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November 7, 2018

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COMMISSION

VIA FedEx OVERNIGHT DELIVERY

Ms. Gwen R. Pinson
Executive Director
Public Service Commission of Kentucky
211 Sower Boulevard
Frankfort, KY 40601

Re: *In the Matter of: 2017 Integrated Resource Plan of Big Rivers Electric Corporation - Case No. 2017-00384*

Dear Ms. Pinson:

Enclosed for filing in the above-referenced matter are an original and ten (10) copies of Big Rivers Electric Corporation's written response to the comments filed by the Office of the Attorney-General, Kentucky Industrial Utility Customers, Inc., and Ben Taylor and the Sierra Club, and the public comments filed by Southern Renewable Energy Association. I certify that, on this date, copies of this letter and all public attachments were served on each of the persons listed on the attached service list by express overnight delivery.

Sincerely,

A handwritten signature in black ink, appearing to read "TK" or similar initials.

Tyson Kamuf
Corporate Attorney,
Big Rivers Electric Corporation
tyson.kamuf@bigrivers.com

cc: Service List
Roger D. Hickman

BIG RIVERS ELECTRIC CORPORATION

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

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PUBLIC SERVICE
COMMISSION

1 COMMONWEALTH OF KENTUCKY
2 BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION

3 In the Matter of:

4
5 THE 2017 INTEGRATED RESOURCE) CASE NO.
6 PLAN OF BIG RIVERS ELECTRIC) 2017-00384
7 CORPORATION)

8 **BIG RIVERS ELECTRIC CORPORATION'S RESPONSE TO COMMENTS**

9 Comes Big Rivers Electric Corporation ("*Big Rivers*"), by counsel, and
10 respectfully files this response to the comments respecting Big Rivers' 2017
11 Integrated Resource Plan ("*IRP*") filed by the Attorney General of the
12 Commonwealth of Kentucky (the "*Attorney General*"), Kentucky Industrial Utility
13 Customers, Inc. ("*KIUC*"), and Ben Taylor and Sierra Club (collectively, "*Sierra*
14 *Club*"); and to the public comments filed by Southern Renewable Energy
15 Association ("*SREA*").

16 I. INTRODUCTION

17 Big Rivers' IRP must be viewed in the context of its long-term plan to address
18 the loss of approximately 850 MW of native load, 68% of energy sales, and 65% of
19 total revenue that resulted when two aluminum smelters left the Big Rivers system
20 on August 14, 2013, and January 31, 2014. As the Public Service Commission
21 ("*Commission*") is aware, prior to 2012, these smelters were threatening closure
22 because of world aluminum market conditions, and in order to preserve the jobs and
23 economic benefits that the smelters provide to western Kentucky, the Commission
24 approved contractual arrangements among Big Rivers, the smelters, and Kenergy

1 Corp. (“*Kenergy*”)¹ to allow Kenergy to obtain the power needed to serve the
2 smelters from the market rather than from Big Rivers.²

3 When the smelters gave notice in 2012 and 2013 that they were terminating
4 their existing contractual arrangements with Big Rivers and ceasing smelting
5 operations in Kentucky, the immediate effect on Big Rivers included the loss of its
6 investment grade credit ratings. In a matter of three days beginning February 4,
7 2013, the three credit rating agencies that rated Big Rivers or its debt reduced their
8 ratings to below investment grade.³ Those actions triggered a mandatory notice by
9 Big Rivers to the Rural Utilities Service (“*RUS*”) of the ratings downgrades.⁴ To
10 avoid a default under Big Rivers’ loan contract with RUS, Big Rivers had to provide
11 the RUS a satisfactory “corrective plan” by which Big Rivers would regain at least
12 two of its investment grade ratings. Big Rivers is currently operating under the
13 updated version of the corrective plan dated July 29, 2016.

14 The loss of nearly 60% of native load would have been insurmountable for
15 many utilities, but Big Rivers had taken steps to prepare for the potential loss of
16 the smelter load. For example, prior to the smelter departure, Big Rivers
17 established a \$35 million reserve account to provide temporary cash support in the

¹ Kenergy is the Big Rivers Member Distribution Cooperative that provides retail electric service to the smelters.

² See P.S.C. Case Nos. 2013-00221 and 2013-00413.

³ Fitch Ratings, Inc. (“*Fitch*”) (on February 6, 2013), S&P Global Ratings (“*S&P*”) (on February 4, 2013), and Moody’s Investors Services, Inc. (“*Moody’s*”) (on February 6, 2013) downgraded the credit ratings on Big Rivers’ \$83.3 million County of Ohio, KY Pollution Control Refunding Revenue Bonds, Series 2010A. In addition, S&P downgraded its long-term rating on Big Rivers.

⁴ Big Rivers notified RUS in writing on February 7, 2013, of its failure to maintain two Credit Ratings of Investment Grade. Big Rivers provided a corrective plan to RUS in 2013, and a second corrective plan to RUS on March 25, 2015. An update to the 2015 plan was provided to RUS on July 29, 2016.

1 event the smelters closed on short notice; Big Rivers built transmission system
2 improvements that would enable it to export and sell all of the smelter load if the
3 smelters closed;⁵ and Big Rivers convinced the General Assembly to amend a state
4 statute to permit Big Rivers to sell the smelter load to non-members if the smelters
5 closed.⁶ Big Rivers also developed a “Load Concentration Analysis and Mitigation
6 Plan” (the “*Mitigation Plan*”)⁷ that outlined Big Rivers’ analysis of the steps that it
7 could take in the event of smelter closures to mitigate the economic effects of the
8 potential loss of load on Big Rivers and its Members. That plan includes, among
9 many other things, seeking rate increases to offset any immediate net revenue loss
10 associated with the smelter load loss, and then stabilizing Member rates by idling
11 or reducing generation while the power market price does not support the cost of
12 generating, and by marketing excess power through the expansion of existing load
13 and long-term bilateral power sales contracts. The Commission has endorsed Big
14 Rivers’ Mitigation Plan, noting that Big Rivers’ excess generation was “not the
15 result of any imprudent decisions by Big Rivers” and saying, “Further, we find it
16 reasonable to afford Big Rivers the time to pursue its mitigation strategies,

⁵ See *In the Matter of: Application of Big Rivers Electric Corporation for a Certificate of Public Convenience and Necessity to Construct a 161 kV Transmission Line in Ohio County, Kentucky*, Order, P.S.C. Case No. 2007-00177 (Oct. 30, 2007).

⁶ See *In the Matter of: The Applications of Big Rivers Electric Corporation for: (1) Approval of Wholesale Tariff Additions for Big Rivers Electric Corporation, (2) Approval of Transactions, (3) Approval to Issue Evidences of Indebtedness, and (4) Approval of Amendments to Contracts; and of E.On U.S., LLC, Western Kentucky Energy Corp., and LG&E Energy Marketing, Inc. for Approval of Transactions*, P.S.C. Case No. 2007-00455, Joint Applicants’ Post-Hearing Brief, at p. 45 (Dec. 31, 2008) (describing 2006 amendment to KRS 279.120).

⁷ The Mitigation Plan was submitted to the Commission in Big Rivers’ second smelter-related rate case (P.S.C. Case No. 2013-00199) pursuant to Post-Hearing Data Request Item 4, subject to a petition for confidential treatment.

1 including operational changes to reduce costs, seeking to acquire replacement load,
2 increasing off-system sales, and attempting to sell or lease its generating facilities.”⁸

3 Since the first smelter issued its termination notice, Big Rivers has diligently
4 pursued its Mitigation Plan. Big Rivers effectively stemmed the immediate, short-
5 term effects of the smelter load loss by seeking rate increases in 2012 (after the first
6 smelter gave its notice that it was ceasing operations) and 2013 (after the second
7 smelter gave its notice that it was ceasing operations), by working with RUS to
8 establish a corrective action plan to regain at least two investment grade credit
9 ratings as required by the RUS loan contract, by temporarily idling the Coleman
10 and Reid Unit 1 generating units, and by increasing sales into the MISO energy and
11 capacity markets.

12 Big Rivers has also methodically executed its longer-term plans to stabilize
13 Members rates and mitigate the economic effects of the smelter load loss. Big
14 Rivers has reduced its dependence on fluctuating market prices by entering into
15 long-term power sales agreements with a number of municipal utilities, public
16 power districts, and related entities, including entities in Nebraska and Missouri,
17 as well as the Kentucky Municipal Energy Agency (“*KyMEA*”) and Owensboro
18 Municipal Utilities (“*OMU*”) in Kentucky. Big Rivers developed an economic
19 development incentive rate, which helped secure a \$350 million expansion at the
20 Aleris Rolled Products Manufacturing, Inc. (“*Aleris*”) facility in Lewisport,
21 Kentucky, resulting in a significant load increase on the Big Rivers system. And

⁸ *In the Matter of: Application of Big Rivers Electric Corporation for an Adjustment of Rates*, Order, P.S.C. Case No. 2012-00535 (October 29, 2013), at p. 19.

1 Big Rivers is in the process of further reducing uneconomic excess capacity by
2 exiting the contracts with the City of Henderson, Kentucky, under which Big Rivers
3 operates and takes power from Henderson’s Station Two generating station.

4 In 2014, the Commission ordered a focused management audit of Big Rivers’
5 mitigation efforts.⁹ The auditor, Concentric Energy Advisors, Inc. (“*Concentric*”)
6 reviewed and analyzed the Mitigation Plan, the reasonableness of each step taken
7 by Big Rivers under the Mitigation Plan, and the reasonableness of the Mitigation
8 Plan going forward, including “an assessment of the ability of Big Rivers’ coal-fired
9 generating fleet to be competitive in the wholesale markets” and “an assessment of
10 strategies for maximizing any available opportunity to sell Big Rivers’ excess energy
11 and capacity.”¹⁰ Concentric “concluded that Big Rivers has largely followed the
12 Mitigation Plan in a step-wise manner, consistent with the plan, which identified
13 both short-term and long-term strategies to mitigate the loss of load;” that “Big
14 Rivers has successfully executed on the Mitigation Plan strategy to sell power into
15 the MISO wholesale market;” and that “Big Rivers has made progress in attempting
16 to mitigate the loss of the smelter load through activities involved in the growth of
17 native load as well as growth in replacement load.”¹¹ Concentric recommended,
18 among other things, that Big Rivers continue to pursue the Mitigation Plan, that

⁹ *In the Matter of: Application of Big Rivers Electric Corporation for an Adjustment of Rates Supported by Fully Forecasted Test Period*, Order, P.S.C. Case No. 2013-00199 (April 25, 2014), at p. 48.

¹⁰ Concentric Energy Advisors, Inc., Final Report: Focused Management Audit of Big Rivers Electric Corporation, Oct. 6, 2015 (“*Concentric Report*”), at pp. 10-11.

¹¹ Concentric Report at pp. 10, 19, 55, 61.

1 Big Rivers continue to pursue increased sales to existing and new load, and that Big
2 Rivers continue to idle Coleman while it studies its options for that station.¹²

3 Big Rivers' long-term efforts to mitigate the economic impact of the smelter
4 load loss have enabled to avoid any further rate increases since its second smelter-
5 related rate case in 2013, while at the same time improving its credit ratings. On
6 July 5, 2018, Fitch upgraded Big Rivers' rating on its pollution control debt by two
7 notches to minimum investment grade, and on July 27, 2018, Moody's upgraded the
8 rating on Big Rivers' senior secured debt by one notch to Ba1, although that is still
9 one notch below investment grade.

10 With the reduction in generation from the idling of Coleman and Reid Unit 1
11 and exiting the Station Two contracts, combined with the successes Big Rivers has
12 achieved in securing long-term power sales agreements and increasing native load
13 sales, Big Rivers will have accomplished much of what it set out to do when it began
14 implementing the Mitigation Plan – right-sizing Big Rivers in order to stabilize
15 Member rates and mitigate against the economic impacts of the smelter load loss.
16 In fact, Big Rivers anticipates that it will be able to continue to delay any additional
17 rate increases until at least January 1, 2021. Even then, Big Rivers expects that it
18 will be able to address the regulatory accounts that are on its books, and to include
19 approximately \$46 million of Wilson depreciation expense and Wilson operating
20 expenses in rates, all with little to no increase in Member rates.

¹² Concentric Report at pp. 1, 62.

1 The last hurdle in mitigating the smelter load loss is regaining investment
2 grade credit ratings from Moody's and S&P, which will put Big Rivers back in
3 compliance with its RUS loan contract and ensure that Big Rivers can borrow at
4 favorable interest rates. With Big Rivers so near the finish line, it makes little
5 sense to nullify Big Rivers' successful mitigation efforts by abandoning the patient
6 approach Big Rivers has taken in evaluating its options with respect to Coleman
7 and Reid Unit 1; by prematurely retiring the Green and Wilson units, which have
8 proven value and are economic to operate; or by reversing Big Rivers' efforts to
9 reduce excess generation.

10 Of course, Big Rivers will continue to evaluate all options available to it to
11 "provid[e] an adequate and reliable supply of electricity to meet [its] forecasted
12 electricity requirements at the lowest possible cost."¹³ But the IRP analysis that
13 Big Rivers performed in 2017, which supports Big Rivers' continued pursuit of its
14 long-term mitigation plans, was reasonable and based on reliable information.
15 Sierra Club and SREA's criticisms of the IRP are therefore baseless.

16 **II. BIG RIVERS' MITIGATION STRATEGY IS NOT COSTLY FOR**
17 **CUSTOMERS, AND SIERRA CLUB'S CRITICISMS OF BIG RIVERS' LONG-**
18 **TERM STRATEGY ARE UNFOUNDED**

19 As explained above, Big Rivers' long-term strategy involves deliberate plans
20 to right-size Big Rivers and to stabilize Member rates. Sierra Club's criticisms of
21 that long-term strategy are unfounded.

¹³ 807 KAR 5:058 Section 8(1).

1 Sierra Club complains that “Big Rivers’ strategy of maintaining all the
2 generation that it owns while attempting to acquire new non-member customers is
3 costly for its captive customers”¹⁴ and that Big Rivers’ strategy is “flawed.”¹⁵ In an
4 attempt to support these assertions, Sierra Club alleges that “more than four years
5 after losing approximately 60% of its customer load, the utility’s rates have nearly
6 doubled, while the Company has had only limited success in acquiring new
7 customers,”¹⁶ and that “[t]he result of this strategy has been to greatly increase
8 rates for Big Rivers’ captive customers.”¹⁷ However, the rate increases sought in Big
9 Rivers’ 2012 and 2013 rate cases were obviously the result of the smelters’ decisions
10 to terminate their then-existing contracts, and not the result of Big Rivers’ efforts to
11 mitigate the economic impact of the smelter load loss. In fact, as noted above, Big
12 Rivers’ mitigation efforts have enabled Big Rivers to stabilize Member rates and to
13 avoid any rate increases since the 2013 rate case that was necessitated by the second
14 smelter’s termination notice. Moreover, while those rate increases were
15 unfortunate, prior to the smelter load loss, Big Rivers’ rates were among the lowest
16 rates in the country.

17 Sierra Club’s unsupported allegation that Big Rivers “has had only limited
18 success in acquiring new customers” is patently false. With the power contracts with
19 the Nebraska entities, KyMEA, and OMU that Big Rivers was able to successfully
20 negotiate and secure, Big Rivers has little excess capacity over the next several

¹⁴ Sierra Club comments at p. 1.

¹⁵ Sierra Club comments at p. 1.

¹⁶ Sierra Club comments at p. 1.

¹⁷ Sierra Club comments at p. 4.

1 years. The Attorney General recognized in his comments that Big Rivers' efforts to
2 secure long-term contracts have "show[n] good results" and that once these contracts
3 are fully phased in, "Big Rivers will have been able to fully mitigate the loss of the
4 aluminum smelters' load and have more stabilized, consistent revenue."¹⁸

5 Sierra Club also falsely claims that these power contracts are not profitable.¹⁹
6 To the contrary, in its responses, Big Rivers provided the margins Big Rivers expects
7 to make on these contracts. Because Big Rivers is a non-profit cooperative, these
8 margins contribute to the fixed costs that would otherwise have to be paid by the
9 Members and their retail customers.

10 Sierra Club claims that Big Rivers' analysis of these contract margins is
11 flawed because it was based on Big Rivers' lowest cost unit or average system costs.
12 However, Sierra Club fails to recognize that once Big Rivers completes its exit of the
13 Station Two contracts, which will occur no later than February 1, 2019, then
14 regardless of which of Big Rivers' remaining generating stations (Wilson or Green)
15 that is used for the comparison, the revenues received on the contracts will still
16 significantly exceed the variable costs, and the contributions to fixed costs are
17 therefore still substantial.

18 Sierra Club also asserts that the contracts are not profitable because Big
19 Rivers may "not fully cover[] the system's fixed costs in the contracts."²⁰ This flawed

¹⁸ Attorney General comments at p. 4.

¹⁹ Sierra Club comments at p. 5.

²⁰ Sierra Club comments at p. 5. Note that the Synapse Energy Economics, Inc. ("*Synapse*") Memorandum attached to Sierra Club's comments cherry picks 2020 as an example of the contribution the OMU contract makes to fixed costs. See Synapse Memorandum at p. 5. The OMU contract begins June 1, 2020, and so, 2020 is only a partial year and the other years of the contract are more representative of the contract's contributions to fixed costs. See Big Rivers' response to

1 statement fails to recognize that Big Rivers still earns significant margins on these
2 contracts that contribute to fixed costs that would otherwise have to be paid through
3 Member rates.

4 The Synapse Memorandum attached to Sierra Club’s comments also expresses
5 concern with Big Rivers’ short-term sales in MISO, arguing that “continued reliance
6 on short-term optimized sales will subject the utility to volatile and uncertain
7 revenue streams that could fall short of covering the associated production costs.”²¹
8 Synapse recognizes that these short-term sales are projected to exceed production
9 costs,²² but it fails to acknowledge the importance these sales play in Big Rivers’ long-
10 term strategy. These short-term sales are inevitable as Big Rivers works to replace
11 them with long-term contracts. For example, the Nebraska contracts phase in over
12 four years, and will replace more and more short-term sales as they phase in.

13 Synapse’s allegation that these short-term sales expose Big Rivers to risk also
14 fails to recognize (i) that once the Nebraska, OMU, and KyMEA contracts are fully in
15 place, Big Rivers will have little capacity and energy exposed to the short-term
16 market; (ii) that if production costs exceed market revenues, Big Rivers will simply
17 not generate the energy; and (iii) that since 2014, Big Rivers has been using physical
18 and financial hedges to fix the price that it receives for its energy and capacity
19 exposed to the hourly energy markets and the MISO Planning Resource Auction

Item 2c of Sierra Club’s Second Request for Information. Synapse also based its calculation of average fixed O&M costs for the OMU contract on a capacity amount (180 MW) that is too high. Sierra Club should have reduced that capacity amount by OMU’s 25 MW SEPA allocation and the 36 MW of solar power that OMU is permitted to purchase. See Big Rivers’ response to Item 2 of Sierra Club’s Second Request for Information.

²¹ Synapse Memorandum at p. 1.

²² Synapse Memorandum at p. 4.

1 (“PRA”). All such capacity is hedged through May 2024 at prices that are nearly ten
2 times higher than the past several PRA clearing prices.

3 Finally, Sierra Club alleges that Big Rivers’ mitigation strategy is uneconomic
4 because Big Rivers’ “MISO market expenses of \$52,841,000 in 2017 exceeded its
5 MISO market revenues of \$14,869,000 that year by a factor of more than three.”²³
6 Sierra Club’s allegation is based upon Big Rivers’ response to Item 6a of the
7 Commission Staff’s Second Request for Information (“PSC 2-6a”). Sierra Club
8 cherry picked the only year in which Big Rivers’ MISO expenses exceeded its
9 revenues, which was caused by unscheduled generation outages. Big Rivers’
10 response to PSC 2-6a clearly shows Big Rivers’ MISO revenues exceed its expenses
11 in all other years. In fact, MISO revenues exceeded MISO expenses by an average
12 of \$42.2 million over the past five years.²⁴

13 Additionally, Sierra Club’s allegation attributes Big Rivers’ decision to join
14 MISO to Big Rivers’ mitigation strategy. However, as Big Rivers explained in Case
15 No. 2010-00043, Big Rivers joined MISO in 2010, prior to the smelters’ termination
16 notices, as the least cost option of complying with its North American Electric
17 Reliability Corporation (“NERC”) Contingency Reserve requirements.²⁵ And Big
18 Rivers continues to remain a member of MISO not as part of its mitigation strategy

²³ Sierra Club comments at p. 4.

²⁴ See Attachment for Big Rivers’ response to PSC 2-6a.

²⁵ See *In the Matter of: Application of Big Rivers Electric Corporation to Transfer Functional Control of Its Transmission System to Midwest Independent Transmission System Operator, Inc.*, Order, P.S.C. Case No. 2010-00043 (November 1, 2010).

1 but because MISO membership continues to be Big Rivers' least cost option for
2 complying with its NERC contingency reserve obligations.²⁶

3 The long-term power contracts that Big Rivers has entered into as part of its
4 mitigation efforts were approved by the Commission, they contribute to Big Rivers'
5 fixed costs, thereby benefitting Members by reducing the costs Members would
6 otherwise have to pay through rates, and they reduce Big Rivers' reliance on
7 fluctuating marketing prices. Big Rivers' long-term plans to stabilize Member rates
8 by entering into such long-term contracts while at the same time idling or reducing
9 uneconomic generation, is not a "flawed" strategy as Sierra Club claims. Rather, it
10 has been a deliberate and successful effort to provide an adequate and reliable
11 supply of electricity at the lowest possible cost, and it is a strategy that has been
12 endorsed by the Commission and as part of the 2014 focused management audit of
13 Big Rivers' mitigation efforts.²⁷

14 **III. BIG RIVERS' CONTINUED IDLING OF COLEMAN AND REID UNIT**
15 **1 IS REASONABLE**

16 Sierra Club complains, "Big Rivers continues to keep the Coleman Station
17 and Reid Unit 1 idled, rather than retiring those plants, thus forcing its customers
18 to cover the cost of maintaining capacity even though the significant cost of bringing
19 that capacity back online makes it highly unlikely that Big Rivers would ever do
20 so."²⁸ Sierra Club provides no analysis supporting its claim that it is "highly

²⁶ See Big Rivers' September 28, 2018, annual report filed in P.S.C. Case No. 2010-00043.

²⁷ See *supra* Section I.

²⁸ Sierra Club comments at p. 2.

1 unlikely that Big Rivers would ever” bring Coleman or Reid Unit 1 back online.
2 Moreover, Big Rivers’ decision to continue to idle Coleman and Reid Unit 1 as it
3 awaits certainty is an important part of its long-term strategy, which includes
4 maximizing the value of existing generation resources.

5 Although currently idled, both Coleman and Reid Unit 1 continue to provide
6 value to the Members. There is significant uncertainty surrounding the Clean
7 Power Plan and its proposed replacement, the Affordable Clean Energy (“ACE”)
8 rule. Coleman and Reid Unit 1 are potential compliance alternatives, and
9 continuing to idle them until this uncertainty clears up is a prudent approach in
10 light of the minimal cost of continuing to idle them. Additionally, Big Rivers is in
11 the process of constructing the Kentucky portion of a MISO transmission expansion
12 plan project for a new transmission line from Big Rivers’ Coleman station in
13 Kentucky to Vectren’s Duff’s substation in Indiana. This new transmission line
14 may provide Big Rivers access to the PJM market, which could dramatically affect
15 the value of the capacity provided by Coleman and Reid Unit 1.

16 The minimal cost to continue idling Coleman and Reid 1 is justified by the
17 flexibility those stations provide as Big Rivers awaits certainty on whether those
18 stations can be utilized as carbon compliance options, and on the value those
19 stations may provide in the event Big Rivers gains access to the PJM market or as
20 changes occur in coal, gas, and power market prices. Thus, idling Coleman and
21 Reid Unit 1 as Big Rivers continues to evaluate its options for those facilities

1 provides Big Rivers the flexibility it needs to maximize the value of those facilities
2 for its Members and their retail customers.

3 **IV. BIG RIVERS' EVALUATION OF WILSON AND GREEN WAS**
4 **REASONABLE**

5 Sierra Club alleges, "Big Rivers' purported evaluation of whether to retire the
6 Wilson and Green plants was fatally flawed and biased in favor of continued
7 operation of those plants."²⁹ This allegation is based on (i) Big Rivers' inclusion of
8 the net book value in the retirement costs for Wilson and Green;³⁰ and (ii) Sierra
9 Club's claim that Big Rivers inappropriately limited the model to three replacement
10 resources (20 MW solar units, a 100 MW natural gas combustion turbine, and a 702
11 MW natural gas combined cycle unit).³¹

12 While Big Rivers did include the net book value of Wilson and Green in their
13 retirement costs, the Base Case result would not retire Wilson or Green even if the
14 net book values were excluded. Big Rivers also included Big Rivers' share of the net
15 book value of Station Two in its retirement costs, and the model still showed that
16 retiring Station Two/exiting the Station Two contracts was the least-cost option.

17 Big Rivers modeled a 702 MW combined cycle unit, as well as a maximum
18 105% reserve margin, so that the model would only build a new gas plant if it
19 retired a generating unit, including its largest unit (Wilson).³² Otherwise, the
20 model could have shown that building a new gas plant was economic even when it

²⁹ Sierra Club comments at p. 2.

³⁰ See Sierra Club comments at p. 9.

³¹ See Sierra Club comments at p. 9.

³² See Big Rivers' response to Item 26 of Sierra Club's First Request for Information.

1 was not needed to serve load. As a cooperative, Big Rivers does not want to build
2 generation for merchant operations. Building new generation that is not needed to
3 serve load would also run counter to Big Rivers' long-term efforts to "right-size"
4 itself.

5 Additionally, because the model did not show that building new resources
6 was a least-cost option (except in the Renewable Portfolio Standard scenario where
7 building renewable capacity was a requirement), it was unnecessary to further
8 evaluate different gas options. Had the modeling shown that building a new
9 natural gas plant was a least-cost option, Big Rivers would have refined its
10 modeling to include other natural gas plant types.

11 Big Rivers' production cost modeling is designed to solve for the least-cost
12 solution to serve native load. In the modeling for the IRP, the model could have
13 chosen to retire Wilson or Green, or convert Green to natural gas, based on a 15.8%
14 minimum reserve margin, if those were the least-cost options. The model also
15 dispatches Big Rivers' generation based on MISO market prices, and the model
16 could have shown that the least-cost option was to buy from the market rather than
17 generate the power needed to serve load. However, the Base Case results showed
18 that the least-cost option for Big Rivers was to continue to operate Wilson and
19 Green, and Sierra Club has not shown that any other alternative would provide an
20 adequate and reliable supply of electricity at a lower cost.

21 **V. BIG RIVERS' EVALUATION OF RENEWABLE SOURCES WAS**
22 **REASONABLE, AND SREA AND SIERRA CLUB'S CRITICISMS OF THE**
23 **DATA RELIED UPON BY BIG RIVERS SHOULD BE REJECTED**

1 Although SREA did not intervene in this proceeding, it did file public
2 comments containing several criticisms and recommendations, which should be
3 rejected. Only 4 of the 18 pages of SREA’s public comments relate to Big Rivers’
4 IRP. The remaining pages contain SREA’s views on renewable energy, which SREA
5 was created to promote.³³ Of the pages that do relate to Big Rivers’ IRP, SREA
6 makes several errors. For example, SREA incorrectly states that Big Rivers is “part
7 of the MISO Indiana Hub.”³⁴

8 Both SREA and Sierra Club are critical of the Energy Information
9 Administration (“*EIA*”) and National Renewable Energy Laboratory (“*NREL*”) data
10 that Big Rivers utilized in its analysis of solar, wind, and battery storage options,
11 calling it outdated, inaccurate, and overly conservative.³⁵ The EIA data was
12 published in November 2016, is commonly relied upon by utilities and others, and
13 was timely when Big Rivers was preparing its IRP in the summer of 2017 and when
14 Big Rivers filed its IRP in September 2017.

15 The Synapse Memorandum attached to Sierra Club’s comments goes so far as
16 to say that “EIA itself admitted that it ‘did not anticipate the sharp decline in solar PV
17 costs seen over the past several years.’”³⁶ But that statement is from March 2016 and
18 could not possibly apply to the EIA’s November 2016 data.

³³ See <https://www.southernrenewable.org/> (“our mission is to promote responsible use and development of renewable energy in the South”).

³⁴ SREA public comments at p. 13.

³⁵ See SREA public comments at p. 12; Sierra Club comments at p. 9; Synapse Memorandum at p. 1.

³⁶ Synapse Memorandum at p. 2, *citing* “Wind and Solar Data and Projections from the U.S. Energy Information Administration: Past Performance and Ongoing Enhancements,” March 2016.

1 SREA and Sierra Club’s criticisms of the November 2016 EIA data are primarily
2 based on their assertions that Big Rivers should have instead used studies that were
3 not in existence at the time Big Rivers prepared its IRP. For example, SREA relies
4 predominately on NREL’s 2018 Annual Technology Baseline (“*ATB*”)³⁷ and Lazard’s
5 November 2017 Levelized Cost of Storage Analysis.³⁸ Sierra Club likewise relies on
6 the November 2017 Lazard study, as well as NREL’s September 2017 *U.S. Solar*
7 *Photovoltaic System Cost Benchmark* report.³⁹

8 While SREA and Sierra Club are critical of the EIA data, they offer no evidence
9 that their projections will be any more accurate than the EIA data, nor do they offer
10 any evidence that utilizing their projections would have changed the results of Big
11 Rivers’ IRP. Moreover, if the EIA data were as unreliable as SREA and Sierra Club
12 claim, it makes little sense that EIA would continue to publish its own data when it
13 could instead rely on data from NREL, a sister agency within the Department of
14 Energy.

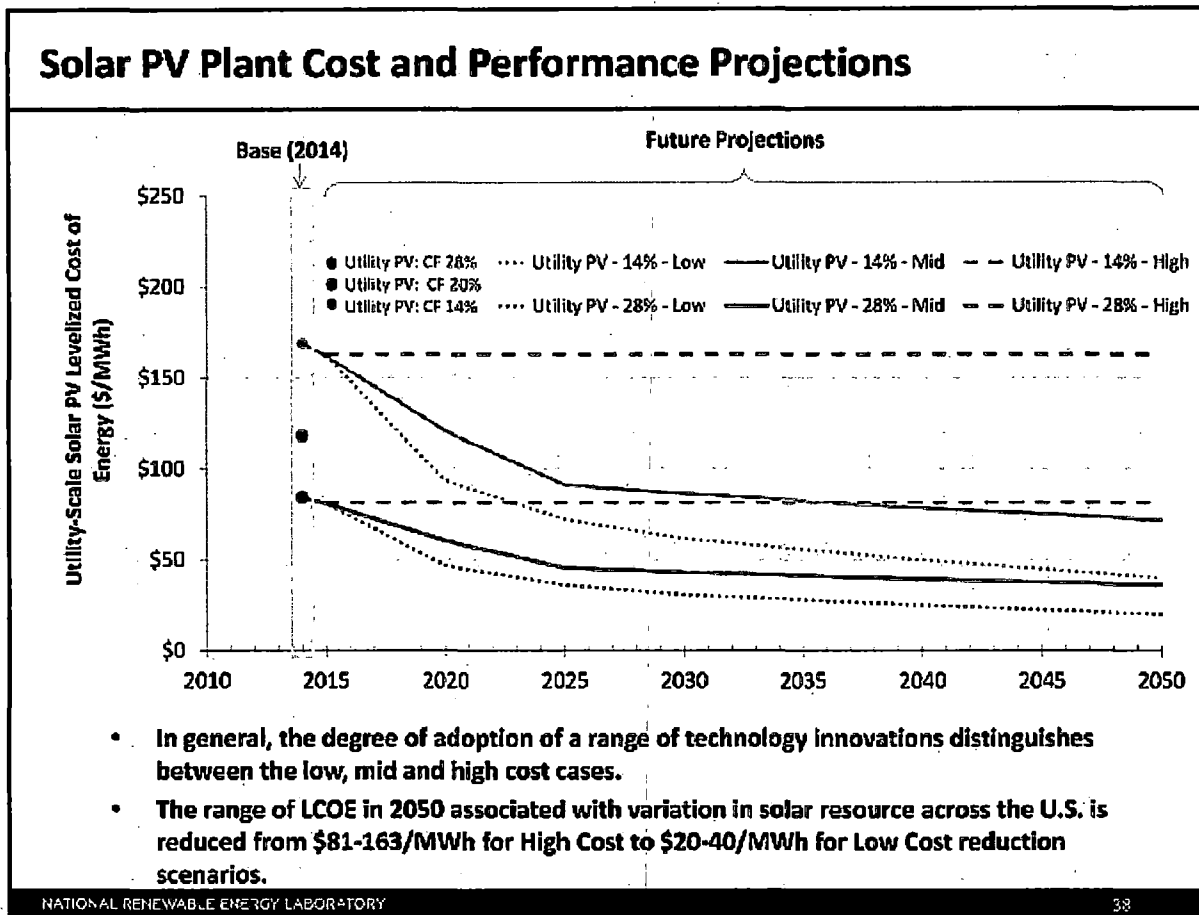
15 Additionally, even NREL’s projections change substantially from year to year.
16 Neither NREL’s 2017 ATB nor 2018 ATB was available when Big Rivers prepared its
17 IRP. Below is the published graph of the projected utility scale solar photovoltaic
18 levelized cost of energy (“*LCOE*”) from the 2016 ATB, which was available during the

³⁷ See SREA public comments at pp. 3, 4, 5, and 17 n. 2.

³⁸ See SREA public comments at pp. 5, 6, and 17 n. 6, 9.

³⁹ See Sierra Club comments at p. 12; Synapse Memorandum at p. 2.

1 IRP preparation in the summer of 2017.



2

3 In the 2016 ATB, the LCOE for utility scale solar ranges between \$48/MWh and

4 \$90/MWh depending on the coincident factor (“CF”), with an average of about

5 \$70/MWh for the year 2025.

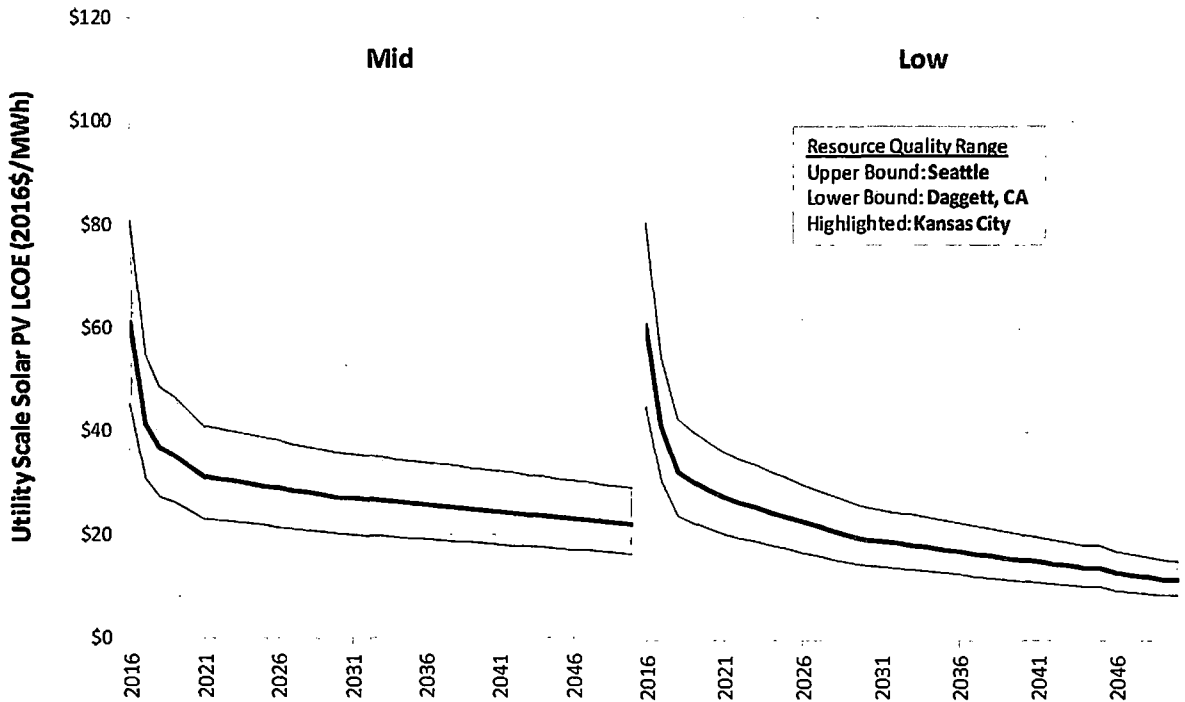
6 As shown in the table below, in the 2018 ATB, the LCOE for utility scale solar

7 ranges from approximately \$22/MWh to about \$38/MWh, with an average of about

8 \$30/MWh for 2025. Thus, the information available in the 2016 ATB is significantly

9 different from the LCOE projection from the 2018 ATB, which is the ATB that SREA

10 relies upon in its comments.



Utility PV (AC) plant LCOE projections with R&D financials

Source: National Renewable Energy Laboratory Annual Technology Baseline (2018), <http://atb.nrel.gov>

1

2 Big Rivers continues to evaluate energy resources and always seeks to identify
 3 and use the best available sources as inputs to solid analytical assessment. However,
 4 it is not a valid criticism that Big Rivers did not utilize data that did not exist at the
 5 time it prepared its IRP, nor is the emergence of newer data a valid basis for requiring
 6 Big Rivers to rerun the models for its IRP, as newer data will always be developed.

7 SREA also refers to other utilities' renewable plans or experiences with
 8 recent requests for proposals ("*RFPs*") as alternatives to the EIA data. SREA points
 9 to Kentucky Power Company's ("*KPC*") IRP as a model solely because KPC's IRP
 10 includes a plan for KPC to procure wind and solar power.⁴⁰ SREA also points to
 11 results of an RFP that Xcel Energy, a Colorado electric utility, published in

⁴⁰ SREA public comments at p.1.

1 December 2017⁴¹ and a July 2018 meeting at which Northern Indiana Public Service
2 Company (“NIPSCO”) discussed renewable energy options as part of its IRP.⁴²

3 The Xcel Energy and NIPSCO data cited by SREA did not exist when Big Rivers
4 prepared its IRP, which Big Rivers filed in September 2017. Moreover, although SREA
5 claims that the NIPSCO data is “relevant to states in MISO and further south,”⁴³
6 SREA provides no evidence that the data gathered by KPC, Xcel Energy, or NIPSCO is
7 applicable to Big Rivers or that the costs of building or delivering wind or solar power
8 to a utility in PJM (like KPC), in Colorado, or in northern Indiana can be used in
9 assuming the cost of wind or solar power built by or delivered to a utility in western
10 Kentucky. In fact, Vectren’s recent experience is contrary to SREA’s implication that
11 the NIPSCO data is applicable to Big Rivers. Vectren is a few hundred miles south of
12 NIPSCO but only a few miles north of Big Rivers, and it has reached agreement with
13 the Indiana Office of the Utility Consumer Counselor for a solar project at
14 \$54.52/MWh.⁴⁴ This also makes SREA and Sierra Club’s claims as to the economics of
15 the OMU/KyMEA PPA for solar power suspect.⁴⁵ Although SREA and Sierra Club try
16 to utilize the OMU/KyMEA PPA as evidence that large scale solar projects would be
17 economic for Big Rivers, they provide no evidence that the OMU/KyMEA PPA is based
18 on solar power being a least cost option rather than being made for other motivations.

⁴¹ See SREA public comments at p. 10.

⁴² See SREA public comments at p. 11.

⁴³ SREA public comments at p. 12.

⁴⁴ See Mark Wilson, *Vectren, consumer groups agree on lower rate for proposed solar farm*,
EVANSVILLE COURIER & PRESS (Oct. 11, 2018), available at
<https://www.courierpress.com/story/news/local/2018/10/11/vectren-solar-rate-citizens-action-coalition-office-utility-consumercounselor-spencer-county/1602954002/>

⁴⁵ See SREA public comments at p. 15; Sierra Club comments at p. 13.

1 SREA recommends that the Commission require Big Rivers to re-run its models
2 now that the Xcel Energy and NIPSCO data exists.⁴⁶ But newer data will always be
3 developed, and so, the existence of newer data is not a basis for rerunning the models
4 for an IRP. Moreover, as noted above, SREA has not shown that the Xcel Energy or
5 NIPSCO data is applicable to Big Rivers.

6 Both SREA and Sierra Club are also critical of an NREL wind speed map
7 utilized by Big Rivers as being outdated.⁴⁷ But no matter which version of the map is
8 used, the map clearly shows that wind generation makes more sense in Colorado than
9 it does in western Kentucky. Moreover, even an updated map does not change the fact
10 that there are no wind farms in western Kentucky.

11 The Synapse Memorandum attached to Sierra Club's comments claims, "There
12 is very high wind resource potential in abutting states, including Indiana and Illinois,
13 so uncertainty about where precisely to site a wind farm does not justify omitting the
14 resource from the model."⁴⁸ However, there is a large difference between the feasibility
15 of wind power in northern Indiana versus western Kentucky. Additionally, without a
16 source location, Big Rivers would not be able to estimate the costs of transmission or
17 congestion.

18 Sierra Club next criticizes Big Rivers for not applying an inflation factor to the
19 November 2016 data in developing a value for 2017.⁴⁹ But, as Big Rivers explained in

⁴⁶ SREA public comments at p. 16.

⁴⁷ See SREA public comments at p. 14; Sierra Club comments at p. 12; Synapse Memorandum at p. 2.

⁴⁸ Synapse Memorandum at p. 4.

⁴⁹ See Sierra Club comments at p. 13.

1 its response to Item 15 of the Sierra Club’s Second Request for Information, applying
2 an inflation factor for 2017 would not have changed the modeling results.

3 SREA and Sierra Club then recommend that Big Rivers should develop an RFP
4 to provide data for its IRP.⁵⁰ Big Rivers opposes this recommendation. Big Rivers’
5 experience with such ‘market reference point’ RFPs suggest they are not approached
6 with the same rigor as one might find in any true ‘market need’ RFP. Moreover, the
7 more frequently ‘market reference point’ RFPs are used, the less effective they become,
8 as prospective respondents are unlikely to expend the time and effort needed to
9 develop a sound proposal if they assume the prospective buyer is only shopping for a
10 price rather than actually considering purchasing power. Given the market perception
11 that Big Rivers has no need for additional capacity or energy, only a renewables
12 mandate would suggest use of a ‘market reference point’ RFP.

13 Finally, SREA notes that, “[d]ue to high demand by corporate customers for
14 renewable energy resources, several states and utilities have developed corporate
15 procurement strategies and regulation,” and SREA recommends that the Commission
16 require Big Rivers to conduct a study of other states’ procurement practices and
17 “develop a 100 MW renewable energy corporate procurement scenario for
18 evaluation.”⁵¹ Big Rivers has seen no such demand for renewable energy on its system.
19 In fact, Big Rivers has a renewable energy tariff,⁵² but has received no inquiries from

⁵⁰ See SREA public comments at pp. 10, 12; Synapse Memorandum at p. 4.

⁵¹ SREA public comments at p. 16.

⁵² See Big Rivers’ Renewable Resource Energy Service tariff, Original Sheet Nos. 57-58.

1 customers regarding the tariff in nearly ten years. SREA and Sierra Club’s criticisms
2 and recommendations are unsupported and should be rejected.

3 **VI. BIG RIVERS’ DETERMINATION TO ELIMINATE ITS EXISTING**
4 **DEMAND-SIDE MANAGEMENT AND ENERGY EFFICIENCY PROGRAMS**
5 **WAS REASONABLE**

6 Sierra Club complains, “Big Rivers has chosen to eliminate nearly all of its
7 Energy Efficiency and Demand Response programs even though its own studies
8 show that the programs provide additional savings for its customers.”⁵³ In P.S.C.
9 Case No. 2018-00236, the Commission approved as reasonable Big Rivers’
10 withdrawal of most of its existing DSM and energy efficiency programs.⁵⁴ Big
11 Rivers explained in that case that it intends to phase out its remaining programs
12 and to eliminate the tariffs for those programs once the phase out is complete.
13 However, the Commission has already approved Kenergy’s termination of the
14 programs Big Rivers and its other Members are phasing out.

15 Big Rivers is eliminating its existing DSM and energy efficiency programs
16 due to the significant fall in the Total Resource Cost (“TRC”) test results of all
17 programs across the board. In the 2017 Residential Amended analysis provided in
18 response to Item 52 of the Commission Staff’s First Request for Information, every
19 residential program had net present value (“NPV”) costs substantially larger than
20 NPV benefits. Combined, the residential programs have a NPV benefit of \$10.3

⁵³ Sierra Club comments at p. 2.

⁵⁴ *In the Matter of: Demand-Side Management Filing of Big Rivers Electric Corporation on Behalf of Itself, Jackson Purchase Energy Corporation, and Meade County R.E.C.C. and Request to Establish a Regulatory Liability*, Order, P.S.C. Case No. July 31, 2018).

1 million, a NPV cost of \$23.8 million, and a TRC benefit to cost ratio of .43, which is
2 clearly not cost effective.

3 The Non-Residential program analysis provided in response to Item 14 of the
4 Commission Staff's First Request for Information shows three programs with a TRC
5 above 1.0 and an overall TRC at 1.7, down substantially from 2.2 in 2014. Big
6 Rivers and its Members elected to withdraw all current programs rather than offer
7 three marginal programs to a single customer class.

8 Additionally, while Big Rivers is eliminating its existing programs, Big
9 Rivers explained in P.S.C. Case No. 2018-00236 that it plans to provide funds to
10 community action agencies that can be used for low income weatherization
11 initiatives. Big Rivers and its Members will also continue to provide energy
12 efficiency education to all retail members/customers so they have the opportunity to
13 make informed energy use decisions. Big Rivers and its Members have for decades
14 provided trusted and transparent education and assistance to both residential and
15 commercial retail members/customers.

16 Big Rivers will also continue to provide direct assistance to its Members and
17 their retail members/customers, including:

- 18 • Energy Use Assessments: Assessments are provided to commercial and
19 industrial customers upon request. Walk-through energy audits help
20 identify simple and low cost efficiency measures that customers can
21 install or implement themselves. Third-party service providers such as
22 the Kentucky Pollution Prevention Center and the Kentucky

1 Department for Energy Development and Independence assist customers
2 in achieving energy reduction goals. Educational programs are also
3 available for employees of commercial and industrial retail
4 members/customers.

- 5 • Power Quality Assessment: Big Rivers provides support to its Members
6 and their commercial retail members/customers to evaluate and correct
7 power quality issues that affect production of goods and services.
- 8 • Energy Savings Analysis: Big Rivers provides energy saving analyses to
9 industrial and large commercial retail customers by combining efforts
10 with the Members, the U. S. Department of Energy, and the Kentucky
11 Pollution Prevention Center.
- 12 • Power Factor Correction: Big Rivers and its Members provide
13 assistance to correct lagging power factor at Commercial and Industrial
14 (“C&I”) facilities. These corrections save money for the retail customer
15 and improve the efficiency of both transmission and distribution
16 facilities.
- 17 • Technology Evaluation: Big Rivers and its Members assist in the
18 evaluation and implementation of technologies that benefit the
19 productivity, profitability and energy efficiency of C&I facilities.
- 20 • Energy Efficiency Education: Big Rivers and its Members offer
21 comprehensive residential and commercial energy efficiency education
22 through websites and on-site employee education for commercial

1 customers. Big Rivers also provides energy efficiency education for
2 Member staff.

3 Big Rivers will continue to evaluate DSM initiatives as changes in the
4 market and circumstances occur. As new technology develops and substantial
5 changes arise in end use, Big Rivers will continue to provide education and direct
6 support and may add additional incentive programs that provide strong benefit to
7 retail members/customers.

8 VII. CONCLUSION

9 807 KAR 5:058 provides, “The [IRP] shall include the utility’s resource
10 assessment and acquisition plan for providing an adequate and reliable supply of
11 electricity to meet forecasted electricity requirements at the lowest possible cost.”
12 Big Rivers’ 2017 IRP and its ongoing planning activities rely on reasonable
13 methodologies and assumptions, consider an appropriate range of potential
14 scenarios, and seek to fulfill the goal of the IRP regulation of providing an adequate
15 and reliable supply of power at the lowest reasonable cost by optimizing the existing
16 capacity Big Rivers has available, consistent with its long-term efforts to stabilize
17 Member rates following the loss of the smelter loads.

18 Still, the IRP is just a snap shot in time, and completing the IRP does not end
19 Big Rivers’ mitigations efforts or its efforts of ensuring that it is providing its
20 Members an adequate and reliable supply of power at the lowest possible costs. Big
21 Rivers will continue to evaluate all options available to it, including potential DSM
22 and energy efficiency initiatives, the retirement of existing generation, and the

1 potential for additional renewable resources, based on up-to-date and reliable
2 information. Based on the foregoing, Big Rivers' 2017 IRP complies with 807 KAR
3 5:058 and should be approved, and the criticisms of the IRP should be rejected.

1 On this the 7th day of November, 2018.

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Respectfully submitted,



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