COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR 1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A NEW GENERATION RESOURCE; 2) A SITE COMPATIBLITY CERTIFICATE; AND 3) OTHER GENERAL RELIEF	)))))))	**CASE NO. 2024-00310**

RESPONSES TO SIERRA CLUB'S SECOND INFORMATION REQUEST

TO EAST KENTUCKY POWER COOPERATIVE, INC.

DATED DECEMBER 2, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATVIE, INC. FOR 1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A NEW GENERATION RESOURCES; 2) A SITE COMPATIBILITY CERTIFICATE; AND 3) OTHER GENERAL RELIEF	)	**CASE NO. 2024-00310**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Darrin Adams, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Sierra Club's Second Request for Information in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Subscribed and sworn before me on this 16th day of November 2024.

Notary Public

GWYN M. WILLOUGHBY
Notary Public
Commonwealth of Kentucky
Commission Number KYNP38003
My Commission Expires Nov 30, 2025

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

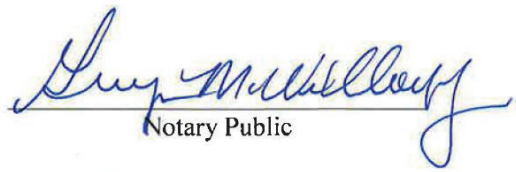
THE ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATVIE, INC. FOR 1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A NEW GENERATION RESOURCES; 2) A SITE COMPATIBILITY CERTIFICATE; AND 3) OTHER GENERAL RELIEF	)	**CASE NO. 2024-00310**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Craig Johnson, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Sierra Club's Second Request for Information in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Subscribed and sworn before me on this 16th day of November 2024.



Notary Public

GWYN M. WILLOUGHBY
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Commission Number KYNP38003
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COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATVIE, INC. FOR 1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A NEW GENERATION RESOURCES; 2) A SITE COMPATIBILITY CERTIFICATE; AND 3) OTHER GENERAL RELIEF	)	**CASE NO. 2024-00310**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Jerry B. Purvis, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Sierra Club's Second Request for Information in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Subscribed and sworn before me on this 16th day of November 2024.

Notary Public

GWYN M. WILLOUGHBY
Notary Public
Commonwealth of Kentucky
Commission Number KYNP38003
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COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATVIE, INC. FOR 1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A NEW GENERATION RESOURCES; 2) A SITE COMPATIBILITY CERTIFICATE; AND 3) OTHER GENERAL RELIEF	)	**CASE NO. 2024-00310**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Julia J. Tucker, being duly sworn, states that she has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Sierra Club's Second Request for Information in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Julia J. Tucker

Subscribed and sworn before me on this 16th day of November 2024.

Notary Public

GWYN M. WILLOUGHBY
Notary Public
Commonwealth of Kentucky
Commission Number KYNP38003
My Commission Expires Nov 30, 2025

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 1
RESPONSIBLE PARTY: Darrin Adams

Request 1. Please describe EKPC's load interconnection queue process and answer the following:

a. What criteria or requirements, if any, do potential large load customers have to meet for entry to EKPC's load interconnection queue?

b. What data sharing requirements does EKPC have in place for large load customers to describe their operational characteristics, both in terms of steadystate and dynamic performance?

c. What transmission studies does EKPC conduct of a potential, new large load customer?

d. What is the transmission study process for large load customers? Is a serial or cluster study approach used? What specific studies (power flow, contingency analysis, transient stability, EMT, etc.) are conducted for large loads? What size thresholds or other criteria, if any, are used to differentiate the types of studies performed?

e. What information is required/requested to develop a load model representation in power flow, positive sequence dynamics, and EMT? Does EKPC require the large load customer to provide a dynamic model? Does EKPC require the provision of any information that would help

inform the creation of a dynamic load model? If so, do all potential, new large load customers provide this data?

f. If EKPC does not receive dynamic load data from a potential, new large load customer, what assumptions with respect to the load of the potential customer does EKPC make when conducting EMT and/or transient stability studies?

g. What requirements, if any, does EKPC impose on the length of time in which a customer can remain in its load interconnection queue?

h. Provide a copy of any contracts that govern the recovery of transmission study costs from potential large load customers.

i. What types of power flow cases and scenarios does EKPC run when assessing the impacts of new large load customers?

j. How are new large load customers grouped, if at all, for purposes of transmission planning studies?

k. What information serves as the basis for the commitment and dispatch represented in EKPC's transmission modeling?

l. What assumption does EKPC make with respect to imports/exports of energy to or from its transmission system for purposes of power flow simulations as part of its large load interconnection planning process?

m. Does EKPC have any restrictions or requirements in place regarding fast ramping of large load customers such as AI data center loads that could impact bulk power system conditions?

n. Does EKPC have a documented criterion for assessing what is considered acceptable versus unacceptable performance of the bulk power system when studying the reliability impacts of large load interconnection requests? If so, please provide those criteria.

o. What is the process and criteria for incorporating large load interconnection requests into load forecasts used for integrated planning, resource planning, transmission planning, etc.?

Response 1. a. EKPC does not presently have a formal load interconnection queue. EKPC historically has received inquiries regarding potential new load connections or increased demand for existing customer connections through various channels, including; local or state economic development organizations, individual land developers, or EKPC owner-member distribution cooperative personnel. EKPC Transmission Planning staff typically perform a preliminary analysis to determine how the new/additional load should be served and any impacts the load would have on the EKPC transmission system. In some instances where more detailed studies and/or engineering work are required or desired, the customer may be required to provide an upfront fee to cover the costs of those studies and/or preliminary engineering work. If the load connection continues to progress beyond the initial study work, EKPC presents the load connection and associated required transmission projects to PJM as a supplemental need/project so that the load and associated projects to serve it are incorporated into the PJM regional transmission plan.

b. EKPC requests information regarding the characteristics of large customer loads as needed for the studies to be performed. Typical data requested from customers includes; the real power profile of the load (i.e, peak demand, typical seasonal operating characteristics, and ramp rates for demand), the power factor of the load,

and size and starting requirements for large motors. Certain types of loads may require additional data to be provided, such as dynamic characteristics of loads, short-circuit requirements, sensitivity to voltage fluctuations, etc. This information is requested when deemed necessary.

c. EKPC performs power-flow studies with the new load connected to the system to determine what the system impacts will be and to develop a service plan to address those impacts.

d. See the response to part a. above. EKPC's process is more serial in nature than cluster-based but is not a strict serial process. Potential new loads are studied as inquiries are received rather than studying groups of load requests together. In areas of the system where new load requests overlap, EKPC will study the area both with and without the prior load inquiries received in order to determine what is required if all loads develop in the area, as well as if only each single load connects. Power-flow studies simulating both single contingency (n-1) and multiple contingency (n-1-1) scenarios are performed for all potential new load connections to determine the impacts of the load connection and required transmission facilities to address those impacts.

e. See the response to part b. above. EKPC does not typically require a dynamic load model or dynamic-load characteristic to be provided. However, certain types of loads (such as an arc furnace or smelter) are required to provide this type of information.

f. EKPC does not typically perform EMT or transient-stability studies for large-load customers. If such studies are deemed to be necessary, EKPC would request the needed data from the customer.

g. EKPC has no such timeframe restrictions. However, since EKPC has no formal load-interconnection queue, capacity that is available to serve load on the EKPC system can be used by any other load connection that commits to connect – that is, EKPC does not reserve capacity for a customer that has expressed interest but has not yet made a commitment to connect.

h. No such contracts currently exist.

i. EKPC utilizes power-flow models that represent summer and winter peak-load periods for the upcoming 10-year period (for example, studies conducted in 2024 would utilize cases representing both summer and winter peak periods for the 2025-2034 period). EKPC considers scenarios involving local generator-unit outages/unavailability along with the n-1 and n-1-1 transmission contingency analysis that is performed on each model. As discussed in the response to part d. above, EKPC assesses the impact of multiple load-connection requests in a specific area of the system, when appropriate to determine the combined impacts of these potential connections on the transmission system.

j. See the responses to part d. and part i. above.

k. EKPC models generation to serve its load sourcing first from its own internal resources and committed power purchase agreements. EKPC's combustion turbines at J.K. Smith and Bluegrass Station are the last internal units to be dispatched in the models to meet the modeled load level. If EKPC's contracted power purchases and internal generation resources are not sufficient to meet the load level in the power-flow models, the remaining needed generation is modeled as an import from the PJM market.

l. If EKPC does not have sufficient internal generation and committed power purchases available in the models to cover the modeled load level, an import is simulated from the PJM market.

m. EKPC does not currently have any such restrictions or requirements.

n. EKPC does not have any documented criteria specific to studying the reliability impacts of large-load customers on the bulk power system. The same EKPC and PJM planning criteria that are used to plan the system as ordinary course of business would apply for assessments of impacts due to a large-load connection. EKPC's planning criteria that apply to its transmission-planning processes, including large-load connections, is provided as Attachment *SC-DR2-1n-1.pdf*. PJM's planning criteria used for its assessments of reliability impacts on the bulk power system can be found in its Manual 14-B at the following location on the PJM website:

https://pjm.com/-/media/documents/manuals/m14b.ashx

o. In the short term, large commercial sales projections rely on the input of EKPC's owner-member cooperatives. Owner-members, having knowledge of their key accounts and the presence of industrial parks, project usage for existing large loads and advise of new consumers or consumers that are leaving. Additional input from EKPC's Economic Development staff may also be included.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 2
RESPONSIBLE PARTY: Jerry B. Purvis and Julia J. Tucker

Request 2. Please refer to Purvis Testimony at 7.

a. Please provide all analysis and support for the statement that "EKPC would need a fast start dispatchable energy resource to keep the grid reliable and in-service."

b. Is this statement mainly intended to refer to the role Cooper Station plays in maintaining stability in the immediate vicinity of the proposed Liberty RICE facility (see Mosier at 5) or does EKPC have a "need" for keeping its entire system's "grid reliable and in-service"?

c. Please explain why EKPC's participation in the PJM market does not provide it with the opportunity to keep its grid reliable and in-service.

Response 2. a. and b. This statement generally refers to intermittent resources' impact on overall grid stability, not specific or local voltage support when the fuel source (the sun or wind) is not available. The extreme changes in demand in the morning as the sun rises and again in the evening as the sun sets, commonly referred to as the "duck curve," presents challenges for balancing

authorities. Refer to the Application, Exhibit 3, Direct Testimony of Julia J. Tucker, for more information on the need for quick-start generation and its value to EKPC.

c. EKPC's participation in the PJM markets has provided EKPC with increased access to lower-cost capacity and energy when compared to EKPC as a stand-alone balancing authority. However, as stated in the application, the Commission has made clear that utilities in Kentucky are not to depend on any market to meet its forecasted capacity and energy needs.[1] As such, EKPC has continued its planning practices of meeting its forecasted peak demand while economically optimizing its owner-member's assets in the PJM market.

[1] *See* Case No. 2014-00226, *An Examination of the Application of the Fuel Adjustment Clause of East Kentucky Power Cooperative, Inc. from November 1, 2013, through April 30, 2014, January 30, 2015*, Order (Ky. P.S.C., January 30, 2015); Case No. 2022-00402, *Electronic Joint Application of Kentucky Utilities Company and Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Site Compatibility Certificates and Approval of Demand Side Management Plan and Approval of Fossil Fuel-Fired Generating Unit Retirement*, Order at 95 (Ky. P.S.C., November 6, 2023); and Case No. 2023-00153, *Electronic Tariff Filing of East Kentucky Power Cooperative, Inc. and its Member Distribution Cooperatives for Approval of Proposed Changes to Their Qualified Cogeneration and Small Power Production Facilities Tariffs*, Order at 10 (Ky. P.S.C. October 21, 2023).

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 3
RESPONSIBLE PARTY: Julia J. Tucker

Request 3. Please refer to the Application at page 3, referencing the Commission's expectation that EKPC "should have generation capacity to serve its native load."

a. Please explain whether EKPC believes that, absent such direction from the Commission, it could provide the overall system grid reliability (maintaining service of load) at a lower cost by relying in part on the PJM market rather than on the Liberty RICE facility.

b. Please provide all analysis and support for EKPC's response to part (a).

Response 3 all. No, EKPC could not maintain service of load at a lower cost while also maintaining overall system reliability without the addition of the Liberty RICE facility. Refer to the Application, Exhibit 3, Direct Testimony of Julia J. Tucker, page 15 line 17 through page 16 line 21, and Figure 2 on page 18. Without the addition of Liberty RICE, EKPC would not be expected to meet its forecasted peak load, even without the planning reserve margin included in the overall load expectation.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 4
RESPONSIBLE PARTY: Julia J. Tucker

Request 4. Please see Direct Testimony of Don Mosier at 6.

a. Please provide all analysis and support for the statement that "there will be a significant need for fast start peaking resources to replace rapidly declining solar generating capability during evening peak needs."

b. Please define "evening peak."

c. Please explain why EKPC's participation in the PJM market does not provide it with the opportunity to meet the need for power during "evening peak" periods.

Response 4. a. Refer to EKPC's response to Item 2a and 2b, above.

b. Evening peak is defined as 5:00 PM to 10:00 PM.

c. EKPC's participation in PJM provides it with an opportunity to meet the need for power during evening peak, however it may not be the most economic or reliable option. From an economic standpoint, EKPC pays for 100% of its load needs from the PJM market then offsets that expense with its owned generation resources. This offset is commonly referred to as a

hedge. If EKPC does not own a generation resource that is capable of providing quick-start and fast-ramping energy, then it cannot adequately and efficiently hedge against the market – which results in increased costs for owner-members that could otherwise be avoided. In addition, as seen during Winter Storm Elliot, capacity in PJM can become constrained. The Commission has repeatedly made it clear that utilities are expected to maintain adequate generation "steel in the ground" to serve its native load and maintain reliability, even when the PJM market is constrained. Refer to EKPC's response to Item 2c, above. It is important for EKPC to be protected from the retirement of dispatchable capacity from other participants in the PJM capacity market as it has no control over those decisions or the tightening market conditions they create.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 5
RESPONSIBLE PARTY: Craig Johnson and Julia J. Tucker

Request 5. Please refer to Direct Testimony of Craig Johnson at 9.

a. Please confirm that Mr. Johnson is stating that the RICE engines are justified, in part, because they will meet a resource need "expected in the future PJM footprint." If not confirmed, please explain the statement.

b. Please confirm that PJM will dispatch the RICE units. (Tucker at 26) If not confirmed, please explain.

c. Please confirm that, absent any local reliability requirements, the most economical units in the PJM system will be dispatched to serve PJM load. In other words, the RICE units will not be dispatched to serve EKPC load specifically. If not confirmed, please explain.

d. Please provide EKPC's understanding of the "deployment of renewable energy expected in the future PJM footprint" and explain why EKPC needs to respond to the entire PJM footprint. In your response, please address EKPC's position that, "The Commission has often expressed an expectation that every electric utility in Kentucky should have generation capacity to serve its native load." (Application at 3)

e. Is EKPC intending the RICE engines to serve its native load or to respond to the entire PJM footprint?

Response 5. a. The RICE units are justified because EKPC needs reliable "steel in the ground" to serve its native load and the RICE units do not result in wasteful duplication of resources. See the Application, Exhibit 3, Direct Testimony of Julia J. Tucker. The RICE units are also expected to meet the future needs of PJM as the market transitions to rely more heavily on intermittent resources, such as solar, which is expected to produce the phenomena known as the "duck curve." PJM will need to respond to the duck curve, and the RICE facility will be poised to meet that response, thus more adequately hedging owner-member load within the PJM market.

b. Yes. The RICE units will be offered into the PJM market daily (day-ahead and real-time), as well as the PJM RPM capacity market. PJM will economically dispatch the RICE units similar to any other unit EKPC has offered into the PJM market. EKPC has the option to dispatch the RICE units, just as it does any unit within the EKPC fleet, as "must-run" as long as PJM can reliably accommodate the energy injection into the system.

c. No. While PJM does dispatch units based on economic merit, absent the impacts of transmission constraints, the RICE units can still be dispatched by EKPC to serve native load if needed – especially during high-load and/or extreme weather scenarios. EKPC desires to economically optimize its generation resources within the PJM market, however, EKPC retains operational discretion over its generation fleet to reliably serve its native load.

d. PJM currently has approximately 85 GW of solar generation capacity under construction. See attached Excel spreadsheet *SC DR2-5d.xlsx*, which was downloaded from the PJM Interconnection Queue website (https://www.pjm.com/planning/service-requests/serial-service-request-status). With regards to the Commission's expectation regarding "steel in the ground", refer to EKPC's response to Item 2c, above.

e. EKPC intends for the RICE units to reliably serve native peak-load expectations based on its updated 2024 long-term load forecast plus reserve margin while also economically dispatching against market prices to adequately hedge owner-member load. These two concepts are not mutually exclusive, as all owned generation in the EKPC portfolio is expected to meet these needs.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 6
RESPONSIBLE PARTY: Julia J. Tucker

Request 6. Please refer to Direct Testimony of Julia J. Tucker at page 21.

a. Please provide the heat rates for RICE units and "Traditional CTs" as referenced in the testimony that support the statements made by Witness Tucker.

Response 6. Refer to EKPC's response to Commission Staff's First Request for Information, Item 6.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2024-00310
SECOND REQUEST FOR INFORMATION RESPONSE

SIERRA CLUB'S REQUEST DATED DECEMBER 2, 2024
REQUEST 7
RESPONSIBLE PARTY: Julia J. Tucker

Request 7. Please refer to Direct Testimony of Julia J. Tucker at page 23.

a. Please explain what is meant by a "run time of over 6,000 hours." Is this the equivalent of a 68% capacity factor?

b. At what capacity factor does EKPC expect to operate the proposed Liberty RICE facility?

c. Please identify any other RICE facilities that are currently operating in North America that operate at a capacity factor that is similar to that forecast by EKPC for the proposed Liberty RICE facility.

Response 7.

a. and b. Refer to EKPC's response to Commission Staff's Second Request for Information, Item 4.

c. EKPC does not retain operational history for other RICE facilities operating in North America.