

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

In the Matter of:

ELECTRONIC 2024 INTEGRATED )  
RESOURCE PLAN OF DUKE ENERGY ) CASE NO. 2024-00197  
KENTUCKY, INC. )

**SUPPLEMENTAL REQUESTS FOR INFORMATION OF KENTUCKY  
SOLAR ENERGY SOCIETY, KENTUCKIANS FOR THE  
COMMONWEALTH, AND KENTUCKY RESOURCES COUNCIL TO  
DUKE ENERGY KENTUCKY**

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Dated: September 25, 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. "You" or "your" means the person whose filed testimony is the subject of these data requests and, to the extent relevant and necessary to provide full and complete answers to any request, "you" or "your" may be deemed to include any other person with information relevant to any interrogatory who is or was

employed by or otherwise associated with the witness or who assisted, in any way, in the preparation of the witness' testimony.

11. "Company", "Duke Energy", or "Duke", means Duke Energy Kentucky, Inc., and/or any of its officers, directors, employees or agents who may have knowledge of the particular matter addressed, and affiliated companies including Duke Energy Corporation.
12. "DEOK" means Duke Energy of Ohio and Kentucky.
13. "Joint Intervenors," or "Joint Movants" means Kentucky Solar Energy Society, Kentuckians for the Commonwealth, and Kentucky Resources Council who have moved for the status of full intervention as joint intervenors in this matter.
14. Unless otherwise specified in each individual request the term "tariff" means the tariff as filed in this matter by Company.
15. "IRP" means integrated resource plan.
16. "2024 IRP" means the Kentucky 2024 Duke Energy Integrated Resource Plan.
17. "NAAQS" means national ambient air quality standards.
18. "PM" means particulate matter
19. "PM<sub>2.5</sub>" means particles with diameters generally less than or equal to 2.5 µm, also known as fine particulate matter.
20. "2024 PM<sub>2.5</sub> NAAQS" means the EPA *Reconsideration of the National Ambient Air Quality Standards for Particulate Matter*, 89 Fed. Reg. 16,202 (Mar. 06, 2024).
21. "GNP" means good neighbor plan.
22. "2015 Ozone GNP" means the EPA *Federal "Good Neighbor Plan" ("GNP") for the 2015 Ozone National Ambient Air Quality Standards*, 88 Fed. Reg. 36,654 (Jun. 05, 2023).
23. "Legacy CCR Rule" means the EPA *Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments rule*, 89 Fed. Reg. 38,950 (May 08, 2024).
24. "Section 111 Update" means the EPA *New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas*

*Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 89 Fed. Reg. 39798 (May 09, 2024).*

25. "CAA" means Clean Air Act.
26. "CO<sub>2</sub>" means carbon dioxide.
27. "CCS" means carbon capture and storage.
28. "EIR" means the Energy Infrastructure Reinvestment Program.
29. "ELCC" means effective load carrying capacity.
30. "GRIP" means the Grid Resilience and Innovation Partnerships Program.
31. "IRA" means the Inflation Reduction Act of 2022.
32. "ITC" means investment tax credits.
33. "O&M" means operation & maintenance.
34. "PTC" means production tax credits.
35. "PV" means solar photovoltaic.
36. "PVRR" means present value revenue requirement.
37. "TFP" means the Transmission Facilitation Program.
38. "SMR" means small modular reactor.
39. "UCAP" means unforced capacity.

## 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. The answers provided should first restate the question asked and also identify the person(s) supplying the information.
5. 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.
6. 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.
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. 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.
10. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

**SUPPLEMENTAL DATA REQUESTS PROPOUNDED TO  
DUKE ENERGY KENTUCKY BY JOINT INTERVENORS**

Joint Intervenors hereby tender the following supplemental requests for information to the Company:

- 2.1. Please refer to the following responses from Duke Energy Kentucky to the *Tendered Initial Requests for Information of Kentucky Solar Energy Society, Kentuckians for the Commonwealth, and Kentucky Resources Council to Duke Energy Kentucky* (“JI 1”), and provide responses in native, machine-readable electronic format (e.g., Microsoft Excel):
  - a. JI 1-2, responses to l., m., and n.;
  - b. JI 1-47
  - c. JI 1-48
  - d. JI 1-49
  
- 2.2. Please refer to the Company’s response to JI 1-3, and answer the following requests.
  - a. In response to subpart k, seeking projected energy revenues, the Company responded “N/A”. Does the response mean to say that it does not have energy revenue projections for any of the modeled portfolios? Please clarify.
  - b. In response to subpart l, seeking projected capacity revenues, the Company responded “N/A”. Does the response mean to say that it does not have capacity revenue projections for any of the modeled portfolios? Please clarify.
  - c. In response to subpart m, seeking projected ancillary services revenues, the Company responded “N/A”. Does the response mean to say that it does not have ancillary services revenue projections for any of the modeled portfolios? Please clarify.
  - d. Please provide the information provided in the Attachment accompanying the Company’s response to JI 1-3 for each of the modeled portfolios presented in the Company’s IRP.
  
- 2.3. Please refer to the Company’s response to JI 1-4.b. & c., and answer the following questions:
  - a. What interstate pipeline would the needed lateral be connected to?
  - b. Approximately how long (miles) would the lateral need to be in order to connect with an interstate pipeline? To the extent there are different interconnection point and/or interstate pipeline options how long would each need to be?
  - c. Please identify the “costs included in the IRP modeling” for the addition of a lateral connecting East Bend to an interstate pipeline, and produce the underlying “high-level budgetary estimate.” If multiple cost estimates were used, please identify and explain how each cost estimate was used in the modeling.
  - d. Please identify the “costs included in the IRP modeling” for firm transportation, and produce the underlying “high-level budgetary estimate.” If

multiple cost estimates were used, please identify and explain how each cost estimate was used in the modeling.

- e. What permitting, contracts, and other pre-construction agreements or approvals will be required?
- f. What is the estimated size and capacity of a lateral needed in the case of DFO?
- g. What is the estimated size and capacity of a lateral needed in the case of full conversion to gas firing?
- h. What is the estimated size and capacity of a lateral needed in the case of a NGCC addition?

2.4. Please refer to JI 1-5.b., and answer the following questions:

- a. Is the Company aware of the term “conservation voltage reduction” as defined in the document *Duke Energy Ohio Smart Grid Audit and Assessment*, prepared for The Staff of the Public Utilities Commission of Ohio by MetaVu at 154 (Jun. 30, 2011), *available at* [https://www.smartgrid.gov/document/duke\\_energy\\_ohio\\_smart\\_grid\\_audit\\_and\\_assessment.html](https://www.smartgrid.gov/document/duke_energy_ohio_smart_grid_audit_and_assessment.html)?
  - i. Has the Company implemented conservation voltage reduction as defined and utilized in that document?
  - ii. If so, please explain the efforts undertaken.
  - iii. If not, why not?
- b. Is the Company aware that their meters support remote power quality analysis and are capable of instantaneous voltage monitoring? See Case No. 2016-00152, DEK Ex. 3 at 1-2.
  - i. Has the Company implemented remote power quality analysis?
    - 1. If so, please explain the efforts undertaken, and provide any analysis.
    - 2. If not, why not?
  - ii. Has the Company implemented instantaneous voltage monitoring?
    - 1. If so, please explain the efforts undertaken.
    - 2. If not, why not?
- c. Is the Company aware of evaluation/implementation of conservation voltage reduction efforts included in other Kentucky IRPs (see, e.g., Case No. 2016-00413, *Electronic 2016 Integrated Resource Planning Report of Kentucky Power Company to the Public Service Commission of Kentucky*, at Sec. 3.3.5, Volt VAR Optimization, page 84 of 1497, (explaining that “VVO enables Conservation Voltage Reduction (“CVR”) on a utility’s system. CVR is a process by which the utility systematically reduces voltages in its distribution network, resulting in a proportional reduction of load on the network”); Case No. 2021-00393, *Electronic 2021 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, at Sec. 6, Significant Changes, 6-1 (“The major reasons pertain to continued improvements in end-use efficiencies, as mentioned above, and load reductions associated with conservation voltage reduction (“CVR”) after AMI is fully implemented.”))?



- d. Is the Company aware of Volt-VAR Optimization (VVO) programs, for instance as piloted by Duke Energy Ohio from 2008 to 2016? See Zohreh S. Hossein et al., *Conservation Voltage Reduction and Volt-VAR Optimization: Measurement and Verification Benchmarking*, 8 IEEE Access 50,755, 50,764 (Mar. 23, 2020), available at <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9027815>?
    - i. Has the Company implemented VVO as defined and utilized in that document?
    - ii. If so, please explain the efforts undertaken.
    - iii. If not, why not?
  - e. Did the Company receive and/or utilize funding from the U.S. Department of Energy for deployment of AMI in its Kentucky service territory as outlined in the Project Description, Duke Energy Business Services, LLC Smart Grid Deployment, November 2015 available at [https://www.smartgrid.gov/project/duke\\_energy\\_business\\_services\\_smart\\_grid\\_deployment](https://www.smartgrid.gov/project/duke_energy_business_services_smart_grid_deployment)?
    - i. If so, did the Company make any commitments to implement CVR and/or VVO as defined in related funding agreements, or in the alternative as defined in parts a. and d., above?
    - ii. If so, please explain the efforts undertaken.
    - iii. If not, why not?
- 2.5. Please refer to the Company's response to JI 1-5.c., and explain how each of the "efficiency and quality of service improvements that AMI provides or enabled" improves the efficiency or quality of service *to customers*.
- 2.6. Please refer to the Company's response to JI 1-7, and answer the following questions:
- a. Does the Company agree that the past inclusion of including a CO<sub>2</sub> tax on plant emissions in resource modeling added costs for units with CO<sub>2</sub> emissions? If the Company does not agree, please explain.
  - b. Does the Company agree that the inclusion of EPA CAA Section 111 constraints in resource modeling added costs for units with CO<sub>2</sub> emissions? If the Company does not agree, please explain.
  - c. Does the Company agree that, if EPA's Section 111 rule were stayed or eventually repealed, it is possible that a subsequent statutory, regulatory, and/or taxation change could impose new costs on CO<sub>2</sub> emitting generation resources? If the Company does not agree, please explain.
  - d. For each of the three time periods specified below, please explain whether the Company believes that a scenario with no legislation, regulation, or taxation of carbon emissions is likely, and why?
    - i. Over the next three years (2025-2027),
    - ii. Four to seven years out (2028-2031), does the Company believe that a scenario with no legislation or regulation of carbon emissions is likely? Please explain.

- iii. Eight to fifteen years out (2032-2039), does the Company believe that a scenario with no legislation or regulation of carbon emissions is likely? Please explain.
- 2.7. Please refer to the section titled “Legislation Impacting Existing Fossil Fuel Generation” at page 63 of the Company’s IRP, and Kentucky Acts 172, 24 RS SB 349, *available at* <https://apps.legislature.ky.gov/law/acts/24RS/documents/0172.pdf>, and answer the following questions:
  - a. To what extent has this affected the Company’s evaluation of the least cost alternative?
  - b. Has the Company evaluated the additional cost to the Company or ratepayers of compliance with SB 349? Please provide any such evaluation.
  - c. Referencing the letter from Amy B. Spiller, President, Duke Energy Ohio and Kentucky to the Honorable David Osborne, Speaker, and Members of the Kentucky House of Representation at 2 (Mar. 25 2024), presented as Joint Intervenor’s Hearing Exhibit 2 in Case No. 2023-413, *Electronic Application of Duke Energy Kentucky, Inc. For an Adjustment to Rider NM Rates and for Tariff Approval*, *available at* PDF 54-55 at [https://psc.ky.gov/pscscf/2023%20cases/2023-00413//20240717\\_PSC%20Notice%20of%20Filing%20Hearing%20Documents%20-%20May%2021.%202024.pdf](https://psc.ky.gov/pscscf/2023%20cases/2023-00413//20240717_PSC%20Notice%20of%20Filing%20Hearing%20Documents%20-%20May%2021.%202024.pdf),
    - i. Please provide the analysis that supports the assertion at p. 2 of that letter that the legislation will result in “shifting approximately \$50-\$100 million in costs from those customers who are currently benefitting from East Bend’s operation to future customers who will be required to pay for these stranded costs.”
    - ii. Please provide a current estimate of any costs associated with compliance with these requirements.
- 2.8. Please refer to the Company’s response to JI 1-8, and answer the following questions:
  - a. With regard to b., did the Company include the costs to convert its wet flue gas desulfurization system from a quicklime reagent process to a limestone reagent handling system at its east bend generating station, as applied for in Case No. 2024-00152? If yes, please explain how. If not, why not?
  - b. With regard to e.:
    - i. Did the Company include costs of compliance with the Legacy CCR in its IRP?
    - ii. Is it the Company’s position that costs that would be the same under any scenario do not need to be considered?
- 2.9. Please refer to the Company’s response to JI 1-9 and answer the following questions.
  - a. With regard to the assumptions made “[a]t the time the IRP was developed” in a-c, does the Company still consider CCS and SMRs feasible on same timelines?

- b. With regard to the response to d. & e., confirm no studies or analysis were relied on, or please produce the studies or analysis relied on.
  - c. With regard to the response to f.
    - i. Confirm only wind PPAs outside Company territory?
    - ii. How is this impacted by the Company's filing in Case no. 2024-00285?
- 2.10. Please refer to the Company's response to JI 1-10.a.
- a. Please confirm that "Duke Energy" as used in the above-referenced response refers to Duke Energy Corp. If anything but confirmed, please explain.
  - b. Please produce Duke Energy's carbon reduction goals.
  - c. Please identify the regulatory entity (or entities) that would approve Duke Energy's carbon reduction goals.
  - d. Please explain what portion of Duke Energy Corp.'s carbon reduction goals will need to be achieved through reduced carbon emissions from Duke Energy Kentucky's operations.
  - e. Please identify where the 2024 IRP identifies Duke Energy's carbon reduction goals and/or explains its relevance to Duke Energy Kentucky's resource planning.
- 2.11. Please refer to the Company's response to JI 1-14, particularly the statement that "As domestic coal generating capacity is expected to continue to retire over the next several years, the Company anticipates coal supply will continue to follow a similar downward trend in response to lower domestic demand."
- a. Does the Company agree that a downward trend in coal supply could reduce the number of potential coal suppliers for the East Bend 2 unit? Please explain why the Company agrees or disagrees.
  - b. Does the Company agree that, all else being equal, reduced supply and fewer suppliers would put upward pressure on coal prices? Please explain why the Company agrees or disagrees.
- 2.12. Please refer to the Company's response to JI 1-16 and answer the following questions:
- a. With regard to the response to a., please list each "relevant IRA benefit[ ]" evaluated/modeled, and explain how each was accounted for.
  - b. With regard to the response to b., please confirm the Company has not applied for any IRA benefits aside from IRA tax credits.
    - i. If confirmed, explain why the Company has not applied for any other IRA programs, and reconcile this answer with the answer in JI 1-16.c.
    - ii. If anything but confirmed, please list each program the Company has applied for and provide applications and current status.
  - c. With regard to the response to c., please provide the "Concept Papers & Applications for the GRIP Program."
- 2.13. Please refer to the Company's response to JI 1-19.a.
- a. The language of this response is semantically unclear, please clarify whether the Company means that the generic storage resource(s) available to the model all included a weighted ITC of 32.5%.

- b. Please also clarify whether the Company means the same with regard to standalone solar and SPS solar “reciev[ing] portions of two PTC curves”.
- 2.14. Please identify each instance in which the 2024 IRP explicitly addresses the capital investment in East Bend 2 proposed in Case No. 2024-00152.
- 2.15. Please identify each instance where the capital investment in East Bend 2 proposed in Case No. 2024-00152 is included in the modeling inputs for the 2024 IRP.
- 2.16. Please confirm that the CPCN project proposed in Case No. 2024-00152 is not identified in the 2024 IRP as a part of Duke’s “three-year implementation plan.”
- a. If confirmed, please explain in full the reasons that the 2024 IRP does not address the referenced CPCN project.
- b. If anything but confirmed, please identify each instance where the referenced CPCN project is identified as part of Duke’s “three-year implementation plan.”
- 2.17. Please confirm that the proposal to change from a Fixed Resource Requirement status to full participation in PJM’s auction-based Reliability Pricing Model, as proposed in Case No. 2024-00285, was not identified as a part of Duke’s “three-year implementation plan.”
- a. If confirmed, please explain in full the reasons that the 2024 IRP does not address the referenced change in PJM participation.
- b. If anything but confirmed, please identify each instance in which the referenced change in PJM participation is identified as part of Duke’s “three-year implementation plan.”
- 2.18. Please identify each instance in which the 2024 IRP explicitly addresses the changes to the Company’s Demand Side Management programs proposed in Case No. 2024-00264.
- 2.19. Please identify each instance where the changes to the Company’s Demand Side Management programs proposed in Case No. 2024-00264 are included in the modeling inputs for the 2024 IRP.
- 2.20. For each modeling exercise included in the Company’s 2024 IRP, please state whether Duke was assumed to participate in PJM as a Fixed Resource Requirement entity, with associated capacity and reserve margin requirements, or as a Reliability Pricing Model (RPM) entity?
- 2.21. Please refer to Witness Matthew Kalemba’s response to Sierra-DR-01-006, including the statement that “given the requirements of KY SB 4 and SB 349, the 2035 timeline is a relatively conservative assumption for ensuring that the necessary approvals for retiring the asset are received.” In the Company’s estimation, given the requirements of KY SB 4 and SB 349, what is a reasonable timeframe in which the necessary approvals could be obtained to retire a fossil unit? Please explain

- 2.22. Please explain how the Company calculated the preferred portfolio's revenue requirements per kilowatt hour, provided in the IRP at page 31, Table 3.3. Please include with your response the workpaper(s) used in those calculations.
- 2.23. Please reconcile the statement at page 30 of the IRP that "Executing on these compliance pathways will require updates to Kentucky statutes" and the Company's response to JI 1-20.c., and explain how the Company intends to comply with the EPA CAA Section 111 Update if no changes are made to Kentucky statutes.

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 September 25, 2024; that the documents in this electronic filing are a true representation 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.



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Byron L. Gary