs for those projects not selected for the 2012 ECP.

- b. Please see Big Rivers' response to Item 3 of these responses for total Interest Charged to Construction (*i.e.*, capitalized interest) on the 2012 Environmental Compliance Plan projects selected by Big Rivers for installation. Big Rivers has not calculated

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1 capitalized interest on the environmental compliance plan
2 projects not selected for installation.

3

4

5 **Witnesses)** Robert W. Berry and

6 William DePriest

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1 Item 19) *Refer to p. 9 line 18 of the testimony of John Wolfram, which*
2 *lists "emissions allowance expense" as one of the cost components to be*
3 *included in BREC's proposed ES tariff rider.*

- 4
- 5 a. *Please provide all work papers that demonstrate how*
6 *BREC quantified the amount of emissions allowances it*
7 *expects to purchase and the associated cost.*
- 8 b. *What does BREC plan to do if the emissions allowance*
9 *expense is much higher than anticipated?*
- 10 c. *What does BREC plan to do if the emissions allowance*
11 *expense is much lower than anticipated?*
- 12

13 **Response)**

- 14 a. The assumption in the APM planning models was that Big
15 Rivers would not bank allowances. In other words, emissions
16 would comply with the SO₂ and NO_x limits, either through
17 added control equipment or by capping generation at emission
18 allowances allocated plus allowances purchased up to the
19 variability limit.
- 20 b. and c.
- 21 From an operations perspective, Big Rivers actively manages its
22 allowances as part of its Energy Services operation. As the cost

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1 of emission allowances varies, Big Rivers will manage its
2 dispatch and its allowance inventory in an effort to optimize the
3 economics of its allowance portfolio. From a planning
4 perspective, Big Rivers will continue to monitor allowance costs,
5 both actual and forecast, and will incorporate any changes into
6 its planning processes.

7

8

9 **Witness)** Robert W. Berry

10

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1 **Item 20)** *Refer to the December 11, 2011 Financial Statement of Big*
2 *Rivers, provided as an attachment to response AG 1-37: Please explain why*
3 *the fuel cost seen in the Statements of Operations increases by over 250%*
4 *from 2009 to 2010.*

5

6 **Response)** In Case No. 2007-00455, the Commission granted approval of the
7 “Unwind Transaction,” whereby Big Rivers resumed operational control of its
8 owned and leased generating facilities, and which became effective at midnight on
9 July 16, 2009. Upon the closing of the Unwind Transaction and up until Big
10 Rivers integrated into MISO in December 2010, Big Rivers began generating the
11 majority of its own power requirements. Prior thereto, during the term of E.ON
12 lease agreements, Big Rivers purchased all its power requirements, primarily
13 from Western Kentucky Energy Corp., an E.ON affiliate. At the close of the
14 Unwind Transaction, Big Rivers assumed the power supply obligation for
15 Kenergy's two large aluminum smelter loads, Century and Rio-Tinto Alcan, the
16 majority of which had been provided by E.ON parties. Accordingly, Big Rivers’
17 fuel for electric generation in 2009 reflects only 168 days, whereas the amount for
18 2010 represents the entire year, or 365 days. Also due to the closing of the
19 Unwind Transaction, 2010 sales of surplus power to non-members increased over
20 2009. Additionally, non-smelter member MWh sales in 2010 increased over 2009
21 due to the hot summer weather.

22

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1 **Witness)** Mark A. Hite

2

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1 **Item 21)** *Refer to your response to AG 1-55. Please explain why there*
2 *was the need for a 3% rate increase in “buy” scenario, but not in the*
3 *“build” scenario to meet the TIER requirement.*

4
5 **Response)** The Build Case and the Buy Case have comparable off-system sales
6 prices. However, off-system sales volume is much lower in each year (2012
7 through 2026) in the Buy Case, resulting in lower off-system sales revenue.
8 Because off-system sales revenue is lower in the Buy Case, a 3% member base rate
9 increase was made effective August 1, 2012, to maintain a 1.24 TIER.

10

11

12 **Witnesses)** Mark A. Hite

13

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1 **Item 22)** *Refer to your response to Staff 1-31. Please comment on how a*
2 *1.1 TIER would affect the results of the 2012 Compliance Plan, instead of*
3 *the 1.24 TIER currently being used.*

4
5 **Response)** Using a 1.10 TIER rather than the proposed 1.24 TIER would reduce
6 the RORB component of the Environmental Surcharge by \$2.3 million in 2016
7 (this difference decreases slightly each year thereafter as environmental
8 compliance plan net utility plant balance decreases). In the Build Case, the
9 smelters are not projected to be at the ceiling of the TIER Adjustment Charge in
10 2016 and beyond. Therefore, any portion of the \$2.3 million that is not allocated
11 to the members via the environmental surcharge (e.g., \$2.0 million in 2016) would
12 be collected entirely from the smelters via an increase in the TIER Adjustment
13 Charge, allowing Big Rivers to achieve the 1.24 contract TIER. In the event the
14 smelters were at the ceiling of the TIER Adjustment Charge and Big Rivers'
15 earnings were projected to fall below the 1.10 MFIR requirement in its loan
16 documents, Big Rivers' would seek a base rate increase to achieve the overall 1.24
17 TIER.

18
19
20 **Witness)** Mark A. Hite

21

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1 **Item 23)** *Refer to your response to KIUC 1-33, which mentions three*
2 *different sets of forward power prices. Please state which power prices*
3 *were used and in which section of the analysis, referencing any specific*
4 *spreadsheet workbooks that have already been provided, and producing*
5 *any spreadsheet workbooks that have not yet been provided.*

6
7 **Response)** The APM planning model cases that utilized the Pace Global ("Pace")
8 energy price forecast and the APM planning model cases that utilized the APM
9 energy price forecast are both listed in Big Rivers' response to Item 6 of Kentucky
10 Industrial Utility Customers, Inc.'s Second Request for Information. There were
11 no production cost or financial model sensitivity runs using the IHS energy price
12 forecast. Copies of all sensitivity runs inputs and output files have been provided
13 previously on the USB drives Big Rivers filed in this proceeding.

14
15

16 **Witness)** Robert W. Berry

17

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1 **Item 24)** *Refer to Table 5-8 of Exhibit DePriest-2. Please provide any*
2 *spreadsheets, modeling and calculations associated with the analysis*
3 *behind the "Break Even" natural gas price for conversion of the Reid 1 or*
4 *Green 1 & 2 units.*

5

6 **Response)** Excel's "Goal Seek" function was used to determine the natural gas
7 price at which the net present value, including CSAPR allocation costs, reached
8 \$0. The function was executed using data provided in "NPV (Tech)" and "Fuel
9 Cost" tabs of the Excel file named "Capital & O&M," which is contained in the
10 "Sargent & Lundy Production to Big Rivers" folder on the USB drive Big Rivers
11 filed confidentially on June 14, 2012, in this proceeding.

12

13

14 **Witness)** William DePriest

15

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1 **Item 25)** *Please describe the treatment of off-system sales and*
2 *purchases in the analyses of both ACES Power Marketing and Sargent &*
3 *Lundy. Specifically, give the tie line capacity limit for economy energy*
4 *sales and purchases between Big Rivers and the MISO external market by*
5 *month and year that was used to help determine off-system sales.*

6

7 **Response)** APM modeled Big Rivers' portfolio as part of MISO. As such, all
8 generation is sold at its LMP to MISO, and all load is purchased at its LMP from
9 MISO. There were no limits (except for capacity of the generation and peak load)
10 on these purchases or sales.

11 The ability to sell outside of MISO was not considered, as this
12 transaction would be priced at the MISO-export LMP vs the outside market's
13 price. As such, generation cost is not a factor in whether this transaction would
14 add margin.

15

16

17 **Witness)** Brian J. Azman

18

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1 **Item 26)** *Does Big Rivers currently have an interruptible agreement*
2 *with the smelters or any other large commercial or industrial customers to*
3 *reduce load in event of an emergency or at times of high peak demand?*

4
5 **a.** *If not, has Big Rivers ever considered such a program that*
6 *would allow it to avoid some built capacity of electric*
7 *generating facilities? Produce any analysis of such a*
8 *program.*

9 **b.** *If so, please provide the current or expected impacts of*
10 *those agreements in energy reductions, peak demand*
11 *reductions and cost savings, both annual and monthly*
12 *throughout the time period analyzed during the study.*

13
14 **Response)** While the agreements with the smelters have a provision for
15 interruptible energy, the associated terms and conditions do not provide a reliable
16 method for reduction in smelter load. Big Rivers' tariff has a Voluntary Price
17 Curtailable Service Rider ("CSR") for customers of Big Rivers' members capable of
18 curtailing at least 1,000 kW of load. Use of the CSR is subject to Big Rivers and
19 the customer agreeing to terms and conditions for curtailment.

20
21 **a.** Not applicable.

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1 b. Currently, no impact is expected from the CSR. Current and
2 projected power prices are insufficient to compel a customer to
3 curtail its load.

4
5
6
7

Witness) Robert W. Berry

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- 1 **Item 27)** *With regards to the load forecast used in your application and*
2 *supporting analyses:*
3
4 **a.** *Please provide the BREC load forecast, by month and year*
5 *for both peak and energy requirements relied upon by*
6 *ACES in its modeling analysis of the BREC units.*
7 **b.** *State whether any other BREC load forecast was used in*
8 *any portion of your application or supporting analyses.*
9 **i.** *If so, identify and explain the differences between the*
10 *load forecasts that were used.*
11 **c.** *For each load forecast used in your application or*
12 *supporting analyses:*
13 **i.** *State what month and year the load forecast was*
14 *developed.*
15 **ii.** *Produce the load forecast and any supporting*
16 *analyses, worksheets, and modeling files.*
17 **iii.** *Please provide a description of the models, methods,*
18 *data and key assumptions used to develop the load*
19 *forecast.*
20 **iv.** *State whether the load forecast reflects the projected*
21 *impacts of any DSM programs? If so, please identify*
22 *each specific DSM program, the quantity of*

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1 *reductions from DSM embedded in the load forecast,*
2 *and the basis for the quantity of reductions assumed,*
3 *and produce any work papers regarding such*
4 *reductions.*

5 *v. State whether the load forecast reflects the projected*
6 *impact of any federal efficiency standards or*
7 *programs. If so, please identify each specific federal*
8 *efficiency standard or program, the quantity of*
9 *reductions in forecasted load resulting from those*
10 *standards and programs, and the basis for the*
11 *quantity of reductions assumed, and produce any*
12 *work papers regarding such reductions.*

13 *d. Produce Big Rivers' most recent load forecast, along with*
14 *any supporting analyses, work papers, or modeling files.*

15
16 **Response)**

17 a. The Big Rivers load forecast that was used for the APM
18 modeling has already been provided. See the Excel file
19 "BRECMISOmonthlyLoadForecast2012-01.xlsm" on the
20 CONFIDENTIAL USB drive Big Rivers filed on June 21,
21 2012.

22 b. No other load forecast data was used.

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- c.
 - i. The load forecast was updated in January 2012. The forecast that the January 2012 update is based on was developed in 2011 and finalized in August 2011.
 - ii. The August 2011 Load Forecast documents for Big Rivers and the City of Henderson, associated underlying work/modeling files and the January 2012 spreadsheet update are being provided on two separate USB drives. One USB drive is accompanying these responses. The second USB drive is CONFIDENTIAL and Big Rivers is submitted it with a Petition for Confidential Treatment. Note the underlying work work/modeling files are included under a petition for confidentiality.
 - iii. Please see the August 2011 Big Rivers Load Forecast document provided in part c. subpart ii. of this response. The January 2012 load forecast used for the ACES modeling is an update of the biennial load forecast required by the United States Department of Agriculture Rural Utilities Service ("RUS"). Monthly updates are typically made to reflect changes in projected large industrial or smelter load. This is done because each month MISO

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- 1 requires Big Rivers to submit a monthly load forecast for
2 the next three years in addition to meeting the MISO
3 resource adequacy requirement on a monthly basis.
- 4 iv. Section 6.5 of the August 2011 Load Forecast reflects
5 projected impacts from energy efficiency programs that
6 were being contemplated at the time the load forecast was
7 being prepared in 2011, but were not reflected in forecasted
8 load data values. These programs are only now being
9 implemented in 2012, and as such, the level of participation
10 and actual impacts are not presently known to a degree
11 that would be prudent to reflect in load forecast values.
- 12 v. The load forecast does not explicitly include projected
13 impacts of federal efficiency standards or programs. These
14 impacts are reflected indirectly to the extent they impact
15 historical load data and economic forecast data.
- 16 d. See the data supplied in part c. subpart ii. of this response.

17
18
19 **Witness)** Robert W. Berry
20

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1 **Item 28)** *Refer to your response to SC 1-2 and KIUC 1-26:*

2

3 *a. Identify the current unamortized plant balance for each*

4 *of Big Rivers' coal-fired generating units.*

5 *b. Identify the projected unamortized plant balance as of*

6 *January 1, 2016 for each of Big Rivers' coal-fired*

7 *generating units.*

8 *c. Identify the estimated salvage value for each of Big*

9 *Rivers' coal-fired generating units.*

10

11 **Response)**

12 a. Please see the attached schedule. Note that Big Rivers does not

13 account for plant balances by generating unit, only by

14 generating station.

15 b. Please see the attached schedule. Note that the values therein

16 do not assume any additions or retirements after May 31, 2012.

17 c. Big Rivers has not determined an estimated salvage value for its

18 generating units, and it is not aware of a universally-accepted

19 method for doing so. Typically the salvage value is less than or

20 equal to the demolition cost.

21

Case No. 2012-00063

Response to SC 2-28

Witnesses: Mark A. Hite (a. and b.) and

Robert W. Berry (c.)

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1 **Witnesses) Mark A. Hite (a. and b.) and**

2 **Robert W. Berry (c.)**

3

Big Rivers Electric Corporation
Case No. 2012-00063
Net Book Value (Undepreciated/Unamortized Plant Balance)
May 31, 2012

Account	Reid	Coleman	Green	Wilson	HMPL	Common Reid/HMPL	Common Reid/Green/HMPL
311	\$ (103,737.83)	\$ 2,573,638.22	\$ 6,100,697.67	\$ 31,707,039.44	\$ 460,983.90	\$ 482,864.92	\$ 740,434.77
312	1,174,854.30	41,116,381.88	53,730,083.35	179,102,822.72	16,005,239.38	2,353,536.11	314,587.00
312-Env	3,012,307.28	107,829,217.93	42,783,131.49	132,207,252.80	48,168,273.22	1,794,115.77	10,706.51
312-SL Env	-	-	613,788.23	5,852,843.60	3,901,916.28	-	-
312-SL	21,945.95	370,932.46	149,540.91	-	105,404.29	-	-
314	434,020.73	13,044,512.20	17,264,888.99	58,728,412.33	3,988,579.00	243,548.68	21,934.72
315	430,414.31	3,017,011.83	3,896,027.44	15,980,265.90	164,437.07	-	-
316	1,151.51	1,133,022.30	1,077,654.08	1,192,288.71	381,757.30	391,006.30	98,998.14
Total	\$ 4,970,956.25	\$ 169,084,716.82	\$ 125,615,812.16	\$ 424,770,925.50	\$ 73,176,590.44	\$ 5,265,071.78	\$ 1,186,661.14
Grand Total		\$ 804,070,734.09					

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1 **Item 29)** *Refer to your response to SC 1-16a. For each year through*
2 *2026, identify the size in kWh of the energy shortfall that would need to be*
3 *filled if Big Rivers' coal fleet operated at a capacity factor of 62%.*

4
5 **Response)** At a capacity factor of 62%, Big Rivers' coal fleet would generate
6 9,150,000,000 kWh. Please see the table below displaying the energy shortfall in
7 kWh for each year through 2026.

8

Big Rivers Coal Fleet at 62% Capacity Factor	
Year	Energy Shortfall, kWh
2013	1,861,069,770
2014	1,899,782,140
2015	2,053,166,790
2016	2,116,384,110
2017	2,134,770,770
2018	2,162,734,410
2019	2,191,477,520
2020	2,249,921,990
2021	2,266,175,090
2022	2,305,877,530
2023	2,347,919,430
2024	2,406,153,890
2025	2,427,561,570
2026	2,465,681,730

9

10 **Witness)** Robert W. Berry

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1 **Item 30)** *Refer to your response to SC 1-17.*

2

3

*a. Identify any coal-fired electric generating units that have
achieved an average SO₂ removal of at least 99% over a
30-day or 12-month period through the use of a wet FGD.*

4

5

6

*b. Produce any continuous emissions monitoring ("CEMs")
data demonstrating achievement of at least 99% SO₂
removal at a coal-fired electric generating unit through
use of a wet FGD.*

7

8

9

10

*c. Produce any wet FGD vendor guarantees of at least 99%
SO₂ removal for a coal-fired electric generating unit.*

11

12

13

14

15

16

17 **Response)**

18

19

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21

*a. Sargent & Lundy ("S&L") is not aware of any emissions data
that include "uncontrolled" SO₂ emissions on a 30-day or 12-
month basis. Without this data, percent removal of SO₂ for an
existing coal-fired power plant cannot be calculated.*

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- 1 b. To the best of S&L's knowledge, continuous emissions
2 monitoring ("CEMs") data represents stack emissions and does
3 not include "uncontrolled" FGD system inlet SO₂ data.
4 Therefore, the information requested is not available.
- 5 c. Guarantees are offered by FGD vendors. Per Big Rivers'
6 response to Item 17 of the Sierra Club's Initial Request for
7 Information, information regarding 99% SO₂ removal can be
8 found at the internet addresses provided in that response. Note
9 that any guarantees from FGD system suppliers are typically
10 very limited and subject to specific conditions and remedies.
- 11 d. As indicated in Table 5-9 of Exhibit DePriest-2 of the Direct
12 Testimony of William DePriest, the FGD system at Wilson
13 would generate a surplus of 2565 tpy of SO₂ allowances if
14 operated at the design removal rate of 99% and given the
15 assumptions made in the study. At 98% SO₂ removal, the
16 Wilson FGD system would generate a surplus of approximately
17 1516 tpy of SO₂ allowances.
- 18 Because CSAPR is a cap-and-trade program, Big Rivers has
19 the flexibility of operating its units such that system-wide
20 emissions remain at or below available system-wide CSAPR
21 allowance allocations, or it can either apply banked allowances
22 from previous years or purchase additional allowances if the

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1 system-wide emissions exceed the available CSAPR allowance
2 allocations. In addition to the SO₂ removal efficiency achieved
3 at the Wilson plant, several other operating variables go into
4 this evaluation, including dispatch of all of Big Rivers' units,
5 projected annual capacity factors, SO₂ emissions from each unit
6 and system-wide SO₂ emissions, as well as the availability of
7 banked allowances. Therefore, additional SO₂ allowance
8 purchases would not be required simply because the Wilson
9 scrubber achieves an annual average SO₂ removal efficiency of
10 98% rather than its design removal efficiency of 99%.

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Witness) William DePriest

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1 **Item 31)** *Refer to your response to SC 1-25(b). Produce the proposals*
2 *“from Sargent & Lundy and other engineering firms for assistance on the*
3 *projects listed in the Environmental Compliance Plan filing,” and*
4 *describe the status of Big Rivers’ review of those proposals including when*
5 *you plan to make a final decision on such proposals.*

6

7 **Response)** Please see the proposals from Burns & McDonnell and Sargent &
8 Lundy which are being submitted with a Petition for Confidential Treatment.
9 Black & Veatch also submitted a proposal, but they have not given Big Rivers
10 permission to release it, even under a Petition for Confidential Treatment. Also,
11 please see Big Rivers’ response to Item 17 of the Kentucky Industrial Utility
12 Customers’ Second Request for Information for an update on the status of the A/E
13 selection.

14

15

16 **Witness)** Robert W. Berry

17

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1 **Item 32)** *Refer to your response to SC 1-33. For each year of 2012*
2 *through 2033, identify the projected level in MWh of off-system sales.*

3

4 **Response)** This information can be found on the “monthly net market position”
5 tab for each APM planning model exhibits file that has already been provided on
6 the flash drives Big Rivers has filed in this proceeding. These off-system sales by
7 year vary with each model run and its associated assumptions and inputs.

8

9

10 **Witness)** Robert W. Berry

11

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- 1 *Item 33) Refer to your responses to SC 1-36 and KIUC 1-7. For each of*
2 *SO₂, HCl, and mercury:*
3
4 *a. State whether the results from each stack test are*
5 *reflective of the average 30-day emissions of each*
6 *pollutant from each coal unit.*
7 *i. If so, explain how they are reflective.*
8 *ii. If not, explain why not.*
9 *b. State whether the results from each stack test are*
10 *reflective of the average annual emissions of each*
11 *pollutant from each coal unit.*
12 *i. If so, explain how they are reflective.*
13 *ii. If not, explain why not.*
14 *c. Produce the results of any other stack test for any of the*
15 *those pollutants that has been carried out at any of the*
16 *Big Rivers coal units since 2005.*
17 *d. State whether information regarding the emissions of any*
18 *of those pollutants has been provided to U.S. EPA in*
19 *response to any Information Collection Request.*
20 *i. If so, produce all such information.*
21
22

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1 **Response)**

- 2 a. The results are expected to be representative of a 30-day
3 average.
4 i. The coal utilized during the testing was of the same general
5 quality that has been used in the past and is expected to be
6 utilized in the future. Additionally, the units were operated
7 as they have been in the past and as they are expected to be
8 operated in the future.
9 ii. Not applicable.
10 b. The results are expected to be representative of the average
11 annual emissions of SO₂, HCl, and mercury given the fact that
12 the fuel used during the test was similar in quality to the fuel
13 used in the past and the same quality that is expected to be used
14 in the future.
15 i. See the response to part b, above.
16 ii. See the response to part b, above.
17 c. There are no additional stack tests for SO₂ or HCl.
18 d. Big Rivers provided test results for HCl for Green Unit 2 and
19 HMP&L Units 1 and 2 to EPA.
20 i. The test results are attached.

21

22 **Witness)** Thomas L. Shaw

3236C Big Rivers Green Unit 2

8/26/2010

Location: Stack Exit - Method 26A

Compound: Hydrogen Chloride

				Average
RunNumber	1	2	3	
Mass_mg	0.418	0.602	0.909	0.643
Elb/hr	3.80E-01	5.61E-01	8.22E-01	0.588
lb/mmBtuO2	1.42E-04	2.12E-04	3.14E-04	0.000
mg/dscm	1.53E-01	2.30E-01	3.39E-01	0.241
mg/dscm@7%O2	1.49E-01	2.23E-01	3.29E-01	0.234

3236 Big Rivers Henderson 1

7/13/2010

Emissions Summary

Location: Stack Exit - Method 26A				
Compound: Hydrogen Chloride				
				Average
RunNumber	1	2	3	
Mass_mg	0.332	0.321	1.14	0.598
Elb/hr	1.83E-01	1.79E-01	6.42E-01	0.335
lb/mmBtuO2	1.38E-04	1.34E-04	4.84E-04	0.000
mg/dscm	1.16E-01	1.11E-01	4.01E-01	0.209
mg/dscm@7%O2	1.47E-01	1.40E-01	5.07E-01	0.265

3236 Big Rivers Henderson 2

7/13/2010

Emissions Summary

Location: Stack Exit - Method 26A				
Compound: Hydrogen Chloride				
	1	2	3	Average
RunNumber				
Mass_mg	0.628	0.766	1.07	0.821
Elb/hr	3.63E-01	4.37E-01	6.17E-01	0.472
lb/mmBtuO2	2.36E-04	2.82E-04	3.97E-04	0.000
mg/dscm	2.48E-01	2.96E-01	4.16E-01	0.320
mg/dscm@7%O2	2.48E-01	2.96E-01	4.16E-01	0.320

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1 **Item 34)** *Refer to your response to SC 1-37. Identify the basis for your*
2 *belief that “estimated emission rates accurately characterize HCl*
3 *emissions.” Produce any documents supporting that belief.*
4

5 **Response)** The stack testing that was performed on all of the Big Rivers units
6 considered except Reid, was compared to the data developed for the Information
7 Collection Request that supported the development of EPA's MATS. For wall-
8 fired units burning a bituminous fuel and with FGD controls installed, the range
9 of HCl emissions is approximately 0.00001 to 0.013 lb/MBtu. All of the Big Rivers
10 units considered except for Reid, which does not have FGD controls installed, fall
11 within this range. Therefore, the estimated emission rates based on stack test
12 data are believed to accurately characterize HCl emissions compared to other
13 similar units. For wall-fired units that do not have FGD controls installed, the
14 range of HCl emissions is approximately 0.012 to 0.14 lb/MBtu. Because the Reid
15 emissions were estimated to be within this range, the estimated emission rates for
16 Reid are believed to accurately characterize HCl emissions when compared to
17 other, similar units. Big Rivers is planning to convert the Reid unit to natural
18 gas, which will effectively remove it from the requirement to control and monitor
19 HCl.
20
21

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**Witnesses) Thomas L. Shaw and
William DePriest**

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1 **Item 35)** *Refer to your response to SC 1-39. Identify over what period of*
2 *time and at what emission sources "limestone based, vertical wet FGD*
3 *systems with forced oxidation have been proven to achieve SO2 removal*
4 *efficiency of 99%." Produce any documents supporting that contention.*

5

6 **Response)** Please see Big Rivers' response to Item 30 of these responses.

7

8

9 **Witness)** William DePriest

10

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1 **Item 36)** *Refer to your response to SC 1-31.c. i and ii.*

2

3 *a. Identify in dollars per mmBtu the “available U.S. Energy*
4 *Information Administration pricing” referenced therein*
5 *for coal for each year of 2012 through 2033.*

6 *b. Identify in dollars per mmBtu the “available U.S. Energy*
7 *Information Administration pricing” referenced therein*
8 *for natural gas for each year of 2012 through 2033.*

9 *c. State specifically what document or documents contain*
10 *the “available U.S. Energy Information Administration*
11 *pricing at the time of the study” are referenced therein,*
12 *and produce such document or documents.*

13

14 **Response)**

15 a. Dollars per mmBtu pricing for coal was determined from
16 publicly available market pricing during the S&L
17 Environmental Compliance Study on the U.S. Energy
18 Information Administration web site.

19 (http://www.eia.gov/coal/news_markets/)

20 b. Dollars per mmBtu pricing for natural gas was determined from
21 publicly available market pricing during the S&L
22 Environmental Compliance Study on the U.S. Energy

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- 1 Information Administration web site.
2 (http://www.eia.gov/dnav/ng/ng_pri_fut_sl_d.htm).
3 c. Documents used during the study are publicly available at
4 <http://www.eia.gov/>.

5
6
7
8

Witness) William DePriest

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1 **Item 37)** *Refer to your response to SC 1-45.c. Identify and produce any*
2 *documents upon which your reasons identified therein for rejecting the*
3 *use of lower sulfur Central Appalachian coal are based.*

4

5 **Response)** Big Rivers' responses in SC 1-45.c are all based on Sargent & Lundy's
6 experience and engineering judgment. There are no supporting documents to
7 provide.

8

9

10 **Witness)** William DePriest

11

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1 **Item 38)** *Compare your response to SC 1-45.c. with your response to SC*
2 *1-47.*

3

4 *a. Explain why in the former response you state that the use*
5 *of Central Appalachian coal would require*
6 *“modifications to units,” while in the latter you state that*
7 *“it is not expected” that the burning of “lower sulfur*
8 *bituminous coals would result in capital changes” at the*
9 *HMP&L, Wilson, or Green Units.*

10 *b. Identify any modifications that would be needed to burn*
11 *lower sulfur bituminous coals at the HMP&L, Wilson, or*
12 *Green Units, and the capital and O&M costs of such*
13 *modifications.*

14

15 **Response)**

16 *a. Most Central Appalachian coal has a lower Hardgrove*
17 *Grindability Index (“HGI”) than the Illinois Basin coal that the*
18 *units were designed to burn. If lower HGI coal is utilized,*
19 *upgrades to the milling capacity could be required. To*
20 *accurately determine if upgrades would be required, specific fuel*
21 *characteristics would need to be known.*

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1 b. Typically, modifications would not be required to burn lower
2 sulfur bituminous coals for boilers that are designed to burn
3 higher sulfur bituminous fuels. Therefore, Big Rivers' response
4 in SC 1-47 stands with respect to capital expenditure. The
5 primary cost impact would be to O&M costs. It should be noted
6 that a detailed analysis of the HMP&L boilers was not
7 conducted to confirm that no modifications would be required,
8 although, in Sargent & Lundy's engineering judgment, any
9 modifications would be minor and would not affect the
10 recommendations of its study.

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**Witnesses) Robert W. Berry (a.) and
William DePriest (b.)**

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- 1 **Item 39)** *Refer to your response to KIUC 1-14.*
2
3 *a. Identify the “670MW bituminous coal-fired power plant”*
4 *that the cost of replacing the Wilson FGD was based on,*
5 *the year in which the scrubber on that plant occurred,*
6 *and the cost of such scrubber. Produce any documents*
7 *regarding that scrubber project.*
8 *b. Identify the “similarly sized bituminous coal-fired units”*
9 *upon which the SCR costs were based, the years in which*
10 *SCRs were installed on those units, and the cost of*
11 *installing each such SCR. Produce the “recent project*
12 *cost data” for such units.*
13 *c. Produce the “similar sized unit co-firing study” upon*
14 *which the costs for the Green and Reid natural gas*
15 *conversions were developed, and identify the unit in such*
16 *study.*
17 *d. Identify the “460MW coal-fired plant in the Southwest”*
18 *upon which the costs for the Green and Reid natural gas*
19 *conversions were developed, the cost of the conversion*
20 *project for such plant, and the year in which that*
21 *conversion occurred.*

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- 1 e. *Identify the “similarly sized coal-fired plants” from which*
2 *CCR modification costs were developed, the cost of the*
3 *CCR modifications at such plants, and the years in which*
4 *the CCR modifications took place. Produce the “recent*
5 *conversion studies” and “recent past project data”*
6 *referenced therein*

7

8 **Response)**

- 9 a. For the Wilson FGD, a detailed line-item cost estimate that
10 originated from a similar template for a 670MW bituminous
11 coal-fired unit was modified for Wilson. Engineering judgment
12 was used to replace costs shown in the original estimate so that
13 the numbers were specific to the Wilson FGD. This estimate
14 was provided electronically in an Excel file titled “Wilson FGD
15 Estimate.xls.”
- 16 b. The project date, sizes and \$/kw installation costs that were
17 used as a basis for the SCR are provided in the table on the next
18 page. Previous costs were adjusted for inflation, plant size and
19 an engineering judgment retrofit factor to address the
20 intricacies of the Big Rivers units.

21

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1

\$/kw SCR Project Costs (2011\$)

150-250MW SCR Installations 2001-2004			
Project 1	Project 2	Project 3	
\$232	\$309	\$205	

2

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- c. The costs for the natural gas conversions at Green and Reid were developed from past project cost estimates. Specifically, a prior cost estimate from a natural gas co-firing study was used as the basis for this study and adjusted based on inflation, plant size and engineering judgment to satisfy the specifics of the Big Rivers plants including plant gross MW output. This reference gas conversion cost estimate was for a nominally rated 450 MW coal burning power station in the Southwest.
- d. Please see the response to part c., above.
- e. CCR costs were developed using data compiled for previous environmental studies and cost estimates. The estimated costs associated with CCR are not based on actual installed costs from previous projects but on estimates developed to support related

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1 compliance studies similar to compliance requirements faced by
2 the Big Rivers plants. The cost estimates from previous studies
3 were adjusted for inflation, plant size and a retrofit factor to
4 address the intricacies of the Big Rivers units. Input data is
5 provided on page 2 of 5 of the attachment in Big Rivers' response
6 to Item 36 of the Kentucky Industrial Utility Customers' Second
7 Request for Information.

8
9

10 **Witness)** William DePriest

11

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1 **Item 40)** *Refer to your response to Staff 1-9. Produce any assessment or*
2 *document regarding the impact that potential CCR and/or 316(b)*
3 *regulations could have on the economics of Big Rivers' 2012 Plan or on the*
4 *economic feasibility of the continued operation of any of Big Rivers' coal-*
5 *fired generating units.*

6

7 **Response)** Please see Big Rivers' response to Item 4 of the Commission Staff's
8 Second Request for Information.

9

10

11 **Witnesses)** Robert W. Berry and

12 Thomas L. Shaw

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1 **Item 41)** *Refer to the table attached to your response to Staff 1-16.*

2

3

*a. Identify and produce each "quotation[] received from
other projects during study" referenced therein.*

4

5

*b. Identify and produce each "similar compliance stud[y]"
referenced therein.*

6

7

*c. Produce the "2012 Budget Input e-mail" and any
documents supporting the information contained in that
e-mail.*

8

9

10 *d. Identify and produce the "U.S. Department of Energy,
Energy Information Administration" document or
documents referenced therein.*

11

12

13

14 **Response)**

15

*a. Commodity quotations are typically obtained verbally via phone
conversations. Vendors do not submit written quotations;
therefore, this data is not available.*

16

17

18

*b. S&L does not have permission from the owners of these reports
to release this information.*

19

20

*c. The "2012 Budget Input e-mail" was previously provided on a
CONFIDENTIAL CD which Big Rivers' provided in its response
to Item 36 of the Kentucky Industrial Utility Customers' Initial*

21

22

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1 Request for Information. This e-mail was from DeAnna
2 McCormick Speed to Eric Robeson, dated November 16, 2011.
3 d. Referenced coal pricing data can be found at:
4 http://www.eia.gov/coal/news_markets/ and referenced natural
5 gas pricing data can be found at:
6 http://www.eia.gov/dnav/ng/ng_pri_fut_s1_d.htm. Data was
7 collected from these locations during S&L's Environmental
8 Compliance Study.

9
10
11
12

Witness) William DePriest

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
FOR APPROVAL OF ITS AMENDED ENVIRONMENTAL COST
RECOVERY SURCHARGE TARIFF, FOR CERTIFICATES OF PUBLIC
CONVENIENCE AND NECESSITY, AND FOR AUTHORITY TO
ESTABLISH A REGULATORY ACCOUNT
CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

1 **Item 42)** *Refer to your response to Staff 1-39. Identify the basis for the*
2 *PACE Global projections of CO₂ costs that were used in the ACES*
3 *planning models, and produce any documents or work papers regarding*
4 *such projections.*

5

6 **Response)** Pace incorporates a CO₂ price in its power simulations beginning in
7 2018. Pace's forecasts are based on its belief that the U.S. will eventually adopt
8 policies causing there to be a CO₂ price associated with emissions from power
9 plants, and on Pace's experience observing and studying existing CO₂ cap-and-
10 trade programs, as well as its detailed tracking of major CO₂ legislative proposals
11 in the U.S. Pace's CO₂ price forecast is consistent with current pricing in other
12 countries in which CO₂ policies are operational. For example, the CO₂ price in the
13 European Emission Trading System on November 15, 2011, was about
14 US\$13.47/tonne.

15

16

17 **Witness)** Patrick N. Augustine

18

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
FOR APPROVAL OF ITS AMENDED ENVIRONMENTAL COST
RECOVERY SURCHARGE TARIFF, FOR CERTIFICATES OF PUBLIC
CONVENIENCE AND NECESSITY, AND FOR AUTHORITY TO
ESTABLISH A REGULATORY ACCOUNT
CASE NO. 2012-00063**

**Response to the Sierra Club's
Second Request for Information
Dated June 22, 2012**

July 6, 2012

1 **Item 43)** *Refer to your response to AG 1-20.*

2

3 *a. Identify any SO₂ emission limit that you included in your*
4 *Title V permit renewal application for the Wilson plant if*
5 *the new FGD scrubber is installed.*

6 *b. Identify the assumed SO₂ removal efficiency for the new*
7 *FGD scrubber upon which that emission limit is based.*

8 *c. Produce the Title V permit renewal application referenced*
9 *therein.*

10

11 **Response)**

12 a. Big Rivers projected an emission rate for SO₂ at 0.134
13 lbs/MMBtu, or an overall control efficiency of 98%.

14 b. 98 to 99%.

15 c. The Title V permit renewal application for Wilson is attached.

16

17

18 **Witness)** Thomas L. Shaw

19

December 6, 2011

Mr. James Morse, Supervisor
Kentucky Division for Air Quality
Department of Environmental Protection
200 Fair Oaks Lane
First Floor
Frankfort, KY 40601

RE: Big Rivers Electric Corporation, Wilson Station Title V Renewal;
Source ID# 21-183-00069; Current Permit # V-05-002 R1; AI# 3319

Dear Mr. Morse,

The current Title V operating permit for the Wilson Station electric generating station was issued with an effective date of June 19, 2007 and an expiration date of June 19, 2012. In accordance with 401 KAR 52:020, Section 12, this is to submit information and forms necessary for renewal of this facility's Title V permit.

Included in this renewal application are the following forms and information in accordance with 401 KAR 52:020, Section 4(2)(c).

- 1) DEP7007AI Administrative Information
- 2) DEP7007DD Insignificant Activities
- 3) DEP7007V Applicable Requirements and Compliance Activities
- 4) Acid Rain Permitting Fact Sheet
- 5) Acid Rain Permit Renewal Application
- 6) NOx Compliance Plan
- 7) NOx Averaging Plan
- 8) Potential To Emit (PTE) calculations for the Wilson Station Indirect Heat Exchanger
- 9) Suggested Draft Permit for the addition of Reciprocating Engines as Source Points
- 10) Typical and Potential To Emit (PTE) calculations for the Reciprocating Engines

The Acid Rain Permitting Fact Sheet states that "Renewal acid rain permit applications and NOx compliance plans are submitted to the permitting authority at the same time as the associated Title V permit renewal applications". Attached are the Acid Rain Permitting Fact Sheet, Acid Rain Permit Application, NOx Compliance Plan and NOx Averaging Plan.

The Wilson Station has existing stationary reciprocating internal combustion engines (RICE); an emergency diesel generator and an emergency diesel fire pump. The stationary RICE were constructed in 1980 and are subject to the regulations in 40 CFR 63, Subpart ZZZZ. The emergency diesel generator is greater than 500 HP, thus only subject to the operating limitations in 40 CFR 63.6640(f). Information regarding the existing stationary RICE is attached as listed above.

The current permit Section C - Insignificant Activities needs the following revisions;

- 1) Removal of Description Item # 2. Diesel Fire Pump Engines: This will become Emission Unit 6.
- 2) Removal of Description Item # 17. Emergency Diesel Generator: This will become Emission Unit 7.
- 3) Change of Description Item # 16. Diesel UST for Emergency Diesel Generator to Diesel fuel storage tank for Emergency Diesel Generator: UST underwent closure, diesel now stored in AST.
- 4) Removal of Description Item # 19. Space Heater, W69 (propane): The heater was removed.
- 5) The addition of Pressure Washer, Maintenance (propane).
- 6) The addition of Pressure Washer, Coal Handling (diesel).

The pressure washers added to the insignificant activities list are stationary and combust fuel to heat water thus subject to the mandatory Green House Gas Reporting Rule.

If you have any questions or require further information, please contact Mike Galbraith (270-844-6030) or myself (270-844-6176) at any time.

Sincerely,



Mark W. Bertram
Manager, Environmental Services - Air
Big Rivers Electric Corporation

Cc: Mac Cann
Steve Sanders
Ron Gregory
Tom Shaw

**DEP7007AI Form
Administrative Information**

**Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection**

**Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601
(502) 564-3999
<http://www.air.ky.gov/>**

DEP7007AI
Administrative Information
<i>Enter if known</i> AFS Plant ID#
Agency Use Only
Date Received
Log#
Permit#

PERMIT APPLICATION
The completion of this form is required under Regulations 401 KAR 52:020, 52:030, and 52:040 pursuant to KRS 224. Applications are incomplete unless accompanied by copies of all plans, specifications, and drawings requested herein. Failure to supply information required or deemed necessary by the division to enable it to act upon the application shall result in denial of the permit and ensuing administrative and legal action. Applications shall be submitted in triplicate.

1) APPLICATION INFORMATION

Note: The applicant must be the owner or operator. (The owner/operator may be individual(s) or a corporation.)

Name: Big Rivers Electric Corporation

Title: _____ Phone: (270) 827-2561

(If applicant is an individual)

Mailing Address: 201 Third Street
Company _____

Street or P.O. Box: P.O. Box 24

City: Henderson State: KY Zip Code: 42420

Is the applicant (check one): Owner Operator Owner & Operator Corporation/LLC* LP**

* If the applicant is a Corporation or a Limited Liability Corporation, submit a copy of the current Certificate of Authority from the Kentucky Secretary of State.

** If the applicant is a Limited Partnership, submit a copy of the current Certificate of Limited Partnership from the Kentucky Secretary of State.

Person to contact for technical information relating to application:

Name: Mark W. Bertram

Title: Manager, Environmental Services - Air Phone: (270) 844-6176

2) OPERATOR INFORMATION

Note: The applicant must be the owner or operator. (The owner/operator may be individual(s) or a corporation.)

Name: same as above

Title: _____ Phone: _____

Mailing Address: _____
Company _____

Street or P.O. Box: _____

City: _____ State: _____ Zip Code: _____

3) TYPE OF PERMIT APPLICATION

For new sources that currently *do not* hold any air quality permits in Kentucky and are required to obtain a permit prior to construction pursuant to 401 KAR 52:020, 52:030, or 52:040.

Initial Operating Permit (the permit will authorize both construction and operation of the new source)

Type of Source (Check all that apply): Major Conditional Major Synthetic Minor Minor

For existing sources that do not have a source-wide Operating Permit required by 401 KAR 52:020, 52:030, or 52:040.

Type of Source (Check all that apply): Major Conditional Major Synthetic Minor Minor

(Check one only)

Initial Source-wide Operating Permit Modification of Existing Facilities at Existing Plant

Construction of New Facilities at Existing Plant

Other (explain) _____

For existing sources that currently have a source-wide Operating Permit.

Type of Source (Check all that apply): Major Conditional Major Synthetic Minor Minor

Current Operating Permit # V-05-002 R1

Administrative Revision (describe type of revision requested, e.g. name change): _____

Permit Renewal Significant Revision Minor Revision

Addition of New Facilities Modification of Existing Facilities

For all construction and modification requiring a permit pursuant to 401 KAR 52:020, 52:030, or 52:040.

Proposed Date for Start of Construction or Modification: _____

Proposed date for Operation Start-up: _____

4) SOURCE INFORMATION

Source Name: D. B. Wilson Station

Source Street Address: State Hwy. 85

City: Island Zip Code: 42350 County: Ohio

Primary Standard Industrial Classification (SIC) Category: Generation of Electrical Power Primary SIC #: 4911

Property Area (Acres or Square Feet): 2,034 Acres Number of Employees: 102

Description of Area Surrounding Source (check one):
 Commercial Area Residential Area Industrial Area Industrial Park Rural Area Urban Area

Approximate Distance to Nearest Residence or Commercial Property: _____

UTM or Standard Location Coordinates: (Include topographical map showing property boundaries)

UTM Coordinates: Zone 16 Horizontal (km) 492.97635 Vertical (km) 4,144.55651

Standard Coordinates: Latitude 37 Degrees 26 Minutes 58.818 Seconds

Longitude 87 Degrees 04 Minutes 49.934 Seconds

4) SOURCE INFORMATION (CONTINUED)

Is any part of the source located on federal land? Yes No

What other environmental permits or registrations does this source currently hold in Kentucky?
Same as original Title V

What other environmental permits or registrations does this source need to obtain in Kentucky?
None

5) OTHER REQUIRED INFORMATION

Indicate the type(s) and number of forms attached as part of this application.

- | | |
|--|--|
| <input type="checkbox"/> DEP7007A Indirect Heat Exchanger, Turbine, Internal Combustion Engine | <input type="checkbox"/> DEP7007R Emission Reduction Credit |
| <input type="checkbox"/> DEP7007B Manufacturing or Processing Operations | <input type="checkbox"/> DEP7007S Service Stations |
| <input type="checkbox"/> DEP7007C Incinerators & Waste Burners | <input type="checkbox"/> DEP7007T Metal Plating & Surface Treatment Operations |
| <input type="checkbox"/> DEP7007F Episode Standby Plan | <input checked="" type="checkbox"/> DEP7007V Applicable Requirements & Compliance Activities |
| <input type="checkbox"/> DEP7007J Volatile Liquid Storage | <input type="checkbox"/> DEP7007Y Good Engineering Practice (GEP) Stack Height Determination |
| <input type="checkbox"/> DEP7007K Surface Coating or Printing Operations | <input type="checkbox"/> DEP7007AA Compliance Schedule for Noncomplying Emission Units |
| <input type="checkbox"/> DEP7007L Concrete, Asphalt, Coal, Aggregate, Feed, Corn, Flour, Grain, & Fertilizer | <input type="checkbox"/> DEP7007BB Certified Progress Report |
| <input type="checkbox"/> DEP7007M Metal Cleaning Degreasers | <input type="checkbox"/> DEP7007CC Compliance Certification |
| <input type="checkbox"/> DEP7007N Emissions, Stacks, and Controls Information | <input checked="" type="checkbox"/> DEP7007DD Insignificant Activities |
| <input type="checkbox"/> DEP7007P Perchloroethylene Dry Cleaning Systems | |

Check other attachments that are part of this application.

- | <u>Required Data</u> | <u>Supplemental Data</u> |
|---|--|
| <input type="checkbox"/> Map or Drawing Showing Location | <input type="checkbox"/> Stack Test Report |
| <input type="checkbox"/> Process Flow Diagram and Description | <input type="checkbox"/> Certificate of Authority from the Secretary of State (for Corporations and Limited Liability Companies) |
| <input type="checkbox"/> Site Plan Showing Stack Data and Locations | <input type="checkbox"/> Certificate of Limited Partnership from the Secretary of State (for Limited Partnerships) |
| <input checked="" type="checkbox"/> Emission Calculation Sheets | <input type="checkbox"/> Claim of Confidentiality (See 400 KAR 1:060) |
| <input type="checkbox"/> Material Safety Data Sheets (MSDS) | <input checked="" type="checkbox"/> Other (Specify) <u>Acid Rain Permit Renewal</u> |

Indicate if you expect to emit, in any amount, hazardous or toxic materials or compounds or such materials into the atmosphere from any operation or process at this location.

- | | |
|--|--|
| <input type="checkbox"/> Pollutants regulated under 401 KAR 57:002 (NESHAP) | <input checked="" type="checkbox"/> Pollutants listed in 401 KAR 63:060 (HAPS) |
| <input checked="" type="checkbox"/> Pollutants listed in 40 CFR 68 Subpart F [112(r) pollutants] | <input type="checkbox"/> Other: |

Has your company filed an emergency response plan with local and/or state and federal officials outlining the measures that would be implemented to mitigate an emergency release?
 Yes No

Check whether your company is seeking coverage under a permit shield. If "Yes" is checked, applicable requirements must be identified on Form DEP7007V. Identify any non-applicable requirements for which you are seeking permit shield coverage on a separate attachment to the application.
 Yes No A list of non-applicable requirements is attached

**DEP7007DD Form
Insignificant Activities**

DEP7007DD

**INSIGNIFICANT
 ACTIVITIES**

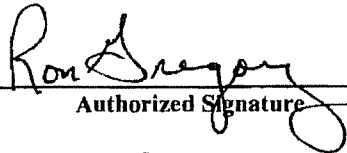
INSIGNIFICANT ACTIVITY CRITERIA

1. Emissions from insignificant activities shall be counted toward the source's potential to emit;
2. Emissions from the activity shall not be subject to a federally enforceable requirement other than generally applicable requirements that apply to all activities and affected facilities such as 401 KAR 59:010, 61:020, 63:010, and others deemed generally applicable by the Cabinet;
3. The potential to emit a regulated air pollutant from the activity or affected facility shall not exceed 5 tons/yr.
4. The potential to emit of a hazardous air pollutant from the activity or affected facility shall not exceed 1,000 pounds/yr., or the de minimis level established under Section 112(g) of the Act, whichever is less;
5. The activity shall be included in the permit application, identifying generally applicable and state origin requirements.

Description of Activity Including Rated Capacity	Generally Applicable Regulations Or State Origin Requirements	Does the Activity meet the Insignificant Activity Criteria Listed Above?
Space Heater, W64	40 CFR 98, Subpart C	Yes
Space Heater, W65	40 CFR 98, Subpart C	Yes
Pressure Washer, Maintenance	40 CFR 98, Subpart C	Yes
Pressure Washer, Coal Handling	40 CFR 98, Subpart C	Yes

SIGNATURE BLOCK

I, THE UNDERSIGNED, HEREBY CERTIFY UNDER PENALTY OF LAW, THAT I AM A RESPONSIBLE OFFICIAL, AND THAT I HAVE PERSONALLY EXAMINED, AND AM FAMILIAR WITH, THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ITS ATTACHMENTS. BASED ON MY INQUIRY OF THOSE INDIVIDUALS WITH PRIMARY RESPONSIBILITY FOR OBTAINING THE INFORMATION, I CERTIFY THAT THE INFORMATION IS ON KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE OR INCOMPLETE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

BY 
 Authorized Signature

Ron Gregory
 Typed or Printed Name of Signatory

12, 6, 11
 Date

Plant Manager, D. B. Wilson Station
 Title of Signatory

**DEP7007V Form
Applicable Requirements and
Compliance Activities**

DIVISION FOR AIR QUALITY

DEP7007V

Applicable Requirements
 & Compliance Activities

APPLICANT NAME: Big Rivers Electric Corporation, D. B. Wilson Station II, KYEIS #21-183-00069

SECTION I. EMISSION AND OPERATING STANDARD(S) AND LIMITATION(S)

KYEIS No. (1)	Emission Unit Description (2)	Contaminant (3)	Origin of Requirement or Standard (4)	Applicable Requirement, Standard, Restriction, Limitation, or Exemption (5)	Method of Determining Compliance with the Emission and Operating Requirement(s) (6)
1	Indirect Heat Exchanger Space Heater, W64 Space Heater, W65	CO2e	40 CFR 98, Subpart C and 40 CFR 98, Subpart D 40 CFR 98, Subpart C 40 CFR 98, Subpart C	Mandatory Greenhouse Gas Reporting Mandatory Greenhouse Gas Reporting Mandatory Greenhouse Gas Reporting	Continuous Emissions Monitors and Fuel Usage Records Fuel Usage Records Fuel Usage Records
6	Pressure Washer, Maintenance	CO2e	40 CFR 98, Subpart C	Mandatory Greenhouse Gas Reporting	Fuel Usage Records
7	Pressure Washer, Coal Handling Emergency Diesel Generator Emergency Diesel Fire Pump	CO2e	40 CFR 98, Subpart C 40 CFR 63, Subpart ZZZZ 40 CFR 63, Subpart ZZZZ	Mandatory Greenhouse Gas Reporting	Fuel Usage Records Fuel Usage Records



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Acid Rain Permitting Fact Sheet

Every emissions source affected by the Acid Rain Program must have a permit. Each acid rain permit specifies the Title IV requirements that apply to each affected unit at a the affected source. All affected sources must submit acid rain permit applications to an EPA-approved state or local Title IV permitting authority, which in turn issues and administers the permit. Every acid rain permit is a portion of a larger Title V permit.

The acid rain permit specifies each unit's allowance allocation and NOx limitation (if applicable), and also specifies compliance plan(s) for the affected source.

Frequently Asked Questions about Acid Rain Permitting

- [Which Affected Sources Must Obtain Permits?](#)
- [Who Represents Affected Sources in Acid Rain Permitting Matters?](#)
- [What Information Must Be Included in Acid Rain Permit Applications?](#)
- [What are Compliance Plans?](#)
 - [SO₂ Compliance Plans](#)
 - [NO_x Compliance Plans](#)
- [What Does the Permitting Authority Do with the Acid Rain Permit Application?](#)
- [When Are the Acid Rain Permit Applications and NO_x Compliance Plans Due?](#)
- [How is an Acid Rain Permit Revised?](#)

Which Affected Sources Must Obtain Permits?

Every affected source must obtain an Acid Rain Permit. However, two types of affected utility units that are not required to be covered by an acid rain permit are small new units burning clean fuels and retired units. These types of units are automatically exempted from the requirement to be covered by an acid rain permit, but must submit an exemption notice to the permitting authority & EPA headquarters.

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Who Represents Affected Sources in Acid Rain Permitting Matters?

The owners and operators of each source must select one person to represent

them in matters pertaining to the Acid Rain Program and may select a second person to act as an alternate for the first. These people are known as the Designated Representative and Alternate Designated Representative, respectively. Both people must be identified in a Certificate of Representation, submitted to EPA headquarters, as having been selected by an agreement binding on the owners and operators of a source.

The Designated Representative is responsible for submitting to EPA and permitting authorities all Acid Rain Program submissions for the source, including allowance transfers, emission monitoring reports, compliance certifications, Excess Emissions Offset Plans, permit applications, and permit revisions. The Designated Representative must sign and attest to the truth and accuracy of each submission. Permits are only issued to a source if EPA has received a Certificate of Representation for the designated representative. The Designated Representative may be changed at any time by the source's owners and operators by submitting a revised Certificate of Representation to EPA.

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What Information Must Be Included in Acid Rain Permit Applications?

The source must submit a complete acid rain permit application to apply for an acid rain permit. Simple and standardized acid rain permitting forms request information about the affected source & affected units, and provide for the selection of compliance plan(s) for each affected unit.

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What are Compliance Plans?

Each affected source must have a compliance plan covering each affected unit. For every affected unit, the plan indicates that the unit will hold enough allowances to cover its annual SO₂ emissions and that it will be operated in compliance with the its NO_x emissions limits, if applicable.

SO₂ Compliance Plans

Beginning January 1, 2000, all affected units must hold sufficient SO₂ allowances by the allowance transfer deadline to account for SO₂ emissions for each calendar year. This is the only SO₂ compliance option in Phase II of the Acid Rain Program, & is automatically denoted in the acid rain permit application.

NO_x Compliance Plans

For affected units subject to an acid rain NO_x emission limitation, there are four compliance options:

Standard Emission Limitations: Each boiler subject to a NO_x emissions limitation may choose to individually meet the standard annual NO_x emission limitation for that boiler type. The boiler types and their respective NO_x limits are as follows: Phase I Group 1 dry bottom wall-fired boilers; 0.50 lb/mmBtu, Phase I Group 1

tangentially fired boilers; 0.45 lb/mmBtu, Phase II Group 1 dry bottom wall-fired boilers; 0.46 lb/mmBtu, Phase II Group 1 tangentially fired boilers; 0.40 lb/mmBtu, cell burner boilers; 0.68 lb/mmBtu, cyclone boilers; 0.86 lb/mmBtu, vertically fired boilers; 0.80 lb/mmBtu, and for wet bottom boilers, 0.84 lb/mmBtu.

NO_x Emissions Averaging: Any boilers subject to a NO_x emissions limitation that are under the control of the same owner or operator and that have a common designated representative may average their NO_x emissions with an approved NO_x averaging plan. Every unit in an averaging plan is deemed to be in compliance with its NO_x emissions limitation if, as a group, the actual Btu-weighted NO_x emissions rate for a calendar year is less than or equal to the rate the group would have had if each unit had emitted at its standard limit rate

Alternative Emission Limitations: If a boiler is unable to meet its standard limit after properly installing and operating the appropriate NO_x emissions reduction technology for that boiler type, the owners and operators may petition EPA and the permitting authority for a less stringent NO_x emissions limitation that is referred to as an AEL. Approval of an AEL is contingent upon a demonstration by the owners and operators that the NO_x emissions control equipment was properly designed, installed, and operated during a designated demonstration period.

Early Election: A Phase II affected unit with a Group 1 boiler that complied with the appropriate Phase I NO_x emission limit by January 1, 1997 is exempt from the more stringent Phase II Group 1 limit until 2008. By encouraging affected sources to comply early with the Phase I limits, emission reductions are achieved early and the utilities can ensure themselves of greater certainty in their long-range planning and electric grid system reliability.

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What Does the Permitting Authority Do with the Acid Rain Permit Application?

State or local title IV permitting authorities administer acid rain permitting programs under both Titles IV and V of the Clean Air Act. States process acid rain permit applications, issue draft acid rain permits for public comment, and submit proposed acid rain permits to EPA for review. Final acid rain permits are then issued by the permitting authorities.

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When Are the Acid Rain Permit Applications and NO_x Compliance Plans Due?

- Initial acid rain permit applications were due by January 1, 1996
- Initial NO_x compliance plans were due by January 1, 1998
- Acid rain permit applications for new units are due 24 months before the unit commences operation

Acid Rain Permit Renewal Application

Permit Requirements

STEP 3

Read the standard requirements.

- (1) The designated representative of each affected source and each affected unit at the source shall:
 - (i) Submit a complete Acid Rain permit application (including a compliance plan) under 40 CFR part 72 in accordance with the deadlines specified in 40 CFR 72.30; and
 - (ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain permit application and issue or deny an Acid Rain permit;
- (2) The owners and operators of each affected source and each affected unit at the source shall:
 - (i) Operate the unit in compliance with a complete Acid Rain permit application or a superseding Acid Rain permit issued by the permitting authority; and
 - (ii) Have an Acid Rain Permit.

Monitoring Requirements

- (1) The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75.
- (2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the source or unit, as appropriate, with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
- (3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements

- (1) The owners and operators of each source and each affected unit at the source shall:
 - (i) Hold allowances, as of the allowance transfer deadline, in the source's compliance account (after deductions under 40 CFR 73.34(c)), not less than the total annual emissions of sulfur dioxide for the previous calendar year from the affected units at the source; and
 - (ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.
- (2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
- (3) An affected unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
 - (i) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or
 - (ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an affected unit under 40 CFR 72.6(a)(3).

D.B. Wilson Station
Facility (Source) Name (from STEP 1)

Sulfur Dioxide Requirements, Cont'd.

STEP 3, Cont'd.

(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.

(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.

(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.

(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements

The owners and operators of the source and each affected unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements

(1) The designated representative of an affected source that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.

(2) The owners and operators of an affected source that has excess emissions in any calendar year shall:

(i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and

(ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements

(1) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:

(i) The certificate of representation for the designated representative for the source and each affected unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;

Recordkeeping and Reporting Requirements, Cont'd.

STEP 3, Cont'd.

- (ii) All emissions monitoring information, in accordance with 40 CFR part 75, provided that to the extent that 40 CFR part 75 provides for a 3-year period for recordkeeping, the 3-year period shall apply.
 - (iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,
 - (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.
- (2) The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability

- (1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
- (2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
- (3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
- (4) Each affected source and each affected unit shall meet the requirements of the Acid Rain Program.
- (5) Any provision of the Acid Rain Program that applies to an affected source (including a provision applicable to the designated representative of an affected source) shall also apply to the owners and operators of such source and of the affected units at the source.
- (6) Any provision of the Acid Rain Program that applies to an affected unit (including a provision applicable to the designated representative of an affected unit) shall also apply to the owners and operators of such unit.
- (7) Each violation of a provision of 40 CFR parts 72, 73, 74, 75, 76, 77, and 78 by an affected source or affected unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities

No provision of the Acid Rain Program, an Acid Rain permit application, an Acid Rain permit, or an exemption under 40 CFR 72.7 or 72.8 shall be construed as:

- (1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an affected source or affected unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating

D.B. Wilson Station Facility (Source) Name (from STEP 1)

Effect on Other Authorities, Cont'd.

STEP 3, Cont'd.

to applicable National Ambient Air Quality Standards or State Implementation Plans;

(2) Limiting the number of allowances a source can hold; *provided*, that the number of allowances held by the source shall not affect the source's obligation to comply with any other provisions of the Act;

(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;

(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,

(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

Certification

STEP 4
Read the certification statement, sign, and date.

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name Mark W. Bertram (Designated Representative)	
Signature <i>Mark W. Bertram</i>	Date <i>12-05-11</i>

NOx Compliance Plan



Phase II NO_x Compliance Plan

For more information, see instructions and refer to 40 CFR 76.9

Page 1 of 2

This submission is: New Revised

STEP 1

Indicate plant name, State, and ORIS code from NADB, if applicable

Plant Name D.B. Wilson Station	KY State	006823 ORIS Code
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STEP 2

Identify each affected Group 1 and Group 2 boiler using the boiler ID# from NADB, if applicable. Indicate boiler type: "CB" for cell burner, "CY" for cyclone, "DBW" for dry bottom wall-fired, "T" for tangentially fired, "V" for vertically fired, and "WB" for wet bottom. Indicate the compliance option selected for each unit.

ID#	W1	ID#	ID#	ID#	ID#
Type	DBW	Type	Type	Type	Type

(a) Standard annual average emission limitation of 0.50 lb/mmBtu (for Phase I dry bottom wall-fired boilers)

(b) Standard annual average emission limitation of 0.45 lb/mmBtu (for Phase I tangentially fired boilers)

(c) EPA-approved early election plan under 40 CFR 76.8 through 12/31/07 (also indicate above emission limit specified in plan)

(d) Standard annual average emission limitation of 0.46 lb/mmBtu (for Phase I dry bottom wall-fired boilers)

(e) Standard annual average emission limitation of 0.40 lb/mmBtu (for Phase I tangentially fired boilers)

(f) Standard annual average emission limitation of 0.68 lb/mmBtu (for cell burner boilers)

(g) Standard annual average emission limitation of 0.86 lb/mmBtu (for cyclone boilers)

(h) Standard annual average emission limitation of 0.80 lb/mmBtu (for vertically fired boilers)

(i) Standard annual average emission limitation of 0.84 lb/mmBtu (for wet bottom boilers)

(j) NO_x Averaging Plan (Include NO_x Averaging form)

(k) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(A) (check the standard emission limitation box above for most stringent limitation applicable to any unit utilizing stack)

(l) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(B) with NO_x Averaging (check the NO_x Averaging Plan box and include NO_x Averaging form)

Plant Name (from Step 1) **D.B Wilson Staton**

STEP 2, cont'd.

ID#	ID#	ID#	ID#	ID#	ID#
W1					
Type DBW	Type	Type	Type	Type	Type
(m) EPA-approved common stack apportionment method pursuant to 40 CFR 76.17(a)(2)(i)(C), (a)(2)(iii)(B), or (b)(2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(n) AEL (include Phase II AEL Demonstration Period, Final AEL Petition, or AEL Renewal form as appropriate)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(o) Petition for AEL demonstration period or final AEL under review by U.S. EPA or demonstration period ongoing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(p) Repowering extension plan approved or under review	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STEP 3
Read the standard requirements and certification, enter the name of the designated representative, sign &

Standard Requirements

General. This source is subject to the standard requirements in 40 CFR 72.8 (consistent with 40 CFR 76.8(e)(1)(i)). These requirements are listed in this source's Acid Rain Permit.

Special Provisions for Early Election Units

Nitrogen Oxides. A unit that is governed by an approved early election plan shall be subject to an emissions limitation for NO_x as provided under 40 CFR 76.8(a)(2) except as provided under 40 CFR 76.8(e)(3)(ii).

Liability. The owners and operators of a unit governed by an approved early election plan shall be liable for any violation of the plan or 40 CFR 76.8 at that unit. The owners and operators shall be liable, beginning January 1, 2000, for fulfilling the obligations specified in 40 CFR Part 77.

Termination. An approved early election plan shall be in effect only until the earlier of January 1, 2008 or January 1 of the calendar year for which a termination of the plan takes effect. If the designated representative of the unit under an approved early election plan fails to demonstrate compliance with the applicable emissions limitation under 40 CFR 76.5 for any year during the period beginning January 1 of the first year the early election takes effect and ending December 31, 2007, the permitting authority will terminate the plan. The termination will take effect beginning January 1 of the year after the year for which there is a failure to demonstrate compliance, and the designated representative may not submit a new early election plan. The designated representative of the unit under an approved early election plan may terminate the plan any year prior to 2008 but may not submit a new early election plan. In order to terminate the plan, the designated representative must submit a notice under 40 CFR 72.40(d) by January 1 of the year for which the termination is to take effect. If an early election plan is terminated any year prior to 2000, the unit shall meet, beginning January 1, 2000, the applicable emissions limitation for NO_x for Phase II units with Group 1 boilers under 40 CFR 76.7. If an early election plan is terminated on or after 2000, the unit shall meet, beginning on the effective date of the termination, the applicable emissions limitation for NO_x for Phase II units with Group 1 boilers under 40 CFR 76.7.

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name	Mark W. Bertram	Manager, Environmental Services - Air Designated Representative
Signature	<i>Mark W. Bertram</i>	Date 12-05-11

NOx Averaging Plan



Phase II NO_x Averaging Plan

For more information, see instructions and refer to 40 CFR 76.11

Page 1

This submission is: New Revised

Page of

STEP 1

Identify the units participating in this averaging plan by plant name, State, and boiler ID# from NADB. In column (a), fill in each unit's applicable emission limitation from 40 CFR 76.5, 76.6, or 76.7. In column (b), assign an alternative contemporaneous annual emissions limitation (ACEL) in lb/mmBtu to each unit. In column (c), assign an annual heat input limitation in mmBtu to each unit. Continue to page 3 if necessary.

Plant Name	State	ID#	(a) Emission Limitation	(b) ACEL	(c) Annual Heat Input Limit
Coleman Station	KY	C1	0.50	0.45	6,854,700
Coleman Station	KY	C2	0.50	0.45	6,854,700
Coleman Station	KY	C3	0.50	0.45	6,946,680
Green Station	KY	G1	0.50	0.45	11,650,800
Green Station	KY	G2	0.50	0.45	11,650,800
HMP&L Station Two	KY	H1	0.50	0.40	6,867,840
HMP&L Station Two	KY	H2	0.50	0.40	6,867,840
Robert Reid	KY	R1	0.46	0.90	7,305,840
D.B. Wilson	KY	W1	0.46	0.40	20,082,300

STEP 2

Use the formula to enter the Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan and the Btu-weighted annual average emission rate for the same units if they are operated in compliance with 40 CFR 76.5, 76.6, or 76.7. The former must be less than or equal to the latter.

Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan

0.47

$$\frac{\sum_{i=1}^n (R_{Li} \times HI_i)}{\sum_{i=1}^n HI_i}$$

Btu-weighted annual average emission rate for same units operated in compliance with 40 CFR 76.5, 76.6 or 76.7

0.49

$$\frac{\sum_{i=1}^n [R_{Li} \times HI_i]}{\sum_{i=1}^n HI_i}$$

≤

Where,

- R_{Li} = Alternative contemporaneous annual emission limitation for unit i, in lb/mmBtu, as specified in column (b) of Step 1;
- R_{0i} = Applicable emission limitation for unit i, in lb/mmBtu, as specified in column (a) of Step 1;
- HI_i = Annual heat input for unit i, in mmBtu, as specified in column (c) of Step 1;
- n = Number of units in the averaging plan

Plant Name (from Step 1) D.B. Wilson Station

NO_x Averaging - Page 2

STEP 3

This plan is effective for calendar year 2012 through calendar year 2017

unless notification to terminate the plan is given.

Mark one of the two options and enter dates.

Treat this plan as identical plans, each effective for one calendar year for the following calendar years: _____, _____, _____, _____ and _____ unless notification to terminate one or more of these plans is given.

STEP 4

Special Provisions

Read the special provisions and certification, enter the name of the designated representative, and sign and date.

Emission Limitations

Each affected unit in an approved averaging plan is in compliance with the Acid Rain emission limitation for NO_x under the plan only if the following requirements are met:

- (i) For each unit, the unit's actual annual average emission rate for the calendar year, in lb/mmBtu, is less than or equal to its alternative contemporaneous annual emission limitation in the averaging plan, and
- (a) For each unit with an alternative contemporaneous emission limitation less stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year does not exceed the annual heat input limit in the averaging plan,
- (b) For each unit with an alternative contemporaneous emission limitation more stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year is not less than the annual heat input limit in the averaging plan, or
- (ii) If one or more of the units does not meet the requirements of (i), the designated representative shall demonstrate, in accordance with 40 CFR 76.11(d)(1)(ii)(A) and (B), that the actual Btu-weighted annual average emission rate for the units in the plan is less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitations in 40 CFR 76.5, 76.6, or 76.7.
- (iii) If there is a successful group showing of compliance under 40 CFR 76.11(d)(1)(ii)(A) and (B) for a calendar year, then all units in the averaging plan shall be deemed to be in compliance for that year with their alternative contemporaneous emission limitations and annual heat input limits under (i).

Liability

The owners and operators of a unit governed by an approved averaging plan shall be liable for any violation of the plan or this section at that unit or any other unit in the plan, including liability for fulfilling the obligations specified in part 77 of this chapter and sections 113 and 411 of the Act.

Termination

The designated representative may submit a notification to terminate an approved averaging plan, in accordance with 40 CFR 72.40(d), no later than October 1 of the calendar year for which the plan is to be terminated.

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Manager, Environmental Services - Air	
Name <u>Mark W. Bertram</u> Designated Representative	
Signature <u>Mark W. Bertram</u>	Date <u>12-05-11</u>

Potential To Emit (PTE) calculations for the
Wilson Station Indirect Heat Exchanger

Wilson Station Indirect Heat Exchanger Emissions Calculations Potential to Emit

Indirect Heat Exchanger, Potential To Emit:			
Description: Wilson Station Unit One			
Assumptions:			
Operating Hours			3760
Conversion			2,000 lb/ton
Maximum Hourly Operation Rate			199.348 tons/hour
Emissions calculations: Emission rate x operation rate x operating hours x conversions			
	Emission Rate (lb/ton)	lb/hr	lb/yr
Arsenic	4.1E-04	0.0817	715.9783
Chromium	2.6E-04	0.0518	454.0350
Cobalt	1.0E-04	0.0199	174.6288
Manganese	4.9E-04	0.0977	855.6814
CO2	6250	1245925.0	10914303000.0
N2O	0.03	5.9804	52388.6544
Lead	4.2E-04	0.0837	733.4412
Antimony	1.8E-05	0.0036	31.4332
HF	0.15	29.9022	261943.2720
HCl	1.20	239.2176	2095546.1760
Mercury	8.3E-05	0.0165	144.9419
			5457151.5
			0.3580
			0.2270
			0.0873
			0.4278
			26.1943
			0.3667
			0.0157
			130.9716
			1047.7731
			0.0725
Notes:			
Emissions Rates based on: AP-42 1.1-18 controlled EF for Trace Metals, AP-42 1.1-19 EF for N2O, AP-42 1.1-15 EF for HF and HCl, and AP-42 1.1-20 EF for CO2.			

**Suggested Draft Permit for the addition of
Reciprocating Engines as Source Points**

Emission Unit 6: Existing CI Emergency RICE <500 HP

Emission Unit	Description	Model Year	Maximum Engine Rating	Fuel	Control Equipment
6	Cummins Model NT-855-F2, Serial 48247 (Emergency Fire Pump)	1980	380 HP	Diesel	None

APPLICABLE REGULATIONS:

40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (ICE).

1. Operating Limitations:

- (a) Beginning no later than May 3, 2013, for each unit the permittee shall
- i. Change oil and filter every 500 hours of operation or annually, whichever comes first, or change oil utilizing an oil analysis program according to the methods and requirements in order to extend the specified oil change requirements;
 - ii. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; and
 - iii. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.
 - iv. Minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply.

[40 CFR 63.6602, 40 CFR 63.6625(e), 40 CFR 63.6595(a), and 40 CFR 63.6625(i)]

- (b) The permittee must install a non-resettable hour meter if one is not already installed. [40 CFR 63.6625(f)]

Compliance Demonstration:

1. The permittee must operate and maintain the engine according to the manufacturer's emission-related operating and maintenance instructions, or develop and follow your own maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR 63.6625(e)]
2. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for fifty (50) hours per year is prohibited. There is no limit on the use of emergency stationary RICE in emergency situations. Maintenance checks and readiness testing of this unit is limited to 100 hours per year. Operation of the unit in non-emergency situations is counted towards the 100 hours per year provided for maintenance and testing, including, as provided in 40 CFR 63.6640(f)(1)(i), 40 CFR 63.6640(f)(1)(ii), for demand response 40 CFR 63.6640(f)(1)(iii).
3. The permittee must be in compliance with the emission limitations and operating limitations in this subpart that apply at all times. [40 CFR 63.6605(a)]

2. Emission Limitations:

None

3. Testing Requirements:

None

4. Specific Monitoring Requirements:

(a) Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the amount of fuel usage on a monthly basis.

5. Specific Recordkeeping Requirements:

(a) The permittee must keep records of each notification and report that is submitted, the occurrence and duration of each malfunction of operation or the air pollution control and monitoring equipment, records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(viii), records of all required maintenance performed on the air pollution control and monitoring equipment, and records of action taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. [40 CFR 63.6655(a)]

(b) The permittee shall maintain records of the maintenance conducted on the engine in order to demonstrate that the engine was operated and maintained, including any after-treatment control device, according to the maintenance plan for the engine.

[40 CFR 63.6655(e)]

(c) If the engine is not certified to the standards applicable to non-emergency engines (see Table 2d to 40 CFR 63 Subpart ZZZZ), then the permittee must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee must document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engine is used for demand response, records must be kept of the notification of the emergency situation, and the time the engine was operated as part of demand response. [40 CFR 63.6655(f)(1)]

6. Specific Reporting Requirements:

(a) The permittee must report each instance in which the operating limitations in Subsection 1 have not been met. These instances are deviations from the emission and operating limitation in 40 CFR 63 Subpart ZZZZ and must be reported according to 40 CFR 63.6650. [40 CFR 63.6640(b)]

(b) The permittee must report each instance in which the requirements of Table 8 to 40 CFR 63 Subpart ZZZZ, that apply, have not been met. The notifications listed 40 CFR 63.7(b) and (c), 40 CFR 63.8(e), (f)(4) and (f)(6), 40 CFR 63.9(b) through (e) and (g) are not required. [40 CFR 63.6645(a)(5)]

(c) See Section F.

Emission Unit 7: Existing CI Emergency RICE >500 HP

Emission Unit	Description	Model Year	Maximum Engine Rating	Fuel	Control Equipment
7	Detroit Model 91237305, Serial AB91393DM (Emergency Generator)	1980	380 HP	Diesel	None

APPLICABLE REGULATIONS:

40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (ICE).

1. Operating Limitations:

The emergency engine must be operated according to the following conditions;

1. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for fifty (50) hours per year is prohibited. There is no limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance.
[40 CFR 63.6640(f)(2)(i), 40 CFR 63.6640(f)(2)(ii), 40 CFR 63.6640(f)(2)(iii)]

2. Emission Limitations:

None

3. Testing Requirements:

None

4. Specific Monitoring Requirements:

Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor the hours of operation in non-emergency situations other than maintenance and testing.

5. Specific Recordkeeping Requirements:

None

6. Specific Reporting Requirements:

None

Typical and Potential To Emit (PTE) calculations
for the Reciprocating Engines

Wilson Station Emergency Diesel Emissions Calculations Typical Emissions

Emergency Fire Pump, Typical Emissions:						
Description: Cummins Subpart ZZZZ Diesel Engine, 380 HP (full standby)						
Assumptions:						
Operating Hours						
Conversion						
Estimate based on 0.5 hr/month 2,000 lb/ton 7,000 Btu/hp-hr 138.69 MMBtu/1000gal						
Engine rating 360 hp 2.66 MMBtu/hr 19.17946 gal/hr						
Emissions calculations: Emission rate x engine rating x operating hours x conversions						
Pollutant	Emission Factor lb/MMBtu	Emission Factor Source	Emission Factor lb/1000gal	lb/hr	lb/yr	Tons/yr
PM	0.31	AP-42 3.3-1	4.30E+01	0.82	4.95	0.00247
PM10	0.31	AP-42 3.3-1	4.30E+01	0.82	4.95	0.00247
PM2.5	0.31	AP-42 3.3-1	4.30E+01	0.82	4.95	0.00247
NOx	4.41	AP-42 3.3-1	6.12E+02	11.73	70.38	0.03519
SO2	0.29	AP-42 3.3-1	4.02E+01	0.77	4.63	0.00231
CO	0.95	AP-42 3.3-1	1.32E+02	2.53	15.16	0.00758
TOC	0.35	AP-42 3.3-1	4.85E+01	0.93	5.59	0.00279
Benzene	9.33E-04	AP-42 3.3-2	1.29E-01	0.0025	0.0149	0.000007
Toluene	4.09E-04	AP-42 3.3-2	5.67E-02	0.0011	0.0065	0.000003
Xylene	2.85E-04	AP-42 3.3-2	3.95E-02	0.0008	0.0045	0.000002
CO2	1.64E+02	AP-42 3.3-1	2.27E+04	436.24	2617.44	1.309

Notes:
 *No available AP-42 emissions factor for VOC. VOC concentration assumed as TOC.

Wilson Station Emergency Diesel Emissions Calculations Potential to Emit

Emergency Fire Pump, Potential to Emit:									
Description: Cummins Subpart ZZZZ Diesel Engine, 380 HP (full standby)									
Assumptions:									
Operating Hours	5000 PTE, from EPA Guidance document dated January 25, 1995								
Conversion	2,000 lb/ton								
	7,000 Btu/hp-hr								
	138.69 MMBtu/1000gal								
Engine rating	380 hp								
	2.66 MMBtu/hr								
	19.17946 gal/hr								
Emissions calculations: Emission rate x engine rating x operating hours x conversions									
Pollutant	Emission Factor lb/MMBtu	Emission Factor lb/1000gal	Source	Emission Factor lb/hr	lb/yr	Tons/yr			
PM	0.31		AP-42 3.3-1	4.30E+01	412.30	0.20615			
PM10	0.31		AP-42 3.3-1	4.30E+01	412.30	0.20615			
PM2.5	0.31		AP-42 3.3-1	4.30E+01	412.30	0.20615			
NOx	4.41		AP-42 3.3-1	6.12E+02	5865.30	2.93265			
SO2	0.29		AP-42 3.3-1	4.02E+01	385.70	0.19285			
CO	0.95		AP-42 3.3-1	1.32E+02	1263.50	0.63175			
TOC	0.35		AP-42 3.3-1	4.85E+01	465.50	0.23275			
Benzene	9.33E-04		AP-42 3.3-2	1.29E-01	1.2409	0.000620			
Toluene	4.09E-04		AP-42 3.3-2	5.67E-02	0.5440	0.000272			
Xylene	2.85E-04		AP-42 3.3-2	3.95E-02	0.3791	0.000190			
CO2	1.64E+02		AP-42 3.3-1	2.27E+04	218120.00	109.060			
Notes:									
*No available AP-42 emissions factor for VOC. VOC concentration assumed as TOC.									

Wilson Station Emergency Diesel Emissions Calculations Typical Emissions

Emergency Diesel Generator, Typical Emissions:						
Description: Detroit Subpart ZZZZ Diesel Engine, 1130 HP (full standby)						
Assumptions:						
Operating Hours		Estimate based on 0.5 hr/month				
Conversion		2,000 lb/ton				
		7,000 Btu/hp-hr				
		138.69 MMBtu/1000gal				
Engine rating		1130 hp		7.91 MMBtu/hr		57.03367 gal/hr
Emissions calculations: Emission rate x engine rating x operating hours x conversions						
Pollutant	Emission Factor lb/MMBtu	Emission Factor Source	Emission Factor lb/1000gal	lb/hr	lb/yr	Tons/yr
PM	0.31	AP-42 3.3-1	4.30E+01	2.45	14.71	0.00736
PM10	0.31	AP-42 3.3-1	4.30E+01	2.45	14.71	0.00736
PM2.5	0.31	AP-42 3.3-1	4.30E+01	2.45	14.71	0.00736
NOx	4.41	AP-42 3.3-1	6.12E+02	34.88	209.30	0.10465
SO2	0.29	AP-42 3.3-1	4.02E+01	2.29	13.76	0.00588
CO	0.95	AP-42 3.3-1	1.32E+02	7.51	45.09	0.02254
TOC	0.35	AP-42 3.3-1	4.85E+01	2.77	16.61	0.00831
Benzene	9.33E-04	AP-42 3.3-2	1.29E-01	0.007	0.044	0.00002
Toluene	4.09E-04	AP-42 3.3-2	5.67E-02	0.003	0.019	0.00001
Xylene	2.85E-04	AP-42 3.3-2	3.95E-02	0.002	0.014	0.00001
CO2	1.64E+02	AP-42 3.3-1	2.27E+04	1297.24	7783.44	3.892

Notes:

No available AP-42 emissions factor for VOC. VOC concentration assumed as TOC.

BIG RIVERS ELECTRIC CORPORATION

**APPLICATION OF BIG RIVERS ELECTRIC CORPORATION
FOR APPROVAL OF ITS 2012 ENVIRONMENTAL COMPLIANCE PLAN,
FOR APPROVAL OF ITS AMENDED ENVIRONMENTAL COST
RECOVERY SURCHARGE TARIFF, FOR CERTIFICATES OF PUBLIC
CONVENIENCE AND NECESSITY, AND FOR AUTHORITY TO
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1 **Item 44)** *Refer to the November 11, 2011 Budget Letter from Siemens*
2 *regarding SESS Budget Proposal No. 4296.*

3

4 *a. Identify the SO₂ removal percentage being achieved by the*
5 *wet FGD at the Coleman facility.*

6 *b. Given that SESS Budget Proposal No. 4296 is proposing a*
7 *“design which is expected to provide Wilson Unit 1 with*
8 *SO₂ removal levels similar to the Coleman facility,” if the*
9 *wet FGD at the Coleman facility is achieving less than*
10 *99% removal, identify the additional capital and O&M*
11 *costs over those in the SESS Budget Proposal that would*
12 *be needed for the wet FGD at Wilson Unit 1 to achieve an*
13 *average annual SO₂ removal of 99%.*

14

15 **Response)**

16 *a. Please see the table below displaying the SO₂ removal*
17 *percentage by the Coleman FGD for the last 5 years (2007 –*
18 *2011). The listed percentages are for SO₂ removal of flue gas*
19 *that flows through the Coleman FGD and does not include any*
20 *bypass emissions.*

21

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Coleman Scrubber Performance					
Year	2007	2008	2009	2010	2011
FGD SO₂ Removal Efficiency, %	98.7	97.7	97.5	95.9	96.1

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Note that Big Rivers made an economic decision to use lower grade limestone, which resulted in lower removal efficiency than achievable. This economic decision was made due to the declining value of SO₂ allowances versus the cost savings of the lower quality limestone.

- b. As shown above, the Coleman FGD system is capable of near 99% removal efficiency (98.7%). The SESS proposal was increased slightly to cover any minimal design change (maximizing liquid/gas contact) needed to achieve 99% removal efficiency. Please see Big Rivers' response to Item 13 of these responses (SC 2-13) for the O&M cost increase for utilizing a higher quality limestone

Witness) Robert W. Berry

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1 **Item 45)** *Refer to page 7 of the Big Rivers 2010 IRP, Appendix B.*

2

3 *a. Explain the basis for limiting the Big Rivers energy*
4 *efficiency program budget to \$11.2 million from 2011-2020.*

5 *b. State what level of annual energy efficiency program*
6 *budget would be needed to achieve the level of energy*
7 *savings and peak demand reduction identified for the*
8 *achievable potential scenario.*

9 *c. Identify the basis for assuming a 30% market penetration*
10 *by 2020 for achievable cost effective energy efficiency*
11 *programs, rather than a higher market penetration level.*
12 *Produce any documents supporting or regarding that 30%*
13 *market penetration assumption.*

14

15 **Response)**

16 *a. The \$11.2 million from 2011-2020 is based on a projected budget*
17 *of \$1 million in 2011, followed by an increase of 2.5% annually*
18 *from 2012-2020. The projected 2011 budget of \$1 million is*
19 *approximately 1% of rural system sales in 2011.*

20 *b. The achievable potential scenario was estimated to result in an*
21 *approximate cost of \$48 million over the 10 year study period*

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1 (2011-2020). This results in an average annual cost of \$4.8
2 million dollars.
3 c. Estimates of achievable potential can vary widely depending on
4 the assumed level of penetration and incentives. Maximum
5 achievable potential is typically represented by an
6 unconstrained budget with 100% incentives, aggressive and
7 sustained marketing and program designs, and high levels of
8 market penetration. For example, the Northwest Power and
9 Conservation Council assumes maximum achievable penetration
10 at 85%. This is based on the widely-referenced "Hood River
11 Project" that performed a community-wide direct install,
12 primarily weatherization effort. There was no cost to customers,
13 and the 85% represents the portion of measures installed.
14 However, the National Energy Efficiency Best Practices
15 Study concluded that use of an incentive level of 100% of
16 measure costs is not recommended or realistic as a program
17 strategy. This best practices report notes that if incentives are
18 set too high, free-ridership rates will increase and dilute the
19 market impact of program dollars. Big Rivers opted to set the
20 achievable potential estimate incentive levels at a more
21 conservative 35% of incremental measure cost in an effort to
22 encourage potential participants (in an effort not to overpay

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1 participants and simultaneously allow a more constrained
2 budget to impact additional participants) . The study then
3 linearly estimated the achievable potential long-term
4 participation at 30% based on a ratio of (Achievable Incentive %
5 / Max. Achievable Incentive % : Achievable Penetration Rate /
6 Max. Achievable Penetration Rate, or 35%/100%: X/85% = 30%).
7
8
9 **Witness)** Robert W. Berry
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1 **Item 46)** *Refer to p. 29 of the Big Rivers 2010 IRP, Appendix B.*

2

3

*a. State how the annual avoided energy costs identified in
Table 5.1 compare to the annual energy costs assumed in
the 2012 Plan.*

4

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6

*b. State how the annual avoided capacity costs identified in
Table 5.2 compare to the annual capacity costs assumed
in the 2012 Plan.*

7

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9

*c. Identify the levels of economic, achievable, and program
potential energy and capacity savings using the annual
energy and capacity costs assumed in the 2012 Plan
rather than the annual energy and capacity costs
assumed in the 2010 IRP.*

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15 **Response)**

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*a. The avoided costs for energy used in the 2010 IRP analysis were
the same as those used in the 2012 Plan.*

17

18

*b. The avoided costs for capacity used in the 2010 IRP analysis
were the same as those used in the 2012 Plan.*

19

20

*c. Due to no changes in the assumed avoided cost of energy and
capacity between the 2012 Plan and 2010 IRP, there would be*

21

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1 no resulting change in the levels of economic, achievable, and
2 program potential energy and capacity savings.

3

4 **Witness)** Robert W. Berry

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1 **Item 47)** *With regards to either of Big Rivers' two smelter customers,*
2 *identify:*

3

4 *a. Any energy efficiency, demand side management, or*
5 *demand response programs that Big Rivers has evaluated*
6 *to achieve energy savings or reduce peak demand for*
7 *either of the two smelters.*

8 *b. Any energy efficiency, demand side management, or*
9 *demand response programs that Big Rivers has offered to*
10 *either of the two smelters.*

11 *c. Any energy efficiency, demand side management, or*
12 *demand response program that either of the two smelters*
13 *is currently implementing*

14

15 **Response)**

16 a. Please see Big Rivers' response to Item 26 of these responses.

17 b. Current demand side management offerings are available to
18 members under the Rural Deliver Service tariff only.

19 c. Please see Big Rivers' response to Item 26 of these responses.

20

21

22 **Witness)** Robert W. Berry

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Item 48)

[REDACTED]

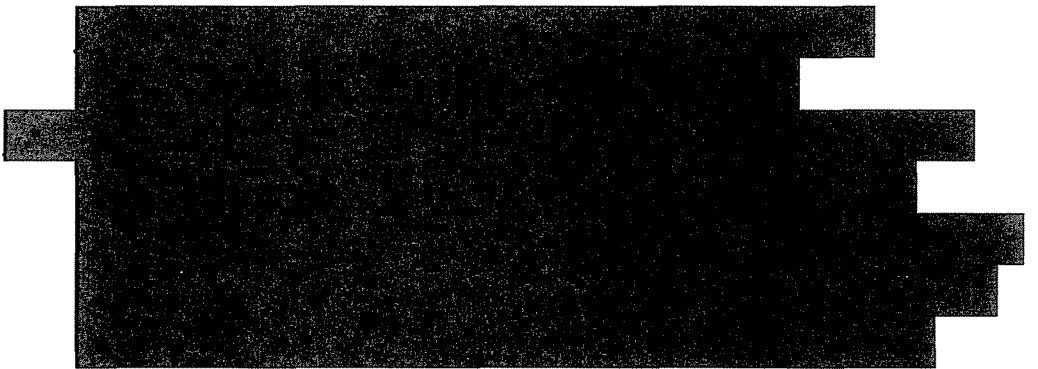
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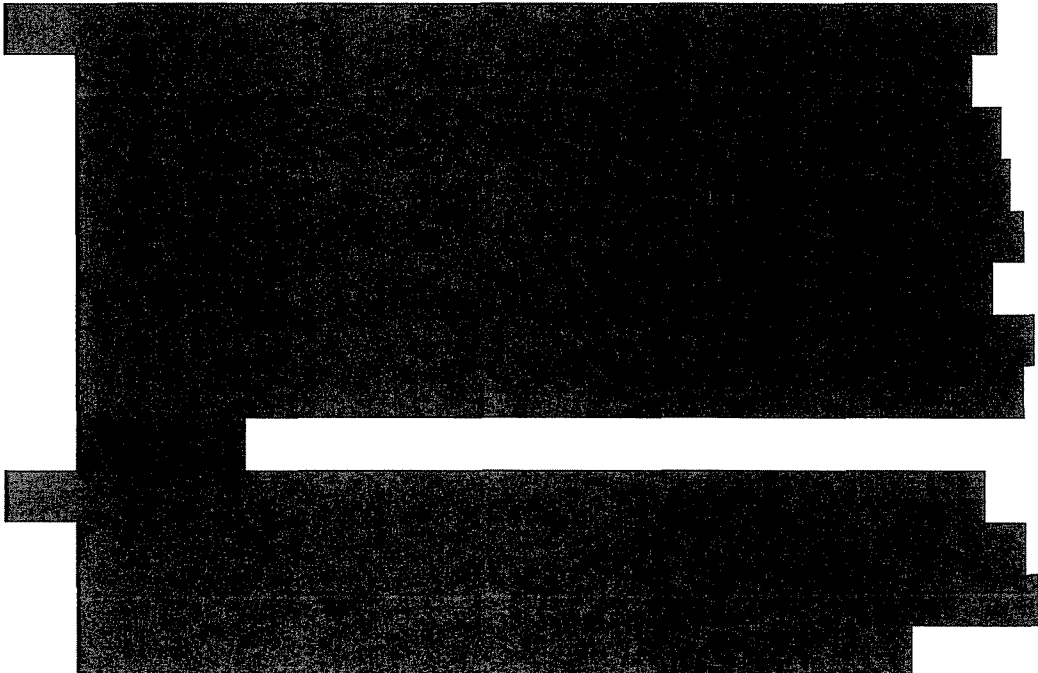
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Response)



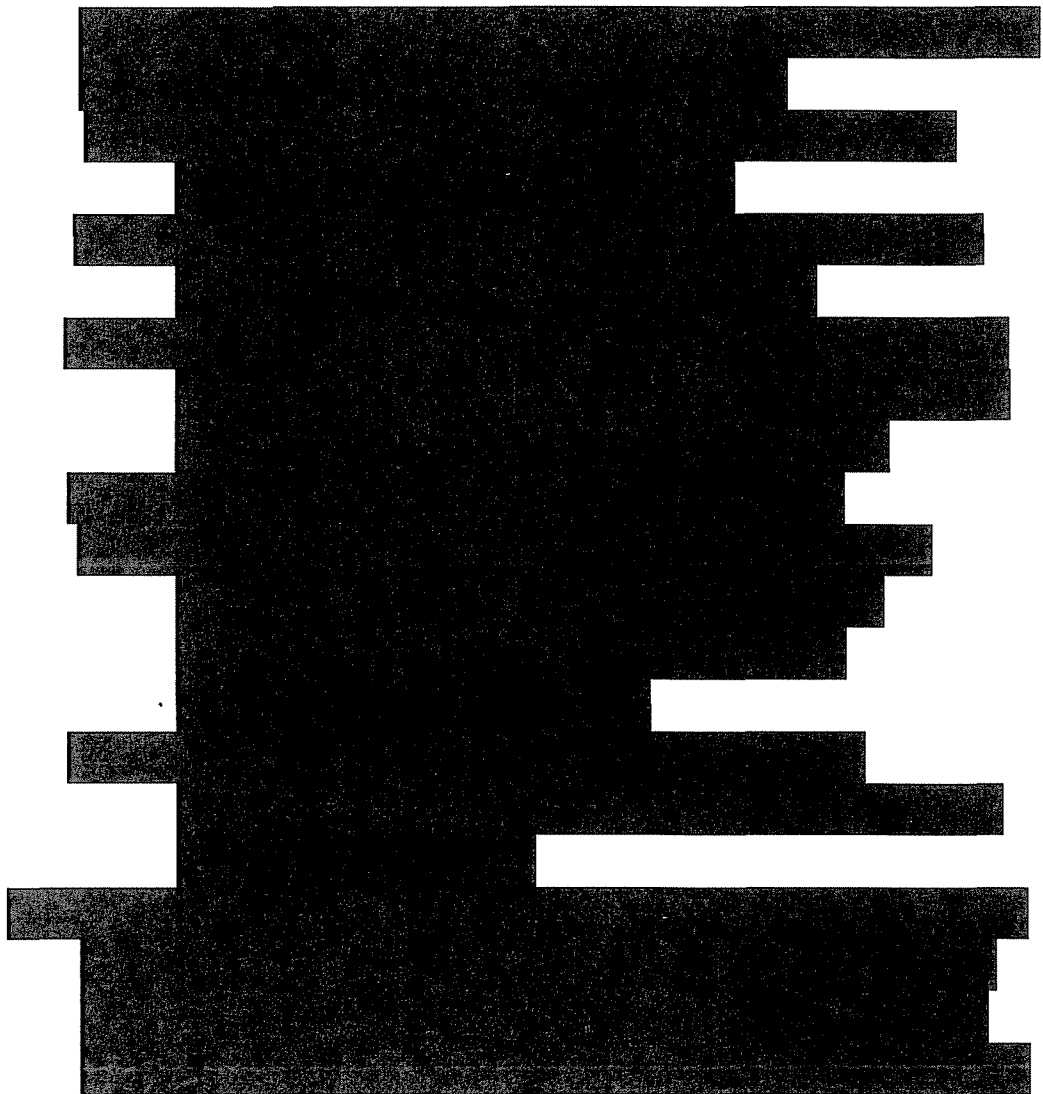
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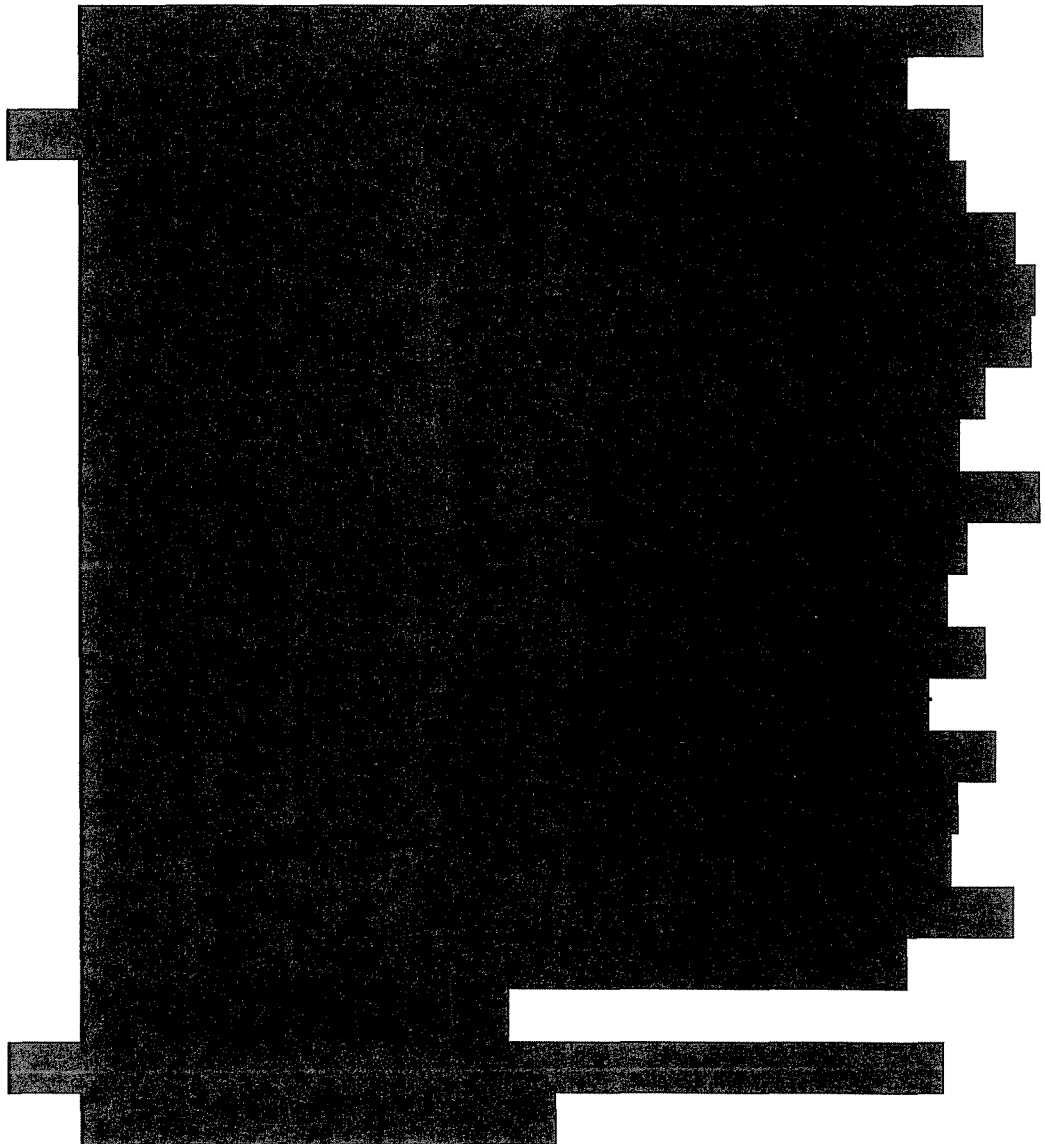
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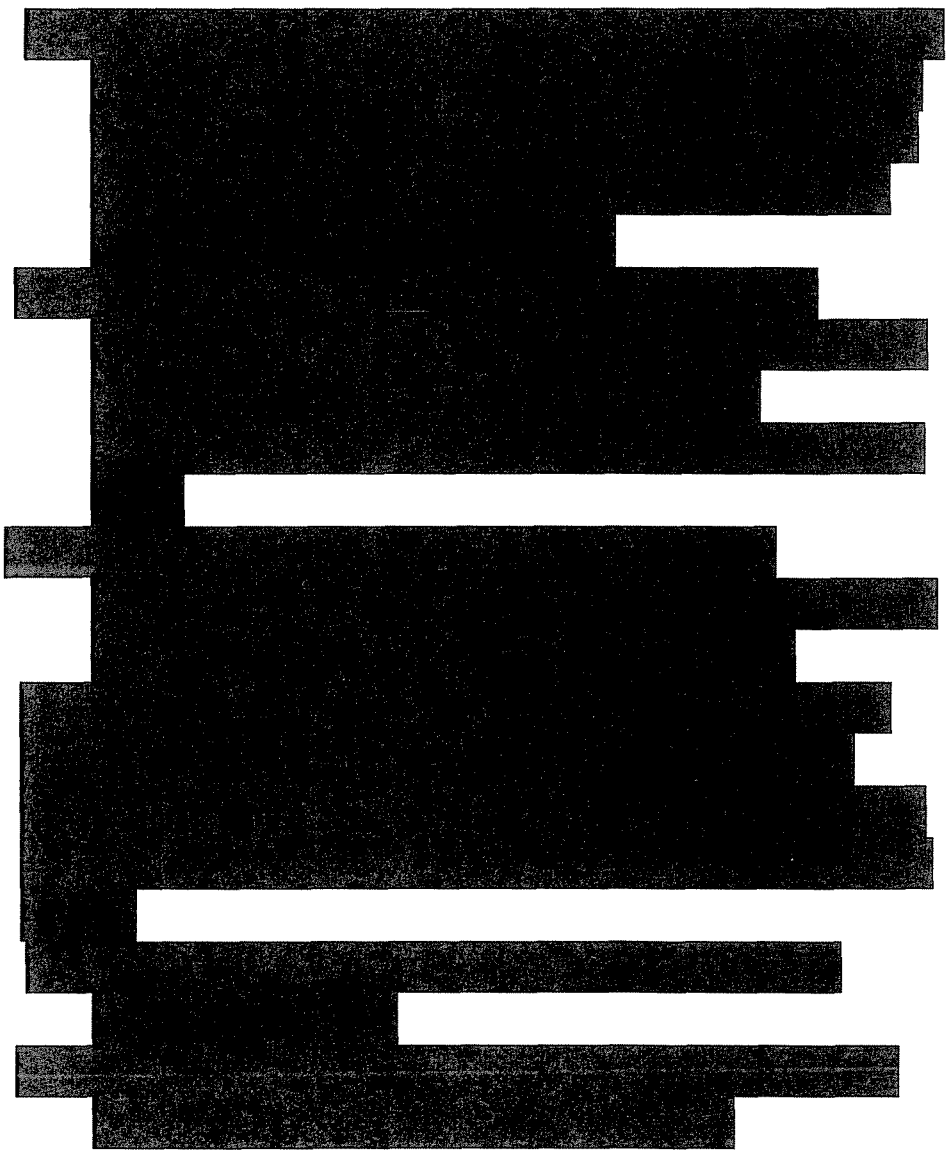
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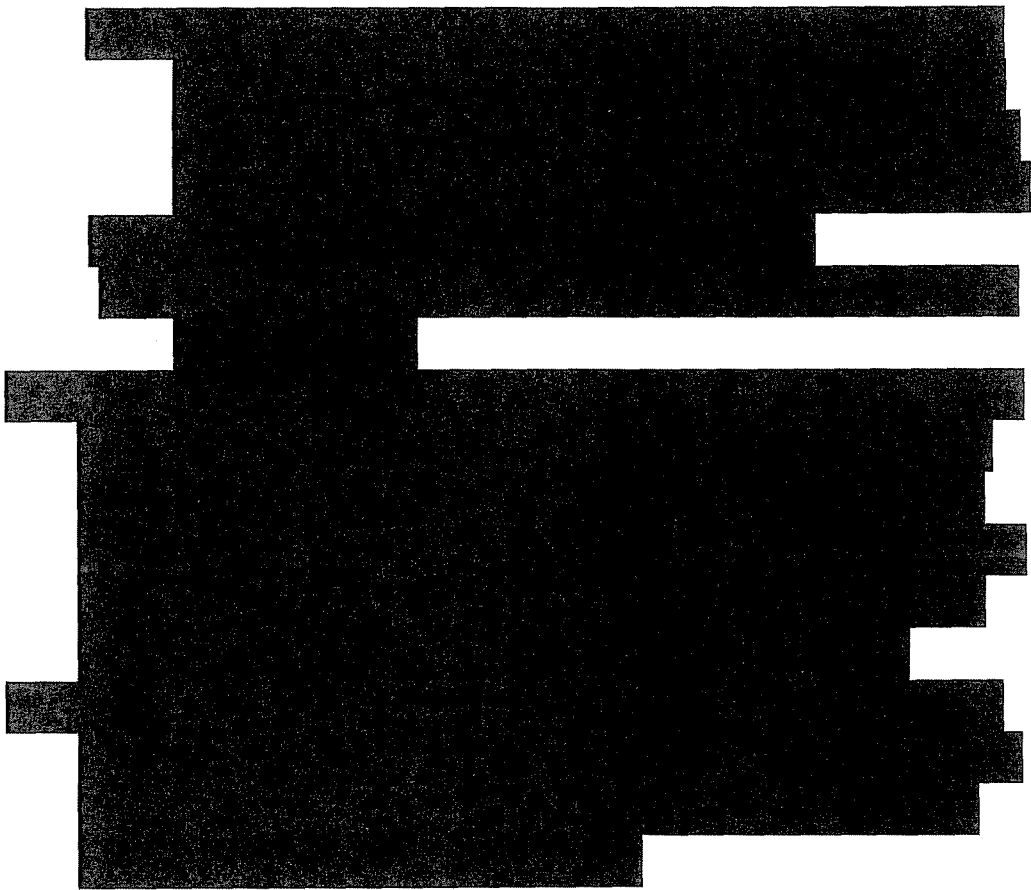
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Witness) Patrick N. Augustine