**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

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|---|---|---|
| **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 STAFF 'S FOURTH INFORMATION REQUEST**

**TO EAST KENTUCKY POWER COOPERATIVE, INC.**

**DATED FEBRUARY 21, 2025**

**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

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| **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** |

**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 Staff's Fourth Request for Information in the above-referenced case dated February 21, 2025, 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

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Subscribed and sworn before me on this 27th day February, 2025.

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:**

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| **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** |

**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 Staff's Fourth Request for Information in the above-referenced case dated February 21, 2025, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information, and belief, formed after reasonable inquiry.

Darrin Adams

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Subscribed and sworn before me on this 27th day of February, 2025.

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:**

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| **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** |

**CERTIFICATE**

**STATE OF KENTUCKY )**
**)**
**COUNTY OF CLARK )**

Jerry Purvis, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Staff's Fourth Request for Information in the above-referenced case dated February 5, 2025 and that the matters and things set forth therein are true and accurate to the best of his knowledge, information, and belief, formed after reasonable inquiry.

Jerry Purvis

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Subscribed and sworn before me on this 27th day of February, 2025.

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**
**FOURTH REQUEST FOR INFORMATION RESPONSE**

**STAFF 'S REQUEST DATED FEBRUARY 21, 2025**
**REQUEST 1**
**RESPONSIBLE PARTY: Darrin Adams**

**Request 1.** Refer to the Application, Exhibit 6, Direct Testimony of Darrin Adams, page 10, lines 18-19 in which EKPC noted that there are transmission system reliability concerns, particularly when a Cooper Generation Unit is not available. Given that EKPC currently has an application in Case No. 2024-00370,[2] to construct additional CCGT generation at the Cooper facility, explain if the addition of the new generation source in Case No. 2024-00370 will improve the reliability of the transmission system concerns addressed in the testimony without the addition of this project. Include in this analysis specific quantitative evidence (i.e. load forecasts, cost projections) and work papers.

**Response 1.** The addition of the new combined-cycle gas turbine facility at Cooper Station will improve the reliability of the transmission system in the area. This conclusion is based on the results of EKPC's annual transmission-planning studies, which have not identified any significant reliability concerns in the area when the existing Cooper generating units are operating. Similarly, EKPC has not identified real-time reliability issues when the Cooper generating units are available and online. Therefore, EKPC real-time operational experience and studies of the

future system indicate that system reliability is maintained with generation operating at Cooper Station. The addition of the Liberty RICE facility in combination with the Cooper combined-cycle gas turbine facility will bolster reliability even further for the area. The existence of two separate generation facilities in the area creates an additional level of reliability that will provide more operating margin for the area when transmission and/or generation outages occur. For instance, if an outage of the 161 kV transmission lines connecting Cooper Station to the area to the northwest (northern Pulaski County and Casey County) or to the west (Russell County and Adair County), the Liberty RICE generation facility would provide a valuable resource to help support those areas of the transmission system without available support from Cooper Station.

Furthermore, the addition of a new unit at Cooper Station will help support the transmission in the region, it does not fully cover EKPC's need for additional generation. EKPC's winter peak load exceeds its generation capabilities. EKPC needs both the RICE facility in this application and the unit at Cooper Station in Case No. 2024-00370 to address EKPC's capacity shortfall which cannot be overcome with transmission projects only.

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

**STAFF 'S REQUEST DATED FEBRUARY 21, 2025**
**REQUEST 2**
**RESPONSIBLE PARTY: Julia J. Tucker**

**Request 2.** Refer to the Application, Exhibit 3, Direct Testimony of Julia J. Tucker, page 20, line 15. Confirm that one alternative EKPC considered included the addition to or upgrading of the 161kV transmission system to the Liberty Transmission Region. If unable to confirm, explain why.

**Response 2.** The referenced testimony stated that "EKPC evaluated multiple alternatives in its 2022 IRP." The multiple alternatives evaluated were all generation alternatives, not upgrades to the transmission system. Table 8-2 on page 163 of the 2022 IRP lists the alternatives evaluated. Results of that evaluation were that EKPC would need to install a 225 MW simple cycle combustion turbine in 2032. That date was based on the 2020 Long Term Load Forecast that was used for the 2022 IRP analysis. That forecast estimated that EKPC's winter peak load would reach 3,520 MW by the 2031-2032 winter peak season. However, EKPC's actual load experience for the past three winters has exceeded that projected value each year. On December 23, 2022, EKPC's peak load reached 3,747 MW; on January 17, 2024, EKPC hit a peak load of 3,754 MW;

and, on January 22, 2025, EKPC's load peaked at 3,744 MW. EKPC has approximately 3,430 MW of existing winter capacity that it depends on to serve its winter peak load. EKPC's winter peak load has already exceeded that amount each of the past three winter seasons and is expected to continue to do so. The long-term load forecast was updated in 2024 and has changed substantially from what was used in the 2022 IRP. The most current update reflects actual load experience. Therefore, the new generation projected to be needed in 2032 in the 2022 IRP is now needed as soon as it can be constructed, which is expected to be in late 2028. Upgrading or adding new transmission capabilities will not provide additional generation that is needed to serve load. A comparison of the last three EKPC load forecasts was provided as Attachment JJT-2 to the Application. That comparison clearly shows the increase in the projected winter peak load expectations. Those expectations are based on actual load experience and not potential new load that might be added at some point in the future. Any new load that is added will increase EKPC's projected winter peak load expectations.

Attachment JJT-3 to the Application shows the expected planning reserves if EKPC is granted all of the generation resources that it is requesting in Case No. 2024-00310 and Case No. 2024-00370. With all of the requested generation facilities being included, EKPC only achieves a positive winter reserve margin after both the RICE facility and combined cycle facilities are installed. The Attachment JJT-3 also shows EKPC relying on a 300 MW hydro power purchase agreement that has not been successfully negotiated and is in jeopardy of not being realized. Once the power purchase agreement is ended, EKPC's installed reserve margin goes back down to just

being slightly positive and does not maintain the targeted 7% reserve level. All of the requested facilities are needed to meet forecasted load.

Depending on purchases from the market will be a risky proposition. The market is tightening significantly at a time load is expected to substantially increase, and winter risk is increasing in the PJM region. Both PJM and the North American Electric Reliability Corporation ("NERC") have provided insights related to the PJM region that confirm the riskiness of leaning on the market. PJM's 2025/26 Base Residual Auction sent a strong signal that the supply-demand balance is tightening in the PJM region; only 514 MW of annual Unforced Capacity was offered and did not clear and receive a capacity commitment. After the auction, PJM indicated that the clearing results sent a strong signal that investment is needed.[1] After releasing the 2025 load forecast report, revealing a substantial increase in expected future load in the PJM region, PJM released a Board Letter stating, "Taking the anticipated 2025 load forecast into account, the PJM system could see a capacity shortage as soon as the 2026/27 Delivery Year."[2] Similarly, in a filing before the Federal Energy Regulatory Commission, PJM indicated that now is a time in which investment is needed.[3]

Additionally, in December 2024, NERC issued its 2024 Long-Term Reliability Assessment. For the first time NERC has designated the PJM region as a region with "Elevated Risk," meaning the region meets resource adequacy criteria, but analysis indicates that extreme weather conditions are likely to cause a shortfall in reserves.

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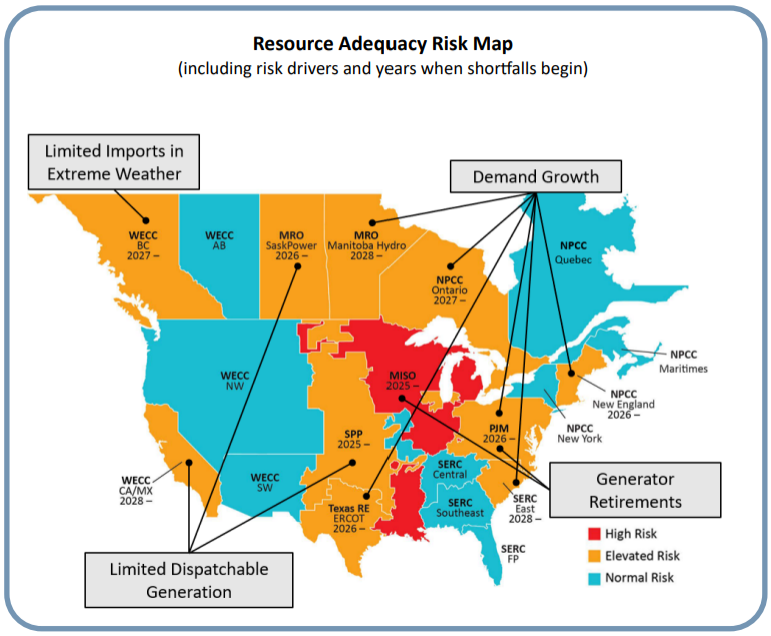
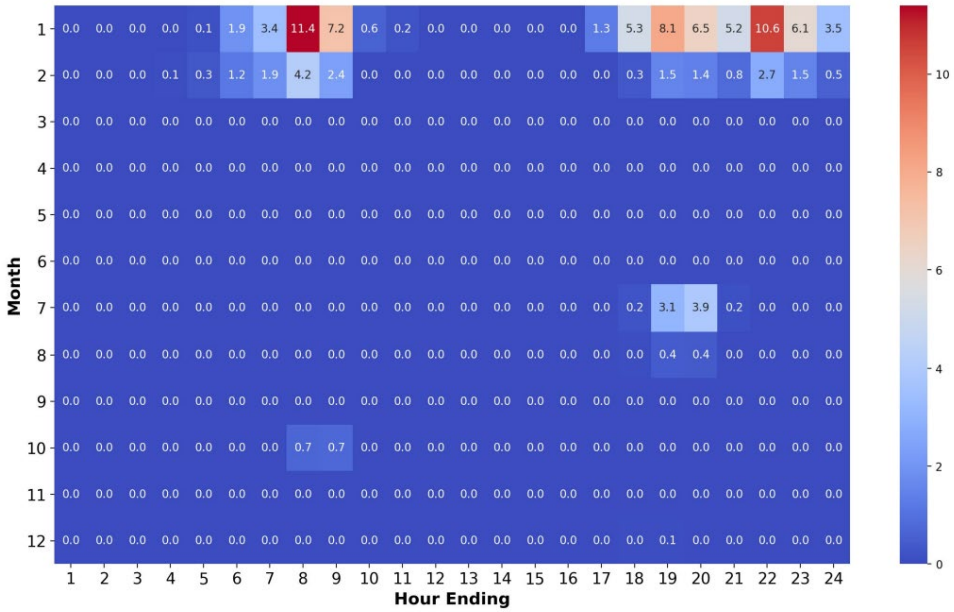
[1] PJM Capacity Auction Procures Sufficient Resources To Meet RTO Reliability Requirement | PJM Inside Lines
[2] 20241209-board-letter-outlining-action-on-capacity-market-adjustments-rri-and-sis.pdf
[3] *PJM Interconnection, L.L.C.,* Docket No. ER25-1357-000 (Feb. 20, 2025).




NERC also looked at the energy assurance, measured as EUE (MWh), and revealed winter hours of concern for 2026. NERC presented the data from its analysis as a heat map, provided below, showing month on the y-axis and hour ending on the x-axis.



Relying on availability of long-term power purchases introduces more risk into the power supply portfolio than it has previously when excess generation was readily available within the PJM system. Additionally, the economic analysis shows the benefits of the EKPC proposed new generation resources as compared to the PJM market. It would be unreasonable to assume that someone would sell their capacity and energy below the expected market price, so the market comparison demonstrates the economic value of constructing the new generators as opposed to relying on power purchases.

Generation and transmission are two different issues. EKPC needs additional generation capacity to meet its load today and into the future. The additional generation in this case and the generation in Case No. 2024-00370 are the ways EKPC proposes to secure that needed generation, and EKPC requires all the additional generation proposed in both cases. Adding the additional generation onto the system, does necessitate transmission upgrades / additions. The cost of transmission upgrades is estimated and evaluated in the site evaluation process to develop the best location for the generation. In no instance, do the transmission upgrades / additions replace the need for generation, rather they enable the generation to reach load.

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

**STAFF 'S REQUEST DATED FEBRUARY 21, 2025**
**REQUEST 3**
**RESPONSIBLE PARTY: Darrin Adams**

**Request 3.** Would the addition to or upgrading of the 161kV transmission system negate the need to provide additional generation capability with the proposed RICE Units. If confirmed, provide the cost analysis and specific description(s) of each alternative to add to or upgrade the 161kV transmission system.

**Response 3.** No, the addition of a new generation facility for EKPC is driven by the need for additional generation capacity to address increasing electric demand, which cannot be achieved by upgrading the 161kV transmission system. Either adding to or upgrading the 161 kV transmission system in the area would provide no additional capacity or energy to meet EKPC's power-supply needs, and therefore would not address EKPC's overarching objective of adding generation capacity to meet its load. Please also refer to the response to Item 2.

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

**STAFF 'S REQUEST DATED FEBRUARY 21, 2025**
**REQUEST 4**
**RESPONSIBLE PARTY: Jerry Purvis**

**Request 4.** Provide a copy of the Air Application submitted to the Kentucky Division for Air Quality on or about September 20, 2024. Also provide a status update on the progress of the application and the projected schedule.

**Response 4.** Please see attached *DR4-4 EKPC – Liberty Station PSD-Title V permit Application 02024(002).pdf* and *DR4-4 AIR PRB APPLICATION COMPLETE LETTER AI 183908.pdf.* The Kentucky Division of Air Quality is reviewing the permit application. KDAQ issued a letter that the application is deemed administratively complete 11/21/2024. Additionally, KDAQ has not filed any notice of deficiencies (NOD's).

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

**STAFF 'S REQUEST DATED FEBRUARY 21, 2025**
**REQUEST 5**
**RESPONSIBLE PARTY: Darrin Adams & Julie Tucker**

**Request 5.** Refer to the Cooper Generation Unavailability Transmission Analysis, dated June 5, 2024, in Case No. 2024-00370. Of the six identified options, identify which option EKPC determined as the most beneficial alternative and explain why they were chosen as the most beneficial. Explain if any of these alternatives either negate the need for or reduce the benefit from the construction of the RICE units.

**Response 5.** EKPC determined that either construction of a new West Garrard-Cooper 345 kV line and associated substation terminal equipment at each end (labeled Alternative #3 in the referenced document) or construction of a new KU Alcalde-Cooper 345 kV line and associated substation terminal equipment (labeled as Alternative #5) provides the most load-serving benefit for the region. These alternatives would support the highest amount of additional EKPC load in the region – estimated at 405.7 MW -- if no new generation is added, and would therefore provide the most reliability margin if existing and/or new generation is not available.

None of the transmission alternatives provide additional generation for the EKPC system. The need identified in this case is for additional generation to serve the EKPC Owner Members load, and that requires additional generation resources. Therefore, none of the transmission alternatives evaluated would negate the need for the RICE units nor would the transmission alternatives reduce the benefits of constructing the RICE units.

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

**STAFF 'S REQUEST DATED FEBRUARY 21, 2025**
**REQUEST 6**
**RESPONSIBLE PARTY: Julia J. Tucker**

**Request 6.** Refer to Application, Exhibit 4, Direct Testimony of Brad Young, page 8, lines 11 thru 17. Confirm EKPC included the ancillary benefits to the PJM System associated with the dispatchability of the RICE Units. If confirmed, provide details of the ancillary benefits including any work papers to support the response. If not confirmed, provide an analysis of the ancillary benefits.

**Response 6.** Ancillary benefits are driven by real time operating conditions and are not generally considered in cost benefit analyses of alternatives. For such modeling, ancillary services do not drive the dispatch of the units, rather, the ancillary services are a byproduct of having the unit available and operational. To be clear, EKPC does expect that the RICE units will qualify for ancillary services payments; however, that value was not included in the quantitative analysis of the project. PJM ensures that when ancillary payments are made that they are at least equal to what the generator would have received from the Locational Marginal Price (LMP) if it had been fully dispatched instead of modified to provide services such as load following or operating reserves. The economic evaluation provided

by EKPC in JI Response 3-5 evaluated the unit compared to the LMPs and did not include ancillary services revenues.

PJM has identified the need to refine its current ancillary services. It established a roadmap to do so over the next few years. As a result, it is possible that the revenues from those markets will increase. Additionally, PJM indicated that new market products may be needed. As the portfolio of generation supplies continues to evolve, PJM has indicated that it will need flexible resources. Increasing levels of intermittent resources creates significant variability and uncertainty that will need to be managed with flexible resources.[4] As Craig Johnston testified, the operational flexibility of the the RICE units are well-suited to provide the ramping service that PJM operations will need in a future with increased levels of intermittent resources. As markets get refined and new products added, additional value is likely to accrete to the RICE units based on their operational capabilities.

As a reasonable proxy to determine potential ancillary service revenues, actual revenues earned by EKPC's J.K. Smith Units 9 and 10 were reviewed. Those two units received an average revenue of $3.54 per MWh over the years 2023 and 2024. The J.K. Smith Units 9 and 10 were used for the proxy because they are the most efficient, best heat rate natural gas fired units that EKPC currently has on its system. The Liberty Rice units will be more efficient with better heat rates so it would be reasonable to assume that they would earn at least as much revenue per MWh as the existing units. Using this value as a proxy for the value of ancillary service benefits would

[4] Energy Transition in PJM: Flexibility for the Future (June 24, 2024), 20240624-energy-transition-in-pjm-flexibility-for-the-future.ashx

result in approximately $5 million in ancillary service revenue annually. The $3.54/MWh revenue was applied to the modeled annual energy from the Liberty RICE facility. The Liberty RICE facility will be expected to operate significantly more hours than a combustion turbine would because of the better heat rate and flexible operating characteristics of the RICE facility. Comparing the ancillary service potential revenue to a new combustion turbine shows that the Rice Units are expected to generate roughly twice as much revenue or $2.5 million more per year. An updated economic comparison of the Rice Units to a new combustion turbine is provided with this response (See Attachment- *DR4-6.xlsx* ). This is the same evaluation provided in JI Response 3-5 but with the addition of an estimate of ancillary service revenue. An additional economic benefit of the RICE facility over a traditional combustion turbine is its expected dispatch within the market a significant amount of time. Because of this predictable dispatch, natural gas can be economically purchased on a firm basis and hedged into the future. If EKPC had been able to hedge an additional 214 MW of its natural gas generation in January and February of 2025, it could have saved $4.3 million in fuel costs. EKPC hedges a very nominal amount of gas for its existing combustion turbines because of the minimal amount of run time on those units and not being able to reasonably predict their operations months in advance. The RICE facility is expected to run a significant amount of time, so gas needs can be predicted well in advance of actual operations. This predictability allows for hedges to be put into place to cap the price paid for gas. EKPC had to pay a weighted average price of $8.824/dth for gas in January 2025. If that gas had been hedged in April 2024, it would have cost $3.882/dth. That difference in price could have saved EKPC's owner members roughly $2.9 million in fuel costs during January. EKPC had to

pay a weighted average price of $6.18/dth for gas in February 2025. If that gas had been hedged in April 2024, it would have cost $3.72/dth. That difference in price could have saved EKPC's owner members roughly $1.4 million in fuel costs during February.

The Liberty RICE facility is economic compared to the expected PJM market prices (See Attachment to this response – row 15), it provides flexible dispatch and operations, will qualify for additional ancillary revenues within the PJM market (see Attachment to this response – row 14), is a better economic alternative than a traditional large frame simple cycle combustion turbine (see Attachment to this response – row 51) and will allow for better natural gas procurement practices thus reducing the net cost paid to fuel the units.