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**

VERIFIED APPLICATION

Comes now East Kentucky Power Cooperative, Inc. ("EKPC" or the Company"), by and through the undersigned counsel, pursuant to KRS 278.020, KRS 278.216, KRS 278.220, 807 KAR 5:001 and other applicable law, and hereby tenders its Application with the Kentucky Public Service Commission ("Commission") requesting issuance of a Certificate of Public Convenience and Necessity ("CPCN") to construct a new electric generation station using Reciprocating Internal Combustion Engine ("RICE") generators (the "Liberty RICE" Facility), the issuance of a Site Compatibility Certificate for the Liberty RICE Facility, and other general relief. In support of the Application, EKPC respectfully states as follows:

I. INTRODUCTION

1. EKPC is a not-for-profit, rural electric cooperative corporation established under KRS Chapter 279 with its headquarters in Winchester, Kentucky. Pursuant to various agreements, EKPC provides electric generation capacity and electric energy to its sixteen (16) Owner-Member Cooperatives ("Owner-Members"), which in turn serve over 570,000 Kentucky homes, farms and

commercial and industrial establishments in eighty-nine (89) Kentucky counties. EKPC's Board has stated its strategic objective is to maintain a generation fleet that prudently diversifies its fuel sources while maximizing its capital investments and minimizing stranded assets. EKPC is a "utility" as that term is defined in KRS 278.010(3)(a) and a "generation and transmission cooperative" as that term is defined in KRS 278.010(9).

2. In total, EKPC owns and operates approximately 2,963 MW of net summer generating capacity and 3,265 MW of net winter generating capacity. EKPC owns and operates coal-fired generation at the John S. Cooper Station in Pulaski County, Kentucky (341 MW) and the Hugh L. Spurlock Station (1,346 MW) in Mason County, Kentucky. EKPC also owns and operates natural gas-fired generation at the J. K. Smith Station in Clark County, Kentucky (753 MW (summer)/989 MW (winter)) and the Bluegrass Generating Station in Oldham County, Kentucky (501 MW (summer)/567 MW (winter)), landfill gas-to-energy facilities in Boone County, Greenup County, Hardin County, Pendleton County and Barren County (13.8 MW total), and a Community Solar facility (8.5 MW) in Clark County, Kentucky. Finally, EKPC purchases hydropower from the Southeastern Power Administration at Laurel Dam in Laurel County, Kentucky (70 MW), and the Cumberland River system of dams in Kentucky and Tennessee (100 MW). EKPC also has 200 MWs of interruptible load and approximately 28 MWs in peak reduction mechanisms. EKPC's record peak demand of 3,754 MW occurred on January 17, 2024.

3. EKPC owns 2,994 circuit miles of high voltage transmission lines in various voltages, mainly 69kV and greater. EKPC also owns the substations necessary to support this transmission line infrastructure. Currently, EKPC has seventy-seven (77) free-flowing interconnections with its neighboring utilities. EKPC's transmission system is operated by PJM Interconnection, LLC ("PJM"), of which EKPC has been a fully integrated member since June 1,

2013. PJM is a regional electric grid and market operator with operational control of over 180,000 MW of regional electric generation. It operates the largest capacity and energy market in North America.

II. CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

4. The Commission has often expressed an expectation that every electric utility in Kentucky should have generation capacity to serve its native load.[1] This philosophy is consistent with EKPC's approach to system planning and, because of this, EKPC has developed a strategy, *inter alia*, based upon: (a) forecasted load growth; (b) recent extreme winter weather experiences; (c) increasing economic development prospects; (d) the potential large influx of new, intermittent generation across Kentucky (and the PJM footprint) and its impact on dispatchable generation needs during the morning and evening peak periods; (e) the evolving nature of PJM's capacity market, including the introduction of Effective Load Carrying Capacity ("ELCC") considerations; (f) regional grid reliability and resiliency considerations; (g) long-term hedges against market fluctuations; (h) consistency with existing and new federal environmental regulations; and (i) the ability to reduce EKPC's Carbon Dioxide ("CO_2") emissions intensity, that will ensure EKPC is in the best position to reliably serve its forecasted load at a competitive rate. In furtherance of this goal, EKPC is requesting a CPCN to construct a new generation resource, the Liberty RICE Facility to be located near Liberty, Kentucky, that will allow EKPC to continue to provide safe, reliable, and economical service while simultaneously planning for future generation needs.

[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. PSC 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*, November 6, 2023 Order at 95 (Ky. PSC 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*, October 31, 2023 Order at 10 (Ky. PSC October 21 2023).

5. Before undertaking a construction project that is not in the ordinary course of business, a utility must obtain a CPCN from the Commission under the authority of KRS 278.020(1), which states in relevant part:

> No person, partnership, public or private corporation, or combination thereof shall…begin the construction of any plant, equipment, property, or facility for furnishing to the public any of the services enumerated in KRS 278.010…until that person has obtained from the Public Service Commission a certificate that public convenience and necessity require the service or construction.… The commission, when considering an application for a certificate to construct a base load electric generating facility, may consider the policy of the General Assembly to foster and encourage use of Kentucky coal by electric utilities serving the Commonwealth.

6. The statute is silent, however, with regard to the criteria which the Commission should apply to any such request from a utility. Accordingly, case law construing KRS 278.020(1) provides the appropriate standard for evaluating EKPC's request for a CPCN in this proceeding. The leading authority on CPCNs is *Kentucky Utilities Co. v. Public Service Comm'n*, which articulates a two-part test for demonstrating entitlement to a CPCN: (1) need; and (2) absence of wasteful duplication. *Kentucky Utilities Co.* provides significant guidance as to what further considerations should be taken into account when evaluating a request for a CPCN under these two criteria.

7. As to "need," Kentucky's highest Court wrote:

> We think it is obvious that the establishment of convenience and necessity for a new service system or a new service facility requires first a showing of a substantial inadequacy of existing service, involving a consumer market sufficiently large to make it economically feasible for the new system or facility to be constructed and operated. Second, the inadequacy must be due either to a substantial deficiency of service facilities, beyond what could be supplied by normal improvements in the ordinary course of business; or to

> indifference, poor management or disregard of the rights of consumers, persisting over such a period of time as to establish an inability or unwillingness to render adequate service.[2]

8. Thus, the Courts have established that in order to obtain a CPCN a utility must show need for the project and that the investment will not result in wasteful duplication.[3]

9. As established by the Kentucky Supreme Court's decision in *Kentucky Utilities Co.,* need must be shown by an inadequacy of existing service involving such capital outlay that it is economically feasible for the new project to be constructed.[4] The Liberty RICE Facility proposed herein is needed to improve reliability concerns in the area when generation is not available, meet the forecasted load growth, support the addition of increased renewable energy and other issues that existing service is inadequate to provide. This information is discussed more thoroughly in the Direct Testimonies of Julia J. Tucker, Darrin Adams and Craig Johnson.

10. The proposed facility is to be located on a 100-acre greenfield site in Casey County near Liberty, Kentucky. The new generating station will use RICE technology and provide a net output of 214 megawatts for the facility. There will be twelve Wartsila W18V50DF engine/generator sets with a gross rating of 18.132 MW each. These engines are designed to burn pipeline quality natural gas as their primary fuel but can burn ultra-low sulfur diesel fuel. Two diesel tanks will be constructed on site to allow for up to 72 hours of continuous full load operation with diesel fuel. The major features for the plant site are an engine and auxiliary building, new 161 kV substation, new natural gas pipeline with metering and regulating station, and various other

[2] *Kentucky Utilities Co.*, at 890.

[3] *Kentucky Utilities Co v. Public Service Comm'n*, 252 S.W.2d 885 (Ky. 1952).

[4] *Kentucky Utilities Co v. Public Service Comm'n*, at 890.

features normally constructed for similar facilities. More details can be found in Exhibit 5, the Direct Testimony of Mr. Craig Johnson.

11. A new 161 kV substation will be constructed at the Liberty RICE Facility site in order to provide a point of interconnection for three generating step-up transformers that will be installed. The connection to the transmission system will be established by constructing 161 kV extensions from the existing EKPC 161 kV line that is adjacent to the facility to the new substation. These line extensions will be less than one mile in total length and will be located solely on property that EKPC will acquire as part of this project. The new substation and the 161 kV line extensions are the only greenfield transmission projects that EKPC expects to undertake for the Liberty RICE Facility. More details can be found in Exhibit 6, the Direct Testimony of Darrin Adams.

12. The Liberty RICE Facility is needed in order to improve the reliability and resiliency of EKPC's system, which currently relies heavily upon the Cooper Station to support the grid in this region of the Commonwealth, as discussed in detail in the Direct Testimony of Darrin Adams, attached as Exhibit 6 to this Application. It is also needed to serve the growing demand in EKPC's service territory, as demonstrated in EKPC's 2024 Long Term Load Forecast, and it will also help further EKPC economic development efforts, as discussed in more detail in the Direct Testimony of Julia J. Tucker, attached as Exhibit 3 to the Application.

13. EKPC's 2024 Long Term Load Forecast also supports the need for the new generation capacity requested in this application. The 2024 Long Term Load Forecast states that residential, small commercial, and large commercial sales are forecast to grow over the forecast period (2025 – 2039). Total energy requirements, winter peak demand, and summer peak demand,

including electric vehicle projections, are forecasted to grow. More details on the Long-Term Load Forecast can be found in Exhibit 3, the Direct Testimony of Julia J. Tucker.

14. In addition, PJM's ELCC paradigm reduces EKPC's existing generating capacity. This is described more fully in Exhibit 3, the Direct Testimony of Julia J. Tucker.

15. Electric utilities are among the most heavily environmentally regulated companies in the United States. Authorities at the federal and state levels oversee nearly every aspect of EKPC's operations, with particular emphasis on the monitoring and abatement of the wastes and by-products that accompany coal-fired electric generation. EKPC has devoted, and continues to devote, substantial resources to ensure its proactive compliance with environmental requirements. The Liberty RICE Facility will assist EKPC in complying with existing environmental rules and regulations. See Exhibit 7, Direct Testimony of Jerry Purvis for more details on the environmental aspects of the Liberty RICE Facility.

16. The Liberty RICE Facility will also allow EKPC to have operational flexibility. A RICE unit's ability to start in less than 10 minutes and quickly ramp up and down will assist EKPC to remain a reliable source of energy, capacity, and service to our Owner Members as more intermittent renewable resources are deployed on the system. See Exhibit 5, Direct Testimony of Craig Johnson for more details on the flexible nature of the Liberty RICE Facility.

17. In addition to operational flexibility, the Liberty RICE Facility will help allow EKPC to meet its forecasted peak demand, provide an economic hedge against PJM wholesale energy and capacity prices, and enable EKPC to further reduce its carbon intensity. This information is described more fully in the Direct Testimonies of Julia J. Tucker, Craig Johnson and Jerry Purvis Exhibits 3, 5 and 7 to the Application.

18. The additional consideration for the approval of a CPCN is the lack of wasteful duplication.[5] The Courts have determined that lack of wasteful duplication requires the utility to demonstrate that all reasonable alternatives have been considered.[6]

19. With regard to what constitutes "wasteful duplication," the Court opined:

> [W]e think that 'duplication' also embraces the meaning of an excessive investment in relation to productivity or efficiency, and an unnecessary multiplicity of physical properties, such as right of ways, poles and wires. An inadequacy of service might be such as to require construction of an additional service facility to supplement an inadequate existing facility, yet the public interest would be better served by substituting one large facility, adequate to serve all the consumers, in place of the inadequate existing facility, rather than constructing a new small facility to supplement the existing small facility. A supplementary small facility might be constructed that would not create duplication from the standpoint of an excess of capacity, but would result in duplication from the standpoint of an excessive investment in relation to efficiency and a multiplicity of physical properties.[7]

20. In evaluating the "wasteful duplication" aspect of CPCN analysis, the Court further instructed, "[w]e are of the opinion that the Public Service Commission should have considered the question of duplication from the standpoints of excessive investment in relation to efficiency, and an unnecessary multiplicity of physical properties."[8] While the avoidance of "wasteful duplication" is a primary consideration for evaluating a request for a CPCN, *Kentucky Utilities Co*. makes clear that the Commission must not focus exclusively upon the cost of a proposal alone.

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[5] *See Kentucky Utilities Co v. Public Service Comm'n*, at 890.

[6] *See* Case No. 2005-00142, *Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for the Construction of Transmission Facilities in Jefferson, Bullitt, Meade, and Hardin Counties, Kentucky*, September 8, 2025 Order (Ky. PSC September 8, 2005).

[7] *Id.*, at 891.

[8] *Id*.

The Commission must also look at an application for a CPCN in relation to the service to be provided by the utility:

> [W]e do not mean to say that *cost* (as embraced in the question of duplication) is to be given more consideration than the need for *service*. If, from the past record of an existing utility, it should appear that the utility cannot or will not provide adequate service, we think it might be proper to permit some duplication to take place, and some economic loss to be suffered so long as the duplication and resulting loss be not greatly out of proportion to the need for service.[9]

21. In other words, the complete absence of "wasteful duplication" need not be shown to an absolute certainty, "it is sufficient that there is a reasonable basis of anticipation" that the "consumer market in the immediately foreseeable future will be sufficiently large to make it economically feasible for a proposed system or facility to be constructed…."[10] As recently as 2012, the Commission affirmed this point:

> To demonstrate that a proposed facility does not result in wasteful duplication, we have held that the applicant must demonstrate that a thorough review of all alternatives has been performed. Selection of a proposal that ultimately costs more than an alternative does not necessarily result in wasteful duplication. All relevant factors must be balanced.[11]

22. The generation assets proposed in this Application are a portion of the most reasonable, least cost option to meet the long-term needs of EKPC and its owner-members.[12] EKPC believes that the increased penetration of renewable solar energy in the PJM market presents

[9] *Id*., at 892 (emphasis in original).

[10] *Kentucky Utilities Co. v. Public Service Commission*, 59 P.U.R.3d 219, 390 S.W.2d 168, 172 (Ky. 1965).

[11] *In re the Application of Big Rivers Electric Corporation for Approval of its 2012 Environmental Compliance Plan*, Case No. 2012-00063, Final Order, pp. 14-15 (Ky. P.S.C. Oct. 1, 2012) (citations omitted).

[12] EKPC anticipates filing applications for additional dispatchable and renewable generation resources in the coming months.

new challenges, and opportunities, in unit commitment and dispatch due to the intermittent output of solar generation. For these reasons, EKPC needs to consider a generation unit that provides reliable capacity with swift and flexible dispatch characteristics. The RICE units meet the expected unit commitment and dispatch challenges while also providing reliable and competitive energy.

23. The execution of the Liberty RICE Facility has been planned and will be performed to limit the project's risk exposure to potential delays due to supply chain concerns and impacts of the PJM queue. Refer to Exhibit 4 the Direct Testimony of Brad Young and Exhibit 6 the Direct Testimony of Darrin Adams for a complete discussion of the timeline and PJM interconnection process.

III. SITE COMPATIBILITY CERTIFICATE

24. KRS 278.216 generally requires the approval of a Site Compatibility Certificate before a utility may undertake the construction of new generation resources if the generation is capable of producing over ten (10) MW of electricity and is not located on the site of an existing generation resource. The Liberty RICE Facility will be capable of producing 18.132 MW/unit (214 MW net output for the station) and is located on a greenfield site. Therefore, EKPC respectfully requests the Commission to issue a Site Capability Certificate. KRS 278.216(2) requires a site assessment report ("SAR") to be prepared and submitted in accordance with KRS 278.708(3) or documentation of compliance with the National Environmental Policy Act (NEPA). EKPC is providing a SAR to comply with KRS 278.216(2).

25. The SAR, attached as Attachment BY-2 to Exhibit 4 – Direct Testimony of Brad Young, contains the required components, including a description of the facility, compatibility with scenic surroundings, property value assessment, evaluation of peak and average noise, and an analysis of the facility's impact on the local roads.

IV. FILING REQUIREMENTS

26. Pursuant to 807 KAR 5:001, Section 14(1), EKPC's business address is 4775 Lexington Road, Winchester, Kentucky 40391 and its mailing address is Post Office Box 707, Winchester, Kentucky 40392-0707. EKPC's telephone number is 859-744-4812 and its fax number is 859-744-6008. EKPC's email address is: psc@ekpc.coop. EKPC requests that the following individuals be included on the service list:

Greg Cecil, EKPC's Director of Regulatory and Compliance Services:

greg.cecil@ekpc.coop

L. Allyson Honaker, Counsel for EKPC:

allyson@hloky.com

Brittany Hayes Koenig, Counsel for EKPC:

brittany@hloky.com

Heather S. Temple, Counsel for EKPC:

heather@hloky.com

27. Pursuant to 807 KAR 5:001, Section 14(2), EKPC is a Kentucky corporation, in good standing, and was incorporated on July 9, 1941. The certificate of good standing is attached as Exhibit 1.

28. Pursuant to 807 KAR 5:001, Section 15(2)(a), A more detailed description of the need for the project is set forth above and also contained in the Direct Testimony of Julia J. Tucker contained in Exhibit 3 to this Application.

29. Pursuant to 807 KAR 5:001, Section 15(2)(b), EKPC has listed in Exhibit 7 in the Direct Testimony of Jerry Purvis Attachment JP-1 the necessary permits that will be necessary for

construction of the proposed transmission line. EKPC will file copies of each of the franchises or permits when they are obtained from the proper authorities.

30. Pursuant to 807 KAR 5:001, Section 15(2)(c) and KRS 322.340, a full description of the Liberty RICE Facility, the engineering plans, the manner of proposed construction, and the names of all public utilities, corporations, or persons with whom the proposed construction or extension is likely to compete (there are none) is included in the Direct Testimony of Mr. Craig Johnson Exhibit 5 and Mr. Brad Young Exhibit 4 to this Application.

31. Pursuant to 807 KAR 5:001, Section 15(2)(d)(1) and Section 15(2)(d)(2), three copies of maps of suitable scale showing the location of the proposed construction and plans of the proposed plant, equipment, and facilities is found in Attachment BY-1 to Exhibit 4 – Direct Testimony of Brad Young Pursuant to KRS 322.340 these have been stamped by a licensed professional engineer in Kentucky.

32. Pursuant to 807 KAR 5:001, Section 15(2)(e), EKPC plans to initially finance the proposed projects by funding any expenditure with general corporate cash and borrowings on the Revolving Credit Facility. Ultimately EKPC intends to seek Rural Utilities Service ("RUS") financing for the Liberty RICE Facility, which will be the lowest cost financing option. For more details on the financing plan, please refer to the Direct Testimony of Tom Stachnik, attached as Exhibit 8 to this Application.

33. Pursuant to 807 KAR 5:001, Section 15(2)(f), EKPC's estimated annual cost of operation after the proposed facilities are placed into service is $15.00/kW-year ($3.2M/year).

34. Pursuant to KRS 278.216, EKPC is providing a SAR with all of the content required by KRS 278.708: the SAR includes: a description of the facility and site development plan; evaluation of the compatibility of the facility with scenic surroundings; the potential change in

property value; evaluation of peak and average noise during construction and operation; impact of the facility on the road and rail traffic in the area; and mitigation measures to avoid adverse effects of the facility.

35. EKPC reviewed and considered the impacts of Demand Side Management ("DSM") and energy efficiency ("EE") programs when evaluating the Liberty RICE Facility. Please see Exhibit 3, Direct Testimony of Julia J. Tucker for additional information on EKPC's consideration of DSM/EE programs and the amount of capacity EKPC's existing programs could offset based on the 2024 Long Term Load Forecast.

36. In addition to the statutory and regulatory requirements, EKPC is supporting this application with the verified testimony and exhibits of the following individuals:

- Don Mosier, Executive Vice President and Chief Operating Officer, will provide an overview of the Cooperative and the new generation project.
- Julie Tucker, Vice President of Power Supply, will provide a discussion of EKPC's power supply needs and how the new generation will meet the current and future needs of the Cooperative.
- Brad Young, Vice President of Engineering and Construction, will provide information on the project's scope, siting, and construction.
- Craig Johnson, Senior Vice President of Power Production, will provide an overview of EKPC's generation resources and how the new generation will be integrated into the EKPC's generation portfolio.
- Darrin Adams, Director of Transmission Planning & System Protection, will discuss the transmission system upgrades needed for the project.

- Jerry Purvis, Vice President of Environmental Affairs, will provide information regarding current and future Environmental Protection Agency rules and the federal and state permits required for the project.
- Tom Stachnik, Vice President of Finance and Treasurer will provide information on EKPC's financing for the project.

V. CONCLUSION

37. EKPC is in need of additional generation capacity in order to have sufficient "steel in the ground" to serve its Owner Members. EKPC has reviewed and analyzed multiple alternatives and has determined that the units at the Liberty RICE Facility proposed in this Application are the best, least-cost alternative to meet the needs of EKPC and its Owner Members at this time and in the foreseeable future as part of an overall generation planning strategy. EKPC has developed a strategy, *inter alia*, based upon: (a) forecasted load growth; (b) recent extreme winter weather experiences; (c) increasing economic development prospects; (d) the potential large influx of new, intermittent generation across Kentucky (and the PJM footprint) and its impact on dispatchable generation needs during the morning and evening peak periods; (e) the evolving nature of PJM's capacity market, including the introduction of ELCC considerations; (f) regional grid reliability and resiliency considerations; (g) long-term hedges against market fluctuations; (h) consistency with existing and new federal environmental regulations; and (i) the ability to reduce EKPC's CO_2 emissions intensity, that will ensure EKPC is in the best position to reliably serve its forecasted load at a competitive rate. The Liberty RICE Facility will allow EKPC to continue to provide safe, reliable, and economical service while simultaneously planning for future generation needs.

WHEREFORE, on the basis of the foregoing, EKPC respectfully requests the Commission to grant relief as follows:

1. Issuance of a Certificate of Public Convenience and Necessity for the Liberty RICE Facility project as proposed;

2. Issuance of a Site Compatibility Certificate for the Liberty RICE Facility; and

3. Any and all other relief to which EKPC is entitled.

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Comes now Don Mosier, Executive Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc., and, after being duly sworn, does hereby verify, swear and affirm that the averments set forth in the foregoing Application are true and correct based upon my personal knowledge and belief, formed after reasonable inquiry, as of this 12th day of September 2024.

Don Mosier

Don Mosier, Executive Vice President
and Chief Operating Officer

East Kentucky Power Cooperative, Inc.

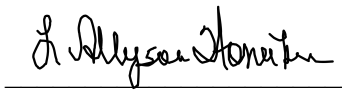
The foregoing Verification was verified, sworn to and affirmed before me, by Don Mosier, Executive Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc. on this 12th day of September 2024.

Notary Public

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

This 20th day of September 2024.

Respectfully Submitted,



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Counsel for East Kentucky Power Cooperative, Inc.

EXHIBIT 1
CERTIFICATE OF GOOD STANDING

Commonwealth of Kentucky
Michael G. Adams, Secretary of State

Michael G. Adams
Secretary of State
P. O. Box 718
Frankfort, KY 40602-0718
(502) 564-3490
http://www.sos.ky.gov

Certificate of Existence

Authentication number: 310267
Visit https://web.sos.ky.gov/ftshow/certvalidate.aspx to authenticate this certificate.

I, Michael G. Adams, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

EAST KENTUCKY POWER COOPERATIVE, INC.

EAST KENTUCKY POWER COOPERATIVE, INC. is a corporation duly incorporated and existing under KRS Chapter 14A and KRS Chapter 273, whose date of incorporation is July 9, 1941 and whose period of duration is perpetual.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that Articles of Dissolution have not been filed; and that the most recent annual report required by KRS 14A.6-010 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 26th day of April, 2024, in the 232nd year of the Commonwealth.

Michael G. Adams
Secretary of State
Commonwealth of Kentucky
310267/0015195

EXHIBIT 2
DIRECT TESTIMONY DON MOSIER

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**

DIRECT TESTIMONY OF DON MOSIER
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Don Mosier, Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc., being duly sworn, states that he has supervised the preparation of his Direct Testimony and certain filing requirements in the above referenced case 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.

Don Mosier

Don Mosier, Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc., East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Don Mosier, Vice President and Chief Operating Officer of East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public

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

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Don Mosier and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am Executive Vice President and Chief Operating Officer at EKPC.

Q. PLEASE STATE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I obtained my Bachelor of Science degree in civil engineering from the University of Virginia and my Master of Business Administration degree from the Kenan-Flagler Business School at the University of North Carolina. My professional experience includes working at Carolina Power & Light (now Duke Energy) in Raleigh, North Carolina, developing merchant generation projects and marketing activities, regulatory affairs, and nuclear power plant engineering and operations. I also was an engineering manager of U.S. Operations for Canatom Corp., a Toronto-based engineering firm that provides nuclear plant engineering and construction services. Immediately prior to joining EKPC, I was Vice President of St. Louis-based Ameren Energy Marketing ("AEM'), a subsidiary of Ameren Corp. At AEM, I managed wholesale power trading, plant dispatch, NERC and SERC compliance, transmission and congestion management activities, and customer account management for Ameren Corporation's unregulated merchant generation fleet located in the Midwest ISO and PJM RTO.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR DUTIES AT EKPC.

A. I oversee the operations of power production, engineering and construction, power delivery, power supply and resource planning, environmental compliance, PJM market and FERC regulatory affairs. I report directly to EKPC's Chief Executive Officer, Mr. Anthony Campbell.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. Yes. I have provided written testimony and testified at several proceedings.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to support EKPC's application in this proceeding and to discuss EKPC's corporate profile and strategic goals. I will also discuss the process undertaken by EKPC to prepare and propose the project at issue.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. Yes, I am sponsoring Attachment DM-1, the EKPC Board resolution approving the proposed Liberty Reciprocating Internal Combustion Engine ("RICE") Facility ("Liberty RICE Facility").

Q. PLEASE DESCRIBE EKPC AND ITS OWNER-MEMBERS' SYSTEM.

EKPC is a not-for-profit, rural electric cooperative corporation established under KRS Chapter 279 with its headquarters in Winchester, Kentucky. EKPC has approximately $4.68 billion in assets and approximately 700 employees. In 2023, EKPC's energy sales exceeded 14.34 million Megawatt ("MW") hours, contributing to an operating revenue of $1.11 billion and a net margin of $17.9 million. Pursuant to various agreements, EKPC provides electric generation

capacity and electric energy to its sixteen (16) owner-members: Big Sandy RECC, Blue Grass Energy, Clark Energy, Cumberland Valley Electric, Farmers RECC, Fleming-Mason Energy, Grayson RECC, Inter-County Energy, Jackson Energy, Licking Valley RECC, Nolin RECC, Owen Electric, Salt River Electric, Shelby Energy, South Kentucky RECC and Taylor County RECC. Those owner-members in turn serve approximately 570,000 Kentucky homes, farms and commercial and industrial establishments in eighty-nine (89) Kentucky counties.

EKPC is a member of the PJM Interconnection, LLC ("PJM") and owns and operates a total of approximately 2,963 MW of net summer generating capacity and 3,265 MW of net winter generating capacity. EKPC owns and operates coal-fired generation at the John S. Cooper Station in Pulaski County, Kentucky (341 MW) and the Hugh L. Spurlock Station (1,346 MW) in Mason County, Kentucky. EKPC also owns and operates natural gas-fired generation at the J. K. Smith Station in Clark County, Kentucky (753 MW (summer)/989 MW (winter)) and the Bluegrass Generating Station in Oldham County, Kentucky (501 MW (summer)/567 MW (winter)), landfill gas-to-energy facilities in Boone County, Greenup County, Hardin County, Pendleton County and Barren County (13.8 MW total), and a Community Solar facility (8.5 MW) in Clark County, Kentucky. Finally, EKPC purchases hydropower from the Southeastern Power Administration at Laurel Dam in Laurel County, Kentucky (70 MW), and the Cumberland River system of dams in Kentucky and Tennessee (100 MW). EKPC also has 200 MWs of interruptible load and approximately 28 MWs in peak reduction mechanisms. EKPC's record peak demand of 3,754 MW occurred on January 17, 2024.

EKPC also owns approximately 2,994 circuit miles of high voltage transmission lines in various voltages and the substations necessary to support this transmission line infrastructure. Currently, EKPC has seventy-seven (77) free-flowing interconnections with its neighboring utilities.

Q. HOW WAS THE DECISION MADE FOR THE PROJECT PROPOSED IN THIS PROCEEDING?

EKPC has an obligation to serve and maintain adequate supply resources, plus reserves, to meet the sixteen owner-member cooperatives' growing winter peak needs. Collectively these cooperatives are seeing moderate organic growth and increasing opportunity from economic development activities including large datacenters. In January of 2024, EKPC set a new winter peak record of 3,754 MW during Winter Storm Gerri on the heels of the December 2022 Winter Storm Elliot's previous all-time peak of 3,747 MW. Both winter storms exceeded EKPC's installed winter peak generation capacity by nearly 300 MW. Thus, EKPC has an immediate need for new capacity resources.

Also, EKPC has experienced grid reliability issues due to extreme weather in southern Kentucky. These reliability issues can also occur due to single contingency reliance on neighboring utilities Tennessee Valley Authority ("TVA") and Kentucky Utilities Company ("KU"). Cooper Station is the primary support to maintain stability but relies on having at least one of its two coal-fired generators online. A significant aspect of siting the proposed Liberty RICE Facility with its multiple unit redundancy is to significantly mitigate these reliability concerns while

simultaneously increasing the geographic diversity of EKPC's portfolio of capacity resources.

Lastly, EKPC, along with other utilities in the state, is or will be adding significant solar energy resources. EKPC projects that, as more intermittent resources, like solar, are added to Kentucky's and PJM's systems, there will be a significant need for fast start peaking resources to replace rapidly declining solar generating capability during evening peak needs. This phenomenon is referred to as the "duck curve" showcased in California which experiences extreme increases in demand during this daily peak period. The addition of this modest amount of fast response RICE units will help relieve these rapid load increase periods.

All this information was presented to the board culminating in a first reading of the resolution to the Strategic Issues Committee of the Board on May 13, 2024. The Board reviewed and approved the resolution detailed in Attachment DM-1 on June 10, 2024.

Q. DOES THE ADDITION OF THE PROPOSED RESOURCE AT LIBERTY SATISIFY EKPC'S LONG TERM NEED FOR NEW GENERATION?

No, it does not. EKPC, as part of its Integrated Resource Planning ("IRP") process, load growth projects, and coupled with new United States Environmental Protection Agency ("EPA") regulations, especially the Greenhouse Gas Rule that became law on April 25, 2024, has identified the need for further additions and changes to its generation portfolio to include a significant addition of solar generation, investments in demand response and energy efficiency, new highly

efficient natural gas generation and the possible co-firing of EKPC's coal units at its Spurlock Station in Maysville, KY and Cooper's coal units at Burnside, KY. These future additions will be complimentary to the addition of the Liberty RICE Facility and will help meet EKPC's commitment to our Board's Sustainability Plan and its overall Strategic Plan to diversify and decarbonize our generation fleet over the next decade. These planned changes are currently under review by executive management and are anticipated to be the subject of a future filing this fall.

Q. WHY IS EKPC FILING THIS REQUEST SEPARATELY INSTEAD OF WAITING AND COMBINING IT WITH ANY ADDITIONAL REQUESTS MENTIONED ABOVE?

The market for these types of engines, as well as natural gas fired combustion turbine engines in general, is under heavy demand. EKPC believes it is critical to secure production positions with the manufacturer to achieve the commercial operation timeline and satisfy our immediate capacity needs more fully described in the testimonies of Brad Young and Julia Tucker.

Q. WHAT ARE THE ESTIMATED CONSTRUCTION COSTS FOR EACH ELEMENT OF THE PROPOSED PROJECT?

A. The Liberty RICE Facility project cost is estimated at $500 million. A more detailed cost estimate is provided in the direct testimony of Mr. Brad Young.

Q. HOW IS EKPC PLANNING TO FINANCE THE COSTS OF THE PROPOSED PROJECT?

A. The Liberty RICE project will initially be financed through the funds available from normal operations or funds through its unsecured Credit Facility or other interim

financing. Once completed, any short-term debt associated with the projects will be refinanced using the long-term debt EKPC has available. This is discussed in more detail in the Direct Testimony of Thomas J. Stachnik which is attached to the Application at Exhibit 8.

Q WILL EKPC AND ITS OWNER-MEMBERS BENEFIT FROM THE PROPOSED PROJECTS?

A. Yes.

Q. **WHAT BENEFITS WILL BE PROVIDED TO EKPC AND ITS OWNER-MEMBERS AS A RESULT OF THE PROPOSED PROJECTS?**

A. This project protects our owner-members from highly volatile market pricing and emergency energy needs during extreme weather events. The technology selection is highly efficient throughout its operating range and will displace higher cost market power in general and lower EKPC's carbon footprint as it displaces higher emitting resources. The location and multiple unit configuration will provide assurance of grid reliability in the south Kentucky region. The units are highly complementary to our planned increase in intermittent renewable resources to assure overall portfolio reliability for our owner-members and ensure cost competitiveness. The Liberty RICE Facility will also advance EKPC's efforts to achieve its Strategic Plan and is fully compatible with the Commission's often-stated preference that a utility satisfy its load commitments with generation base upon "steel in the ground" and not reliance upon the market.

Q. WHAT IS THE TIMELINE FOR COMPLETION OF THE PROJECT?

A. The Liberty RICE Facility is expected to go commercial in December 2028.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

ATTACHMENT DM-1

FROM THE MINUTE BOOK OF PROCEEDINGS
OF THE BOARD OF DIRECTORS OF
EAST KENTUCKY POWER COOPERATIVE, INC.

At a regular meeting of the Board of Directors of East Kentucky Power Cooperative, Inc. held at the Headquarters Building, 4775 Lexington Road, located in Winchester, Kentucky, on Monday, June 10, 2024 at 9:30 a.m., EDT, the following business transacted:

Approval of the Proposed Reciprocating Internal Combustion Engine ("RICE") Facility

After review of the applicable information, Boris Haynes made a motion for approval of the proposed Reciprocating Combustion Engine ("RICE") Facility, seconded by Greg Corbin, and passed by the full Board to approve the following:

Whereas, East Kentucky Power Cooperative, Inc. ("EKPC") filed its 2022 Integrated Resource Plan ("IRP") with the Kentucky Public Service Commission ("PSC"), demonstrating that a peaking resource would be needed in early 2030 and that solar facilities were shown to be economical and necessary for energy supply;

Whereas, in August 2023, the EKPC Board of Directors (the "Board") approved the addition of 136 MW of new solar generation facilities, pursuant to the EKPC Strategic Plan and its IRP;

Whereas, EKPC Management reached the determination to propose the development of a new reciprocating internal combustion engine ("RICE") facility (the "RICE Project") to ensure the capability to support the renewable energy output during the intermittent periods or when severe weather requires additional generation be supplied to EKPC's members and/or the PJM market; and

Whereas, the proposed RICE Project would construct a new maximum 220 MW RICE dual fuel peaking facility located near Liberty, Kentucky, including generator step-up ("GSU") transformers, in addition to necessary transmission and natural gas interconnection facilities; now, therefore be it

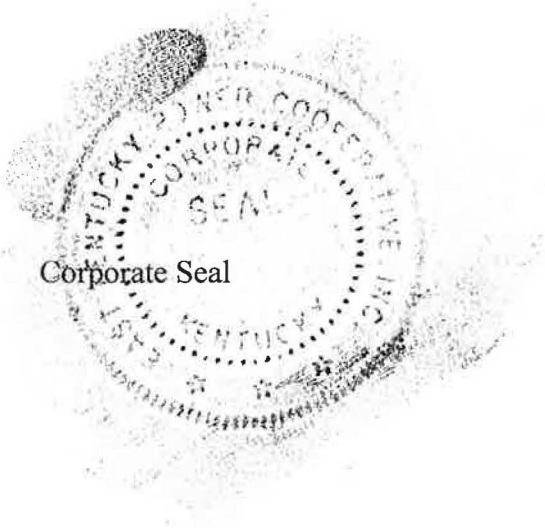
Resolved, the Board hereby authorizes the President and Chief Executive Officer, or designee, to fully implement the RICE Project, at a total estimated cost of $500,000,000.00, including contingency, in accordance with the Rural Utilities Service ("RUS")-required 2025 – 2027 EKPC Three-Year Construction Work Plan and approved EKPC budget; and

Resolved, the Board hereby further authorizes the President and CEO, or a designee, to execute the necessary contracts for equipment or services; to apply for and borrow funds from the Rural Utilities Service ("RUS") and other lenders; to request any needed authorization for financing or rate recovery from the Kentucky PSC; and to use general funds for the RICE Project, until such time as RUS or other loan funds become available; and

Resolved, the Board hereby further authorizes staff to apply for the required or advisable certificates, permits and approvals with regulatory and environmental agencies of the Commonwealth of Kentucky and the United States Federal Government or other entities, including a Certificate of Public Convenience and Necessity and rate recovery for the RICE Project, and to take any other actions, necessary or desirable, to assure that full implementation is achieved.

The foregoing is a true and exact copy of a resolution passed at a meeting called pursuant to proper notice at which a quorum was present and which now appears in the Minute Book of Proceedings of the Board of Directors of the Cooperative, and said resolution has not been rescinded or modified.

Witness my hand and seal this 10th day of June 2024.



Corporate Seal

Randy Sexton, Secretary

EXHIBIT 3
DIRECT TESTIMONY JULIA J. TUCKER

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**

DIRECT TESTIMONY OF JULIA J. TUCKER, P. E.
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

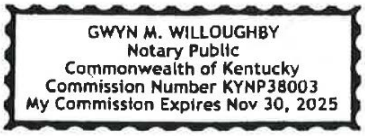
COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Julia J. Tucker, Vice President of Power Supply and Planning for East Kentucky Power Cooperative, Inc., being duly sworn, states that she has supervised the preparation of her Direct Testimony and certain filing requirements in the above referenced case 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, Vice President of
Power Supply and Planning
East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Julia J. Tucker, Vice President of Power Supply and Planning for East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public



I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Julia J. Tucker. I am the Vice President of Power Supply and Planning for East Kentucky Power Cooperative, Inc. ("EKPC"). My business address is 4775 Lexington Road, Winchester, Kentucky 40391.

Q. PLEASE STATE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I have a Bachelor's degree in Electrical Engineering from the University of Kentucky. I am a licensed Professional Engineer, Registration Number 15532, in the state of Kentucky. I have worked for EKPC for the past 18 years.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR DUTIES AT EKPC.

A. I oversee EKPC's Power Supply Planning, Load Forecasting, PJM Market Operations, Fuels Procurement, Demand Side Management, Distributed Energy Resources and development of Renewable Energy Projects.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. Yes, recently in the Fuel Adjustment Clause review case and the Certificate of Public Convenience and Necessity ("CPCN") application to construct the solar facilities in Marion and Fayette Counties.[1]

[1] Case No. 2024-00129, *In the Matter of the Electronic Application of East Kentucky Power Cooperative, Inc. for a Certificates Of Public Convenience and Necessity and Site Compatibility Certificates for the Construction of a 96 Mw (Nominal) Solar Facility in Marion County, Kentucky and a 40 Mw (Nominal)*

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is first to describe EKPC's power supply needs and the efforts it has undertaken to address those needs. I will provide information on EKPC's 2024 Long Term Load Forecast ("LTLF") and how it shows support for the new generation proposed in this Application. I will also discuss PJM's paradigm shift in capacity accreditation to Effective Load Carrying Capability ("ELCC") methodology and how it reduces EKPC's existing generating capacity available to sell into the PJM Reliability Pricing Model ("RPM") capacity market. In addition, I will discuss the supply alternatives considered and provide testimony to support the selection of the new generation proposed in this Application.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. Yes. I am sponsoring the following Attachments, which I ask to be incorporated into my testimony by reference:

- Attachment JJT-1, EKPC Sustainability Plan;
- Attachment JJT-2, EKPC Forecast Vintage Comparisons (Confidential);
- Attachment JJT-3, EKPC Capacity Expansion Plan;

These documents were prepared by me, under my supervision, or at my request.

II. EXISTING GENERATION PORTFOLIO AND IDENTIFCATION OF NEED

Q. PLEASE GENERALLY DESCRIBE EKPC'S EXISTING GENERATION PORTFOLIO.

Solar Facility in Fayette County, Kentucky and Approval Of Certain Assumptions of Evidences of Indebtedness Related to the Solar Facilities and Other Relief; Case No. 2023-00009, *In the Matter of An Electronic Examination of the Application of the Fuel Adjustment Clause of East Kentucky Power Cooperative, Inc. from November 1, 2020 through October 31, 2022* (Ky. PSC filed Set. 6, 2023).

A. In total, EKPC owns and operates coal-fired generation at the John S. Cooper Station in Pulaski County, Kentucky (341 MW) and the Hugh L. Spurlock Station (1,346 MW) in Mason County, Kentucky. EKPC also owns and operates natural gas-fired generation at the J. K. Smith Station in Clark County, Kentucky (753 MW (summer)/989 MW (winter)) and the Bluegrass Generating Station in Oldham County, Kentucky (501 MW (summer)/567 MW (winter)), landfill gas-to-energy facilities in Boone County, Greenup County, Hardin County, Pendleton County and Barren County (13.8 MW total), and a Community Solar facility (8.5 MW) in Clark County, Kentucky. The net unit ratings are based upon the original equipment manufacturer's gross name plate megawatt rating minus the station service. Finally, EKPC purchases hydropower from the Southeastern Power Administration at Laurel Dam in Laurel County, Kentucky (70 MW), and the Cumberland River system of dams in Kentucky and Tennessee (100 MW). EKPC also has 200 MWs of interruptible load and approximately 28 MWs in peak reduction mechanisms. EKPC's record peak demand of 3,754 MW occurred on January 17, 2024.

Q. IN WHAT WAYS DOES EKPC PLAN FOR ITS FUTURE POWER SUPPLY NEEDS?

A. EKPC constantly strives to anticipate the challenges it may face over both the near- and long-term. As part of this process, EKPC regularly conducts and reviews load and pricing forecasts, prepares for environmental regulation developments, and evaluates the impact various factors may have on the Cooperative's existing generation portfolio and overall financial stability. Future power supply needs analysis occurs both during and between EKPC's Integrated Resource Plan ("IRP")

filings. EKPC's Board of Directors, through its Strategic Plan, provides particular guidance in identifying and achieving EKPC's future goals.

Q. DOES EKPC HAVE A STRATEGIC PLAN CURRENTLY IN PLACE?

A. Yes. Following a Commission-directed management audit, EKPC's Board adopted a Strategic Plan in 2011 that identified various core strategies, including but not limited to pursuing prudent diversity in the fuel mix of the Cooperative's generation portfolio and evaluating new investments using sound financial principles. EKPC has convened several Strategic Planning retreats since 2011, with the most recent being held in 2023.

One of EKPC's strategic objectives is to actively manage its current and future asset portfolio to safely deliver reliable and sustainable energy from appropriately diversified resources at competitive prices, and work with federal and state stakeholders to ensure high reliability and economic viability while mitigating evolving regulatory challenges including possible carbon emissions reduction mandates and penalties. EKPC will accomplish this objective by actively managing its current and future asset portfolio to maintain high reliability of electric service to its Owner-Member Cooperatives ("Owner-Members") and economically diversify its energy resources, including market purchases, fossil fuels, renewables, storage, demand management and energy efficiency programs, and partnering opportunities when feasible.

Another strategic objective is to continue to ensure reliability and rate-competitiveness of electric service while supporting beneficial electrification and thoughtfully responding to growing pressures to decarbonize. EKPC will continue

to manage for reliability and minimize negative financial impacts to End-Use Retail Members while supporting beneficial electrification that could generate significant load growth, particularly through continuing penetration of electric vehicles, electrification of industrial processes, and electrification of residential and commercial heating applications. EKPC will also work with state, federal, regional, and PJM stakeholders to respond to the legal, regulatory, and industry pressures to decarbonize the fleet through solutions based on science, engineering and economics that ensure electric service continues to be highly reliable and available at competitive rates to the public. The addition of the Liberty RICE Facility by EKPC will help create more diversity within EKPC's generation portfolio and advance our efforts to fulfill the Strategic Plan.

Q. **DOES EKPC BELIEVE ITS EXISTING GENERATION PORTFOLIO WILL ADEQUATELY PROVIDE FOR ITS LONG-TERM NEEDS?**

A. No. EKPC expects to need additional generation resources to meet its growing needs for the future and to comply with increasingly stringent federal environmental rules. EKPC is an electric generation and transmission cooperative with a growing demand for electricity within its service territory. In addition, the increasing demand within the PJM system along with significant baseload generation retirements, two consecutive winters with extremely cold temperatures, the ongoing nationwide shift towards electrification, and the unprecedented rapid expansion of stringent federal environmental regulation affecting utilities all combine to make the ownership of electric generation a continuous consideration requiring thorough evaluation from EKPC.

Q. PLEASE GENERALLY DESCRIBE EKPC'S ENERGY NEEDS AS REFLECTED IN ITS MOST-RECENT INTEGRATED RESOURCE PLAN.

A. On April 1, 2022, EKPC filed its most recent triennial IRP ("2022 IRP"), which analyzed EKPC's forecasted load, capacity needs and related issues over a fifteen-year period from 2022 through 2036. The 2022 IRP indicated that EKPC's total energy requirement will increase by 1.1% per year over a fifteen-year period. Reflecting EKPC's status as a winter-peaking utility, the 2022 IRP indicated that EKPC's winter net peak demand will increase 0.6% annually while its summer net peak demand will increase by 0.8% annually. Also, the 2022 IRP predicted that EKPC's annual load factor would increase from 50% to 54%.

EKPC desires to keep its plans as flexible as possible to be able to adjust to market and load conditions as needed. EKPC continues to monitor its load and all economic power supply alternatives. EKPC joined PJM on June 1, 2013, which has significantly beneficially impacted its operations and improved its ability to economically serve its native load. EKPC realized significant saving benefits from operating within PJM from June 1, 2013 through May 31, 2024, as described in its annual reports to the Commission.[2] PJM begins the capacity Delivery Year ("DY") on June 1st and ends the DY on May 31st, therefore the annual report and related analysis reflects the DY beginning and ending dates. EKPC continuously evaluates its resource portfolio compared to its forecasted load profile and considers how best to manage its energy market price exposure, and future load needs, while providing

[2] See post case correspondence annual filings for Case No. 2012-00169, *In the Matter of the Application of East Kentucky Power Cooperative, Inc. to Transfer Functional Control of Certain Transmission Facilities to PJM Interconnection, LLC.*

reliable power supply during extreme conditions. The 2022 IRP indicated that EKPC could benefit from adding solar energy to its portfolio, along with some additional fossil fired generation to preserve reliability.

Q. HAS EKPC MATERIALLY CHANGED ITS LOAD FORECAST SINCE ITS 2022 IRP?

A. Yes, EKPC has completed the 2024 Long Term Load Forecase ("LTLF") which substantially alters the base demand and energy projections as compared to those used in the development of the 2022 IRP, which were based on EKPC's 2020 load forecast. Key drivers of the 2024 LTLF include native load growth, load growth attributed to economic development, and the addition of assumptions for electric vehicle ("EV") penetration. The 2024 LTLF is likely to be conservative in that it does not take into account the possible addition of megaloads, such as energy intensive manufacturing or data centers and artificial intelligence computing loads. While these types of large leaps in a load profile are certainly possible based upon economic development activities in EKPC's Owner-Member service territories, they are somewhat speculative until specific projects are finalized and announced.

Q. HOW HAS THE INFLATION REDUCTION ACT AFFECTED THE LOAD FORECASTING?

A. Tax incentives from the Inflation Reduction Act ("IRA") are included in the cost-effectiveness determinations of energy efficiency measures and programs. The tax incentives reduce the cost for the consumer to install energy efficiency measures, and any utility rebate goes to make the installation even more attractive. These changes were taken into account in the cost / benefit analysis of energy efficiency

programs and utilized in developing the future plans for Demand Side Management programs. The impact of those plans were then incorporated into the long-term load forecast, so the forecast was modified downward as a result of considering the IRA tax incentives.

Q. DID EKPC CONSIDER DEMAND SIDE MANAGEMENT AND ENERGY EFFICIENCY (DSM/EE) PROGRAMS IN ITS CAPACITY NEEDS ANALYSIS?

A. Yes. EKPC has undertaken an extensive review of DSM / EE programs and is increasing its program selection. The expected resulting decrease in load has been included in the 2024 LTLF. Comprehensive discussions and tariff updates will be completed soon and included in another CPCN filing that EKPC anticipates filing at the Commission later this fall. The following table shows the values used in the current LTLF.

(negative value= reduction in load)

Year	Impact on Energy Requirements (MWh)	Impact on Winter Peak (MW)	Impact on Summer Peak (MW)
2025	-5,232	-7	-24
2026	-18,177	-13	-29
2027	-31,129	-19	-33
2028	-44,127	-25	-37
2029	-56,761	-31	-41
2030	-69,792	-38	-45
2031	-82,852	-44	-49
2032	-96,103	-50	-54
2033	-108,663	-56	-58
2034	-121,091	-60	-56
2035	-133,857	-66	-60
2036	-147,802	-72	-64

2037	-160,175	-78	-67
2038	-173,082	-83	-71
2039	-185,729	-89	-74

Q. HAS EKPC ACCOUNTED FOR PRICE ELASTICITY IN ITS ANALYSIS?

A. Yes, EKPC uses Statistically Adjusted End use ("SAE") forecast models defined by Itron, Inc. Price elasticity is an explicit assumption in EKPC'S SAE models.

Q IS THE LOAD FORECASTING UNDERTAKEN TO ASSESS EKPC'S NEEDS REASONABLE?

A. Yes, EKPC forecasts consumer and energy growth for each of its Owner-Members' Rural Utility Service ("RUS") consumer classification. Winter and summer seasonal peak demands are also forecast for each cooperative. Class forecasts are based on 2024 S&P economic projections, appliance saturations from EKPC's 2022 Residential Appliance Saturation Survey, appliance efficiencies from the Energy Information Administration's ("EIA") 2023 Annual Energy Outlook ("AEO"), and near term commercial and industrial growth not captured in models. The summation of the Owner-Member forecasts represents EKPC's load forecast. These models and assumptions are reasonable to assess EKPC's needs.

Q. PLEASE SUMMARIZE THE 2024 LONG-TERM LOAD FORECAST.

A. Residential, small commercial, and large commercial sales are forecast to grow at compound annual growth rates of 1.0%, 0.2%, and 1.5% respectively over the forecast period (2025 – 2039). In addition to class forecasts, EKPC partnered with a consultant to forecast EV growth and energy requirements. Charging profiles from the U.S. Department of Energy's ("DOE") Alternative Fuel Data Center ("AFDC") were analyzed and incorporated into EKPC's forecast to project EV

hourly charging needs and seasonal peak contributions. Total energy requirements, winter peak demand, and summer peak demand including EV projections are forecast to grow at compound annual growth rates of 1.4%, 0.9%, and 1.2% respectively.

Q. HOW DOES THE 2024 LONG-TERM LOAD FORECAST COMPARE TO THE 2020 AND 2022 LONG-TERM LOAD FORECAST?

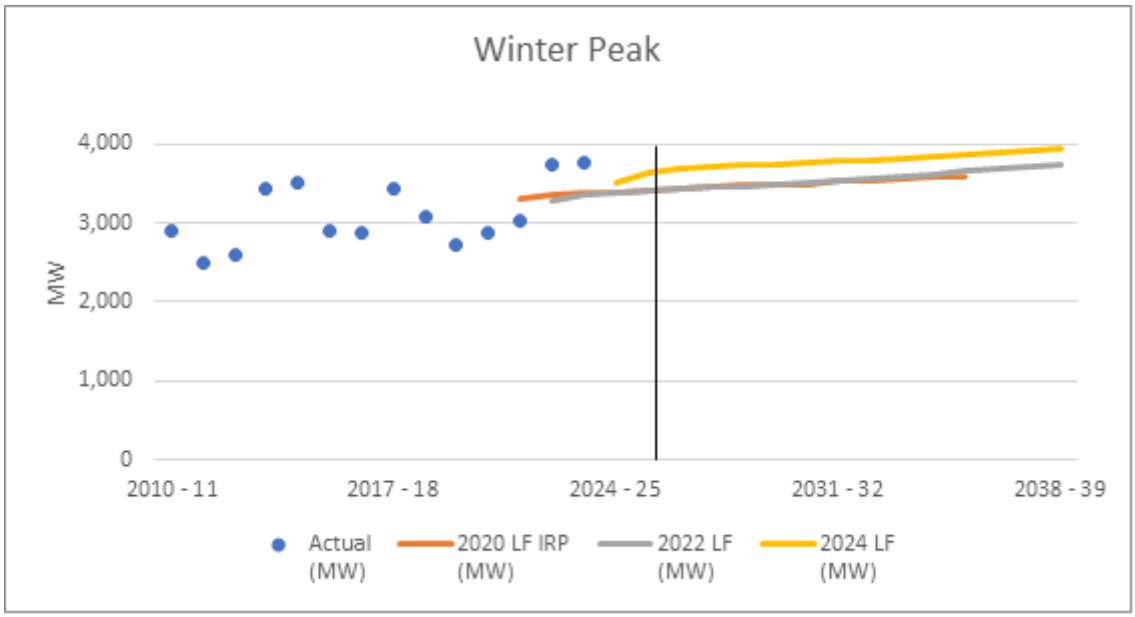
A. The 2024 LTLF winter peak forecast is higher than both the 2020 and 2022 forecasts. The peak experienced during Winter Storm Elliott in December 2022 is attributed to an extreme weather event with unprecedented wind-chill ratings, meaning that once that peak was weather-normalized it was in-line with forecasted expectations. However, the peak witnessed during Winter Storm Gerri in January 2024 (EKPC's all-time peak) did not occur during an extreme weather event, indicating that prior forecasts were under-projecting winter peaks. A comparison of the peaks during Winter Storms Elliott and Gerri is as follows:

- Winter Storm Elliott resulted in a 3,747 MW peak during an extreme weather day on 12/23/2022 (which was a holiday for many businesses) with minimum temperature reaching -5°F
- Winter Storm Gerri resulted in a 3,754 MW peak during a non-extreme weather day in the middle of the workweek on 1/17/2024 with minimum temperature reaching 3°F

In addition, the 2024 LTLF is up from the 2020 forecast primarily due to the updated assumptions related to peak load weather and partly driven by industrial growth and EV assumptions. Figure 1 displays actual winter peaks witnessed from

2009-2024 along with forecasted peaks from the 2020, 2022, and 2024 LTLFs. The 2020 and 2022 LTLF show similar peak load forecasts, while the 2024 LTLF shows the increase due to the aforementioned assumptions.

Figure 1



Attachment JJT-2, EKPC Forecast Vintage Comparisons (Confidential), shows a comparison of each vintage of LTLF discussed herein. From the 2022 forecast to the 2024 forecast, winter peak loads are up by 227 MW in the 2025/2026 winter period and up by 199 MW net over the previous load forecast in the 2038/2039 winter period.

Q. CAN YOU DESCRIBE EKPC'S GENERAL APPROACH TO RESOURCE PLANNING?

A. EKPC utilizes the load forecast to project future capacity needs. The 2024 load forecast serves as the basis for evaluating resource planning needs. Capacity Planning Reserve Margin ("Reserve Margin") is then added to the base forecast, 7% for winter and summer peak, to account for unknown risks in weather and

generation availability. The base forecast plus reserve margin constitutes the forecasted capacity need.

Q. WHY DOES THE RESERVE MARGIN DISCUSSED IN THIS APPLICATION DIFFER FROM EKPC'S 2022 IRP?

A. The Reserve Margin of 7% for winter peak represents a significant change from EKPC's 2022 IRP capacity reserve methodology which assumed a 0% Reserve Margin. This change has been driven by two risks associated with winter peaks: higher than anticipated demand driven by extreme cold weather events (Winter Storms Elliott and Gerri) and generator outage probability. EKPC is a winter-peaking system, and thus it is necessary and reasonable to plan for a generation portfolio to both meet expected forecasts and account for these unknown risks. On average, the actual peak load during those events forecasted. A portion of that increase has been included in the revised 2024 LTLF; however, there remains the risk of an unexpected extreme weather event or generator outage. EKPC quantified this risk by analyzing the 1 in 10 probability of extreme weather events and spreading that risk over the planning horizon, with an extreme weather event occurring every two years for a 48-hour period within each of those two-year periods. This is consistent with actual events in Winter Storms Elliott and Gerri, which were multiple-day cold weather events, driving load saturation from residential consumption. The Reserve Margin of 7% reflects this inherent risk above the base forecast and enables EKPC to increase reliability while also improving the Owner-Member's hedge against PJM energy market prices during peak winter periods.

EKPC's Reserve Margin for the summer peak has been increased from 3% to 7% since the 2022 IRP. This increase in summer peak reserves is necessary to ensure that EKPC is hedged from potentially volatile PJM capacity market prices, which recently cleared at approximately $270/MW-Day for the 2025/2026 Base Residual Auction ("BRA"). This increase was primarily driven by the PJM adoption of ELCC in lieu of Equivalent Forced Outage Rate Demand ("EFORd") as the capacity accreditation methodology in effect starting with the 2025/2026 BRA. EFORd represents a single generator's probability of availability based on total service hours as compared to partial or total forced outage hours. ELCC is a combination of both a generator's market-wide class rating, based on thirty years' worth of historical weather patterns used to simulate thirty-nine thousand (39,000) years' worth of data, and individual generator performance using actual output during the two hundred (200) highest coincident-peak load hours over a rolling ten (10) year period. The shift to ELCC results in an overall reduction in capacity available from all generators to sell into the PJM capacity market and reduced EKPC's accredited capacity to sell into PJM by 17% on average for the 2025/2026 BRA. While the summer peak does not represent a reliability concern for EKPC, as EKPC's winter peak is approximately 1,000 MW higher than its summer peak, it does represent a financial risk should EKPC not carry enough available capacity to offset its required load obligation purchase from the PJM capacity market. While it is likely that the winter capacity needs will continue to drive capacity resource expansion, EKPC cannot ignore the risk of ELCC and therefore has increased its summer planning reserves to match its revised winter reserves.

The Commission has repeatedly stated that it has no desire for regulated utilities in Kentucky to rely on wholesale energy markets for capacity and energy.[3] The revised Reserve Margins further EKPC's efforts to reliably serve its Owner-Members with competitively priced energy and maintain sufficient capacity to more effectively hedge native load during extreme weather events.

Q. CAN YOU DESCRIBE EKPC'S FORECASTED CAPACITY NEEDS?

A. Attachment JJT-3, along with Figures 2 and 3 below, outline EKPC's generation capacity needs within the 2025 through 2039 planning horizon. Attachment JJT-3 outlines EKPC's Capacity Expansion Plan ("Expansion Plan") detailing the LTLF annual peak demand, seasonal planning reserve margins, total existing generation capacity, the capacity surplus (negative number) or deficit (positive number) prior to any capacity additions, the planned capacity additions, and the total capacity including any additions. Any deficit in the total capacity including any planned additions compared to the annual peak is shown in the seasonal purchase column, meaning that EKPC would intend to monitor the position and hedge any outstanding capacity needs on a seasonal basis.

The expansion plan indicates that EKPC is expected to be short 200 MW of capacity beginning in the 2026/2027 winter period as compared to its forecasted winter peak and 454 MW as compared to its forecasted winter peak plus Reserve

[3] Case No. 2014-00226, *In the Matter of an Examination of the Application of the Fuel Adjustment Clause of East Kentucky Power Cooperative, Inc. from November 1, 2013 Through April 30, 2014* (Ky. PSC Order filed Jan., 30, 2015); Case No. 2022-00402*, In the Matter of the 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 a Demand Side Management Plan and Approval of Fossil Fuel-Fired Generating Unit Retirements* (Ky. PSC Order filed Nov. 6, 2023); Case No. 2023-00153, *In the Matter of the Electronic Tariff Filing of East Kentucky Power Cooperative, Inc. and its Member Distribution CooperativefFor Approval of Proposed Changes to their Qualified Cogeneration and Small Power Production Facilities Tariffs* (Ky. PSC Order filed Oct. 31, 2023).

Margin. EKPC's Board of Directors ("Board") has approved the Liberty RICE Facility detailed in this Application as just one project which helps meet the immediate capacity needs of the company. As indicated in the expansion plan, several more projects have been considered by the Board as the best alternatives to meeting the capacity needs. These projects include long-term purchased power agreements from hydro resources in the near-term which are expected to meet nearly 300 MWs of winter capacity needs, fuel conversions to enable coal and natural-gas co-firing at Spurlock Station and Cooper Station in the mid-term to continue reliable and competitive operation of EKPC's current coal fleet, and a natural gas combined cycle unit in the long-term.

Figure 2 details EKPCs existing generation capacity portfolio (designated by the solid colored bars) and generation capacity additions (designated by textured bars) compared to its forecasted winter peaks plus Reserve Margin. The Liberty RICE Facility is shown as "NG - NEW RICE". Along with the hydro PPA, the Liberty RICE Facility allows EKPC to meet its forecasted winter peak within the 2025 through 2033 period. Beginning in 2033, and through the planning horizon to 2039, EKPC could be short capacity as compared to its winter peaks without the addition of another capacity resource. EKPC's Board also recently authorized moving forward with a Natural Gas Combined Cycle ("NGCC") unit to meet this need beginning in 2033. EKPC anticipates filing a CPCN application for the NGCC at a later date this year.

Figure 3 details EKPCs existing generation capacity portfolio (designated by the solid colored bars) and generation capacity additions (designated by textured

bars) adjusted for ELCC (based on the PJM posted ELCC values) compared to the estimated PJM load obligation ("load obligation") to be purchased by EKPC plus Reserve Margin on that load obligation. This figure is intended to provide the approximate position of EKPC's generation capacity portfolio in relation to the PJM capacity auction, which is an economic position, rather than focus on the reliability aspect of the portfolio portrayed in Figure 2. EKPC's ELCC-adjusted capacity remains higher than its load obligation for the period from 2025 through 2029. Adding the Reserve Margin to the load obligation shows that EKPC could be short as soon as summer 2027. Without the addition of the Liberty RICE Facility , EKPC could be short capacity relative to its load obligation plus Reserve Margin in the 2028 through 2032 period. To continue to meet both its summer peaks and Reserve Margin at the end of the planning horizon, EKPC would need to build additional capacity resources with an ELCC-adjusted accreditation of sufficient quantity to ensure it meets its load obligation plus Reserve Margin. The aforementioned NGCC project need is primarily driven by EKPC's forecasted winter peaks, however it also meets the summer ELCC-adjusted need.

Figure 2

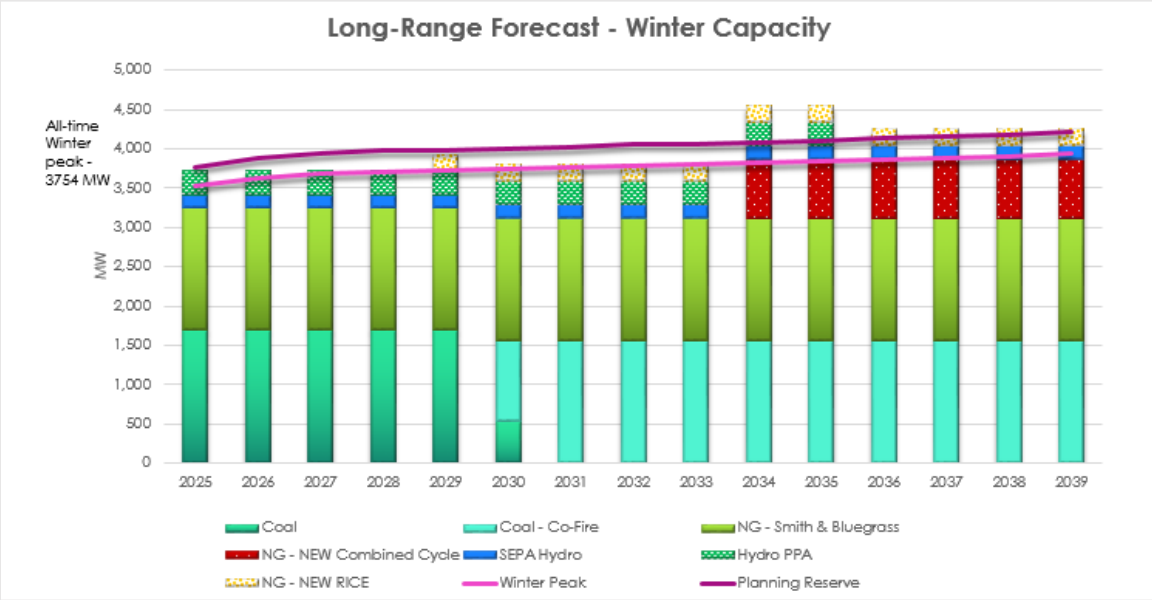
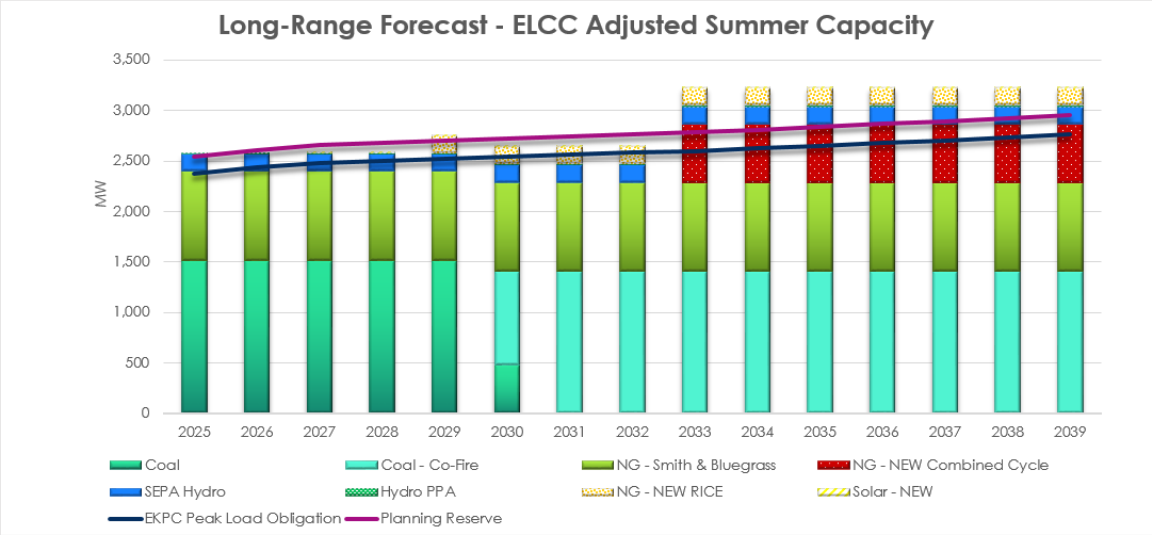


Figure 3



Q. HAVE FEDERAL ENVIRONMENTAL REGULATIONS HAD A PARTICULARLY SIGNIFICANT IMPACT ON EKPC'S GENERATION PORTFOLIO AND POWER SUPPLY PLANNING?

A. Yes. The impacts of environmental regulations are incorporated into EKPC's generation portfolio and power supply process and are accounted for in this

proposal. The specific implications of the latest federal environmental regulations are discussed more thoroughly in the Direct Testimony of Jerry Purvis.

Q. DOES EKPC PLAN TO RETIRE ANY OF ITS EXISTING FOSSIL-FUEL FIRED GENERATION ASSETS AS A RESULT OF BUILDING THE RECIPROCATING INTERNAL COMBUSTION ENGINE FACILITY?

A. No. EKPC has no current plan to retire any of its fossil-fuel electric generating units. The proposed Liberty RICE Facility is a new mid-load energy resource.

Q. PLEASE DESCRIBE EKPC'S GENERATION PORTFOLIO AND HOW DIVERSIFICATION IN SUPPLY RESOURCES BENEFITS THAT PORTFOLIO?

A. The bulk of EKPC's generation portfolio is dependent on reliable and proven fuel resources such as coal and natural gas, with coal generation making up the majority of energy served by EKPC. Having units that are dispatchable is essential to maintain reliability. However, EKPC has expanded over the years to include non-traditional resources such as landfill gas to energy projects and a cooperative solar project. EKPC also has the ability to burn tire derived fuel in a Combustion Fluidized Bed ("CFB") unit at its Spurlock Station. EKPC purchases a significant amount of clean hydro power from existing projects on the Cumberland River System owned and operated by the United States Corps of Engineers. EKPC plans to diversify its portfolio further with new solar projects that are pending Commission approval. The proposed Liberty RICE Facility would support the addition of renewable energy by providing a quick start plant that can follow load needs when the intermittent renewable projects lose sunlight for their fuel supply.

Q. WOULD THE LIBERTY RICE FACILITY HAVE A POSSIBLE BENEFICIAL IMPACT ON ECONOMIC DEVELOPMENT?

A. Yes, by further diversifying EKPC's resource portfolio to include more natural gas-fired generation, EKPC can reduce its carbon intensity, or carbon dioxide per megawatt-hour. This metric is often used by economic development projects to score project sites. Additionally, the Liberty RICE Facility enhances EKPC's ability to add additional renewable energy to its system by providing flexible generation that can quickly follow sudden changes caused by intermittent resources. Large load customers desire clean energy along with reliable, dependable power supply.

III. PREFERRED RESOURCE SELECTION PROCESS

Q. PLEASE DESCRIBE THE PROCESS TAKEN BY EKPC TO EVALUATE THE BEST POSSIBLE POWER SUPPLY OPTIONS AND WHAT FACTORS WERE INCLUDED IN THAT ANALYSIS.

A. EKPC evaluated multiple alternatives in its 2022 IRP. Nuclear power remains cost prohibitive and it would be nearly impossible to get the necessary permits to construct a new coal-fired resource. Intermittent resources are insufficient for assuring reliability of the grid due to their unique operating factors. Also, the amount of capacity needed in the near term far exceeds anything that could be achieved through demand response or similar program. Thus, not surprisingly, the modeling results showed that a natural gas fired resource provided the best load following capacity for EKPC's needs. EKPC considered traditional combustion turbines, along with the Liberty RICE Facility when determining what generation

would best meet its long-term needs. EKPC has a significant amount of Combustion Turbine ("CT") capacity on its system already. Those CTs provide critical, dependable power when the load spikes up or other generation drops offline. However, the fastest of those units takes a minimum of thirty minutes to be started, sync to the grid, and become dispatchable. The operational characteristics of the RICE units allow them to meet all environmental requirements, start up quickly within five minutes, and be fully dispatchable at all load levels. Traditional CTs run at higher heat rates (lower efficiency with more cost) at lower load levels and are most efficient at full load output. The RICE units have very little variation in heat rate between low load levels and full output. The flexibility in operating levels and fast start / ramp times, along with efficient heat rates make the RICE units cost effective when considering load following requirements for solar generation as more units are added to the system. California's experience has demonstrated a very marked change in load, and therefore generation needs, based on the availability of irradiance for solar generation. The load pattern is called a "duck curve" and shows a steep drop in generation needs in the morning as the sun becomes fully available and a steep incline in the evening when the sun sets and is no longer available. Baseload units do not follow load efficiently, they are designed to go to full load output and operate at that level consistently. They have some ramping capability, but it is inefficient and a costly form of load following. CTs can come online much quicker than baseload and ramp to follow load, but they have a limited range of output that can be utilized, that is they have a substantial minimum load level. The RICE units can

operate at a point throughout the entire range of capability of the plant and can move to those various points quickly and efficiently. Importantly, the addition of intermittent resources on the generation grid has created an undeniable need for this type of generation and it would be nearly impossible for EKPC to reach its own renewable power objectives without having RICE units added to its generating fleet.

Q. WHAT TYPES OF POWER SUPPLY OPTIONS WAS EKPC WILLING TO CONSIDER AS PART OF THE PREFERRED RESOURCE PROCESS?

A. EKPC believes that the increased penetration of renewable solar energy in the PJM market presents new challenges, and opportunities, in unit commitment and dispatch due to the intermittent output of solar generation. For these reasons, EKPC needs to consider a generation unit that provides reliable capacity with swift and flexible dispatch characteristics. Both simple-cycle CT and RICE units provide these characteristics, however the RICE units hold the advantage over the CT units in several key areas. A RICE generation facility is made up of several smaller eighteen (18) MW (gross) units to be bundled to the desired amount of total capacity while a CT is typically built as one large (200 MW or greater) unit. A RICE facility enables EKPC to properly size generation to the expected need while also accounting for the economies of scale by installing several RICE engines simultaneously. Operating several RICE engines as opposed to a single CT provides mitigation against forced outages due to engine failure. For example, a CT may experience a failure within the turbine which would render the unit unable to operate. Alternatively, a RICE facility may experience a failure of a single engine,

but the balance of the engines would remain available for dispatch. In addition, RICE engines are fully dispatchable in less than five (5) minutes, as opposed to a CT that commonly takes up to thirty (30) minutes to reach full output. Individual RICE engines can be dispatched to more closely match changes in load.

Q. PLEASE COMPARE THE ECONOMIC OPERATION OF A RICE FACILITY COMPARED TO A COMBUSTION TURBINE.

A. The capital cost for an "F" class CT is estimated to be $1,329/kW per information available on the National Renewable Energy Lab ("NREL") web site. With an assumed interest rate of 4.5%, the expected annual fixed expenses are roughly $143,500 per MW-year. The capital cost for the proposed RICE engine is $500 million including network transmission expenses. Without network transmission expenses, it averages $1,995/kW, which equates to annual fixed charges of approximately $215,500/MW-year. The RICE engines have a higher expected annual fixed cost than the combustion turbine. However, the RICE engines have lower operating and maintenance ("O&M") costs than the traditional combustion turbine. The "F" class combustion turbine has a full load heat rate of 9,717 btu/kWh and will have an average cost of $38.87/MWh based on a natural gas price of $4.00/mmbtu. A RICE engine will cost approximately $33.52/MWh at the same natural gas price. The fixed O&M for the "F" class combustion turbine is estimated to be $26/kW-year and its variable O&M is $6.94/MWh. The fixed O&M for the RICE engine is estimated to be $15/kW-year and its variable O&M is $2.65/MWh. It takes a run time of over 6,000 hours to equalize the total cost between the two technologies. However, the RICE units offer extremely flexible operational

characteristics and are expected to run as much or more than 6,000 hours per year. The CTs are typically limited in their air permits to a much lower number of run hours and / or starts per year. Based on these expectations, the RICE technology was chosen over the combustion turbine for this next increment of capacity for the EKPC system. Given the high number of hours that the RICE plant is expected to operate, it would be reasonable to consider a baseload plant as an alternative. However, baseload plants have less responsiveness to quick load changes than do the CTs and are very inefficient at low load levels. Baseload units do not offer the operational flexibility that EKPC is seeking for its next increment of generation. Thus, while a CT may appear to be less costly in the short-term, it does not neatly fit the generation profile needed in this specific application. RICE units, however, offer a much better alternative for a generation supply option over the long term. Based upon all the qualitative and quantitative factors described above, the Liberty RICE Facility is the reasonable, least-cost power supply alternative available to EKPC to match load, encourage the growth of renewables and provide a hedge against market volatility.

Q. PLEASE DESCRIBE WHY THIS PROJECT IS NOT DUPLICATIVE OF ANY OTHER SOLUTIONS OR RESOURCES CURRENTLY HELD BY EKPC.

A. The development of this project is consistent with EKPC's 2022 IRP and Sustainability Plan. The project will provide a flexible economic power supply in a region of the state that has experienced load serving and voltage challenges over the past few years. The project is intended to supply power that is planned as part

of EKPC's over-all commitment to build a resilient system, therefore, the project is not unreasonably or unnecessarily duplicative and serves a specific need in EKPC's system. An application to interconnect this project to the transmission system has been submitted to PJM so that a study of the network upgrades that will be required are identified. Darrin Adams offers further details on this in his testimony.

Q. PLEASE DESCRIBE THE CONCLUSIONS MADE REGARDING THE PREFERRED RESOURCE PROCESS.

A. Both the RICE and CT technologies are proven and dependable. However, if the needed plant is expected to run many hours per year, then the RICE technology provides a more cost-competitive efficient option. In addition to competitive costs, the RICE units offer much greater operational flexibility, favorable environmental attributes and help support further development of intermittent power supply resources such as solar facilities.

IV. THE PROPOSED PROJECT

Q. PLEASE DESCRIBE THE PROPOSED PROJECT.

A. The proposed project is a 217.6 gross MW RICE facility consisting of twelve (12) Engine/Generator Sets ("Gensets") manufactured by Wartsila with each genset capable of producing eighteen (18.132) gross MW. The total expected net capacity available from the facility is expected to be 214 net MW in total. The Gensets are designed to operate on both natural gas and are capable of operating on ultra-low sulfur diesel as a backup fuel source. Please see the Direct Testimony of Craig A. Johnson and Brad A. Young for further details regarding the proposed project.

Q. WHO WILL OWN THE FACILITIES?

A. EKPC.

Q. WHAT APPROVALS OR CONSENTS ARE NECESSARY IN ORDER FOR THE PROPOSED TRANSACTION TO BE CONSUMMATED?

A. EKPC has already received Board approval for the Project. EKPC must receive Commission approval of the CPCN and Site Compatibility Certificate requested in this Application. RUS must also ensure that EKPC meets appropriate environmental obligations including compliance with the National Environmental Policy Act, the National Historic Preservation Act, and the Endangered Species Act. As Mr. Purvis also describes, EKPC will also seek environmental permits from the Kentucky Energy and Environment Cabinet.

Q. HOW WILL THE PROJECT BE INTEGRATED INTO PJM?

A. EKPC will offer the Liberty RICE Facility into the PJM market in a similar manner as other EKPC-owned generation assets. The offers will be based on costs and will conform to all PJM market rules. Please see the Direct Testimony of Darrin Adams for further details regarding PJM's interconnection queue and transmission interconnection requirements for the project.

Q. EKPC IS PART OF THE PJM REGION. HAS PJM INDICATED ANY CONCERNS WITH ENSURING THE LOAD IN THE PJM REGION MAY BE RELIABLY SERVED INTO THE FUTURE?

A. Yes. Over the last few years, PJM has undertaken a series of analysis to understand the pace of generation retirements, new load growth, and generation additions through 2030. Its report issued in February of 2023, entitled, "Energy Transition in

PJM: Resource Retirements, Replacements & Risk" highlights concern with generation replacement not keeping pace with generation deactivation during period of unprecedented load growth. [4]

PJM's analysis projected resource adequacy needs by comparing the study results to the capacity needs to satisfy the North America Electric Reliability Corporation ("NERC") Adequacy Standard BAL-502-RFC-03, Planning Resource Adequacy Analysis, Assessment and Documentation. This NERC standard requires PJM, acting as the Planning Coordinator, to perform and document resource adequacy analysis that applies a Loss of Load Expectation of one in 10 years. PJM's analysis identified approximately 40,000 MW of PJM's fossil generation fleet resources that may retire by 2030, and approximately 40,000 MW of load growth by 2030.

PJM is now forecasting significant long-term and medium-term load increases – more than 40,000 MW in the next 15 years. At the same time, supply is decreasing. PJM sees significant generator retirements on the horizon due primarily to federal and state policies prompting the shutdown of fossil fuel resources earlier than their useful economic life. Taken together PJM is anticipating 40,000 MW in load growth by 2039 and the loss of over 40,000 MW of generation through retirements by 2030. PJM also found electrification would have an asymmetrical impact on demand growth, with demand growth in the winter, mainly due to heating.

[4] PJM Special Report – Energy Transition in PJM: Resource Retirements, Replacements & Risks. https://www.pjm.com/-/media/library/reports-notices/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx

At the current rates of new generation entry into PJM, the projected Reserve Margin would not meet projected peak load in 2026/27. This would require the deployment of demand response if the 2023 actual load matches the load forecasted. This situation only worsens looking out farther into the future. PJM presented analysis at its August Planning Committee meeting showing that currently the PJM region is not projected to satisfy the LOLE of 1 day in 10 years for 2029/30 through 2034/35.[5]

Adding to the issues is the 40,000 MW of mostly renewable projects have cleared PJM's queue process, many have not moved forward to construction, or operation, due to supply chain, financing, and siting issues. As thermal resources retire and are replaced by renewables and storage resources, more than a one-for-one MW replacement is needed to maintain resource adequacy at the 1 in 10 LOLE. Doubling retirements results in quadrupling the amount of new entry needed. Additionally, a significant amount of flexible thermal resources are still needed in the PJM region. Reliable grid operation will require a system with elevated levels of intermittent resources that have ramping capability. Ramping needs are met by energy storage, thermal generation resources, hydro and imports.

Q. WILL THE PROJECT RESULT IN ANY UNNECESSARY DUPLICATION OF INVESTMENT OR THE CLUTTERING OF THE LANDSCAPE WITH UNNEEDED FACILITIES?

A. No.

[5] PJM Presentation: Supplementary Information about ELCC Class Ratings. https://www.pjm.com/-/media/committees-groups/committees/pc/2024/20240806/20240806-item-08---supplementary-information---elcc-class-ratings.ashx

Q. WILL THE PROJECT COMPETE WITH ANY OTHER ENTITIES REGULATED BY THE COMMISSION?

A. No.

Q. WHAT IS THE TIMELINE FOR COMPLETION OF THE PROJECT?

A. EKPC anticipates a commercial operation date of December 2028 for the Liberty RICE Facility.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

ATTACHMENT JJT-1

SUSTAINABILITY

EAST KENTUCKY POWER COOPERATIVE

Mapping the Road to EKPC's Future

Sustain (sə-ˈstā-n)

1. Strengthen or support physically or mentally.
2. Bear (the weight of an object) without breaking or falling.
3. Cause to continue for an extended period or without interruption.
4. Uphold, affirm, or confirm the justice or validity of.

EAST KENTUCKY POWER COOPERATIVE

A Touchstone Energy® Cooperative

EKPC exists to serve its member-owned cooperatives by safely delivering reliable, affordable and sustainable energy and related services.

- EKPC's mission statement

SUSTAINABILITY

EAST KENTUCKY POWER COOPERATIVE

In 2018, EKPC's Board added "sustainability" to the cooperative's mission statement. For the past year, five employee teams have been gaining a better understanding of the changes taking place in and around the energy industry, changes that will affect EKPC for decades to come. These teams established the following principles and are developing plans to meet them. Like EKPC's employee-based Safety teams, these Sustainability teams are envisioned to continue functioning into the future, helping EKPC identify and meet key challenges. Sustainability will always be a moving target and this plan will change and evolve.

Owner-Members

Purpose:

To ensure EKPC is consistent in vision and relationships with owner-members by developing strategies that ensure long-term energy solutions, partnerships and stability.

Principles

- Work with our owner-members, supporting and enabling them to expand their businesses in response to evolving member service expectations and energy solutions derived from technological advances.

- In partnership with participating owner-members, leverage our combined economies of scale to provide cost-effective and competitive behind-the-meter services.

- Attract and retain businesses in our communities, as the success of our owner-members and EKPC rely on growth and stability.

HIGHLIGHTS:

Foster entrepreneurship to cultivate home-grown jobs and investment.

Electric vehicles can save money and reduce environmental impact.

Includes team members from Farmers RECC, Licking Valley RECC, Nolin RECC and Owen Electric.

SUSTAINABILITY
EAST KENTUCKY POWER COOPERATIVE

Employees

Purpose:

To ensure EKPC meets our Owner-members expectations for cost control and reliability while remaining competitive in attracting and retaining talent by promoting a dynamic and evolving workforce today and in the future.

Principles

- Cultivate a high-performing, diverse and inclusive workforce; encourage and reward respect, collaborative thinking and community volunteerism.
- Ensure long-term workforce success; utilize succession planning, leadership development and professional development resources.
- Study, evaluate and recommend strategies to adapt to post-pandemic workforce trends related to organizational values and culture, worker expectations, candidate/employee behavior and employee relationships.
- Ensure EKPC's workforce is prepared to meet the needs of a rapidly changing energy industry, shifting consumer expectations and the many other challenges ahead by remaining strategically flexible.

HIGHLIGHTS:

Over 4,000 leadership development hours in 2019.

EKPC employees have submitted 265 ideas for improving operations in the last three years.

SUSTAINABILITY
EAST KENTUCKY POWER COOPERATIVE

Energy and Environment

Purpose:

To design and implement strategies to increase fuel diversity, decrease carbon emissions, and promote environmental stewardship throughout EKPC.

Principles

- Commit to reducing greenhouse gas.
- Provide glide-path to replace aging coal resources with cleaner resources and/or market purchases.
- Enhance and promote environmental stewardship projects.
- Adopt new energy technologies to help achieve goals.

HIGHLIGHTS:

35% CO2 reduction by 2035; 70% by 2050.

10% energy from new renewables by 2030; 15% by 2035.

SUSTAINABILITY
EAST KENTUCKY POWER COOPERATIVE

Electric Grid

Purpose:

To ensure EKPC is increasing security, reliability, and resiliency on the transmission system while ensuring the solutions align with downstream grid changes.

Principles

- Grid security: Assessing facilities and cyber threats, and incorporating new technologies.
- Grid reliability: Considering ways to innovatively improve management of facilities and rights-of-way while reducing the environmental impact.
- Grid resiliency: Evaluating ways to ensure EKPC transmission grid can withstand the inevitable challenges ahead.

HIGHLIGHTS:

176 wooden poles replaced with steel poles.

All EKPC service centers certifying an employee as a commercial drone pilot.

SUSTAINABILITY
EAST KENTUCKY POWER COOPERATIVE

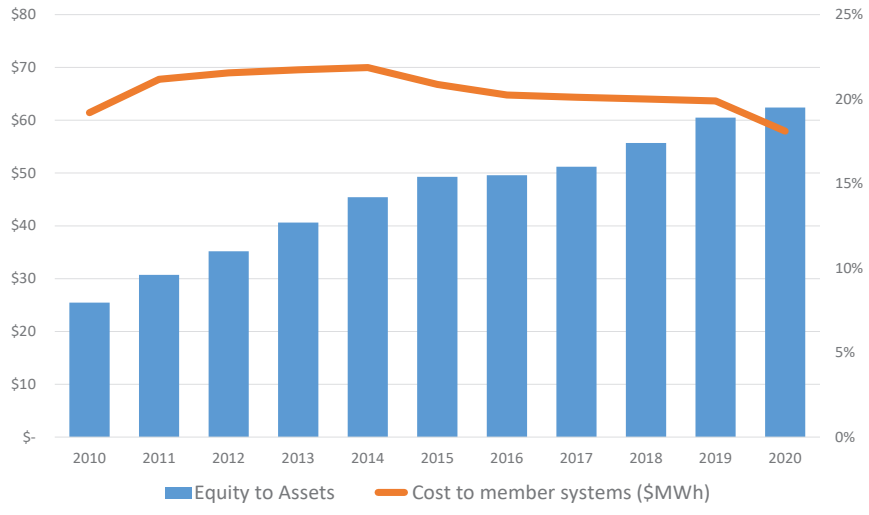
Financial Health

Purpose:

To promote financial sustainability principles that enhance long-term viability.

Principles

- Enhancing responsible financial management.
- Strengthening financial flexibility.
- Building financial resilience.
- Maintaining our forward focus to develop a high degree of strategic strength.



HIGHLIGHTS:

Improve visibility and mitigate future financial risk.

Employee transparency and engagement, such as improving financial literacy.

SUSTAINABILITY
EAST KENTUCKY POWER COOPERATIVE

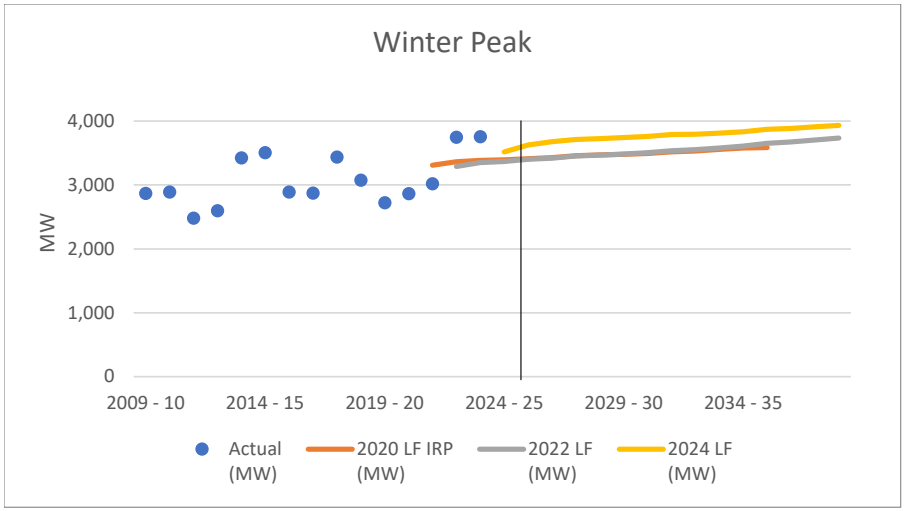
SUSTAINABILITY

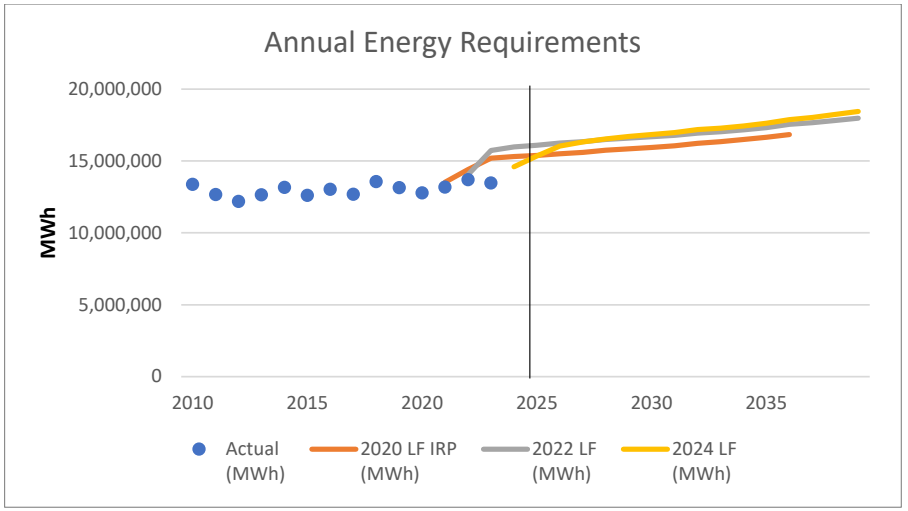
EAST KENTUCKY POWER COOPERATIVE

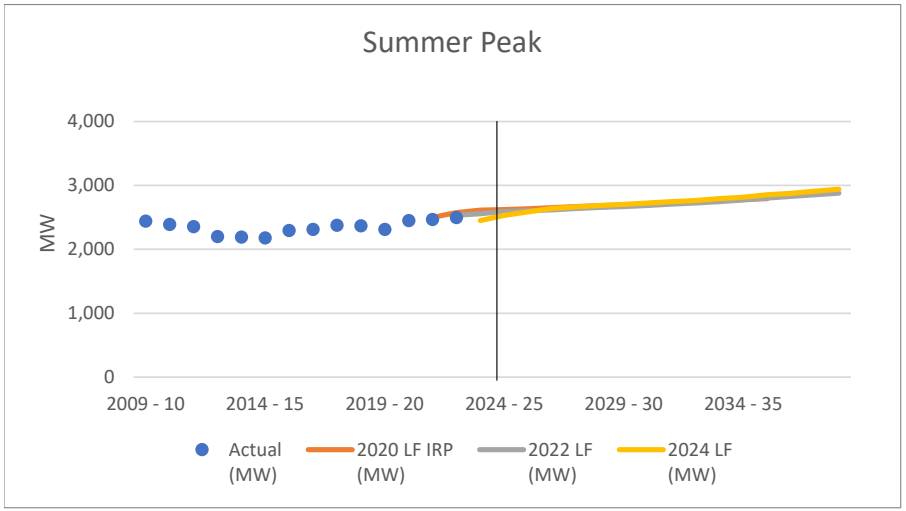
ATTACHMENT JJT-2

REDACTED

Winter	Actual (MW)	Nucor (MW)	Actual excluding Nucor (MW)	2020 LF IRP (MW)	2022 LF (MW)	2024 LF (MW)	Summer	Actual (MW)	Nucor	Actual excluding Nucor (MW)	2020 LF IRP (MW)	2022 LF (MW)	2024 LF (MW)	Year	Actual (MWh)	2020 LF IRP (MWh)	2022 LF (MWh)	2024 LF (MWh)
2009 - 10	2,868	[redacted]	[redacted]				2010	2,443	[redacted]	[redacted]				2010	13,376,292			
2010 - 11	2,891	[redacted]	[redacted]				2011	2,388	[redacted]	[redacted]				2011	12,666,998			
2011 - 12	2,481	[redacted]	[redacted]				2012	2,354	[redacted]	[redacted]				2012	12,190,070			
2012 - 13	2,597	[redacted]	[redacted]				2013	2,199	[redacted]	[redacted]				2013	12,644,590			
2013 - 14	3,425	[redacted]	[redacted]				2014	2,192	[redacted]	[redacted]				2014	13,163,516			
2014 - 15	3,507	[redacted]	[redacted]				2015	2,179	[redacted]	[redacted]				2015	12,604,942			
2015 - 16	2,890	[redacted]	[redacted]				2016	2,293	[redacted]	[redacted]				2016	13,039,953			
2016 - 17	2,871	[redacted]	[redacted]				2017	2,311	[redacted]	[redacted]				2017	12,680,111			
2017 - 18	3,437	[redacted]	[redacted]				2018	2,375	[redacted]	[redacted]				2018	13,576,581			
2018 - 19	3,073	[redacted]	[redacted]				2019	2,366	[redacted]	[redacted]				2019	13,140,704			
2019 - 20	2,723	[redacted]	[redacted]				2020	2,312	[redacted]	[redacted]				2020	12,794,457			
2020 - 21	2,862	[redacted]	[redacted]				2021	2,450	[redacted]	[redacted]				2021	13,183,458	13,529,377		
2021 - 22	3,017	[redacted]	[redacted]	3,309			2022	2,465	[redacted]	[redacted]	2,500			2022	13,700,232	14,421,062	14,054,646	
2022 - 23	3,747	[redacted]	[redacted]	3,363	3,289		2023	2,497	[redacted]	[redacted]	2,574	2,534		2023	13,465,331	15,191,270	15,729,754	
2023 - 24	3,754	[redacted]	[redacted]	3,384	3,349		2024				2,612	2,558	2,450	2024		15,304,776	15,978,231	14,597,314
2024 - 25				3,391	3,370	3,517	2025				2,623	2,590	2,530	2025		15,397,278	16,097,281	15,356,328
2025 - 26				3,409	3,400	3,627	2026				2,634	2,603	2,588	2026		15,500,370	16,249,016	16,032,547
2026 - 27				3,427	3,419	3,677	2027				2,651	2,618	2,641	2027		15,604,583	16,344,822	16,324,831
2027 - 28				3,457	3,452	3,712	2028				2,669	2,640	2,664	2028		15,747,490	16,496,452	16,535,333
2028 - 29				3,470	3,467	3,727	2029				2,684	2,655	2,688	2029		15,849,209	16,587,477	16,716,466
2029 - 30				3,480	3,484	3,743	2030				2,695	2,669	2,703	2030		15,945,207	16,689,158	16,836,043
2030 - 31				3,494	3,504	3,760	2031				2,707	2,686	2,723	2031		16,058,087	16,784,952	16,984,780
2031 - 32				3,520	3,535	3,788	2032				2,726	2,708	2,749	2032		16,227,680	16,931,348	17,186,440
2032 - 33				3,533	3,551	3,793	2033				2,742	2,727	2,766	2033		16,339,247	17,027,037	17,291,964
2033 - 34				3,556	3,578	3,811	2034				2,761	2,748	2,792	2034		16,491,095	17,167,590	17,442,321
2034 - 35				3,578	3,607	3,832	2035				2,780	2,771	2,818	2035		16,647,000	17,330,048	17,621,587
2035 - 36				3,586	3,651	3,870	2036				2,794	2,803	2,853	2036		16,838,980	17,542,966	17,880,165
2036 - 37					3,673	3,882	2037					2,827	2,878	2037			17,663,615	18,029,950
2037 - 38					3,704	3,908	2038					2,854	2,910	2038			17,821,924	18,243,593
2038 - 39					3,734	3,933	2039					2,879	2,941	2039			17,979,010	18,446,924


Winter Peak
4,000
3,000
2,000
1,000
0
MW
2009 - 10
2014 - 15
2019 - 20
2024 - 25
2029 - 30
2034 - 35
Actual (MW)
2020 LF IRP (MW)
2022 LF (MW)
2024 LF (MW)


Annual Energy Requirements
20,000,000
15,000,000
10,000,000
5,000,000
0
MWh
2010
2015
2020
2025
2030
2035
Actual (MWh)
2020 LF IRP (MWh)
2022 LF (MWh)
2024 LF (MWh)


Summer Peak
4,000
3,000
2,000
1,000
0
MW
2009 - 10
2014 - 15
2019 - 20
2024 - 25
2029 - 30
2034 - 35
Actual (MW)
2020 LF IRP (MW)
2022 LF (MW)
2024 LF (MW)

ATTACHMENT JJT-3

EKPC Expansion Plan - Q3 2024

	LTLF-2024	Load Obligation	Planning Reserves 7%	7%	Capacity Required		Existing Capacity		Deficit before Cap Additions		CAPACITY ADDITIONS								Total Effective Addition		Total Capacity		Seasonal Purchases		Planning Reserves (Excl Seas Pur)	
											CCGT		Hydro PPA		RICE		SOLAR									
YEAR	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*	WIN	SUM*
2025	3,517	2,379	246	166	3,763	2,545	3,727	2,580	36	-35				9					-	9	3,727	2,589	40		-1%	2%
2026	3,627	2,433	254	170	3,881	2,603	3,427	2,580	454	23			300					11	300	20	3,727	2,600	150		-4%	0%
2027	3,677	2,482	257	174	3,934	2,656	3,427	2,580	507	77								-1	300	19	3,727	2,599	210	60	-5%	-2%
2028	3,712	2,504	260	175	3,972	2,679	3,427	2,580	545	99									300	19	3,727	2,599	240	80	-6%	-3%
2029	3,727	2,527	261	177	3,988	2,704	3,427	2,580	561	124					214	169		-1	514	187	3,941	2,767	50		-1%	2%
2030	3,743	2,541	262	178	4,005	2,719	3,300	2,474	705	245								-2	514	185	3,814	2,659	190	60	-5%	-2%
2031	3,760	2,560	263	179	4,023	2,739	3,300	2,474	723	265									514	185	3,814	2,659	210	80	-5%	-3%
2032	3,788	2,584	265	181	4,053	2,765	3,300	2,474	753	291									514	185	3,814	2,659	240	110	-6%	-4%
2033	3,793	2,600	266	182	4,059	2,782	3,300	2,474	760	308		573						-1	514	757	3,814	3,231	250		-6%	16%
2034	3,811	2,625	267	184	4,078	2,809	3,300	2,474	778	335	745								1,259	757	4,559	3,231			12%	15%
2035	3,832	2,649	268	185	4,100	2,834	3,300	2,474	800	360									1,259	457	4,559	2,931			11%	3%
2036	3,870	2,682	271	188	4,141	2,870	3,300	2,474	841	396									959	457	4,259	2,931			3%	2%
2037	3,882	2,705	272	189	4,154	2,894	3,300	2,474	855	421									959	457	4,259	2,931			3%	1%
2038	3,908	2,736	274	191	4,182	2,927	3,300	2,474	882	453									959	457	4,259	2,931			2%	0%
2039	3,933	2,765	275	194	4,208	2,959	3,300	2,474	908	485									959	457	4,259	2,931		30	1%	-1%

*Summer capacity adjusted for class ELCC ratings and summer load adjusted for PJM load obligation (EKPC LTLF Summer Peak minus 6%)

EXHIBIT 4
DIRECT TESTIMONY BRAD YOUNG

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**

DIRECT TESTIMONY OF BRAD YOUNG
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Brad Young, Vice President of Engineering and Construction for East Kentucky Power Cooperative, Inc., being duly sworn, states that she has supervised the preparation of her Direct Testimony and certain filing requirements in the above referenced case 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. Brad Young

Brad Young, Vice President of
Engineering and Construction
East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Brad Young, Vice President of Engineering and Construction for East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public

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

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Brad A. Young and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am the Vice President of Engineering & Construction at EKPC.

Q. PLEASE STATE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor's degree and a Master of Science degree in Engineering from the University of Kentucky. I am a licensed professional engineer in the Commonwealth of Kentucky. I have been employed by EKPC since April 2016 and have held my current position within the EKPC organization since March 2023.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR DUTIES AT EKPC.

A. I am responsible for all planning, engineering, and construction of projects associated with EKPC's Power Production and Transmission capital investment portfolio. I report directly to EKPC's Executive Vice President and Chief Operating Officer, Mr. Don Mosier.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide information regarding the project selection process, project scope, and construction information for EKPC's proposed project at issue herein.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. Yes, I am sponsoring the following Attachments:

- Attachment BY-1, Project Scoping Report ("PSR") (Confidential)
- Attachment BY-2, Site Assessment Report
- Attachment BY-3, Project Feasibility Report.

Q. PLEASE DESCRIBE THE PROPOSED PROJECT.

A. EKPC is proposing to construct a new 214 MW Reciprocating Internal Combustion Engine ("RICE") peaking and baseload facility located near Liberty, Kentucky. Among other benefits, the proposed project will incorporate a reliable peaking and baseload generation facility into EKPC's generation portfolio that has accelerated ramp up capability. This accelerated ramp up is necessary to support the renewable energy output during intermittent periods or when severe weather requires additional baseload to support our current customer base and the PJM.

Q. PLEASE DESCRIBE THE MANNER OF CONSTRUCTION FOR THE PROPOSED PROJECT.

A. The new facility's output will be based on the Wartsila's generator set that will be equipped with 12 units capable of producing a total net output of 214 MW. The units will be located within an enclosed pre-engineered metal building that will also house auxiliary operating equipment that requires cold weather protection.

The units will be designed to burn pipeline quality natural gas with ultra-low sulfur diesel ("ULSD") fuel oil as a backup. A new natural gas supply pipeline, dew point heater, and metering and regulating station will be installed to the site as part of a separate project. To support emergency backup operation on fuel oil, the fuel oil storage tanks are designed to provide 72-hours of fuel while firing all engines at full load. Two fuel oil storage tanks will be constructed in concrete secondary containment structures with redundant offloading and forwarding pumps.

A new 161 kV switchyard and transmission line will be installed to interconnect the output from the generating plant to the existing EKPC transmission high voltage line that is adjacent to the facility.

The generating units require minimal water supply. Water is needed for service and potable water supply, fire water tank supply, and closed cooling water makeup. The water supply for the facility will tap off the county potable water supply main. The fire water tank will hold 450,000 gallons.

Site storm water will be collected and directed to an on-site storm water runoff pond. The storm water runoff pond will discharge by gravity to a new outfall. The storm water pond was sized for a 100-year storm event over a 24-hour period for the facility site area.

All contaminated drains will collect in an oil water separator before discharging to the stormwater runoff pond. Sanitary wastewater will be collected in lift stations and pumped to a new leach field for disposal.

Q. WILL THE PROPOSED PROJECT COMPETE WITH ANY OTHER UTILITIES?

A. No, the Liberty RICE Facility project is the first of its kind in the state and will not compete with any other utilities in Kentucky.

Q. WHAT ARE THE ESTIMATED CONSTRUCTION COSTS FOR EACH ELEMENT OF THE PROPOSED PROJECT?

A. The estimated cost for the Liberty RICE Facility Project is approximately $500 million. A detailed cost estimate is included in Appendix R of the Project Scoping Report, which is attached as Exhibit BY-1. Section 7 and Appendix R are being filed in redacted form and are subject to a motion for confidential treatment.

Q. PLEASE DESCRIBE THE PROCESS TAKEN BY EKPC TO EVALUATE THE BEST POSSIBLE PROJECT LOCATION AMONG THE ALTERNATIVES CONSIDERED AND WHAT FACTORS WERE INCLUDED IN THAT ANALYSIS.

A. EKPC reviewed multiple potential locations in central Kentucky, primarily located around the Campbellsville and Liberty areas. Following a Siting Study conducted by 1898 & Company, a subsidiary of Burns & McDonnell Engineering Co. ("Burns McDonnell"), potential locations were identified that would minimize project capital cost by co-locating close to both existing high voltage transmission lines and natural gas pipelines in the area. For the more favorable site locations, a feasibility analysis (Project Feasibility Report, Exhibit BY-3) was conducted that included preliminary general arrangement layout drawings of the proposed facility along with a review of existing land parcel ownership resell opportunities. In the

feasibility analysis, each parcel was reviewed for sufficient land area for the new RICE facility, water availability, noise sensitivity, adjacent residences or community gathering locations, wetlands, and other potential regulatory hurdles. Of these options, the Liberty, Kentucky site was deemed preferable due to the closer proximity of gas pipelines and the existing 161 kV transmission line.

Q. PLEASE LIST AND DESCRIBE THE ALTERNATIVE LOCATIONS RESEARCHED.

A. The first step in the site selection process was the identification of candidate sites. Candidate sites possess the necessary infrastructure, such as interconnection capability to the EKPC transmission system, access to natural gas pipelines, water and wastewater utilities, and land availability. These characteristics are necessary to support the development, construction, and operation of a RICE facility. The proposed project's area of interest was selected to provide improved reliability and voltage support for EKPC's transmission system. The five (5) areas of interest were: Campbellsville, located in Taylor County; Lancaster, located in Garrard County; Liberty, located in Casey County; Lebanon, located in Marion County; and Stanford, located in Lincoln County. In total twenty (20) sites were considered in the site evaluation study. These sites are denominated as Campbellsville 2, 3, 4, 5, 6, and 7; Lancaster 1 and 2; Liberty 1, 2, 3, 4, and 5; Lebanon 1, 2, 3, and 4; and Stanford 1, 2, and 3.

Q. WHAT CRITERIA WAS USED TO DETERMINE THE OPTIMAL PROJECT LOCATION?

A. EKPC, working in partnership with Burns McDonnell, established the following major category / criterion as part of the Site Assessment Report (Exhibit BY-2). The established major categories included electrical transmission, fuel supply delivery, site development, environmental, and permitting. Each proposed new generator location was reviewed and evaluated based on the overall weighted category score per the rating categories / criterion. Final results of the Scoring Matrix for each of the proposed new generator locations are summarized in Figure 5-1 of the Site Assessment Report (Attachment BY-2) that were used to determine the optimal project location.

Q. HOW WAS THE LOCATION CRITERIA DETERMINED AND THE FINAL LOCATION SELECTED?

A. EKPC, working with Burns McDonnell, developed a quantitative decision matrix to rank the candidate sites. In total, twenty-two (22) different criteria were used to evaluate each site (see Table 1-1 of the Site Selection Study). These criteria were first organized into five (5) major categories that identify required specific site attributes for consideration for the site selection process of the proposed new generator. The major categories were allocated weights that reflect the importance and overall impact to the project. Individual scores for each candidate site and criteria were used along with the corresponding weights to calculate a weighted composite score for each site. After the scoring was completed, field reconnaissance was performed of the highest scoring potential sites. The field reconnaissance consisted of a survey of public roads in the vicinity of each potential site area along with the electrical and natural gas interconnection points. Following

the field reconnaissance of the potential site areas and subsequent analysis, the project team evaluated the relative strengths and weaknesses of each site with respect to the previously established criteria to select the final location of the project.

Q. WILL THE PROJECT RESULT IN ANY UNNECESSARY DUPLICATION OF INVESTMENT OR THE CLUTTERING OF THE LANDSCAPE WITH UNNEEDED FACILITIES?

A. No. In fact, part of the benefit of the proposed location of the project is the ability to avoid constructing unnecessary facilities.

Q. WHAT BENEFITS WILL BE DERIVED FROM THE PROJECT?

A. The proposed project will provide a reliable peaking generation facility along with the ability to reliably serve and provide voltage support to this area of EKPC's transmission system, support renewable energy output during intermittent periods due to accelerated ramp up capability, provide additional generation support during severe weather events, and support continued industrial and residential load growth as part of economic development in the southern area of EKPC's transmission system with anticipation of this growth continuing.

Q. WHAT IS THE TIMELINE FOR COMPLETION OF THE PROJECT?

A. Commercial operation is expected to be achieved by December 2028.

Q. ARE THERE ANY TRANSMISSION PORTIONS OF THE PROPOSED GENERATION PROJECT?

A. Yes, however, the only transmission line associated with the project is less than one mile in length and does not require a CPCN.

Q. PLEASE DESCRIBE THE TRANSMISSION PORTIONS OF THE PROPOSED GENERATION PROJECT?

A. A new switchyard is designed to be located east of the new units. Two medium voltage switchgears will collect power from up to 6 engine generators. The two switchgears will then connect to generator step-up transformers, located in containments between the medium voltage buildings and the new switchyard. The reciprocating engine generators output will be connected through these generator step-up transformers to the new 161 kV switchyard. The connection from the generator step-up transformers to the new 161kV switchyard will be accomplished by overhead transmission lines. The new 161kV switchyard will be a five (5) bay, breaker-and-a-half configuration. Two (2) new 161 kV transmission lines will be constructed to connect the new 161kV switchyard to the existing EKPC 161 kV transmission line located less than 1 mile away and entirely along property to be owned by EKPC.

Q. DID EKPC PREPARE A SITE COMPATABILITY STUDY?

A. Yes.

Q. PLEASE SUMMARIZE THE STUDIES THAT WERE UNDERTAKEN AS PART OF THE SITE COMPATABILITY STUDY.

A. The Site Compatibility Study included the following studies in accordance with KRS 728.216, which requires a Site Assessment Report as specified in 278.708(3). The Site Compatibility Study includes a full description of the facility including setbacks; compatibility with scenic surroundings; potential changes in property

values; evaluation of peak and average noise; and the impact of the project on road and rail traffic.

Q. WERE THERE ANY NOTED IMPACTS INDICATED IN THE SITE COMPATABILITY STUDY?

A. Yes, the property value impact study discussed the industrial appearance of the facility being a potential negative for the site. However, the study also noted this could be mitigated with vegetative screening. Also, the noise study determined that noise levels at nearby residences could exceed United States Environmental Protection Agency ("EPA") and American National Standards Institute ("ANSI") guidelines for limiting noise impacts to surrounding communities and recommended mitigation tactics.

Q. IS EKPC PROPOSING ANY MITIGATION MEASURES?

A. Yes, EKPC is moving forward with mitigation tactics recommended by both the property value impact study and the acoustical evaluation. The mitigation for property value includes planting trees across the road from nearby residents to reduce visibility of the facility. The mitigation for the acoustical evaluation includes purchasing and installing noise attenuation provisions with the diesel generator engines to further reduce noise levels during operations. Should the Commission approve the proposed project, EKPC is also seeking to purchase adjacent residential property directly to the west along route 49 and to the south to provide additional buffer and overall setback distance. EKPC does not plan to condemn any property, however, and any such purchases would need to be voluntary on the part of the sellers.

Q. IS EKPC REQUESTING A DEVIATION FROM THE SETBACK REQUIREMENTS?

A. No. EKPC plans to meet all applicable setback requirements. The facility's exhaust stack is proposed to be 1,000 feet from the adjacent property boundary.

Q. PLEASE DESCRIBE THE SURROUNDING LAND USE FOR THE AREA ADJACENT TO THE PROPOSED PROJECT.

A. The proposed site is in an area that is primarily used as farmland and has a very low density of residential and rural buildings. In addition, the site is located more than a mile from any residential neighborhoods, schools, hospitals, or nursing home facilities.

Q. DO THE MAPS ATTACHED AS ATTACHMENT BY-1 SHOW THE LEGAL BOUNDARIES OF THE PROPOSED SITE; THE LOCATION OF BUILDINGS, TRANSMISSION LINES AND STRUCTURES; AND EXISTING OR PROPOSED UTILITIES?

A. Yes.

Q. WHAT STEPS ARE BEING TAKEN BY EKPC TO MITIGATE SUPPLY CHAIN RISK FOR THIS PROPOSED PROJECT?

A. EKPC, working with its Owner's Engineer, Burns & McDonnell, has already begun procurement of critical, long lead equipment such as the reciprocating engines and generator step-up transformers. These two contracts represent approximately 33% of the total project cost and have the most extensive lead times resulting in the design and fabrication of this equipment being a critical path for the overall project. After conducting a competitive bid process, EKPC executed contracts with Limited

Notices to Proceed for engineering only to secure manufacturing schedules or "slots" that align with the proposed project schedule. Each contract contains termination clauses, in the event the Commission does not approve construction of this proposed project.

Q. HOW WILL EKPC CONTROL ACCESS TO THE PROPOSED SITE?

A. The Liberty RICE Facility will be located at a greenfield location approximately 4 miles north of Liberty, Kentucky. Access to the site is from KY-49 on Carr Sasser Road. A new site entrance with a security building and double lanes for entrance and exit will be located at approximately 528 Carr Sasser Road. Security staff will be present at all times to control access to the facility. Perimeter fencing will also be installed around the entire perimeter of the proposed property at a height of 6 feet. The administration building, engine hall, and other major facilities will be located approximately 700 feet from the guard shack into the center of the property boundary. The site layout considers access roads for delivery of equipment and materials during construction as well as operation, while also considering the privacy and road use of the nearby landowners.

Q. HAS EKPC CONDUCTED A NOISE STUDY AND EVALUATED NOISE LEVELS?

A. Yes. EKPC had a noise study conducted that determined the project sound levels are consistent with the intent of the recommended USEPA and ANSI S12.9 guidelines as most receptors are below the recommended guidance sound levels and the few exceedances to the recommended levels are less than 5 dB above the recommended sound levels. Sound mitigation measures already included for the

project are the use of silencers, insulation, and absorptive walls. These measures can be seen in Table 4.2 of Appendix D located within BY-2. Additional mitigation measures above and beyond those listed in Table 4.2 can be found in section 7.0 of BY-2 and include additional sound absorptive landscaping such as trees and shrubs.

Q. PLEASE DESCRIBE THE TIMING FOR PJM APPROVAL FOR THE PROJECTS AND THE IMPACT OF SAME.

A. An application for interconnection of the Liberty RICE Facility has been submitted to PJM to enter its generation interconnection queue. This project will be part of PJM's Cycle #1, which is estimated to commence the study process in Q2 of 2026. PJM expects to complete all studies and issue Generator Interconnection Agreements for all projects in Cycle #1 by the end of 2027. Those studies will identify all necessary physical-interconnection facilities (that is, the new substation and transmission-line connections) necessary to interconnect the facility to the EKPC transmission system, as well as any transmission-system network upgrades needed to accommodate the power flows in the area resulting from the addition of the facility's generation. EKPC and its Owners Engineer have already identified the physical-interconnection facilities required for the Liberty RICE Facility to begin the engineering, procurement, and construction work as needed to ensure those transmission facilities are ready to energize when necessary to synchronize the generation facility to the transmission system.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

ATTACHMENT BY-1
REDACTED
FILE UPLOADED
SEPARATELY DUE
TO FILE SIZE

ATTACHMENT BY-2
UPLOADED
SEPARATELY DUE
TO FILE SIZE

ATTACHMENT BY-3
UPLOADED
SEPARATELY DUE
TO FILE SIZE

EXHIBIT 5
DIRECT TESTIMONY CRAIG JOHNSON

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**

DIRECT TESTIMONY OF CRAIG A. JOHNSON, P. E.
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Craig Johnson, Senior Vice President of Power Production for East Kentucky Power Cooperative, Inc., being duly sworn, states that he has supervised the preparation of her Direct Testimony and certain filing requirements in the above referenced case 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.

Craig Johnson, Senior Vice President of Power Production
East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Craig Johnson, Senior Vice President of Power Production for East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public

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

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Craig A. Johnson, and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am the Senior Vice President of Power Production of EKPC.

Q. PLEASE STATE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a bachelor's degree in engineering from West Virginia Institute of Technology and a Master of Science degree in Engineering from the University of Kentucky. I am a licensed professional engineer in the Commonwealth of Kentucky. I have been employed by EKPC since September 1989 and have held my current position within the EKPC organization since January 2010.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR DUTIES AT EKPC.

A. I am responsible for all operational and maintenance functions at EKPC's two (2) coal fired power plants, two (2) combustion turbine plants, five (5) landfill gas plants, one (1) community solar facility and a new, small solar facility that is scheduled to be completed in September of 2024. I report directly to EKPC's Executive Vice President and Chief Operating Officer, Mr. Don Mosier.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. Yes. Most recently I provided testimony in Case No. 2022-00098, *In the Matter of the Electronic 2022 Integrated Resource Plan of East Kentucky Power Cooperative, Inc.*

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide information regarding EKPC's generation units and the need for additional generation.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. No.

Q. PLEASE DESCRIBE EKPC'S EXISTING GENERATION FLEET.

A. EKPC owns and operates coal-fired generation at the John S. Cooper Station in Pulaski County, Kentucky (341 MW) and the Hugh L. Spurlock Station (1,346 MW) in Mason County, Kentucky. EKPC also owns and operates natural gas-fired generation at the J. K. Smith Station in Clark County, Kentucky (753 MW (summer)/989 MW (winter)) and the Bluegrass Generating Station in Oldham County, Kentucky (501 MW (summer)/567 MW (winter)), landfill gas-to-energy facilities in Boone County, Greenup County, Hardin County, Pendleton County and Barren County (13.8 MW total), and a Community Solar facility (8.5 MW) in Clark County, Kentucky. The net unit ratings are based upon the original equipment manufacturer's gross name plate megawatt rating minus the station service. EKPC is also completing the installation of Star Hill Farms Solar facility, which has a 500kWac rating. This facility has a commercial operation date of September 2024.

The entire output of this new solar facility is under contract to Makers Mark Distillery.

Q. PLEASE DESCRIBE THE NEW GENERATION PROJECT PROPOSED IN THIS PROCEEDING.

A. The proposed Liberty Rice Facility is to be located on a 100-acre greenfield site in Casey County. The site is located at approximately 528 Carr Sasser Road, Liberty, Kentucky. The site can be accessed from nearby KY-49. Year-round site security will be provided. During construction, a contractor's administration area will be constructed with parking and laydown necessary to accommodate the construction needs. The site layout considers the necessary access roads for delivery of equipment and materials during construction and operation, while considering the privacy and road use of the surrounding nearby landowners.

The new generating station will use Reciprocating Internal Combustion Engines ("RICE") technology. Wartsila will be the supplier for the major equipment. The total net output of the facility will be 214 MW. There will be twelve (12) Wartsila W18V50DF Engine/Generator Sets ("Gensets") with a gross rating of 18,132 kW each. The major, and auxiliary, equipment design conditions are for an outside extreme summer maximum temperature of 104.9 degrees Fahrenheit and an outside extreme winter minimum temperature of -21.7 degrees Fahrenheit. The Gensets will be in an enclosed equipment building. The building will also house the auxiliary operating equipment that requires protection from the weather. The engine and auxiliary equipment building will provide sound attenuation. Further sound attenuation from the engine noise is provided by sound

silencers designed into both the horizontal duct work and stacks. The flue gas from the Gensets is combined after the SCR/CO catalyst into two common stacks, (six Gensets per stack).

These engines are designed to burn pipeline quality natural gas as their primary fuel but can burn ultra-low sulfur diesel ("ULSD") fuel. The Wartsila W18V50DF engine always requires a small amount of diesel as pilot fuel even when the engines are firing natural gas. The pilot diesel fuel is less than one percent of the total fuel required on a heat input basis to achieve full load. Pilot fuel is necessary for combustion as this model of engine does not have a spark ignition system. Switchover while online is possible between each fuel type. Each engine will be cooled by individual closed cooling water systems. The heat from the engine is rejected through a common bank of air-cooled heat exchangers (radiators) located outdoors. Each engine also will employ individual Scrubbed Catalytic Reduction ("SCR") and Carbon Monoxide ("CO") catalyst to control Nitric Oxides and CO, respectively, making the units capable of achieving emission requirements.

The major features for the plant site are an engine and auxiliary building, new 161 kV substation, new natural gas pipeline with metering and regulating station, a warehouse and control/administration building, fire water tank, two ULSD tanks, two lube oil storage tanks, paved parking area, laydown area, access roads and site security with guard house and fencing.

The two diesel tanks (630,000 gallons each) will hold enough diesel to allow for 72 hours of continuous full load operation. The tanks will be constructed with

secondary containment and all outside fuel oil piping routed from the tank yard will be jacketed. RICE technology uses little water compared to other generation technologies; however, there will be a need for raw water for a potable water supply, auxiliary equipment service, and fire protection. Water will be supplied from the potable county water line for daily use, but EKPC will construct a 450,000-gallon fire water tank for fire protection needs. Site stormwater runoff will be directed through a newly constructed storm water pond sized for a 100-year storm event over a 24-hour period.

Construction of the facility is expected to take 26 months from mobilization and breaking ground to commercial operation. Assuming all necessary regulatory approvals are obtained, EKPC expects site mobilization to start on October 2026, all major construction activities to be concluded by March 2028, with startup and commissioning to take approximately nine months. EKPC is planning for commercial operation in December 2028.

Q. HOW IS THE NATURAL GAS AND DIESEL FUEL GOING TO BE PROCURED FOR THE LIBERTY RICE FACILITY.

EKPC's Fuel & Emissions department ("Fuels") has a responsibility to ensure that an adequate supply of fuel is purchased at stable and competitive prices, in accordance with the requirements of lending and regulatory agencies; to ensure ethical, fair, and sound business practices are followed; and to avoid the conflict of interest or appearance of any such conflict of interest. Procurement practices used by the Fuels are conducted in concert and under the controls defined within approved strategy, policies, and procedures.

Q. PLEASE DESCRIBE HOW GAS PIPELINE CAPACITY WAS SECURED FOR THE LIBERTY RICE FACILITY.

A EKPC exercised its standard procurement practice to determine the need for the proposed facility. Fuels issued a written Request For Proposal ("RFP"), ensured that proposals were submitted to a secure electronic lockbox, held a formal bid opening with the Contract Committee, evaluated the Phase 1 proposals, established a short-list of bidders to move forward with in Phase 2, had bidders revise schedule and cost estimates for a Phase 2 proposal, ensured that proposals were submitted to a secure electronic lockbox, evaluated the Phase 2 proposals, and ultimately made a recommendation to EKPC's Executive Staff. Full evaluations of proposals consisted of a model that accounted for quantitative and qualitative analysis. The totality of these critical quantitative and qualitative factors clearly demonstrated the counterparty to choose. Now that a company to transport natural gas has been determined, EKPC is in continued negotiations for a Precedent Agreement. This negotiated agreement is the beginning stage for the Firm Mainline Transportation Agreement. The Firm Mainline Transportation Agreement will be executed prior to when EKPC needs the natural gas to flow to the Liberty RICE Facility. The proposed Liberty RICE Facility will be fueled by natural gas that flows on TC Energy's Columbia Gulf Transmission ("CGT") interstate pipeline. In the natural gas industry, CGT is considered one of the top Interstate Pipeline Companies in North America. The location of the mainline proposed by CGT was symbiotic to the physical location of the proposed Liberty RICE facility. The new generation project will have a direct interconnection with the mainline, which means that no

lateral is needed. The mainline operating pressures for CGT meet or exceed the needs of the proposed Liberty RICE Facility, which means that additional compression is not needed. The CGT mainline has sufficient capacity available. CGT proposed fixed rates to flow natural gas on the CGT mainline for a twenty (20) year term for a Maximum Daily Contract Quantity of 50,000 MMBtu/day with expansion cases possible. The cost will consist of a Mainline Reservation Charge, a Mainline Commodity Rate that includes the FERC Annual Charge Adjustment , a Mainline Fuel/LUFG charge, and the price of the actual physical natural gas that flows from suppliers. Physical natural gas bought and scheduled on CGT has liquid mainline pool pricing points. Given that there is no natural gas pipeline lateral associated with this proposed facility, there are no costs associated with a pipeline lateral, which further supported CGT as the least cost option.

Q. DO THE UNITS AT THE LIBERTY RICE FACILITY PROVIDE OPERATIONAL FLEXIBILITY?

A. Yes.

Q. PLEASE DESCRIBE HOW THE RICE UNITS PROVIDE OPERATIONAL FLEXIBILITY.

A. The proposed model Genset has demonstrated reliability with over 5,000 MW of installed capacity worldwide. Having multiple Gensets minimizes shaft risk ensuring grid stability in a region of EKPC's transmission system that historically has relied on the performance of Cooper Power Station during extreme weather events when electricity demand is the highest. Original equipment manufacturer statistics show the proposed model Genset has an availability factor greater than

95% and a starting reliability of 99%. The RICE units EKPC is proposing are highly efficient with an average annual net plant heat rate of 8,381 btu/kWh (HHV). The engines will be capable and designed to operate during extreme weather events. The station will be black start capable. EKPC will keep 72 hours of ULSD diesel (1,260,000 gallons) onsite to ensure operation during times when natural gas may be curtailed or unavailable. RICE engines are capable of a fast start-up and shutdown, making them ideal companions for the increasing deployment of renewable energy expected in the future PJM footprint. The engines can start cold and go to full load in ten minutes. The engines could then be shut down in under one minute and reloaded to full power in just five minutes. There is no maintenance penalty per start on a RICE unit. Planned or unplanned maintenance can be performed on one Genset without affecting the other units. Unlike a simple cycle combustion turbine, a RICE engine's efficiency is flat from a minimum load of nine (9) MW up to full load. This means the station can be dispatched at remarkably high efficiency from 9 MW up to a full station output of 214 MW. A simple cycle combustion turbine, like EKPC owns at the Smith and Bluegrass Stations, have a less favorable part load heat rate, making load following at low loads inefficient. RICE units are also less sensitive to ambient conditions, so the full load output and efficiency varies little from its summer and winter rating. RICE engines can follow load faster than a simple cycle gas turbine. These attributes make them ideal for following a highly unpredictable and non-dispatchable resource such as wind and solar generation. EKPC estimates that this station will operate at capacity factors greater than 20% with some models showing capacity factors as high as 70%.

Q. PLEASE DESCRIBE HOW THE PROPOSED FACILITY WILL BE OPERATED AND MAINTAINED.

A. EKPC will staff the plant for a 24-hour, 365-day operation. Site security will also be provided on this same basis. EKPC anticipates the need for 23 full-time staff for the around-the-clock operation. EKPC will employ our reliability-centered maintenance philosophy for equipment operation and maintenance. This philosophy is governed by a work management optimization program utilizing a computer maintenance management system. A customized maintenance program will be adopted from the OEM guidelines and recommendations. RICE engines' daily and annual maintenance is based upon the actual fired hours of operation. Routine daily engine maintenance will be performed as prescribed by Wartsila, the OEM. EKPC will schedule and plan for maintenance outages in a three-year future window. Specific maintenance will be performed during those times in accordance with OEM guidelines which are based upon actual hours of operation. EKPC anticipates self-performing the routine daily maintenance and inspections and employing the OEM for the annual maintenance and inspections requiring an outage. EKPC will keep the recommended critical inventory in its onsite warehouse.

Q. PLEASE DESCRIBE THE ANTICPATED ONGOING OPERATION AND MAINTENANCE COST FOR THE LIBERTY RICE FACILITY.

A. The estimated annual fixed operating and maintenance cost is $15.00 per kW-year or $2.85 per MWh. The fixed operating and maintenance cost includes allowances for general maintenance activities, unscheduled maintenance activities, office and

administration, and standby energy cost. The levelized Genset major maintenance cost is estimated to be $8.39 per MW hour. This cost includes the levelized major maintenance accrued over the operating hours of the engine. This takes into account the recommendations of the OEM for major milestone maintenance activities and catalyst replacement. A Long-Term Service Agreement with the OEM for field support and technical services is estimated to be $2.46 per MW hour. The non-fuel variable operating and maintenance cost is estimated at $2.65 per MW hour. The variable costs include water, lube oil, urea cost, and the balance of plant equipment and the recommended OEM minor maintenance. The combined total operating and maintenance cost, including fixed but excluding fuel, is $16.35 per MW hour.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

EXHIBIT 6
DIRECT TESTIMONY DARRIN ADAMS

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**

DIRECT TESTIMONY OF DARRIN ADAMS, P. E.
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Darrin Adams, Director of Transmission Planning and System Protection for East Kentucky Power Cooperative, Inc., being duly sworn, states that he has supervised the preparation of her Direct Testimony and certain filing requirements in the above referenced case and that the matters and things set forth therein are true and ae best of his knowledge, information and belief, formed after reasonable inquiry.

Darrin Adams

Darrin Adams, Director of Transmission Planning and System Protection
East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Darrin Adams, Director of Transmission Planning and System Protection for East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public

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

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Darrin Adams and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4755 Lexington Road, Winchester, Kentucky 40391. I am the Director of Transmission Planning & System Protection for EKPC.

Q. PLEASE STATE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I am a graduate of Transylvania University with a Bachelor of Arts degree in Liberal Studies, and a graduate of the University of Kentucky with a Bachelor of Science degree in Electrical Engineering. I am a licensed Professional Engineer in the Commonwealth of Kentucky and have 31 years of experience in the electric utility industry. I have been employed at EKPC since 2004 and have been responsible for transmission planning activities throughout my career at EKPC. Prior to my current position at EKPC, I served as a senior engineer, the Supervisor of Transmission Planning, the Manager of Transmission Planning, and the Director of Planning, Design, & Construction for Power Delivery. Prior to commencing employment with EKPC, I was employed at LG&E Energy/Kentucky Utilities ("LG&E/KU") for approximately 11 years in various roles in the transmission planning and operations areas of those companies.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR DUTIES AT EKPC.

A. In my current role, I am responsible for overseeing the planning of the electric transmission line, transmission substation, and distribution substation facilities

necessary to reliably and economically deliver energy to EKPC's Owner-Member systems. In addition to the planning of EKPC-owned facilities, I oversee coordination of transmission-development plans with other electric utilities and the PJM Interconnection Regional Transmission Organization ("PJM").

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. Yes, I have testified before the Commission on multiple occasions. Most recently, I filed direct testimony in Case No. 2024-00108, which involved EKPC's application for a Certificate of Public Convenience and Necessity ("CPCN") for the construction of transmission and distribution facilities in Marion County, Kentucky. I have also recently participated as a witness at Commission hearings related to EKPC's most recent two-year Fuel-Adjustment Charge review (Case No. 2023-00009) and EKPC's most recent Integrated Resource Plan (Case No. 2022-00098). Regarding cases involving an application for a CPCN for electric transmission lines, I have also testified in Case No. 2022-00314 (requesting a CPCN for the construction of the Fawkes-Duncannon Lane 138 kV & 69 kV double-circuit line and associated facilities in Madison County), Case No. 2006-00463 (requesting a CPCN for the construction of the J.K. Smith-West Garrard 345 kV line in Clark, Madison, and Garrard Counties) and in Case No. 2005-00089 and Case No. 2005-00458 (both cases requesting a CPCN for construction of the Cranston-Rowan County 138 kV line in Rowan County). In addition to the direct testimony supplied in these cases, I have previously sponsored responses to data

requests related to transmission-planning topics in numerous EKPC cases that have come before the Commission.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony will provide an explanation for the purpose and need for the transmission-system modifications required to connect the new generation units proposed in this proceeding ("Liberty RICE Facility") to the EKPC transmission system. I will also discuss the results of a preliminary transmission-system impact analysis performed by EKPC transmission-planning staff. I will also discuss the PJM generation-interconnection queue study process that this generation facility will follow to identify the specific transmission-system network upgrades that are required to accommodate the power output of the facility. Finally, I will describe the benefits that the Liberty RICE Facility will provide to the transmission system in the area.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. Yes. Attachment DA-1 is the report prepared by EKPC transmission-planning staff regarding the preliminary transmission-system impact analysis that was performed.

Q. PLEASE DESCRIBE THE TRANSMISSION ASPECTS OF THE PROJECT THAT EKPC IS UNDERTAKING AS PART OF THIS APPLICATION.

A. A new 161 kV substation will be constructed at the new generating facility site to provide a point of interconnection for the three generating step-up transformers that will be installed at the facility. The connection to the transmission system will be

established by constructing 161 kV extensions from the existing EKPC Casey County-Liberty Junction 161 kV line that is adjacent to the facility to the new substation in order to loop the existing line in and out of the new substation. These line extensions will be less than one mile in total length and will be located solely on property that EKPC will acquire as part of this project. The new substation and the 161 kV line extensions are the only greenfield projects (i.e., not contained in existing rights-of-way and/or existing substations) that EKPC expects to undertake for the Liberty RICE Facility. In addition to these new greenfield projects, EKPC will need to retrofit the existing Casey County-Liberty Junction 161 kV line with Optical Ground-wire ("OPGW") to provide high-speed communications and relaying capabilities between the new Liberty RICE Facility substation and the existing Casey County and Liberty Junction substations.

Q. PLEASE DESCRIBE THE NEED FOR THE TRANSMISSION SYSTEM IMPROVEMENTS.

A. These projects are required to connect the planned Liberty RICE Facility generation units to the EKPC transmission system. This will connect the generation facility to EKPC's 161 kV system. The new 161 kV substation will be constructed using EKPC's current design standards to maximize reliability and operational flexibility.

Q. WHAT SPECIFIC ANALYSIS HAS BEEN PERFORMED TO DETERMINE THE NEED FOR THE TRANSMISSION SYSTEM IMPROVEMENTS IN THE AREA?

A. The physical interconnection projects I have discussed were identified based on basic engineering analysis, preliminary design work, and EKPC's experience with

previous similar generation-interconnection projects on the EKPC system. These facilities are required to connect the generators to the transmission-system, regardless of the impact on power flows on the existing system.

In addition to these facilities, EKPC transmission planning staff performed power-flow analysis with the Liberty RICE Facility generating units included in our system models to determine the potential transmission-system network upgrades that could be identified when the facility goes through the PJM generator-interconnection study process. The analysis was conducted for two scenarios to determine the lower and upper bounds of the expected network upgrades. The lower boundary of network upgrades is based on impacts of the Liberty RICE Facility units with no other generator-interconnection queue projects included in the models within the EKPC system beyond those that currently have generator interconnection agreements with PJM. The upper boundary of network upgrades is based on impacts of the Liberty RICE Facility units with all currently active generator-interconnection queue projects included within the EKPC system.

Q. WHAT DID EKPC'S ANALYSIS FOR THESE TWO SCENARIOS DETERMINE?

A. For the lower-boundary case, EKPC identified four potential network upgrades that could be needed. These upgrades are:

- Rebuild of the Liberty RICE-Liberty Junction 161 kV line (approximately 8 miles) using 795 MCM ACSR conductor.
- Increase the maximum conductor operating temperature of the 636 MCM ACSR conductor in the Liberty RICE-Casey County 161 kV line

(approximately 6 miles) from 167 degrees Fahrenheit to 212 degrees Fahrenheit.

- Increase the maximum conductor operating temperature of the 795 MCM ACSR conductor in the Marion County-Marion County Industrial Park 161 kV line (approximately 4 miles) from 167 degrees Fahrenheit to 212 degrees Fahrenheit.
- Rebuild the Marion County-LGE/KU Lebanon 138 kV line (approximately 0.1 mile) using 795 MCM ACSR conductor.

For the upper-boundary case, EKPC identified three potential network upgrades that could be needed. These upgrades are:

- Rebuild of the Mt. Olive Junction-Highland-Broughtentown Tap-Tommy Gooch Tap 69 kV line (approximately 17.3 miles) using 556.5 MCM ACSR conductor.
- Rebuild the Peytons Store-Casey County 69 kV line (approximately 4.4 miles) using 795 MCM ACSR conductor.
- Upgrade the limiting terminal equipment (circuit-breaker bushing current transformers and disconnect switches) at the Denny substation associated with the Denny-Wiborg Tap 69 kV line.

Therefore, these study results demonstrate that minimal additional impacts are expected if the generator facilities currently in the PJM generation-interconnection queue become operational. This is due primarily to the limited number and size of projects that are in close geographic proximity to the proposed Liberty RICE Facility location.

Q. ARE THE NETWORK UPGRADES THAT YOU HAVE LISTED CERTAIN TO BE REQUIRED IN ORDER TO INTEGRATE THE LIBERTY RICE FACILITY INTO THE TRANSMISSION SYSTEM?

A. Not necessarily. Since the EKPC transmission system is fully integrated into PJM, any generator seeking to interconnect with the EKPC system must follow the Federal Energy Regulatory Commission ("FERC") approved generator interconnection process as described in PJM's Open Access Transmission Tariff. PJM is responsible for administering that process; including approving applications for interconnection, developing study models, performing power-flow, short-circuit, and stability studies, and issuing generator interconnection agreements. Therefore, the specific list of network upgrades that will be required as a result of the connection of the Liberty RICE Facility to the EKPC transmission system will ultimately be determined via the PJM studies that will be conducted for this facility.

Q. HAS EKPC SUBMITTED AN APPLICATION TO PJM IN ORDER FOR THE FACILITY TO ENTER PJM'S GENERATION-INTERCONNECTION STUDY PROCESS?

A. Yes, the application was submitted on August 29, 2024.

Q. WHEN DOES EKPC EXPECT TO RECEIVE A FINAL DETERMINATION FROM PJM REGARDING THE RESULTS OF THE REQUIRED STUDIES FOR THE FACILITY?

A. PJM's current projected timeline to complete studies for any new requests entering its generation queue for the next study cycle (Cycle #1) is the fourth quarter of 2027. PJM is currently accepting applications for Cycle #1 and expects to keep the

application window open into the first quarter of 2026. Once the application window closes, PJM begins its review process of all applications received, which encompasses a three-month period. After this review period, PJM will begin the studies for all approved applications for the cycle. PJM's defined study timeline for its generation-cluster cycles is approximately 18 months. The cycle process is divided into three phases, with decision points to proceed forward for a generation-project developer at the end of each phase. At the end of Phase 1 of a cluster, project developers are provided with information regarding network upgrades that are required based on results of PJM's studies for the cluster. Phase 1 of PJM's Cycle #1 is anticipated to wrap up in the third quarter of 2026. Therefore, EKPC will receive an expected list of network upgrades (along with cost estimates and estimated implementation timeline) for the Liberty RICE Facility in this timeframe. This initial information from the PJM studies will allow EKPC to further develop the transmission projects needed for the Liberty RICE Facility in parallel with PJM's ongoing studies for the cluster.

Q. WHY IS EKPC NOT SEEKING A CPCN FOR ANY OF THESE TRANSMISSION PROJECTS?

A. None of the transmission projects that are expected to be needed will require new transmission line construction of more than one mile. Other than the new substation and associated transmission-line extensions for the generator interconnection at the Liberty RICE Facility site, EKPC does not anticipate any new greenfield projects. The new facilities at the Liberty RICE Facility site will be contained wholly on property that EKPC will own. Furthermore, the expected scope of transmission

work and resulting expenditures is consistent with normal course of business for EKPC. EKPC undertakes projects of this nature and cost on a regular basis.

Q. ARE THE TRANSMISSION PROJECTS INCLUDED IN YOUR TESTIMONY NECESSARY TO SUPPORT THE GENERATION ASSETS PROPOSED IN THIS PROCEEDING?

A. Yes. Once PJM completes its study process for this facility, EKPC will have certainty regarding all of the projects that are required. However, EKPC already has certainty that the set of projects for physical interconnection of the new Liberty RICE Facility to the transmission system (the new 161 kV substation and associated 161 kV line extensions, plus the OPGW retrofit on the existing Casey County-Liberty Junction 161 kV line). Furthermore, EKPC has a high degree of confidence that the lower boundary set of projects that I discussed earlier will be needed, since those projects will be needed to support the Liberty RICE Facility generation additions and/or projects currently in the PJM queue in this area.

Q. WILL THE LIBERTY RICE FACILITY PROVIDE ANY BENEFITS TO THE TRANSMISSION SYSTEM WHEN THE GENERATING UNITS ARE OPERATING?

A. Yes. EKPC has identified a reliability concern in the southern portion of our system when generation is not available, particularly the J.S. Cooper Station units. This has been a known problem for several years, and information regarding these reliability concerns was most recently provided to the Commission in EKPC's last Integrated Resource Plan proceeding (Case No. 2022-00098). During certain high-load periods, the transmission system in the area can become stressed when

generation is not available at Cooper Station. The Liberty RICE Facility will be connected to the Cooper 161 kV substation by the existing 161 kV line that will connect from the facility to the existing Liberty Junction substation. The 161 kV line then extends from Liberty Junction substation to the Cooper substation. The total distance of the 161 kV connection from Liberty RICE Facility to Cooper will be approximately 34 miles. Therefore, in addition to the Liberty RICE Facility generating units providing voltage support in the immediate area surrounding the facility, this 161 kV connection to the Cooper substation will result in the units providing support to the area that is currently supported by the Cooper generating units. This will provide additional operational margin for the area when these units are operating in conjunction with the Cooper units. Furthermore, the Liberty RICE Facility will be a valuable asset that can be dispatched flexibly when needed to provide transmission support during periods when the Cooper units are not operating. The ability to bring these units on quickly and in smaller blocks will be beneficial to responding to real-time operational issues on the transmission system in the area. Therefore, the location and operating characteristics of the Liberty RICE Facility will provide substantial benefits for this area of the Kentucky transmission system.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

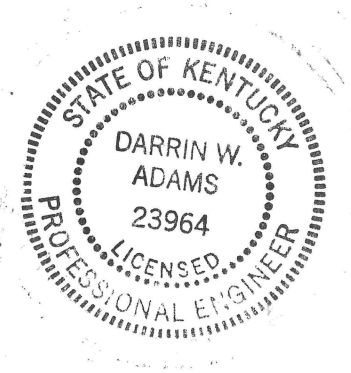
ATTACHMENT DA-1

EKPC LIBERTY RICE TRANSMISSION ANALYSIS REPORT

Prepared by EKPC Transmission Planning
September 2024

CERTIFICATION

I certify, as a Professional Engineer licensed in the state of Kentucky, that this report was produced under my direct supervision. The analyses documented in this report were also conducted under my direct supervision.



Darrin Adams, P.E. (KY License #23964)

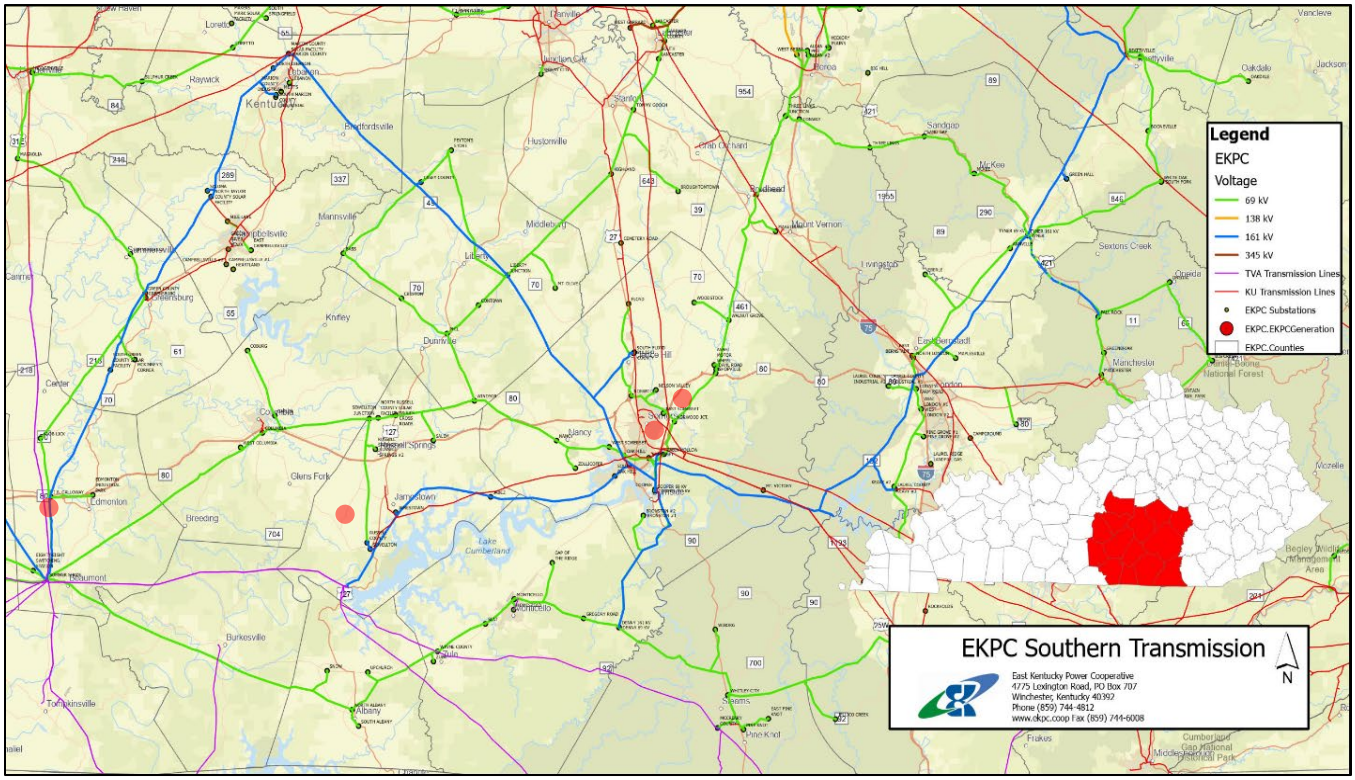
Date: 9/10/2024

Contents

1.0 Introduction

The East Kentucky Power Cooperative's (EKPC) transmission system in the southern portion of Kentucky, extending eastward from Summer Shade, KY in Metcalfe County to Tyner, KY in Jackson County was evaluated by the EKPC Transmission Planning Team to determine future transmission system needs as a result of EKPC's future generation portfolio plans. A current system map of the area is shown in Figure 1.1.

Figure 1.1: EKPC Southern Portion Area Map



The southern portion of the EKPC transmission system relies on four main sources to serve the electric demands of the member-owner cooperatives in the area. These sources consist of: Cooper Station, a coal-fired generation facility in Pulaski County; free-flowing 161 kilo-volt ("kV") interconnections with Tennessee Valley Authority ("TVA") in Metcalfe County between TVA's Summer Shade substation and EKPC's Summer Shade substation; Wolf Creek Dam, a United States Army Corps of Engineers hydroelectric generation facility in Russell County; and the free-flowing 161 kV interconnection with Louisville Gas & Electric/Kentucky Utilities ("LG&E/KU") in Pulaski County (Alcalde – Elihu -- Cooper 161 kV). These sources are shown by the shaded circles on Figure 1.1. The EKPC loads in the area are dependent on these connections for active and reactive power. If one or more of the connections are not available due to an unplanned outage or planned maintenance, the area may experience thermal-loading and low-voltage issues.

2.0 Area Transmission/Generation Plan

The basis of the analyses described herein considers the installation of twelve (12) – Reciprocating Internal Combustion Engines ("RICE"), with rated output of 18 megawatts ("MW") each, near the city of Liberty in Casey County, Kentucky. This installation ("Liberty RICE") will produce approximately 216 MW of net generation to be injected into the EKPC transmission system. The Liberty RICE installation is to be connected along the Liberty Junction – Casey County 161 kV transmission line, approximately 7.4 miles from the Liberty Junction substation. The site and preliminary interconnection details can be found below in Figures 2.1 and 2.2. The transmission projects and estimated cost associated with the Liberty RICE physical-interconnection requirements can be found in Table 2.1.

Figure 2.1 RICE Installation Location

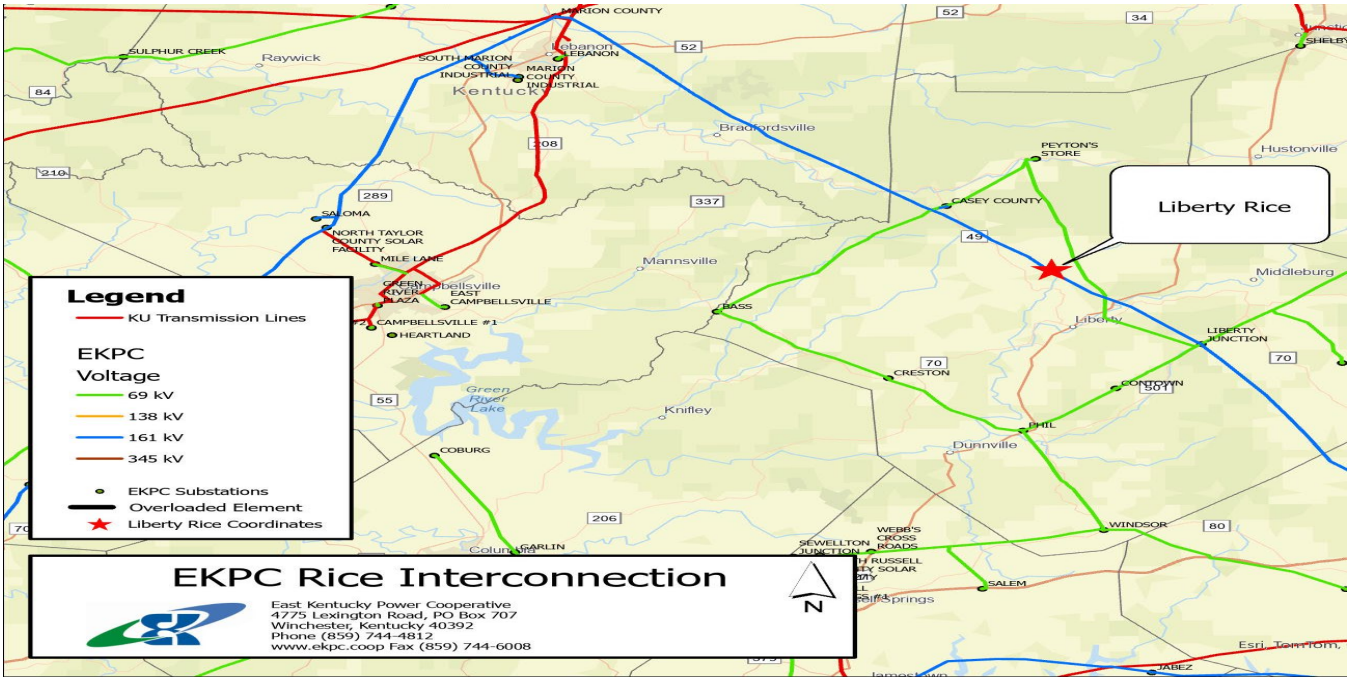


Figure 2.2 RICE Preliminary Interconnection Details

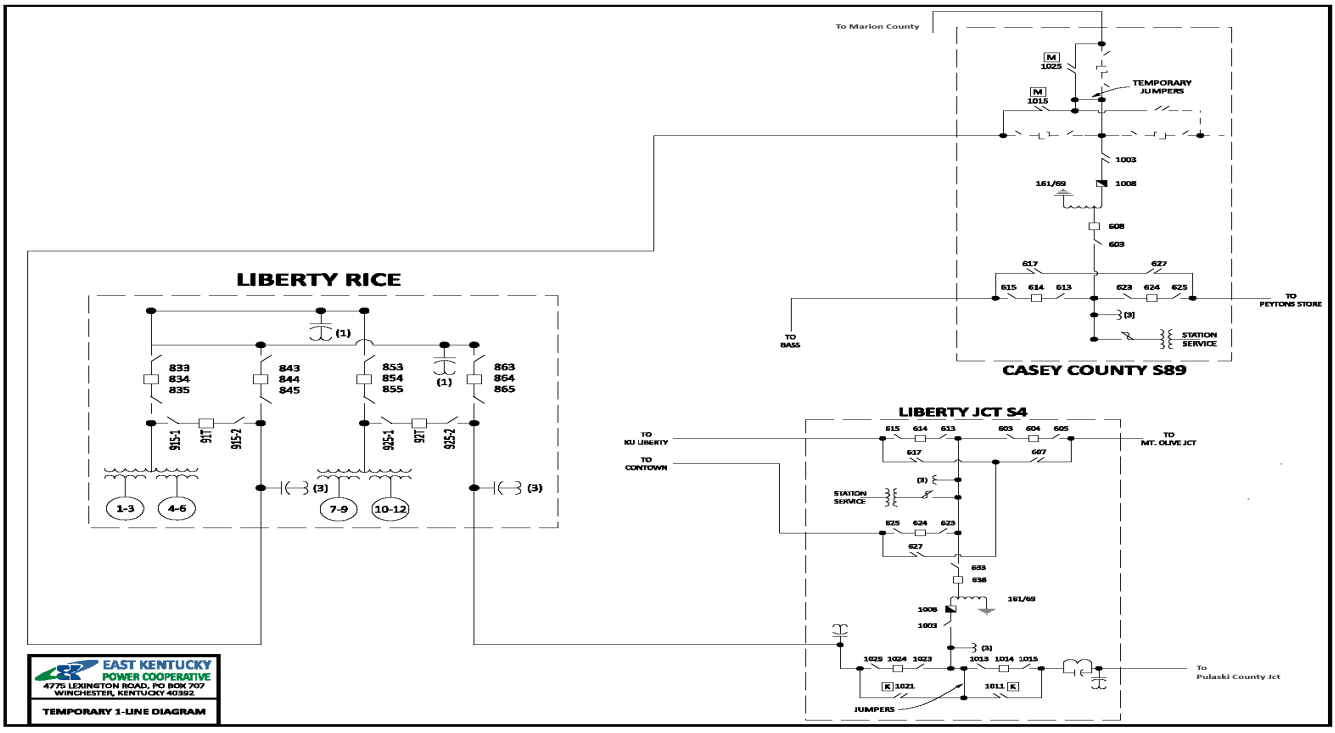


Table 2.1 RICE Interconnection Projects and Estimated Cost

Transmission Project Description	Estimated Cost ($2024)
Construct a new 161 kV Switching Station ("Liberty RICE Substation") along the Casey County-Liberty Junction 161 kV Line	$12,000,000

Construct necessary transmission line facilities to loop the existing Casey County-Liberty Junction 161 kV Line into the new Liberty RICE Substation	$1,500,000
Install OPGW on the Liberty RICE - Casey County 161 kV Line (6.6 miles)	$800,000
Install OPGW on the Liberty RICE - Liberty Junction 161 kV Line (7.4 miles)	$1,005,000
TOTAL	**$15,305,000**

3.0 Study Methodology, Criteria and Assumptions

The power-flow analyses were performed in an effort to capture a low-end and high-end cost associated with transmission reinforcements necessary to facilitate the increased power flows in the area due to the installation of the RICE facility at the Liberty site. A low-end cost estimate can be established using system models reflective of firm confidence loads, transmission projects, and system sources. A high-end cost estimate can be established using system models reflective of worst-case assumptions surrounding system sources. Utilizing the PJM generation-interconnection queue ("PJM Queue"), which contains approximately 120 generation projects (with a combined solar generation capacity of over 10.6 gigawatt ("GW") proposing to connect facilities to EKPC's transmission system, system models can be updated to reflect a scenario where all of these queue projects are executed to their proposed scope.

3.1 Analysis Approach

Power-flow analysis (using Siemens PSS/E version 35.6 and PowerGEM TARA version 2302.2 software packages) was performed to identify any additional future planning-criteria violations and associated mitigation projects in the southern portion of the EKPC transmission system after installation of EKPC's planned Liberty RICE facility. These studies evaluated system performance under normal (N-0), single-contingency (N-1) and double-contingency (N-1-1) conditions applicable to the EKPC FERC Form 715 criteria and PJM's planning criteria.

The targeted scope of this analysis was to capture thermal-overload conditions related to the added Liberty RICE generation on the transmission system. Thermal loading was monitored within the study area and compared with applicable planning criteria. Neighboring utility systems in the area were monitored to assess impacts on existing transmission tie lines, and impacts on the area due to possible new interconnections that might be required as a mitigation project.

3.2 System Models

The power flow models used were:

- 2032 Summer ("S")
- 2032/2033 Winter ("W")

The power-flow models listed above include all planned transmission projects, future known load additions, and PJM Queue projects with signed Interconnection Service Agreements ("ISA").[1] These models were then updated to reflect the transmission and generation plan for Liberty RICE described in Section 2.0 (shown below as **Base**). Where applicable, additional generation dispatch simulations were applied to be included in the EKPC FERC Form 715 evaluation (shown below as **Generation Dispatch**).

In order to identify transmission reinforcements that could be required if all approximately 120 potential projects in the PJM Queue are executed, these projects were modeled at 59 different transmission

[1] Associated PJM Queue projects included in the 2032 S and 2032/33 W models can be found in Appendix A.

interconnection points with a combined solar/battery-storage generation capacity of over 10.6 GW (shown below as **Solar Queue Base**). The full list of transmission reinforcement projects identified is located in Appendix D.1. CAnalysis for the PJM Queue projects was only performed on the summer power flow models, sincethe modeled capacity for each queue project is maximized in the summer models and at zero in the winter models. The full list of queue projects with location and maximum facility output is located in Appendix B. Lastly, to determine future system reinforcements necessary due to the addition of EKPC's planned Liberty RICE generation, the 216 MW of generation was added to the model at the Liberty site as described in Section 2.0 (shown below as **Solar Queue plus Liberty RICE**).

The various models and details of changes from the base model can be seen below in Table 3.2.

Table 3.2 Power Flow Models

Model	Generation	Evaluated Condition	Model Season	Loads
Base	- Liberty RICE 216 MW installation Online	N-0 N-1 N-1-1	2032S 2032/33W	50% probability load forecast
Generation Dispatch	- Base - LG&E/KU Brown 3 generation Offline[1]	N-0 N-1		
Solar Queue Base	- 10.6 GW of added generation[2]	N-0 N-1 N-1-1	2032S	
Solar Queue plus Liberty RICE	- Solar Queue Base - Transmission system reinforcements necessary for Solar Queue Base Models[3] - Liberty RICE 216 MW installation Online[2]	N-0 N-1 N-1-1		

3.3 Monitored Area

The monitored area was comprised of EKPC, LG&E/KU and TVA transmission equipment within the area shown in Figure 1.1. All branch thermal loadings were identified per the study criteria in Tables 3.6.1 and 3.6.2 below.

3.4 Contingency Analysis

EKPC FERC Form 715

Power-flow analysis was performed during single-contingency events (N-1 conditions). The N-1 analysis included the outage of a generator in combination with a single transmission line section, circuit or transformer within the EKPC, TVA and LG&E/KU transmission systems. This included any pre-established restoration switching procedures to restore substation load. Additionally, contingencies defined in neighboring utilities (TVA, LG&E/KU) contingency sets were included.

PJM Planning Criteria

Power-flow analysis was performed during single and double contingency events (N-1/N-1-1 conditions). The N-1/N-1-1 analyses included any category P0 – P7 condition as defined in the NERC TPL-001-5 Transmission System Planning Performing Requirements provided in Appendix C of this report. The NERC TPL-001-5 contingencies include defined P0-P7 contingencies for EKPC as well as any neighboring

[1] Replacement generation net imported from the Southern Company.
[2] Excess generation exported into the PJM Market
[3] Reinforcements necessary for full deployment of the PJM Queue details can be found in Appendix D.

transmission system for both members and non-members of PJM. The intent of this analysis is to identify potential transmission upgrades that could be required as a proxy until the PJM analysis that is required for all of these queue projects has been completed, at which time the "official" set of required transmission upgrades will be defined. PJM will perform N-1 and N-1-1 contingency analysis as applicable to PJM planning criteria.

EKPC performed contingency analysis to adhere to its own criteria, and to replicate results that PJM is likely to see, in order to identify the transmission-reinforcement projects that could potentially be required, depending on the level of queue projects that move forward to commercial operation.

3.5 Power-Flow Solutions

Load flow solution parameters consistent across the software platforms used (PSS/E & TARA) are summarized in Table 3.5.

Table 3.5: Power-Flow Solution Parameters

Contingency	Solution Methodology	Taps	Shunts	Area Interchange Control	DC Taps	Phase Shifters
N-0 N-1 N-1-1	FDNS[1]	Adjusting	Adjusting	Tie Lines and Loads	Adjusting	Locked

3.6 Study Criteria

The study criteria differ between EKPC's FERC Form 715 and PJM's planning criteria. Power-flow analyses were performed and evaluated against each of the criteria as applicable; these criteria are summarized in Tables 3.6.1 and 3.6.2.

Table 3.6.1: EKPC FERC Form 715 Criteria

Criteria	Condition	Thermal	
		Normal	Emergency
		Rate A	Rate B
EKPC FERC Form 715	N-0	X	
	N-1		X

Table 3.6.2: PJM Planning Criteria

Criteria	Condition	Thermal	
		Normal	Emergency
		Rate A	Rate B
PJM Planning	N-0	X	
	N-1		X
	N-1-1	X[2]	X

4.0 Power Flow Analysis and Cost

Power-flow analysis was first performed and evaluated with the base and generation dispatch models to determine the transmission system needs due to the planned generation installed at the Liberty RICE site. These results and associated conceptual costs can be found below in Section 4.1.

[1] FDNS: Fixed Slope Decoupled Newton-Raphson

[2] Rate A is applied after the first contingency, Rate B is applied after the second contingency.

Secondly, to establish the transmission reinforcements that may be necessary to accommodate all approximately 120 potential projects in the PJM Queue, 59 different transmission interconnection points with a combined solar generation capacity of over 10.6 GW were added to the model. [1] These results and associated projects can be found in Appendix D of this report.

In the final analysis, the identified reinforcements needed to accommodate the queue projects were modeled in order to identify the incremental necessary reinforcements associated with the Liberty RICE installation for the worst-case generation-queue project development scenario – i.e., what will be required if all approximately 120 projects currently in the PJM Queue in the EKPC system move to commercial operation. These results and associated conceptual costs can be found in Section 4.2.

4.1 Power Flow Analysis Results and Conceptual Costs related to Liberty RICE Generation

The thermal overloads related to the Liberty RICE installation in Casey County under the assumptions described in Section 3, and with only the PJM queue projects with a signed ISA can be found below in Figure 4.1. Projects identified to relieve identified overloads and associated conceptual cost estimates can be found in Table 4.1.

Figure 4.1 Thermal Overloads

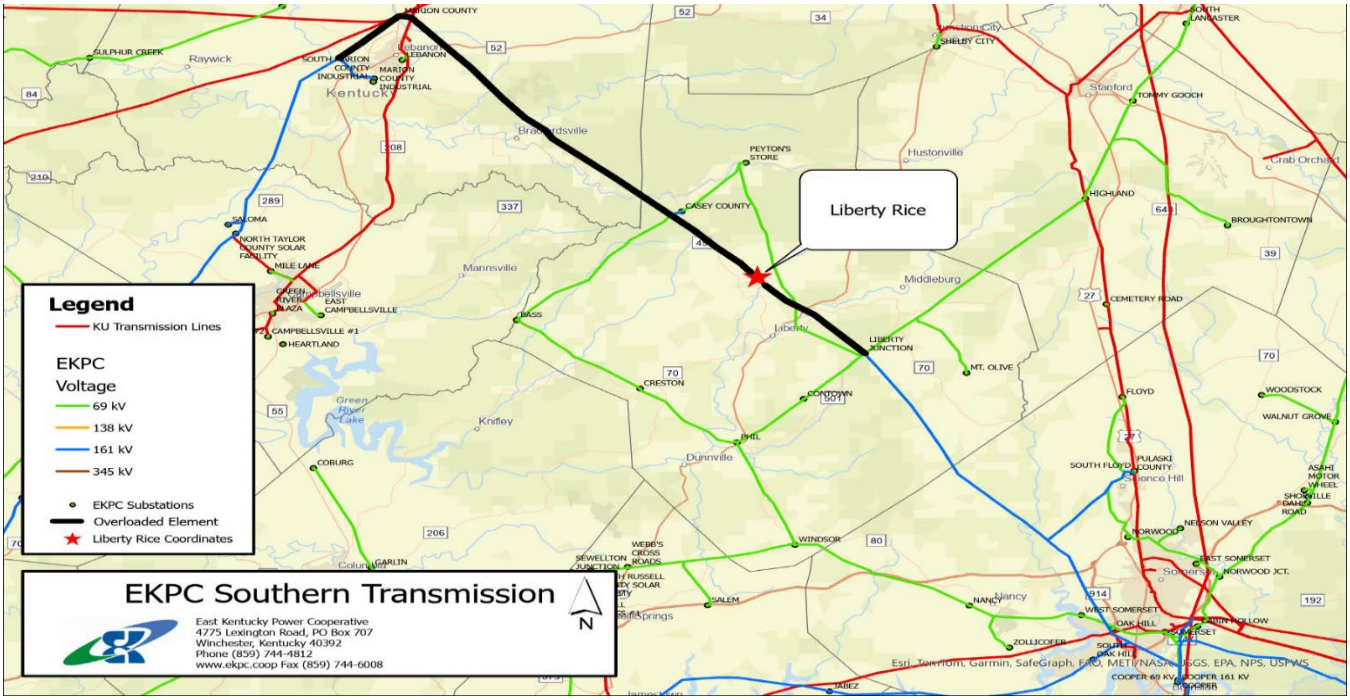


Table 4.1 Identified Transmission Network Upgrades and Estimated Costs

Overloaded Element	Project	Line Length	Cost
Liberty RICE Substation – Casey County 161kV	Increase the maximum operating temperature of the line conductor to 212° F	6.6	$1,950,000

[1] The full list of projects with location and maximum facility output is located in Appendix A.

Liberty RICE Substation – Liberty Junction 161kV	Rebuild the line using 795 ACSR conductor to replace the existing 636 ACSR conductor.	7.4	$13,700,000
Marion County – Marion County Industrial Park Tap 161kV	Increase the maximum conductor operating temperature of the line conductor to 212° F	4.0	$1,150,000
Marion County – LG&E/KU Lebanon 138kV	Rebuild the line using 795 ACSR conductor to replace the existing 636 ACSR conductor	0.1	$200,000
		Total	**$17,000,000**

4.2 Power Flow Analysis Results and Conceptual Costs related to Liberty RICE Generation with Full PJM Queue Development

The thermal overloads related to the Liberty RICE installation in Casey County under the assumptions described in Section 3, with full PJM queue deployment and associated expected transmission reinforcements can be found below in Figure 4.2. Projects identified to relieve identified overloads attributable to Liberty RICE under this scenario and associated conceptual cost estimates can be found in Table 4.2.

Figure 4.2 Thermal Overloads

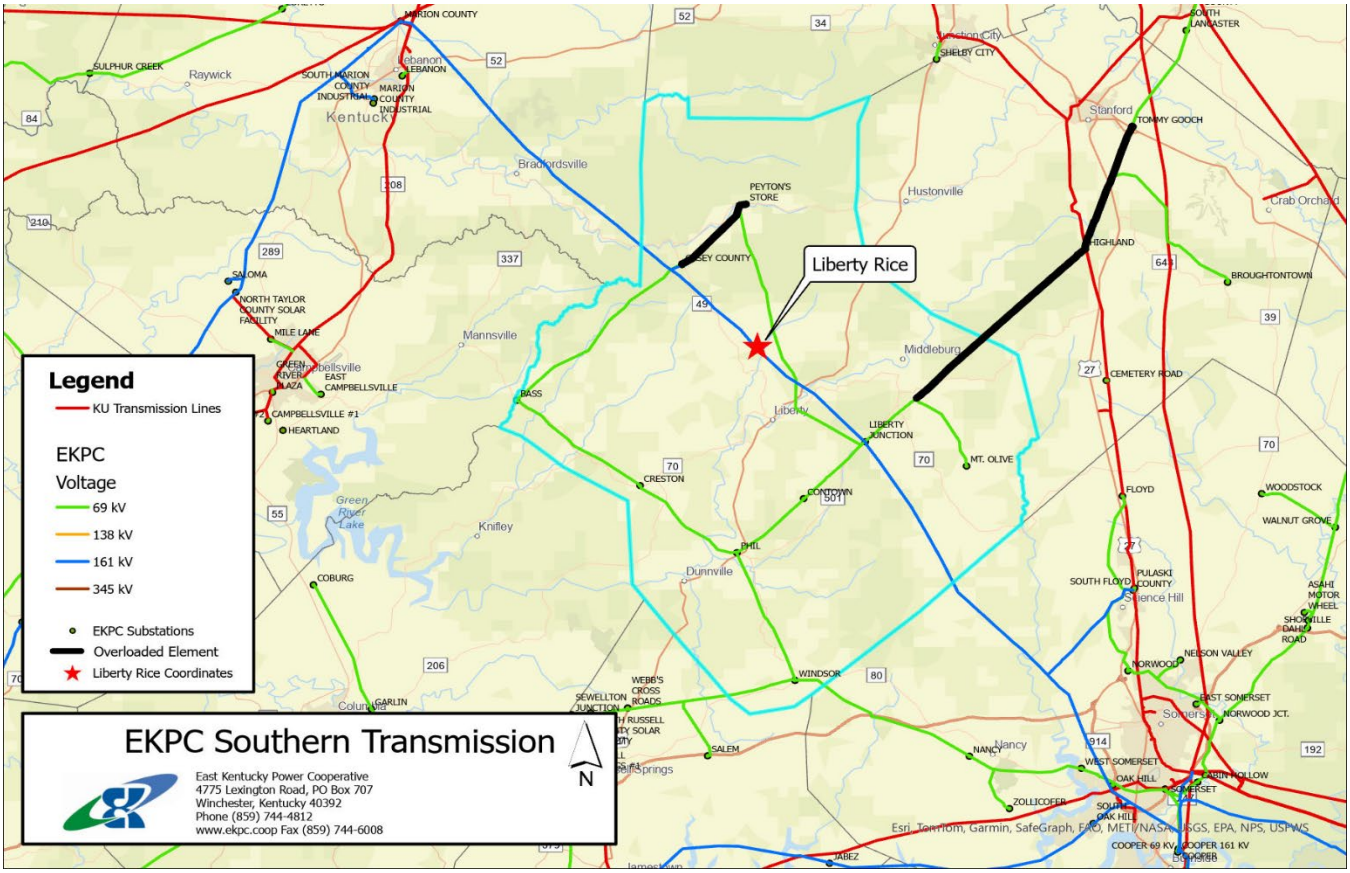


Table 4.2 Identified Transmission Projects and Estimated Cost

Overloaded Element	Project	Line Length	Cost

Denny-Wiborg Tap 69 kV	Upgrade the limiting terminal equipment (bushing CTs and disconnect switches) at Denny substation	N/A	$450,000
Liberty KU-Peytons Store 69 kV	Upgrade the limiting terminal equipment (disconnect switch) at KU Liberty Tap	N/A	$150,000
Mt Olive Junction-Highland-Broughtontown-Tommy Gooch Tap 69 kV	Rebuild the line using 556 ACSR conductor to replace the existing 266 ACSR conductor	17.3	$23,750,000
Peytons Store-Casey County 69 kV	Rebuild the line using 795 ACSR conductor to replace the existing 556 ACSR conductor	4.40	$6,400,000
		Total	**$30,750,000**

5.0 Conclusion

The transmission reinforcement projects detailed above were selected to adhere to EKPC's guiding principles of reliability, affordability, environmental stewardship, and safety. Line rebuilds were selected rather than construction of new transmission lines in order to make use of existing right-of-ways, and to minimize costs to integrate the Liberty RICE generation into the transmission system.

The analysis discussed in this report allowed EKPC to establish a low-end to high-end cost range for transmission system reinforcements necessary to accommodate the installation of the Liberty RICE generation in Casey County. A low-end cost estimate totaling $32,305,000 reflective of the projects described in Sections 2.0 and 4.1 considered both known and expected system alterations, and enables EKPC to establish a baseline for transmission capital expenditures related to the RICE installation. A high-end cost estimate totaling $46,055,000 reflective of the projects described in Sections 2.0 and 4.3 considered known, expected and possible system alterations and allows EKPC to estimate an upper bound for the transmission capital expenditures associated with the RICE installation.

The analyses described above ensure consideration was taken around the realities of the PJM Queue, specifically the possibility of an additional large amount of generation being connected to and flowing through the EKPC transmission system. The assumed system reinforcements necessary to accommodate said generation were captured to consider the impact on reinforcements needed for the Liberty RICE installation. The results of these studies show that the expected range of transmission reinforcements and associated costs is relatively narrow, indicating that 1) the expected transmission expenditures in order to accommodate the Liberty RICE facility are relatively small compared to the overall project cost, and 2) the transmission requirements/expenditures are not expected to be impacted significantly by existing projects in the PJM Queue.

Appendix

A: PJM Queue Projects With Signed ISAs Included in Base Models

Project ID	Location	MFO
AE1-143	Marion Co 161kV	96
AE2-254	South Lancaster 69kV	50

B: Additional PJM Queue Projects Modeled For Full Queue Development Scenario

Project ID	Location	MFO	Project ID	Location	MFO
AI2-327	Eighty-Eight 69kV	55	AC1-074/AC2-075	Jacksonville 138kV	100
AH1-034	Eighty-Eight 69kV	100	AH1-081	Knob Lick 69kV	60
AF1-203	Eighty-Eight 69kV	20	AH1-082	Knob Lick 69kV	104
AE2-071	Eighty-Eight 69kV	35	AG2-598	Knob Lick 69kV	50
AF1-038	AF1-038 69kV	60	AI1-019	Laurel Dam 161kV	50
AH1-083	AF1-050 161kV	250	AG2-424	Lebanon KU 138kV	63.25
AG2-094	AF1-050 161kV	150	AG2-298	Loretto 69kV	60
AG1-354	AF1-050 161kV	150	AI2-349	Loretto 69kV	60
AF1-050	AF1-050 161kV	60	AG2-512	Loretto 69kV	17.5
AG1-353	AF1-083 161kV	98	AH1-409	Maretburg 69kV	58
AF1-083	AF1-083 161kV	55	AG1-488	Marion Co 161kV	70
AI2-371	Asahi 69kV	57	AF1-116	Marion Co 161kV	120
AG1-405	Asahi 69kV	57	AI2-066	Marion Co 161kV	96
AG1-406	Asahi 69kV	79	AE1-143	Marion Co 161kV	96
AH1-004	Avon 138kV	40	AH1-163	Millersburg 69kV	100
AE2-339	Avon 138kV	40	AH1-570	Millersburg 69kV	25
AE2-138	Avon 138kV	260	AH1-571	Millersburg 69kV	20
AE2-210	Avon 138kV	90	AH2-222	Millersburg 69kV	60
AH1-529	Avon 138kV	89	AH2-224	Millersburg 69kV	50
AG2-596	Avon 138kV	65	AH2-410	New Castle 69kV	20
AG1-070	Bon Ayr 69kV	45	AH2-411	New Castle 69kV	50
AG1-071	Bon Ayr 69kV	55	AG2-677	New Russ Sol	150
AG2-552	Bullitt County 161kV	100	AG2-317	New Summ Sol	155
AG2-553	Bullitt County 161kV	50	AE1-246	New Summ Sol	85
AH1-156	Cane Ridge 69kV	40	AH2-021	New Summ Sol	150

AF2-090	Central Hardin 138kV	110	AF2-111	North Clark 345kV	250
AF2-391	Central Hardin 69kV	120	AF2-348	North Clark 345kV	250
AF2-308	Central Hardin 69kV	28	AH2-263	North Lebanon	63.6
AF2-309	Central Hardin 69kV	70	AH1-532	North Lebanon	37.8
AI2-376	Central Hardin 69kV	70	AH1-463	Preston 69kV	80
AG2-662	Central Hardin 69kV	90	AG2-549	Rineyville 69kV	40
AF2-260	Central Hardin 69kV	85	AG2-676	Russell Co 161kV	150
AH2-130	Clark County 138 kV	85	AG2-153	Sideview 69 kV	75
AG2-179	Coburg 69 kV	60	AH1-429	Spurlock 138 kV	90
AG2-073	Crooksville 69 kV	100	AH1-430	Spurlock 138 kV	90
AI2-127	Cynthiana 69 kV	70	AF1-233	Spurlock 138 kV	225
AD2-048	Cynthiana 69 kV	70	AF1-256	Spurlock 138 kV	80
AI1-084	Fawkes 138 kV	150	AG2-666	Spurlock 138 kV	90
AG1-306	Fawkes 138 kV	65	AG1-341	Summer Shade 161kV	106
AE2-275	Fawkes 138 kV	90	AG2-684	Summer Shade 161kV	331
AI1-159	Fogg Pike 69kV	35	AI1-079	Summer Shade 69kV	64.8
AG2-081	Fogg Pike 69kV	30	AI1-165	Summersville 69kV	85
AI1-132	Fredricksburg 69 kV	83	AH2-002	Temple Hill 69kV	80
AG2-687	West Garrard 345 kV	215	AG1-067	Temple Hill 69kV	38
AG1-320	Glendale 69 kV	82	AE2-308	Three Forks 138kV	150
AH2-383	Goddard 138kV	70	AH1-427	Tommy Gooch 69 kV	100
AI2-123	Goddard 138kV	120	AH1-428	Tommy Gooch 69 kV	100
AI2-124	Goddard 138kV	200	AH1-330	Tyner 69kV	100
AE2-038	Goddard 138kV	200	AH1-410	Union City Tap 138kV	68
AE1-144	Goddard 138kV	100	AH1-382	Van Arsdell 69kV	20
AG2-670	Greensburg 69 kV	75	AI2-347	Van Arsdell 69kV	95
AI1-133	Hillsboro 69 kV	50	AG1-471	Wayne County 69kV	60
AG2-513	Hodgenville 69kV	20	AH1-239	Wayne County 69kV	80
AG2-671	Hope 69kV	19.9	AH1-240	Wayne County 161kV	200
AF2-306	Hope 69kV	26	AG1-526	West Garrard 345kV	222
AF2-307	Hope 69kV	66	AF2-355	West Garrard 345kV	225
AI2-374	Hope 69kV	66	AG2-159	Williamstown 69kV	61
AF2-365	Horse Cave Jct 69kV	50	AI1-180	Windsor 69kV	100
AI2-404	Horse Cave Jct 69kV	50	AH1-281	Woodlawn 69kV	20
AI2-302	Jacksonville 138kV	100			

C: NERC TPL-001-5 Transmission System Planning Performing Requirements

Category	Initial Condition	Event [1]	Fault Type [2]	BES Level [3]	Interruption of Firm Transmission Service Allowed [4]	Non-Consequential Load Loss Allowed
P0 No Contingency	Normal System	None	N/A	EHV, HV	No	No

P1 Single Contingency	Normal System	Loss of one of the following: 1. Generator 2. Transmission Circuit 3. Transformer[5] 4. Shunt Device[6]	3Ø	EHV, HV	No[9]	No[12]
		5. Single Pole of a DC line	SLG			
P2 Single Contingency	Normal System	1. Opening of a line section w/o a fault [7]	N/A	EHV, HV	No[9]	No[12]
		2. Bus Section Fault	SLG	EHV	No[9]	No
				HV	Yes	Yes
		3. Internal Breaker Fault[8] (non-Bus-tie Breaker)	SLG	EHV	No[9]	No
				HV	Yes	Yes
		4. Internal Breaker Fault (Bus-tie Breaker)[8]	SLG	EHV, HV	Yes	Yes
P3 Multiple Contingency	Loss of generator unit followed by System adjustments[9]	Loss of one of the following: 1. Generator 2. Transmission Circuit 3. Transformer[5] 4. Shunt Device[6]	3Ø	EHV, HV	No[9]	No[12]
		5. Single pole of a DC line	SLG			
P4 Multiple Contingency *(Fault plus stuck breaker[10])*	Normal System	Loss of multiple elements caused by a stuck breaker[10](non-Bus-tie Breaker) attempting to clear a Fault on one of the following: 1. Generator 2. Transmission Circuit 3. Transformer[5] 4. Shunt Device[6] 5. Bus Section	SLG	EHV	No[9]	No
				HV	Yes	Yes
		6. Loss of multiple elements caused by a stuck breaker[10] (Bus-tie Breaker) attempting to clear a Fault on the associated bus	SLG	EHV, HV	Yes	Yes
P5 Multiple Contingency *(Fault plus non-redundant component of a Protection System failure to operate)*	Normal System	Delayed Fault Clearing due to the failure of a non-redundant component of a Protection System[13] protecting the Faulted element to operate as designed, for one of the following: 1. Generator 2. Transmission Circuit 3. Transformer[5]	SLG	EHV	No[9]	No
				HV	Yes	Yes

		4. Shunt Device[6] 5. Bus Section				
P6 Multiple Contingency *(Two overlapping singles)*	Loss of one of the following followed by System adjustments.[9] 1. Transmission Circuit 2. Transformer [5] 3. Shunt Device[6] 4. Single pole of a DC line	Loss of one of the following: 1. Transmission Circuit 2. Transformer[5] 3. Shunt Device[6]	3Ø	EHV, HV	Yes	Yes
		4. Single pole of a DC line	SLG	EHV, HV	Yes	Yes
P7 Multiple Contingency *(Common Structure)*	Normal System	The loss of: 1. Any two adjacent (vertically or horizontally) circuits on common structure [11] 2. Loss of a bipolar DC line	SLG	EHV, HV	Yes	Yes

Table 1 – Steady State & Stability Performance Extreme Events

Steady State & Stability

For all extreme events evaluated:

a. Simulate the removal of all elements that Protection Systems and automatic controls are expected to disconnect for each Contingency.

b. Simulate Normal Clearing unless otherwise specified.

Steady State	**Stability**
1. Loss of a single generator, Transmission Circuit, single pole of a DC Line, shunt device, or transformer forced out of service followed by another single generator, Transmission Circuit, single pole of a different DC Line, shunt device, or transformer forced out of service prior to System adjustments. 2. Local area events affecting the Transmission System such as: a. Loss of a tower line with three or more circuits.[11] b. Loss of all Transmission lines on a common Right-of-Way[11]. c. Loss of a switching station or substation (loss of one voltage level plus transformers). d. Loss of all generating units at a generating station. e. Loss of a large Load or major Load center. 3. Wide area events affecting the Transmission System based on System topology such as: a. Loss of two generating stations resulting from conditions such as: i. Loss of a large gas pipeline into a region or multiple regions that have significant gas-fired generation.	1. With an initial condition of a single generator, Transmission circuit, single pole of a DC line, shunt device, or transformer forced out of service, apply a 3Ø fault on another single generator, Transmission circuit, single pole of a different DC line, shunt device, or transformer prior to System adjustments. 2. Local or wide area events affecting the Transmission System such as: a. 3Ø fault on generator with stuck breaker[10] resulting in Delayed Fault Clearing. b. 3Ø fault on Transmission circuit with stuck breaker[10] resulting in Delayed Fault Clearing. c. 3Ø fault on transformer with stuck breaker[10] resulting in Delayed Fault Clearing. d. 3Ø fault on bus section with stuck breaker[10] resulting in Delayed Fault Clearing. e. 3Ø fault on generator with failure of a non-redundant component of a Protection System[13] resulting in Delayed Fault Clearing. f. 3Ø fault on Transmission circuit with failure of a non- redundant component of a Protection System[13] resulting in Delayed Fault Clearing.
ii. Loss of the use of a large body of water as the cooling source for generation. iii. Wildfires. iv. Severe weather, e.g., hurricanes, tornadoes, etc. v. A successful cyber-attack. vi. Shutdown of a nuclear power plant(s) and related facilities for a day or more for common causes such as problems with similarly designed plants. b. Other events based upon operating experience that may result in wide area disturbances.	g. 3Ø fault on transformer with failure of a non-redundant component of a Protection System[13] resulting in Delayed Fault Clearing. h. 3Ø fault on bus section with failure of a non-redundant component of a Protection System[13] resulting in Delayed Fault Clearing. i. 3Ø internal breaker fault. j. Other events based upon operating experience, such as consideration of initiating events that experience suggests may result in wide area disturbances

Table 1 – Steady State & Stability Performance Footnotes (Planning Events and Extreme Events)

1. If the event analyzed involves BES elements at multiple System voltage levels, the lowest System voltage level of the element(s) removed for the analyzed event determines the stated performance criteria regarding allowances for interruptions of Firm Transmission Service and Non- Consequential Load Loss.
2. Unless specified otherwise, simulate Normal Clearing of faults. Single line to ground (SLG) or three-phase (3Ø) are the fault types that must be evaluated in Stability simulations for the event described. A 3Ø or a double line to ground fault study indicating the criteria are being met is sufficient evidence that a SLG condition would also meet

the criteria.

3. Bulk Electric System (BES) level references include extra-high voltage (EHV) Facilities defined as greater than 300kV and high voltage (HV) Facilities defined as the 300kV and lower voltage Systems. The designation of EHV and HV is used to distinguish between stated performance criteria allowances for interruption of Firm Transmission Service and Non-Consequential Load Loss.

4. Curtailment of Conditional Firm Transmission Service is allowed when the conditions and/or events being studied formed the basis for the Conditional Firm Transmission Service.

5. For non-generator step up transformer outage events, the reference voltage, as used in footnote 1, applies to the low-side winding (excluding tertiary windings). For generator and Generator Step Up transformer outage events, the reference voltage applies to the BES connected voltage (high-side of the Generator Step Up transformer). Requirements which are applicable to transformers also apply to variable frequency transformers and phase shifting transformers.

6. Requirements which are applicable to shunt devices also apply to FACTS devices that are connected to ground.

7. Opening one end of a line section without a fault on a normally networked Transmission circuit such that the line is possibly serving Load radial from a single source point.

8. An internal breaker fault means a breaker failing internally, thus creating a System fault which must be cleared by protection on both sides of the breaker.

9. An objective of the planning process should be to minimize the likelihood and magnitude of interruption of Firm Transmission Service following Contingency events. Curtailment of Firm Transmission Service is allowed both as a System adjustment (as identified in the column entitled 'Initial Condition') and a corrective action when achieved through the appropriate re-dispatch of resources obligated to re- dispatch, where it can be demonstrated that Facilities, internal and external to the Transmission Planner's planning region, remain within applicable Facility Ratings and the re-dispatch does not result in any Non-Consequential Load Loss. Where limited options for re-dispatch exist, sensitivities associated with the availability of those resources should be considered.

Table 1 – Steady State & Stability Performance Footnotes (Planning Events and Extreme Events)

10. A stuck breaker means that for a gang-operated breaker, all three phases of the breaker have remained closed. For an independent pole operated (IPO) or an independent pole tripping (IPT) breaker, only one pole is assumed to remain closed. A stuck breaker results in Delayed Fault Clearing.
11. Excludes circuits that share a common structure (Planning event P7, Extreme event steady state 2a) or common Right-of-Way (Extreme event, steady state 2b) for 1 mile or less.
12. An objective of the planning process is to minimize the likelihood and magnitude of Non-Consequential Load Loss following planning events. In limited circumstances, Non-Consequential Load Loss may be needed throughout the planning horizon to ensure that BES performance requirements are met. However, when Non-Consequential Load Loss is utilized under footnote 12 within the Near-Term Transmission Planning Horizon to address BES performance requirements, such interruption is limited to circumstances where the Non-Consequential Load Loss meets the conditions shown in Attachment 1. In no case can the planned Non-Consequential Load Loss under footnote 12 exceed 75 MW for US registered entities. The amount of planned Non-Consequential Load Loss for a non-US Registered Entity should be implemented in a manner that is consistent with, or under the direction of, the applicable governmental authority or its agency in the non-US jurisdiction.
13. For purposes of this standard, non-redundant components of a Protection System to consider are as follows:
a. A single protective relay which responds to electrical quantities, without an alternative (which may or may not respond to electrical quantities) that provides comparable Normal Clearing times;
b. A single communications system associated with protective functions, necessary for correct operation of a communication-aided protection scheme required for Normal Clearing (an exception is a single communications system that is both monitored and reported at a Control Center);
c. A single station dc supply associated with protective functions required for Normal Clearing (an exception is a single station dc supply that is both monitored and reported at a Control Center for both low voltage and open circuit);
d. A single control circuitry (including auxiliary relays and lockout relays) associated with protective functions, from the dc supply through and including the trip coil(s) of the circuit breakers or other interrupting devices, required for Normal Clearing (the trip coil may be excluded if it is both monitored and reported at a Control Center).

D: Power Flow Analysis Results related to Solar Que Projects

The addition of a substantial amount of solar generation on EKPC's system caused many significant thermal overload issues. The projects below were selected to resolve issues in the southern area of EKPC's transmission system in order to establish a baseline for determination of incremental upgrades that would be attributable to the Liberty RICE facility.

Table D.1 Thermal Overloads and Project Cost

Overloaded Element	Project	Quantity
Significant area overloads due to multiple solar generation sites in the area	Tap KU Brown North-Pineville 345kV line with a new station near Tommy Gooch	1
Significant area overloads due to multiple solar generation sites in the area	Install two step-up transformers at Tommy Gooch from 69/161kV	2
Significant area overloads due to multiple solar generation sites in the area	Install two step-up transformers at Tommy Gooch from 161/345kV	2
Significant area overloads due to multiple solar generation sites in the area	Tap KU Brown North-Pineville 345kV line with a new station near Pulaski County	1

Significant area overloads due to multiple solar generation sites in the area	Connect Pulaski to the new station via new bundled 954 ACSS 161kV line	3.10
Significant area overloads due to multiple solar generation sites in the area	Connect Asahi MW to the new station via new 954 ACSS 69kV line	6.50
Significant area overloads due to multiple solar generation sites in the area	Install a step-up transformer at the new station 161/345kV	1
Significant area overloads due to multiple solar generation sites in the area	Install a step-up transformer at the new station 69/161kV	1
Pineville 345/500kV transformer	Add a second Pineville 345/500kV transformer	1
Alcalde 161/345kV transformer	Add a second Alcalde 161/345kV transformer	1
EKPC Summer Shade-TVA Summer Shade Tie	Build a second tie using bundled 954 ACSS	1
TVA Summer Shade- TVA Summer Shade Tie	Build a second tie using bundled 954 ACSS	1
Cooper-KU Elihu-KU Alcalde	Rebuild and build a second and third Cooper-KU Alcalde line using bundled 954 ACSS	21.45
Marion County-Casey County-Liberty Junction-Pulaski County Junction-Pulaski County	Rebuild using bundled 954 ACSS	51.50
Significant overloads out of TVA Summer Shade	Rebuild using both single circuit and bundled 954 ACSS	108.54
McCreary-Wayne	Rebuild using 954 ACSS	30.10
TVA Kelsey-Huntsville & TVA Burkesville-Tompkinsville	Rebuild using 954 ACSS	53.60
Pulaski County Junction-Cooper	Rebuild using 954 ACSS	11.4
Cooper-South Oakhill-Jabez-Jamestown-Russell County Junction	Rebuild using 954 ACSS	33.10
The Cooper bus tie	Rebuild using 954 ACSS	0.01
Cooper-KU Elihu-KU Alcalde	Rebuild using 954 ACSS	7.15
Laurel Dam-Laurel County	Rebuild using 954 ACSS	13.50
Marion County 138kV tie to KU	Rebuild using bundled 954 ACSS	0.01
Significant area overloads due to multiple solar generation sites in the area	Install two more ties at Marion County 138kV tie to KU using bundled 954 ACSS	2
Significant area overloads due to multiple solar generation sites in the area	Add three more Marion County 138/161kV transformers	3
Marion County-North Lebanon-Marion Industrial Park-Saloma-Taylor County Junction-Green County	Rebuild using bundled 954 ACSS	27.90
Denny-Gregory Road-Gap of Ridge-Monticello-Slat	Rebuild using bundled 954 ACSS	14.80
Garrard County-South Lancaster-Tommy Gooch	Rebuild using bundled 954 ACSS	7.56
Nancy-Windsor-Salem	Rebuild using 954 ACSS	14.60
Nancy-Zollicoffer Tap-West Somerset-Oak Hill	Rebuild using 954 ACSS	7.50
Norwood Junction-Shopville-Dahl Road-Asahi Motor Wheel Tap	Rebuild using 954 ACSS	7.73
Somerset KU-Somerset-Oak Hill	Rebuild using 954 ACSS	2.10
KU Elihu-Somerset KU 69kV	Rebuild using 954 ACSS	1.58
Phil-Windsor	Rebuild using 795 ACSR	7.00
Liberty KU-Liberty Junction-Mt Olive Junction	Rebuild using 556 ACSR	6.90
Phil-Contown-Liberty Junction	Rebuild using 556 ACSR	8.10

Asahi-Walnut Grove	Rebuild using 556 ACSR	4.40
East Somerset-Norwood Junction	Rebuild using 556 ACSR	1.30
Somerset KU-KU Union Underwear	Rebuild using 556 ACSR	26.00
Bronston-Denny	Increase MOT to 212° F	8.00
Pulaski County-Pulaski County Junction	CT upgrade	1
KU Farley-KU Artemus Tap	Equipment upgrades to reach max conductor rating	1

EXHIBIT 7
DIRECT TESTIMONY JERRY PURVIS

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**

DIRECT TESTIMONY OF JERRY B. PURVIS
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Jerry Purvis, Vice President of Environmental Affairs for East Kentucky Power Cooperative, Inc., being duly sworn, states that he has supervised the preparation of her Direct Testimony and certain filing requirements in the above referenced case 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

Jerry Purvis, Vice President of Environmental Affairs
East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Jerry Purvis, Vice President of Environmental Affairs for East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public

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

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Jerry B. Purvis, and my business address is East Kentucky Power Cooperative, Inc. ("EKPC"), 4775 Lexington Road, Winchester, Kentucky 40391. I am the Vice President of Environmental Affairs for EKPC.

Q. PLEASE STATE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a B.S. degree in Chemistry from Morehead State University and a B.S. degree in Chemical Engineering from the University of Kentucky. I also received a Master of Business Administration from Morehead State University. I have been employed by EKPC for 30 years serving in various positions. On May 28, 2017, I became the Vice President of Environmental Affairs at EKPC.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR DUTIES AT EKPC.

A. As Vice President of Environmental Affairs, I am responsible for compliance with environmental laws, the preparation of applications for all environmental permits required for the construction and operation of generation stations, transmission facilities and landfills, and the preparation of environmental impact statements and other documentation necessary to demonstrate compliance with the National Environmental Policy Act to achieve federally approved financing through the Rural Utilities Service. I report directly to the Chief Operating Officer/Executive Vice President, Mr. Don Mosier.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe the environmental rules that are applicable to the project proposed in EKPC's Application in this proceeding, including the most recent federal EPA rules. I will also describe EKPC's current permitting activities related to this proposed project, the permits required and how the proposed project will allow EKPC to remain in compliance with environmental rules and regulations.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. Yes, I am sponsoring Attachment JP-1, Liberty RICE Facility Permit matrix.

Q. DESCRIBE THE PERMITTING REQUIREMENTS AND EFFORTS OF EKPC REGARDING PERMITTING OF THE PROJECT.

A. EKPC is seeking an air permit under the EPA Prevention of Significant Deterioration ("PSD") and Title V of the Clean Air Act, an environmental assessment ("EA") from the Rural Utilities Service ("RUS") subject to the National Environmental Policy Act ("NEPA"), a water permit under the National Pollution Discharge Elimination System ("NPDES") and Kentucky Pollution Discharge Elimination System ("KPDES") permitting program under the Clean Water Act as required. Should any impacts to streams or wetlands arise, EKPC will pursue a Nationwide or individual 404 permit from the Corp of Engineers, Louisville District, and a 401 Water Quality Certification from Kentucky Division of Water as needed. The site has not been fully studied to make this determination. EKPC

conducted an Environmental Site Assessment (ESA phase 1) and found it to be suitable.

Q. WHAT ENVIRONMENTAL REGULATIONS APPLY TO THE RICE UNITS PROPOSED IN THIS PROCEEDING?

A. EKPC has determined that for the Liberty RICE Facility Project at this time, EPA's final rules in April and May of 2024 for Greenhouse Gas ("GHG"), Mercury Air Toxics ("MATs"), Good Neighbor federal implementation plan ("GNFIP"), legacy Coal Combustion Rule, the 2015 Coal Combustion Rule, National Effluent Limitations Guidance, 2020 Reconsideration of the ELG, and the 2024 ELG's do not apply. For the remaining applicable regulations, EKPC is applying for the EPA and State required permits. The applicable rules under the Clean Air Act (CAA), Clean Water Act (CWA) and Resource Conservation and Recovery Act (RCRA) and Corp of Engineers as applicable are the operating air permit under the Title V of the Clean Air Act 1990 amendments, PSD, Section 402 of the Clean Water Act: NPDES as it was adopted in Kentucky as the KPDES program, water permit, Spill Prevention, Control, and Countermeasure ("SPCC") as established under CWA 1973, Corp of Engineers regulations and an Environmental Assessment ("EA") under the National Environmental Policy Act, as an application as a federal borrower to the Rural Utility Service ("RUS") under the United States Department of Agriculture (USDA).

Q. ARE THE LIBERTY RICE UNITS REQUIRED TO ASSIST EKPC IN COMPLIANCE WITH ANY ENVIRONMENTAL RULES AND REUGLATIONS? IF SO, PLEASE EXPLAIN.

A. The Liberty RICE Facility project will assist EKPC as it continues to provide a reliable source of energy, capacity and service to our owner members as more renewables are deployed in our system. The Liberty RICE Facility is currently exempt from the EPA's GHG, MATs and GNFIP Rules. Kentucky Department of Environmental Protection agencies will be reviewing the Title V air permit application, EPA the PSD air permit application, Federal Land Managers, Class I and II Modeling, the KPDES water permit application and 401 Water Quality Certification, Louisville District of the U.S. Army Corp of Engineers ("USACE"), Nation Wide Permit application, and more as applicable as provided in Attachment JP-1.

Q. PLEASE DESCRIBE THE ENVIRONMENTAL PERMITS REQUIRED FOR THE LIBERTY RICE FACILITY.

A. EKPC is seeking an air permit under the EPA PSD and Title V of the Clean Air Act. Air permits are required for the combustion of natural gas and No.2 fuel oil under the Clean Air Act. An EA is required under NEPA since EKPC is a federal borrower of funds from the RUS. EPA and the state regulate industrial discharges under the Clean Water Act, so EKPC is applying for a water permit under the NPDES and KPDES permitting program. At this time, EKPC does not foresee any impacts to streams or wetlands pursuant to the Waters of the United States or Commonwealth so there is no expectation that EKPC will be required to apply for an individual permit under the CWA 404 permit program with the Louisville District of the USACE. However, EKPC will pursue a Nationwide 57 permit for transmission upgrades and modifications with the Louisville District of the

USACE, and a 401 Water Quality Certification from Kentucky Division of Water as needed. EKPC is conducting an ESA phase 1.

Q. PLEASE DESCRIBE EKPC'S EFFORTS TO ENSURE THAT THE PROJECT WILL BE IN COMPLIANCE WITH ALL APPLICABLE PERMITTING RULES.

A. EKPC works closely with legal counsel and environmental consultants to determine applicability of federal and state environmental statutes and regulations. EKPC holds regular meetings with staff and legal counsel to facilitate these efforts.

Q. Will the addition of the RICE units aid EKPC in reducing CO2 emissions.

A. In 2017, EKPC's Chief Executive Officer and EVP formed the EKPC Sustainability Plan by utilizing five (5) internal teams to study the electric grid, financial health, employees, our owner-members, energy and the environment. This team formulated reductions in greenhouse gas emissions in a deliberate, responsible manner while recognizing the impact of sustainability, reliability and affordability of energy to the 1.1 million rural Kentucky residents and businesses. In 2019, the EKPC Board added "Sustainable" to the EKPC's Mission statement and "Environmental Stewardship" as a value of our cooperative. On November 2020, the Board Sustainability Plan (Attachment JJT-1 of Ms. Julie J Tucker's testimony) solidified EKPC's commitment to reducing greenhouse gas (GHG):

- 35% reduction in total carbon dioxide emissions by 2035
- 70% reduction in total carbon dioxide emissions by 2050
- An additional 10% energy from renewables by 2030; 15% by 2035

EKPC designed and installed Cooperative Solar One farm in 2017, one of the largest solar arrays of its time in Kentucky. EKPC learned a tremendous amount from the operations of this solar array since its installation. EKPC learned that when the sky is cloudy, storms roll in or Central Kentucky was experiencing inclement weather with freezing temperatures below 32 degrees that EKPC would need a fast start dispatchable energy resource to keep the grid reliable and in-service. Combined with our mission to serve reliable, affordable and sustainable energy, EKPC studied several alternatives for cleaner energy resources than coal and elected to propose RICE engines for the project in Casey County. The engines will be dual fueled with natural gas and ultra-low sulfur fuel oil in case of natural gas curtailment. While the new EPA rules for Greenhouse gas are for new, reconstructed or modified units and for existing units, the rules do not apply because the engines are less than 25 MWs and not subject to the New Source Performance Standards for GHG.

In summary, the Liberty RICE Facility in Casey County, KY enables EKPC to serve our owner-members with reliable, sustainable, affordable, dispatchable low-cost energy to our system; hence, emitting half the GHGs as compared to coal. This cleaner energy resource supports the use of renewables as those solar array farms come online in the not so distant future.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. EKPC is actively permitting the Liberty RICE Facility with its environmental consultants and legal counsel. The appropriate permits will be filed with the necessary state and federal agencies as required by the CAA, CWA, USACE

regulations, and RCRA as required. At this point in our review, there are no indications that there are any significant environmental challenges associated with pursuing this project.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

ATTACHMENT JP-1

East Kentucky Power Cooperative
Liberty Generating Station
RICE Dual Fuel Project

Item No.	Permit/Clearance	Regulatory Agency	Details	When Required	Duration	Comments
Federal						
1	Notice of Proposed Construction or Alteration	Federal Aviation Administration (FAA)	Must notify the FAA if structures will exceed 200 feet in height or if the structures (stacks & cranes) are located within the 100:1 (distance to height) ratio from the nearest point of the nearest FAA designated airport runway. Notifying the FAA includes completing Form 7460-1 for all required structures and providing a site layout map depicting structure locations.	Prior to construction	45+ days	Need will be determined based on final design.
2	Section 7 Threatened and Endangered Species Consultation and Clearance	Kentucky Department of Fish and Wildlife Resources, Office of Kentucky Nature Preserves	If the project will potentially impact protected species or their respective habitat, or if federal financing or permit is required, then the FWS must be contacted. The FWS will determine the level of effort needed for the project to proceed (e.g., habitat assessment, species surveys, avian impact studies, etc.).	Prior to construction	30 days for initial response, additional 30 days for determination of field survey results	USFWS IPaC indicates that 16 Special Status species have potential to occur within Project Area. Habitat assessments and/or species surveys were completed to determine presence/absence of protected plant and wildlife species, including bats. No critial habitat is located within the project area. Surveys verifed that no permit was required. Seasonal tree clearing restrictions may be imposed to avoid bat roosting periods.
3	Migratory Bird Treaty Act (MBTA)/Bald and Golden Eagle Protection Act (BGEPA) Compliance	U.S. Fish & Wildlife Service (FWS), Ecological Services	Required when construction or operation of a proposed facility could impact migratory birds, their nests, and especially threatened or endangered species	Prior to construction	30 days for data request, 30-45 days for report review	Nesting period for Migratory Birds within the Project Area primarily occurs from April 1- August 31. If tree clearing must occur during this timeframe, avian nest surveys may be conducted as warranted prior to site clearing.
4	Spill Prevention, Control, and Countermeasure Plan	U.S. Environmental Protection Agency (EPA)	Required if the facility will have 1,320 gallons or more of aboveground petroleum storage capacity in 55-gallon-sized or larger containers (or 42,000 gallons in underground storage not regulated by underground storage tank rules)	Prior to storage of petroleum products onsite in excess of SPCC thresholds	Not required to submit the SPCC Plan to the EPA for review, unless requested.	EKPC will develop a SPCC plan for the Liberty Generating Station.
5	Permits under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act	U.S. Army Corps of Engineers – Louisville District	Nationwide Permit: Less than or equal to 0.5 acre of wetland impacts Section 10 Authorization for any structures within or over any navigable waters of the U.S.	Prior to construction start and activities within waters of the U.S., applicant must apply for a permit Section 404 authorization required to dredge or place fill in a jurisdictional water, including wetlands. Section 10 authorization required for crossings/activities within any navigable waterways.	60 days or so for Nationwide Permit	A wetland delineation was completed to determine the extent of wetland and stream impacts associated with the Project. If permanent impacts to wetlands and streams are less than 0.5-acre, Project should qualify for a Nationwide Permit 12. Mitigation credits will be required for cumulative permanent impacts of 0.10 acre or greater of wetlands and waterbodies. A pre-construction notification may be required. No impacts are anticipated based on the preliminary project design. EKPC will apply for a Nationwide Permit 12 and/or 57 as required. Field surveys indicate no permits are required.
6	Consultations regarding erosion and sedimentation controls and seed mixes, Farmland Protection Policy Act, and Conservation Reserve Program and Wetland Reserve Program Consultation	U.S. Department of Agriculture- Farm Service Agency and Natural Resources Conservation Service	EKPC plans to seek federal funding/grants and the project will be subject to the Farmland Protection Act. Approximately 60 acres of the Project area are prime farmland or famland of statewide importance.			A Land Evaluation and Site Assessment (LESA) will be coordinated with the NRCS Soil Scientist.
7	National Environmental Policy Act (NEPA) Review	Lead Federal agency	The applicant typically prepares a preliminary Environmental Assessment (EA). The agency reviews the document and can either attach a Finding of No Significant Impact (FONSI) or require the preparation of an Environmental Impact Statement (EIS).	Prior to construction		The EA will serve as a detailed written record of the environmental analysis completed for the proposed action, and serve as the basis for RUS to issue a FONSI, or alternatively determine that preparation of an EIS is required. RUS has indicated an EA/FONSI are the appropriate Class of Action.
State - Kentucky						
8	Certificate of Public Convenience and Necessity	Kentucky Public Service Commission	Required for the construction of electric generating facilities	Prior to construction	120 days after the submission of a complete application	A Notice of Intent must be submitted at least 30 days prior to submitting an application for a certificate.
9	Air Quality Construction/Operating Permit (PSD)	Kentucky Department of Environmental Protection Division for Air Quality	Required for new major stationary sources of air emissions	Prior to construction	KDAQ and EPA review anticipated to be 12 -24 months	EKPC will be applying for a PSD air permit as early as September 2024.

Item No.	Permit/Clearance	Regulatory Agency	Details	When Required	Duration	Comments
10	Noise Compliance	Kentucky Public Service Commission (as a part of a larger certificate application).	Required to demonstrate that facility operation will comply with State, county, and city noise regulations. The PSC may require/request additional noise mitigation measures.	Prior to construction	180 days	City of Liberty has local regulations based on time of day and receiving land use that will need to be analyzed for the surrounding area and modeled to determine compliance. Review of County ordinances did not find any numerical noise limits. Any compressors along the pipeline and booster stations will be required to meet the FERC limit of an Ldn of 55 dBA.
11	Section 401 Water Quality Certification (WQC)	Kentucky Energy and Environment Cabinet Department of Environmental Protection Division of Water	General 401 Certification with approved USACE Nationwide Permit assuming project meets conditions listed in the Kentucky Energy and Environment Cabinet DEP *General Certification--Nationwide Permit (NWP)* document for NWP 12 and NWP 57. Individual 401 Certification required if Project is unable to meet conditions listed in the *General Certification--Nationwide Permit (NWP)* document.	Prior to construction	30 - 60 business days	While no water impacts are anticipated, based on the final project design, EKPC will apply for a Section 401 WQC as required.
12	Groundwater Protection Plan	Kentucky Energy and Environment Cabinet Department of Environmental Protection Division of Water	Required for activities that have the potential to pollute groundwater. The Groundwater Protection Plan must define best management practices for groundwater protection.	Prior to operation	Wrapped in KPDES water permit process	The Groundwater Protection Plan is not submitted for review unless requested by the State.
13	General Permit for Stormwater Discharges Associated with Construction Activities	Kentucky Energy and Environment Cabinet Department of Environmental Protection Division of Water	Required for all stormwater discharges from construction activities which will disturb one or more total acres of land. The General Permit requires the development of a Stormwater Pollution Prevention Plan (SWPPP) prior to submitting a Notice of Intent for permit coverage.	Prior to construction	7 Days	The SWPPP describes the site management practices that will be utilized to effectively minimize erosion and sediment discharges for storm up to a 2-year, 24-hour event.
14	KPDES Operational Discharge Permit	Kentucky Energy and Environment Cabinet Department of Environmental Protection Division of Water Division of Water	A KPDES Permit may be required if the proposed facility will result in a wastewater discharge to a waterway as a result of facility operation.	Prior to operation	At least 180 days	This permit is separate from the stormwater discharge. The KPDES permit is required for industrial discharges as a result of operating the proposed Liberty Facility.
15	National Historic Preservation Act – Section 106 Clearance	Kentucky Heritage Council - State Historic Preservation Office (SHPO) and Tribal Consulations	Under Section 106 of the National Historic Preservation Act, Federal agencies must work with the SHPO and federally recognized Indian tribes to address historic preservation issues when planning projects or issuing funds or permits that may affect historic properties and archaeological resources listed in or determined eligible for the National Register of Historic Places.	Prior to construction	45 Days	Archaeological and Cultural Historic field surveys have been completed. Section 106 coordination with SHPO and Tribes is in process.
County						
16	Building Permit	Casey County Clerk	May be required prior to building construction	Prior to construction	TBD	Engineering and Construction effort

EXHIBIT 8
DIRECT TESTIMONY THOMAS STACHNIK

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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 COMPATIBILITY CERTIFICATE; AND 3) OTHER GENERAL RELIEF	)	**CASE NO. 2024-00310**

DIRECT TESTIMONY OF THOMAS J. STACHNIK
VICE PRESIDENT OF FINANCE AND TREASURER
ON BEHALF OF EAST KENTUCKY POWER COOPERATIVE, INC.

Filed: September 20, 2024

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

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

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF CLARK)

Tom Stachnik, Vice President of Treasury and Financial Planning for East Kentucky Power Cooperative, Inc., being duly sworn, states that he has supervised the preparation of her Direct Testimony and certain filing requirements in the above referenced case 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.

Tom Stachnik, Vice President of Treasury and Financial Planning
East Kentucky Power Cooperative, Inc.

The foregoing Verification was verified, sworn to and affirmed before me, by Tom Stachnik, Vice President of Treasury and Financial Planning for East Kentucky Power Cooperative, Inc., on this the 20th day of September, 2024.

Notary Public

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

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Thomas J. Stachnik. I am the Vice President of Finance and Treasurer for East Kentucky Power Cooperative, Inc. ("EKPC"). My business address is 4775 Lexington Road, Winchester, Kentucky 40391.

Q. PLEASE DESCRIBE YOUR EDUCATION AND EXPERIENCE.

A. I have a Bachelor of Science in Chemical Engineering from the University of Illinois and a Master of Business Administration from the University of Chicago. Additionally, I hold the Chartered Financial Analyst and Certified Treasury Professional designations. Prior to establishing a career in finance, I enjoyed working as a chemical engineer for approximately ten (10) years. I worked in the Treasury Department of Brown-Forman Corporation for thirteen (13) years before assuming my current role at EKPC in August 2015.

Q. PLEASE DESCRIBE YOUR DUTIES AS VICE PRESIDENT AND TREASURER FOR EKPC.

A. I am responsible for the management and direction of the treasury function of EKPC including borrowing, investing, and cash management. I also oversee the financial forecasting, budgeting, and risk management functions. I report directly to EKPC's Executive Vice President and Chief Financial Officer, Mr. Cliff Scott.

Q. HAVE YOU TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION BEFORE? IF SO, IN WHAT CASES?

A. I have provided written testimony pertaining to financing issues in several cases at the Commission I have also assisted in the preparation of financing applications and provided testimony in other proceedings.[1]

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe how EKPC intends to finance the proposed construction of the Liberty RICE unit.

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. No.

II. FINANCING RECIPROCATING INTERNAL COMBUTION ENGINES ("RICE")

Q. WHAT DO YOU EXPECT TO BE THE LOWEST COST FINANCING AVILABLE FOR THE RICE UNITS?

[1] Case No. 2017-00376, *Application of East Kentucky Power Cooperative, Inc. For Approval to Amend its Environmental Compliance Plan and Recovery Costs Pursuant To Its Environmental Surcharge, Settlement, of Certain Asset Retirement Obligations and Issuance of a Certificate of Public Convenience and Necessity and Other Relief* (filed Sept. 15, 2017); Case No. 2018-00292, *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for the Construction of Backup Fuel Facilities at its Bluegrass Generating Station* (filed Aug. 24, 2018); Case No. 2021-00103, *Electronic Application of East Kentucky Power Cooperative, Inc. for a General Adjustment of Rates, Approval of Depreciation Study Amortization of Certain Regulatory Assets and Other General Relief* (filed April 1, 2021); Case No. 2024-00109, *Electronic Application of East Kentucky Power Cooperative, Inc. for Approval to Amend its Environmental Compliance Plan and Recover Costs Pursuant to its Environmental Surcharge, and for the Issuance of a Certificate of Public Convenience and Necessity and Other General Relief* (filed May 17, 2024); and Case No. 2024-00129, *The Application of East Kentucky Power Cooperative, Inc. for Certificates of Public Convenience and Necessity, and Site Compatibility Certificates, for the Construction of 96 MW (Nominal) Solar Facility in Marion County and a 40 MW (Nominal) Solar Facility in Fayette County and Approval of Certain Assumption of Evidences of Indebtedness Related to the Solar Facilities and Other Relief* (filed April 26, 2024).Case No. 2016-00116, *An Application of East Kentucky Power Cooperative, Inc. for Approval of the Amendment and Extension or Refinancing of an Unsecured Revolving Credit Agreement in an Amount Up To $800,000,000 of Which Up To $100,000,000 May Be in the Form of an Unsecured Renewable Term Loan and $200,000,000 of Which Will Be in the Form of a Future Increase Option* (filed Mar. 9, 2016); Case No. 2018-00115, *The Application of East Kentucky Power Cooperative, Inc. for Approval of the Authority to Issue up to $300,000,000 of Secured Private Placement Debt and/or Secured Tax-Exempt Bonds and for the Use of Interest Rate Management Instruments* (filed Mar. 27, 2018); and Case No. 2021-00473, *Electronic Application of East Kentucky Power Cooperative, Inc. for Approval of the Amendment and Extension or Refinancing of an Unsecured Revolving Credit Agreement in an Amount up to $800,000,000 or which up to $100,000,000 may be in the Form of an Unsecured Renewable Term Loan and up to $400,000,000 of which will be in the Form of a Future Increase Option* (filed Dec. 20, 2021).

A. Ultimately we intend to seek RUS financing for the Liberty RICE Facility, which will be the lowest cost option. However, there will be a lag in receiving RUS funding due to pending environmental review, applications, and other standard procedures. EKPC cannot apply for RUS funding until environmental reviews are complete, and the application process itself can take several months. Once an application is approved for specific projects, EKPC has generally waited for projects to be completed and in service before requesting advances on the loan. However, we have been discussing with RUS the possibility of advancing funds prior to completion of the projects on an approved loan after making significant payments, which would allow us to benefit from favorable interest rates sooner.

Q. HOW WILL EKPC FINANCE THE INITIAL EXPENDITURES FOR THE RICE ENGINES?

A. Initially any expenditures related to the Liberty RICE Facility project will be funded by general corporate cash and borrowings on the Revolving Credit Facility or with other interim financing (for which a separate financing authorization will be filed if necessary). EKPC will replace any temporary financing with long-term debt issued under the existing trust indenture from the Rural Utilities Service ("RUS") or other lenders.

Q. **DESCRIBE THE CAPACITY ON EKPC'S REVOLVING CREDIT FACILITY.**

A. EKPC recently expanded the Revolving Credit Facility, which was authorized under case number 2021-00473 by $100 million to $600 million and extended the maturity date to July 2029. As of September 13, 2024, $225 million is drawn and approximately $375 million is available on this facility. Amounts under the credit facility are fully pre-payable with funds from other debt issuances or operating cash flow, and those funds may be re-

borrowed as needed for the term of the Credit Facility. With further exercise of the 'accordion option' this credit facility can be expanded to $800 million.

Q. **WHAT OTHER RESOURCES ARE AVAILABLE TO EKPC TO FUND CAPITAL PROJECTS?**

A. EKPC maintains investment-grade credit ratings and strong relationships with the financial community to provide several sources of financing. As an example, in 2019, in anticipation of the expenditures for the CCR/ELG project, EKPC reduced borrowings under the Credit facility by issuing $250 million in term debt at reasonable interest rates in a combination of a Private Placement issuance and a term loan with the National Rural Utilities Cooperative Finance Corporation authorized by Case No. 2018-00115. EKPC is currently in discussions with our financial institutions to seek additional expansions of the credit facility, other short-term bilateral loans, and/or private placement financing to relieve the credit facility as funds are expended.

Q. CAN YOU ELABORATE ON HOW THESE SOURCES OF FINANCING MIGHT BE USED TO FUND THE LIBERTY RICE FACILITY PROJECT?

A. The cash flows for the Liberty RICE Facility project given in Confidential Attachment BY-1 (Appendix S) can be summarized as follows:

2024 $20 million

2025 $122 million

2026 $68 million

2027 $176 million

2028 $106 million

2029 $8 million

We expect to have the RUS loan in place by 2027, at which time we intend to advance a progress payment for the approximately $200 million that will be expended up to that time and continue to use progress payments throughout the project life to relieve the credit facility. As a result, we expect the increased need for short-term funding for the RICE project under the credit facility or other interim financing to peak at approximately $200 million in 2027 and to average $100 – 125 million over the project life.

Q. **DO YOU BELIEVE THAT EKPC'S PLAN TO FINANCE THE PROJECT IS REASONABLE AND WILL RESULT IN THE LOWEST POSSIBLE COST TO EKPC'S OWNER-MEMBERS?**

A, Yes.

Q. IF EKPC REQUIRES ADDITIONAL FINANCING THAT MEETS THE CRITERIA FOR APPROVAL UNDER KRS 278.300, WOULD EKPC FILE A FINANCING APPLICATION WITH THE COMMISSION FOR THAT APPROVAL?

A. Yes.

Q. IN YOUR OPINION, HOW WILL THE FINANCING FOR THE RICE UNITS AFFECT EKPC'S FINANCIAL POSITION?

A. Financing the Liberty RICE Facility will increase EKPC's debt and interest expense. EKPC has the strong ratings and relationships with RUS and the financial community necessary to obtain the financing we need. EKPC projects that that the rate increases needed to support capital plans going forward are reasonable and that the equity to asset ratio, while lower, will remain at acceptable levels.

III. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Initially any expenditures related to the Liberty RICE Facility will be funded by general corporate cash and borrowings on the Revolving Credit Facility or with other interim financing (for which a separate financing authorization will be filed if necessary). EKPC will replace any temporary financing with long-term debt issued under the existing trust indenture from RUS or other lenders.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.