

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

ELECTRONIC 2023 INTEGRATED)
RESOURCE PLAN OF BIG RIVERS) CASE NO. 2023-00310
ELECTRIC CORPORATION)

**SUPPLEMENTAL DATA REQUESTS OF JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH AND KENTUCKY
RESOURCES COUNCIL**

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Dated: January 26, 2024

DEFINITIONS

1. “Document” means the original and all copies (regardless of origin and whether or not including additional writing thereon or attached thereto) of any memoranda, reports, books, manuals, instructions, directives, records, forms, notes, letters, or notices, in whatever form, stored or contained in or on whatever medium, including digital media.
2. “Study” means any written, recorded, transcribed, taped, filmed, or graphic matter, however produced or reproduced, either formally or informally, a particular issue or situation, in whatever detail, whether or not the consideration of the issue or situation is in a preliminary stage, and whether or not the consideration was discontinued prior to completion.
3. “Person” means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.
4. A request to identify a natural person means to state his or her full name and business address, and last known position and business affiliation at the time in question.
5. A request to identify a document means to state the date or dates, author or originator, subject matter, all addressees and recipients, type of document (e.g., letter, memorandum, telegram, chart, etc.), identifying number, and its present location and custodian. If any such document was but is no longer in the Company’s possession or subject to its control, state what disposition was made of it and why it was so disposed.
6. A request to identify a person other than a natural person means to state its full name, the address of its principal office, and the type of entity.
7. “And” and “or” should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.
8. “Each” and “any” should be considered to be both singular and plural, unless specifically stated otherwise.
9. Words in the past tense should be considered to include the present, and words in the present tense include the past, unless specifically stated otherwise.
10. Unless otherwise specified in each individual interrogatory or request, the terms “you,” “your,” “Big Rivers,” or “Company” refer collectively to Big Rivers Electric Corporation, including any parent or affiliated companies, predecessors-in-interest, officers, directors, employees, authorized agents, outside consultants or contractors, or other representatives who may have knowledge of the particular matter addressed.
11. “Joint Intervenors” or “JI” means the Kentuckians For The Commonwealth and Kentucky Resources Council.

12. “Demand-Side Management Potential Study” means Appendix B to the Big Rivers Electric Corporation 2023 Integrated Resource Plan, prepared by Clearspring Energy Advisors, LLC.
13. “2023 New ERA Program LOI” means the 2023 New Era Program Letter of Interest included as Attachment 1 to your response to JI 1-13.
14. “CCS” means Carbon Capture and Sequestration.
15. “DSM” means Demand-Side Management.
16. “ELG Rule” refers to EPA’s federal Clean Water Act Effluent Limitations and Guidelines for Steam Electric Power Plants, which are codified in 40 C.F.R. Part 423.
17. “EPA” means the U.S. Environmental Protection Agency.
18. “FGD” means Flue Gas Desulfurization.
19. “GHG” means Greenhouse Gas.
20. “IRP” means the Big Rivers Electric Corporation 2023 Integrated Resource Plan.
21. “ITC” means Investment Tax Credit.
22. “KPDES” refers to the Kentucky Pollutant Discharge Elimination System.
23. “LOI” means Letter of Interest.
24. “MISO” means Midcontinent Independent System Operator.
25. “PPA” means Power Purchase Agreement.
26. “PRMR” means Planning Reserve Margin Requirements.
27. “TRC” means Total Resource Cost.

INSTRUCTIONS

1. If any matter is evidenced by, referenced to, reflected by, represented by, or recorded in any document, please identify and produce for discovery and inspection each such document.
2. These requests for information are continuing in nature, and information which the responding party later becomes aware of, or has access to, and which is responsive to any request is to be made available to Joint Intervenors. Any studies, documents, or other subject matter not yet completed that will be relied upon during the course of this case should be so identified and provided as soon as they are completed. The Respondent is obliged to change, supplement, and correct all answers to interrogatories to conform to available information, including such information as it first becomes available to the Respondent after the answers hereto are served.
3. Unless otherwise expressly provided, each data request should be construed independently and not with reference to any other interrogatory herein for purpose of limitation.
4. Whenever the documents responsive to a discovery request consist of modeling files (including inputs or output) and/or workpapers, the files and workpapers should be provided in machine-readable electronic format (e.g., Microsoft Excel), with all formulas and cell references intact.
5. The answers provided should first restate the question asked and also identify the person(s) supplying the information.
6. Please answer each designated part of each information request separately. If you do not have complete information with respect to any interrogatory, so state and give as much information as you do have with respect to the matter inquired about, and identify each person whom you believe may have additional information with respect thereto.
7. Wherever the response to a request consists of a statement that the requested information is already available to Joint Intervenors, please provide a detailed citation to the document that contains the information. This citation shall include the title of the document, relevant page number(s), and, to the extent possible, paragraph number(s) and/or chart/table/figure number(s).
8. If you claim a privilege including, but not limited to, the attorney-client privilege or the work product doctrine, as grounds for not fully and completely responding to any discovery request, please describe the basis for your claim of privilege in sufficient detail so as to permit Joint Intervenors or the Commission to evaluate the validity of the claim. With respect to documents for which a privilege is claimed, please produce a "privilege log" that identifies the author, recipient, date, and subject matter of the documents or interrogatory answers for which you are asserting a claim of privilege and

any other information pertinent to the claim that would enable Joint Intervenors or the Commission to evaluate the validity of such claims.

9. In the case of multiple witnesses, each interrogatory should be considered to apply to each witness who will testify to the information requested. Where copies of testimony, transcripts or depositions are requested, each witness should respond individually to the information request.

10. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

**SUPPLEMENTAL DATA REQUESTS PROPOUNDED TO BIG RIVERS
ELECTRIC CORPORATION BY JOINT INTERVENORS
KENTUCKIANS FOR THE COMMONWEALTH AND KENTUCKY
RESOURCES COUNCIL**

- 2.1. Please refer to the Company response to JI 1-31.
 - a. Please provide the avoided cost values which were provided by the ACES Power Marketing forward market price curves for MISO Zone 6, referenced in JI 1-31a.
 - b. Please indicate if the avoided cost values from the ACES Power Marketing forward market price curves are for energy or capacity.
 - c. Please clarify if the values provided in the Company response to JI 1-31.b.i are avoided energy costs or retail energy costs.
 - d. Please identify the cost effectiveness tests that used the avoided cost values provided in the Company response to JI 1-31.b.i.

- 2.2. Please provide copies of the “customized residential and non-residential sector-level potential assessment Excel models” referenced on page 75 of the Big Rivers 2023 IRP.

- 2.3. Please refer to page E-2 of the Demand-Side Management Potential Study, “Identification of Opportunities.”
 - a. Please provide the qualitative screening criteria used to evaluate measures.
 - b. For each measure that was eliminated from the study through this qualitative screening, please provide the reason for elimination. A response is not required for gas-only measures.

- 2.4. Please provide a copy of the Demand-Side Management Potential Study Appendix C Multi-Perspective Model Results, in Excel format.

- 2.5. For each measure evaluated in the study Demand-Side Management Potential Study, please provide the following:
 - a. The incremental annual energy savings.
 - b. The incremental measure cost.
 - c. The incentive amount used for the Program Potential scenario.
 - d. The measure life.
 - e. The TRC benefit-cost ratio.

- 2.6. Please provide the basis and rationale for a 2-year measure life for Non-Residential LED Bulbs / Fixtures, as indicated on page C-2 of the Demand-Side Management Potential Study.
- 2.7. Regarding the Demand-Side Management Potential Study Program Potential scenario (both Residential and Non-residential):
- a. Were levelized costs calculated? If so, please provide these calculations and results for each customer class.
 - b. Please provide the IRP modeling inputs used for the Program Potential scenarios (both Residential and Non-residential).
- 2.8. For the Program Potential scenario of the Demand-Side Management Potential Study (both Residential and Non-residential), please provide:
- a. The incremental annual savings, by measure and customer class, for each year of the study. Please indicate if these savings are at the meter or generator.
 - b. The annual incentive cost, by measure and customer class, for each year of the study.
 - c. The annual administrative cost, by measure and customer class, for each year of the study.
 - d. The measure life, by measure and customer class, for each year of the study.
- 2.9. Were incentives and/or rebates available under the Inflation Reduction Act considered in the Demand-Side Management Potential?
- a. If so, please identify what incentives and/or rebates were considered and how they were considered.
 - b. If not, please explain why not.
- 2.10. Please refer to your response to Staff 1-29(c).
- a. For each of the wind PPAs received in response to the All-Source Request for Proposals, identify the capacity, location, timing, and price of the wind included in the PPA.
 - b. For each of the solar PPAs received in response to the All-Source Request for Proposals, identify the capacity, location, timing, and price of the solar included in the PPA.
 - c. Identify and produce any analysis, workpapers, modeling input and output files, or other documents supporting the contention that the wind and solar PPAs received in response to the All-Source Request for Proposals “were not economical compared to the Natural Gas Combine[d] Cycle Plant.” If no such documents exist, explain the basis for your contention.

2.11. Please refer to your response to Staff 1-32. For each of the years 2018 through 2023, identify the percent of hours for which Big Rivers bid or offered the Wilson plant into the MISO market with the following commitment status:

- a. Economic
- b. Must-Run
- c. Outage
- d. Emergency
- e. Not Participating

2.12. Please refer to your response to JI 1.6.

- a. Please state whether Big Rivers has taken any steps since Winter Storm Elliott to avoid or minimize the chance of derates or outages at the Wilson plant during severe winter storms. If so, please explain those steps in detail. If not, please explain why not.
- b. Please state whether Big Rivers has taken any steps since Winter Storm Elliott to avoid or minimize the chances of starting failures at the Reid CT unit during severe winter storms. If so, please explain those steps in detail. If not, please explain why not.
- c. Please state whether Big Rivers has experienced any outages or derates at the Wilson, R.D. Green, or Reid CT unit in 2024 to date.
- d. If so, please identify for each such outage or derate the date, length, cause, and the size in MW if a derate.

2.13. Please refer to your response to JI 1.8.

- a. Please identify the specific “modeling results” in the 2023 IRP analysis that you contend support Wilson “running on coal throughout the entire study period,” and explain in detail how such modeling results provide such support.
- b. With regards to your response to JI 1.8 subpart b, please confirm that the 2023 IRP and supporting modeling does not provide a net present value (NPV) revenue requirement of other economic analysis of continuing to operate Wilson until 2045 versus retiring Wilson in any year before 2045. If not confirmed, identify the specific portion(s) of the IRP and supporting modeling that you claim provide such analysis.

2.14. Please refer to IRP pages 119–120 and Confidential Table 7.1.4(i) on IRP page 122. With regards to the forecasted renewables and storage costs identified in the table:

- a. Please explain how the costs identified in Table 7.1.4(i) were “forecasted using the cost curves” from the 2022 NREL Annual Technology Baseline and the EIA’s public technology assessment.
 - b. Please explain why Table 7.1.4(i) shows overnight capital costs for solar PV [REDACTED] from 2023 through 2050, while the 2022 NREL Annual Technology Baseline forecasts a [REDACTED] cost curve for solar PV over that same time period.
 - c. Please explain why Table 7.1.4(i) shows overnight capital costs for onshore wind that are [REDACTED] than the range of capex costs for land-based wind identified in the 2022 NREL Annual Technology Baseline.
- 2.15. Please refer to your response to JI 1-33.
- a. Please identify and explain what factors make demand response a “highly technical subject” for a G&T market participant of MISO.
 - b. Please explain in detail the discussions regarding demand response that Big Rivers has “initiated” with its Member-Owners and/or other G&Ts.
 - c. Please produce any documentation of the discussions regarding demand response that Big Rivers has “initiated” with its Member-Owners and/or other G&Ts.
 - d. Please explain in detail Big Rivers’ “observing” of or “lessons learned” from the demand response technology development and innovation occurring across the nation.
 - e. Please produce any documentation of Big Rivers’ “observing” of or “lessons learned” from the demand response technology development and innovation occurring across the nation.
 - f. Please identify the anticipated timing of the demand response “future program offerings” referenced therein.
- 2.16. Please refer to your response to JI 1-34.
- a. Please identify all efforts that Big Rivers has undertaken since 2019 to “maintain[] contact with staff from the Kentucky Housing Corp (“KHC”) to encourage the use of the funding to allow applicable projects to be completed.”
 - b. Please produce any documentation in the Company’s possession concerning any efforts identified in response to subpart (a).
 - c. The annual progress reports referenced in the response do not indicate that Big Rivers has spent any money since 2019 to promote or encourage participation in the Low-Income Weatherization Program Pilot. Please confirm whether this is the case. If it is not the case, please specify the amount of money spent each year since 2019 to promote and/or encourage participation in the program and identify what those funds were spent on.

2.17. Please refer to your response to Staff 1-14(c). With regards to the contention that “[i]t is unlikely that the model would have chosen to retire the Wilson unit and replace it with an alternative if the model had been given the option”:

- a. Please explain in detail the basis for that contention.
- b. Please produce any workpapers, modeling files, or documents supporting that contention.

2.18. Please refer to your response to Staff 1-14(c). With regards to the reference to the “large unrecovered balance on Big Rivers’ financial statement”:

- a. Please explain what role the large unrecovered balance plays in your decision to assume the continued operation of the Wilson plant until 2045.
- b. Please identify the unrecovered balance for the Wilson plant for each of the years 2018 through 2023.
- c. Please identify the forecasted unrecovered balance for the Wilson plant for each of the years 2024 through 2045.
- d. Please state whether Big Rivers has evaluated seeking funding under the federal Inflation Reduction Act to pay off some or all of the unrecovered balance on the Wilson plant.
 - i. If so, please explain the results, and produce any documentation, of such evaluation.
 - ii. If not, please explain why not.

2.19. Please refer to your response to JI 1-46(b) and to Table 7.2.1(a) on page 135 of the IRP. With regards to the annual project capacity limits for 4-hour storage, solar PV, and wind set forth in the referenced table:

- a. Please explain in detail the basis for your belief that the annual build limits for wind, solar, and storage are based on how much Big Rivers “could develop annually given the financial and personnel requirements to do so.” Please identify any experience and produce any analysis or other documents supporting that belief.
- b. Please state whether the annual build limits applied to PPAs as well as self-build projects. If so, please explain why given that the Big Rivers financial and personnel requirements would be less for a PPA than for a self-build. If not, please identify what annual limits were placed in the IRP modeling on solar, wind, and storage PPAs.

2.20. Please refer to your response to JI 1-46(c). Please explain in detail why the model was set to “select a roughly equal amount of capacity from storage as the other generic

resource types” as opposed to some other amount of storage. Please produce any analysis or other documents supporting that approach.

2.21. Please refer to your response to JI 1-51(b). Please identify and produce the “current published research” regarding carbon capture estimates referenced therein.

2.22. Please refer to your response to Staff 1-36. Please explain in detail why the model was offered a natural gas combined cycle plant with a capacity of 635 MW rather than 454 MW or some other capacity closer in size to the Green units that would be replaced.

2.23. Please refer to your response to Staff 1-38(c). With regards to the “system fit” of demand response programs that Big Rivers is “still evaluating”:

- a. Please explain in detail what is meant by the “system fit” of demand response programs and what considerations and factors go into evaluating such system fit.
- b. Please state when Big Rivers began evaluating the “system fit” of demand response programs.
- c. Please produce any analysis or other document regarding Big Rivers evaluation of the system fit of demand response programs.
- d. Please describe the “extensive downstream work” needed before implementation of demand response programs and explain why such work is needed.
- e. Please identify the “downstream work” regarding implementation of demand response programs that Big Rivers has carried out to date.

2.24. Please refer to the Company’s response to JI 1-18(d). Please supplement the table provided to include (as requested in the original request), for each of the years 2018 to 2023, the total number of DG customers and the total capacity (KW) of DG, broken out for each class and distribution Member-Owner. If you are unable to provide this information, please explain in detail why not.

2.25. Please refer to the Company’s response to JI 1-18(g). Please explain why Big Rivers has not prepared or reviewed any analysis of the potential grid resilience and reliability benefits of distributed solar generation in its territory.

2.26. Please refer to the Company response and attachment to JI 1-23 providing Gross Margin analyses for the Non-Member Energy customer contracts for years 2018 through

2023 and the forecast Gross Margin analyses for the Non-Member Energy customer contracts for years 2024 through 2037.

- a. Please identify and produce any analyses or calculations providing net margin data for the Non-Member Energy customer contracts for years 2018 through 2023.
- b. Please identify and produce any projections or forecasts providing net margin data for the Non-Member Energy customer contracts for years 2024 through 2037.

2.27. Please refer to the confidential attachment to JI 1-23. Please explain why [REDACTED]

2.28. Please refer to the Company response to JI 1-24(d) and the confidential attachment to JI 1-23, and to Staff 1-8. Please explain why [REDACTED], despite the fact that OMU's contract expires at the end of 2026 and Big Rivers' response that the Company "is in discussions with OMU about contract renewal" and "[n]o terms have been agreed to."

2.29. On December 20, 2023, there was a widely reported "leak" of fly ash from the D.B. Wilson plant. *See, e.g., Adam Kight, Major ash leak reported at power plant in Ohio County, several people injured, 44News (Dec. 20, 2023), https://www.wevv.com/news/kentucky/major-ash-leak-reported-at-power-plant-in-ohio-county-several-people-injured/article_64de44de-9f4b-11ee-83e7-6fc5b775714e.html.*

- a. Please explain in detail the cause of the "leak" that resulted in this incident.
- b. Please confirm that a "stuck valve" (as described in the video accompanying the above article) was a contributing factor to the incident. If you are unable to confirm, please explain why not.
- c. Please explain the purpose of the valve that was involved in the incident. How frequently and for what reasons is the valve opened?
- d. Does the Company have any permits that authorize fly ash to be released to the environment through the valve? If yes, please identify and produce copies of any such permits. If not, please explain why not.
- e. Does the Company have written policies or procedures for conducting maintenance on the valve? If yes, please produce a copy of any such policies or procedures. If not, please explain why not.
- f. Were the workers involved in this incident wearing any safety equipment? If yes, please identify any such equipment that they were wearing. If not, please explain why not.

- g. Please provide the Company's best estimate of how much fly ash was released to the environment during this incident. Please produce any documents in the Company's possession that reflect this calculation.
- h. Please identify what steps (if any) the Company took after the incident to ascertain how much fly ash might have been deposited on properties off-site from the Wilson plant, to locate that fly ash, and/or to clean it up. Please produce any documentation of these steps that is in the Company's possession.
- i. Please produce any documents reflecting the Company's communications with the Division of Waste Management or other government agencies concerning cleanup of fly ash released in this incident.

2.30. Please refer to the Company's response to Joint Intervenors' Request No. 1-57. Does the Wilson plant discharge treated wastewater from its FGD system pursuant to its KPDES permit?

- a. If yes, please identify where in the KPDES permit for the Wilson plant such discharges are authorized, and please explain why the Wilson plant's wastewater treatment system is in full compliance with the 2020 ELG Rule.
- b. If not, please explain why not.

2.31. Please refer to the Company's 2022 Annual Groundwater Monitoring and Corrective Action Report for the Federal Coal Combustion Residuals Rule – Wilson Phase II Landfill (Jan. 19, 2023), which is available at http://www.bigrivers.com/wp-content/uploads/2023/01/2022-CCR-GWMCAR_FINAL_20230119-RS.pdf.

- a. Please confirm that assessment monitoring for the Wilson Phase II Landfill has identified Statistically Significant Increases of lithium and cobalt in downgradient groundwater monitoring wells. If your response is anything other than an unqualified confirmation, please explain in detail.
- b. Please confirm that the Company completed an Assessment of Corrective Measures in 2019 for the Wilson Phase II Landfill and is in the process of selecting a remedy. If your response is anything other than an unqualified confirmation, please explain in detail.
- c. Please identify what, if anything, the Company did in its modeling or analysis for the 2023 IRP to account for the need for a corrective action remedy for groundwater at the Wilson Phase II Landfill. If the Company did not account for the need for a corrective action remedy at Wilson as part of its IRP modeling or analysis, please explain in detail why not.

2.32. Please refer to the Company's response to Joint Intervenors' Request No. 1-29.

- a. Do any of Big Rivers' Member-Owner distribution cooperatives currently serve data centers as customers? If yes, please identify all such data

centers, including by name, location, capacity need (in MW), percentage of capacity need that is firm capacity, anticipated load factor, and which consumer class they belong to. If the answer is no or you are unable to answer, please explain why not.

- b. Do any of Big Rivers' Member-Owner distribution cooperatives anticipate that any proposed data centers will begin operating in their territories in the next three years? If yes, please identify all such data centers, including by name, location, capacity need (in MW), percentage of capacity need that is firm capacity, anticipated load factor, and which consumer class they belong to. If the answer is no or you are unable to answer, please explain why not.
- c. For each currently operating or proposed data center identified in response to subparts (a) and (b) above, please explain in detail whether or how the facility has been incorporated into the load forecast for this IRP.

2.33. Please refer to Section 4.8 of the 2023 IRP.

- a. Please explain how the load forecast incorporates naturally occurring energy efficiency.
- b. Please provide any quantitative projections of naturally occurring energy efficiency that the Company relied on for this IRP, and identify the sources or bases for those projections.

2.34. Please refer to Table 7.1.4 (g) at page 121 of the 2023 IRP.

- a. Please provide the locations that were used to develop the capacity factor of 21% for new solar resources.
- b. Please provide the source that was used to develop the capacity factor for new solar resources.

2.35. Please refer to Table 7.1.4(i) labeled "Renewable and Storage Project Cost" at page 122 of the IRP.

- a. Please provide the supporting workbooks, with all formulas and links intact, used to develop the cost for each technology provided in Table 7.1.4(i).
- b. Please explain if the capital costs provided for solar and four-hour battery storage are reported before the impact of the ITC or after the impact of the ITC.

- 2.36. Please refer to Table 7.1.4(j) labeled “Thermal Generation Project Cost” at page 124 of the IRP. Please provide the supporting workbooks, with all formulas and links intact, used to develop the cost for each technology provided in Table 7.1.4(j).
- 2.37. Please refer to the planning reserve margins referenced on page 133 of the IRP.
- a. Please explain if a coincidence factor was applied to the planning reserve margins modeled in EnCompass.
 - i. If a coincidence factor was applied, please identify the factor and provide the supporting workbooks, with all formulas and links intact, used to develop the coincidence factor and the planning reserve margins modeled in EnCompass.
 - ii. If a coincidence factor was not applied, please explain why it was not.
- 2.38. Please refer to the table labeled as “Annual Maximum Project Capacity for EnCompass Model” on page 135 of the IRP.
- a. Please explain why wind was allowed to be selected in 2028 before four-hour storage was allowed to be selected in 2029.
 - b. Please provide support for the assumption that 4-hour battery storage resources could not be brought online before 2028.
- 2.39. For each of the new supply side resources modeled in EnCompass, please provide the operating life that was modeled for each technology type.
- 2.40. Please explain if transmission interconnection costs were included for each of the new supply side resource alternatives modeled in EnCompass.
- a. If transmission interconnection costs were modeled, please provide the costs modeled in addition to the supporting documents, analysis, and workbooks, with all formulas and links intact, used to develop those costs.
 - b. On page 116 of the IRP, Big Rivers Energy stated that “The new natural gas combined cycle power plant (635 MW), both with and without 90% CCS, was modeled assuming Big Rivers would own and operate the facility near the existing Green Station Facility.” Given the capacity size difference between the Green Station Facility and the proposed new NGCC, please explain if Big Rivers anticipates the new NGCC requiring transmission system upgrades if it is located near the Green Station facility.
 - c. Please identify the location of the proposed new NGCC that Big Rivers has submitted to the MISO interconnection queue.

2.41. Please refer to the workbook named “Master Assumptions Workbook”, worksheet named [REDACTED]

2.42. Please explain if Big Rivers currently has firm transportation for its existing natural gas resources.

- a. If yes, please provide the cost of the firm transportation for each of the existing natural gas resources.
- b. If not, please explain why not.

2.43. Please identify and explain the cost and other assumptions Big Rivers made around the firm gas transportation for the new natural gas combined cycle power plant modeled in EnCompass.

- a. If Big Rivers did not include the costs for firm gas transportation, please explain why not.

2.44. Please refer to the workbook named “Master Assumptions Workbook”, worksheet named [REDACTED]

- a. Please explain why [REDACTED]
- b. Please state whether [REDACTED] If so, please identify [REDACTED] If not, please explain why not.
- c. Please state whether [REDACTED] If so, please identify [REDACTED] If not, please explain why not.

2.45. Please refer to the workbook named “Master Assumptions Workbook”, worksheet named [REDACTED] Please explain [REDACTED]

2.46. Please refer to the workbook named “Master Assumptions Workbook”, worksheet named [REDACTED] Please provide the supporting workbooks, with all formulas and links

intact, used to develop [REDACTED] contained in the worksheet.

2.47. Please provide the MISO Market import and export assumptions modeled in EnCompass, including any additional constraints that were modeled, such as an annual or monthly import/export limit.

2.48. Please provide Big Rivers' MISO market energy purchases and sales for each month between January 2018 through December 2023.

2.49. Please refer to the workbook named "Master Assumptions Workbook", worksheet named [REDACTED].

- a. Please confirm that the firm capacity modeled in EnCompass for the energy efficiency resources [REDACTED].
 - i. If yes, please explain why the calculation [REDACTED].
 - ii. If yes, please confirm if the calculation [REDACTED]. If not, please explain what the calculation [REDACTED] is intending to achieve.
 - iii. If not confirmed, please provide [REDACTED] in EnCompass for the energy efficiency resource.
- b. Please provide the supporting calculation [REDACTED].
- c. Please confirm if a [REDACTED] has been applied to the values [REDACTED].

2.50. Please reconcile the capital cost of the carbon capture and sequestration modeled for the D.B. Wilson Generating Station as reported in the EnCompass input assumption workbook "Master Assumptions Workbook", worksheet name [REDACTED] and the \$2.5 billion project cost referenced in response to Joint Intervenors' Request No. 1-13(b).

2.51. Please refer to the workbook named "Master Assumptions Workbook", worksheet named [REDACTED]. Please provide the source of the capital cost reported in cell [REDACTED].

2.52. Please refer to the Confidential Table 7.1.4(j) labeled as “Thermal Generation Project Cost” and the workbook named “Master Assumptions Workbook”, worksheet named [REDACTED].

- a. Please reconcile [REDACTED].
- b. Please confirm which capital cost was modeled in EnCompass for the new Combined Cycle Gas Turbine that is referenced in the IRP as the “BREC CC”.

2.53. Please refer to Table E-1 in “Appendix E – Technical Appendix” to the IRP. Please explain why the natural gas fuel cost input modeled in EnCompass is [REDACTED].

2.54. Please refer to the 2022 All Source RFP that was provided in response to Joint Intervenors Request No. 1-9. In Section 4.1.5 of the 2022 All Source RFP it states that “BREC will also consider any Proposal for a facility to be developed on an existing BREC-owned site.”

- a. Please state if Big Rivers received any bids for solar or storage resources that could be sited at an existing BREC-owned site. If so, identify for each such bid the resource, capacity, timing, and price in the bid.
- b. Please explain if Big Rivers has evaluated the potential to self-build solar or storage resources at an existing BREC-owned site. If so, please explain the results of such evaluation and produce any documentation. If not, please explain why not.

2.55. Please provide the EnCompass input database used to develop each of the modeling runs presented in the IRP.

2.56. Please refer to the 2023 New ERA Program LOI included as Attachment 1 to your response to JI 1-13, and the Rural Utilities Service Notice of Funding Opportunity¹ (“NOFO”) referenced therein. With regards to the financial assistance request set forth at pages 3–4 of the LOI of a \$630 million grant and a \$1.89 billion zero-interest loan to cover the \$2.5 billion total estimated capital cost of installing CCS on the Wilson plant:

- a. Please state whether Big Rivers believes that the financial assistance request included in the LOI fits within the \$970 million cap on the total

¹ *Notice of Funding Opportunity for the Empowering Rural America (New ERA) Program*, 88 Fed. Reg. 31,218 (May 16, 2023).

amount that any one applicant can receive under the NewERA Program, as noted in the NOFO at 88 Fed. Reg. at 31,221.

- i. If so, please explain how, including an explanation of how Big Rivers believes the \$1.89 billion zero-interest loan would count towards the \$970 million cap.
 - ii. If not, please explain why Big Rivers submitted an LOI for financial assistance under the NewERA Program that exceeds the per-applicant cap on total funding that can be obtained under that program.
- b. Please state whether Big Rivers based its NewERA Program financial assistance request on the capital cost for CCS assumed in the IRP modeling, as discussed on pages 145–46 of the IRP. If so, please explain how. If not, please explain why not.
 - c. Please explain why Big Rivers did not seek funding under the NewERA Program for renewable energy projects, distributed energy strategies, energy storage systems, transmission improvements, or projects that would significantly reduce energy demand, each of which are identified in the NOFO as eligible projects (*see* 88 Fed. Reg. at 31,223).

2.57. Please refer to page 4 of the 2023 New ERA Program LOI. With regards to the claim therein that with the requested NewERA financial assistance, an estimated \$1.98 billion in 45Q tax credits, and “strong cost and project management,” the CCS project on Wilson “could be cost neutral or slightly cost positive”:

- a. Please state whether that claim factors in each of the following costs related to CCS:
 - i. CO₂ transportation costs.
 - ii. CO₂ storage costs.
 - iii. The heat rate penalty that the Wilson plant would incur.
 - iv. The capacity penalty that the Wilson plant would incur.
 - v. The annual fixed O&M costs for the CCS technology.
 - vi. The variable O&M costs for operating the CCS technology.
- b. For each cost in subsection a that was factored into the claim that the project “could be cost neutral or slightly cost positive,” please explain how it was factored in. For each cost in subsection a that was not factored into the claim, please explain why not and how the claim would be impacted if the cost had been factored in.

2.58. Please refer to pages 4–5 of the 2023 New ERA Program LOI. With regards to the annual and lifetime GHG reduction estimates for the Wilson CCS project set forth therein:

- a. Please explain the distinction between the GHG “reduction” and GHG “avoided” figures.
- b. Please state whether the GHG reduction and/or GHG avoided figures factor in GHG emissions that may be created in generating the electricity needed to power

the CCS technology.

- c. Please explain how the 47.9% annual GHG reduction and 52.6% decrease in carbon intensity figures were calculated, including whether those percents are measured based on total GHG emissions from the Wilson plant without CCS, or the total GHG emissions from the Big Rivers generating fleet as a whole.
 - i. If the 47.9% and 52.6% figures are measured based on total GHG emissions from the Wilson plant without CCS, please explain how they are consistent with the 90% CCS assumption utilized in the IRP modeling (*see* IRP page 145).

2.59. Please refer to Confidential Attachment 1 to your response to JI 1-10. For each of the years 2018 through 2022, please state whether Big Rivers received any revenues for the Wilson plant beyond the energy, capacity, and ancillary services revenues identified in Attachment 1. If yes, please identify the amount and source(s) of such revenues for each of the years 2018 through 2022.

2.60. Please refer to Confidential Attachment 1 to your response to JI 1-11. For each of the years 2023 through 2037, please state whether Big Rivers projects that it will receive any revenues for the Wilson plant beyond the beyond the energy, capacity, and ancillary services revenues identified in Attachment 1. If yes, please identify the amount and source(s) of such projected revenues for each of the years 2023 through 2037.

2.61. Please refer to your response to OAG 1-8.

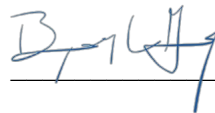
- a. Please identify in terms of percent of total system capacity or energy, megawatts, or other quantification measure the amount of “grid-following, inverter-based resources” Big Rivers would consider to be “an excess,” and explain the basis for your answer.
- b. Please state whether Big Rivers considers battery storage to be a resource that will “complement intermittent renewable resources.” If not, explain why not.

2.62. Please refer to your response to OAG 1-9.

- a. With regards to your contention that the referenced risk related to solar construction and PPAs is “transient in nature,” please identify and explain any working assumption or estimate of by when you anticipate that such risk “will resolve itself.”
- b. Please state whether Big Rivers believes that there are execution risks associated with the 635 MW NGCC plant included in the IRP. If so, please explain in detail those risks. If not, please explain why not.

- 2.63. Please refer to your response to OAG 1-21.
- a. Please state whether Big Rivers experienced any incidents of low gas pipeline pressure or other gas supply inadequacies at Sebree station during Winter Storm Elliott. If so, explain in detail such incidents.
 - b. Please identify when and why you explored purchasing firm gas capacity from Texas Gas Transmission, LLC.
 - c. Please identify the “major system upgrades” that would be needed for firm gas capacity at Sebree station, and the estimated cost of such upgrades.
- 2.64. Please refer to your response to OAG 1-27.
- a. Please explain why Big Rivers is considering potential partners/co-owners for the 635 MW NGCC plant identified in the IRP.
 - b. Please explain in detail the status of Big Rivers’ efforts to identify potential partners/co-owners for the referenced NGCC plant and produce any documents used in such efforts.
 - c. Please identify any partners/co-owners for the NGCC plant that have been identified to date. For each such partner/co-owner, identify the share in MWs of the plant that they would own.

Respectfully submitted,

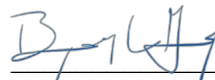


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CERTIFICATE OF SERVICE

In accordance with the Commission's July 22, 2021 Order in Case No. 2020-00085, Electronic Emergency Docket Related to the Novel Coronavirus COVID-19, this is to certify that the electronic filing was submitted to the Commission on January 26, 2024; that the documents in this electronic filing are a true representations of the materials prepared for the filing; and that the Commission has not excused any party from electronic filing procedures for this case at this time.



Byron L. Gary