

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 COMPATIBILITY)
CERTIFICATE; AND 3) OTHER GENERAL RELIEF)**

**CASE NO.
2024-00310**

**RESPONSES TO MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE
COMMONWEALTH'S SUPPLEMENTAL INFORMATION REQUEST
TO EAST KENTUCKY POWER COOPERATIVE, INC.**

DATED DECEMBER 2, 2024

COMMONWEALTH OF KENTUCKY

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CASE NO.
2024-00310

CERTIFICATE

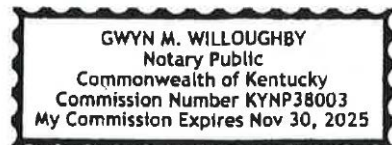
STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Greg Cecil, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Joint Movant’s supplemental information request in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Greg Cecil

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

Gwyn M. Willoughby
Notary Public



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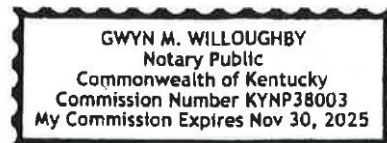
STATE OF KENTUCKY)
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COUNTY OF CLARK)

Jerry Purvis, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Joint Movant’s supplemental information request in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Jerry Purvis

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

Gwyn M. Willoughby
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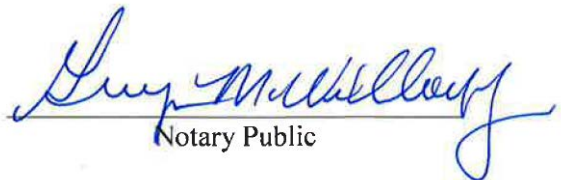
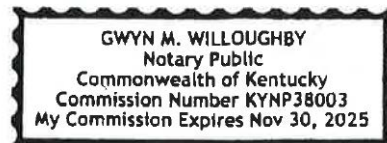
CERTIFICATE

STATE OF KENTUCKY)
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COUNTY OF CLARK)

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



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


Notary Public

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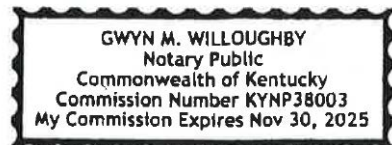
STATE OF KENTUCKY)
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COUNTY OF CLARK)

Brad Young, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Joint Movant's supplemental information request in the above-referenced case dated December 2, 2024, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

Brad Young

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

Gwyn M. Willoughby
Notary Public



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

MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE COMMONWEALTH'S
REQUEST DATED DECEMBER 2, 2024
REQUEST 2

RESPONSIBLE PARTY: Julia J. Tucker

Request 2. Please refer to the 2025 - 2039 Load Forecast provided in EKPC's updated response to Commission Staff's First Request for Information 1(a) on November 12, 2024 (hereinafter "Long-Term Load Forecast" or "LTLF"), and dated December 2024, and provide the date this document was prepared.

Response 2. The LTLF report was prepared in October 2024.

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REQUEST 3**

RESPONSIBLE PARTY: Julia J. Tucker

Request 3. Please provide all workpapers underlying the LTLF.

Response 3. This request is unreasonably broad. Please see the following responses to specific requests that support the LTLF.

- Joint Intervenor's initial data request 8, 9
- Sierra Club's initial data request 6, 7, 8, 13, 14, 15, 41, 42
- Staff's initial data request 1, 2, 14
- Staff's second data request 7

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REQUEST 4

RESPONSIBLE PARTY: Julia J. Tucker

Request 4. Please refer to the LTLF at page 1, which states “Once finalized, EKPC aggregates the owner-member forecasts, adds projections of EKPC facilities and transmission losses, and incorporates energy efficiency impacts, demand side management impacts, and electric vehicle (EV) assumptions resulting in EKPC’s total system forecast,” and respond to the following questions:

a. Ideally, these latter impacts would be accounted for using a bottom-up methodology. Especially for EV loads, what gives EKPC confidence that its ex-post methodology reasonably predicts loads pockets as well as accurately captures the offsetting effects that DSM programs and energy efficiency have?

b. Does EKPC agree that a correlation exists among early adopters of different types of energy technologies from EVs to EE to DSM?

Response 4.

a. The EV stock and energy projections are a bottom-up approach developed for each owner-member cooperative; however, added at the EKPC system level to provide an overall

view of energy growth due to EVs and impacts associated with DSM. Forecasting pockets of EV growth and DSM is not the intended purpose of the long-term load forecast.

b. EKPC does not have a correlation analysis to support or dispute the claim regarding early EV adopters.

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REQUEST 5

RESPONSIBLE PARTY: Julia J. Tucker

Request 5. Please refer to the LTLF, and specifically the table at page 2 labeled “Energy Sales Growth by Class,” and explain the following:

- a. The drivers and their relative contributions behind the reversal in the declining residential energy use trend, and
- b. The driver(s) behind the disappearance of any seasonal growth given massive growth rates historically.

Response 5.

a. Historical compound annual growth rates (“CAGR”) in the “Energy Sales Growth by Class” are not adjusted for weather. The forecast is based on a normal weather assumptions. The primary driver for the negative CAGR for residential sales is due to mild weather in 2023. See the table on page 35 of the LTLF for additional historical and forecast year to year growth details.

b. The seasonal class is a very small class reported by only one owner-member. The CAGR looks large, but consumers only grew by 128 consumers from 2018 – 2023. Consumer growth is expected to remain flat throughout the forecast period.

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REQUEST 6

RESPONSIBLE PARTY: Julia J. Tucker

Request 6. Please refer to the LTLF, and specifically the table at page 3 labeled “Coincident Peak Demands and Total Requirements Historical and Projected,” and respond to the following requests:

- a. Explain the jump discontinuities between historical and forecasted values;
- b. Explain why these jump discontinuities result in a lower future expectation of peak load in both summer and winter, but a higher total electricity requirement; and
- c. Specifically, explain what resources contribute to this immediate trend in suppressed peak but higher total consumption in the near term.

Response 6. a. Historical seasonal peak demand (MW) and net total requirements (MWh) are actual data and are not weather normalized. Forecasted seasonal peak demand and net total requirements assume normal weather. Forecasted seasonal peak demand assumes interruptible loads are curtailed at the time of the peak. Consumers on an interruptible rate have the option to purchase market-based energy during economic load interruptions; however, consumers are required to interrupt during reliability load interruptions.

b. Demand and energy are both strongly impacted by weather but in different and potentially opposite directions. Energy reflects weather over a period of time while demand often reflects short-lived extreme temperatures. The referenced jump discontinuities are reflective of historic actual data that is not weather adjusted and an assumption of normal weather in forecasted years. Specifically, the assumption of normal weather in forecasted years has the impact of increasing energy from 2023 (a mild year) to 2024 (assumed to be a normal year) while decreasing demand from winter 23/24 to winter 24/25 because winter 23/24 had a winter storm with an extreme low temperature and winter 24/25 is assumed to have no such extreme event. Additionally, some interruptible consumers chose not to curtail load during the winter 23/24 and summer 2023 peak periods so those consumers' demand is included in historic peaks. Forecasted seasonal peak demand assumes interruptible loads are curtailed.

c. Refer to the responses above. The resource that contributes to the immediate trend in suppressed peak is interruptible consumers. Forecasts assume interruptible consumers curtail load while historical data reflect that some interruptible consumers did not curtail load during peak periods. However, much of the reduction in peak with a simultaneous increase in consumption is due to weather normalization.

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REQUEST 7

RESPONSIBLE PARTY: Julia J. Tucker

Request 7. Please compare the 2022 IRP at page 65 Table 3-2, and page 166 Table 8-3 with the LTLF at page 3 at the table labeled “Coincident Peak Demands and Total Requirements Historical and Projected,” and the Direct Testimony of Don Mosier at page 6 line 15 to page 7 at line 7, and respond to the following requests:

- a. What vintage long-term load forecast is the 2022 IRP based on?
- b. Why does EKPC update its load forecast every two years, rather than in cycle with the IRP?
- c. What is the actual MW difference in the load forecasts in each future year?
- d. Please compare the resource additions outlined in the Direct Testimony of Don Mosier to those in Table 8-3 of the 2022 IRP, and explain why additional resources are needed as compared to the projected additions in the 2022 IRP.
- e. Does the stated position of the incoming Presidential Administration on the Greenhouse Gas Rule that became law on April 25, 2024 impact the Company’s anticipated need for additional resources? Please explain why or why not.

Response 7.

a. The 2022 IRP is based on the 2020 LTLF with updated assumptions for DSM and an industrial consumer's expansion.

b. EKPC is a Rural Utilities Service ("RUS") power supply borrower. RUS requires a power supply borrower to maintain and provide a current (prepared within the last 2 years) load forecast in support of any request for RUS financial assistance (7 C.F.R. § 1710.202). The IRP is on a three-year cycle as a matter of Kentucky law.

c. Refer to the table below and attachment JJT-2, subject to motion for confidential treatment, from the application for this CPCN.

Winter	2020 LF IRP (MW)	2024 LF (MW)	Difference	Summer	2020 LF IRP (MW)	2024 LF (MW)	Difference
2021 - 22	3,309			2022	2,500		
2022 - 23	3,363			2023	2,574		
2023 - 24	3,384			2024	2,612	2,450	-162
2024 - 25	3,391	3,517	126	2025	2,623	2,530	-92
2025 - 26	3,409	3,627	218	2026	2,634	2,588	-46
2026 - 27	3,427	3,677	250	2027	2,651	2,641	-10
2027 - 28	3,457	3,712	255	2028	2,669	2,664	-5
2028 - 29	3,470	3,727	257	2029	2,684	2,688	4
2029 - 30	3,480	3,743	263	2030	2,695	2,703	8
2030 - 31	3,494	3,760	266	2031	2,707	2,723	16
2031 - 32	3,520	3,788	268	2032	2,726	2,749	23
2032 - 33	3,533	3,793	260	2033	2,742	2,766	23
2033 - 34	3,556	3,811	255	2034	2,761	2,792	31
2034 - 35	3,578	3,832	254	2035	2,780	2,818	38
2035 - 36	3,586	3,870	284	2036	2,794	2,853	59
2036 - 37		3,882		2037		2,878	
2037 - 38		3,908		2038		2,910	
2038 - 39		3,933		2039		2,941	

2020 LF IRP refers to the load forecast used in the 2022 IRP

d. As discussed above, the 2022 IRP was based on the 2020 LTLF with updated assumptions for DSM and an industrial consumer’s expansion, which assumed winter peak load anywhere from 218 MW lower in winter 2025-26 to 284 MW lower in winter 2035-36 than the more recent 2024 LTLF. In addition, the 2022 IRP did not contemplate a seven percent planning reserve margin to account for unknown risks in weather and generation availability, which has now been added in the expansion plan outlined in this application. The seven percent planning reserve margin is further discussed in the direct testimony of Julia J. Tucker page 13, lines 3 through 23 and page 14 lines 1 through 5.

e. Refer to EKPC's response to the Attorney General's supplemental request for information, Item 1a.

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REQUEST 8

RESPONSIBLE PARTY: Julia J. Tucker

Request 8. Please refer to the LTLF, and specifically the table at page 5 labeled “Total Energy Requirements,” and answer the following requests:

- a. Justify EKPC’s choice of fixed distribution line losses at 3.3% and transmission line losses at 2% when actual losses have been higher historically.
- b. What specific actions has EKPC taken or does EKPC plan to take to reduce system losses on both the distribution system and the transmission system?

Response 8.

a. Distribution losses are not simply based on a fixed percentage at the EKPC level, but rather historical averages for each owner member along with expectations for industrial growth. Industrial consumers often don’t have distribution losses, and this assumption is reflected in each owner-member's forecast. The assumption for transmission losses is based on the average of the last 5 years and is reasonable given the recently completed and planned projects.

b. EKPC does not have distribution lines. For the transmission system, EKPC has completed projects recently driven by aging infrastructure concerns -- primarily rebuilds of existing lines that included replacement of smaller conductors with larger, more efficient conductors, and rebuilds of distribution substations that included replacement of older transformers with new transformers that are more efficient -- that provide an ancillary benefit of reducing system losses. EKPC has projects planned in upcoming years of a similar nature that will provide similar loss-reduction benefits.

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REQUEST DATED DECEMBER 2, 2024
REQUEST 9**

RESPONSIBLE PARTY: Julia J. Tucker

Request 9. Please refer to the LTLF at page 12, which states “[s]easonal peak demands are developed using historical normalized peaks and modeled growth,” and answer the following requests:

- a. Explain how EKPC accounted for changing seasonal trends in modeling seasonal peak load growth.
- b. Specifically explain how EKPC accounted for each of the following:
 - i. more mild winters on average;
 - ii. hotter summers on average; and
 - iii. changing patterns in frequency and severity of extreme events across the entire year.

Response 9. a. Normal weather assumptions are based on the most recent 20 years of historical weather data. Changing seasonal trends are embedded in history. There are no additional assumptions for changing seasonal trends.

b. i – iii. Normal weather assumptions are based on the most recent 20 years of historical weather data. Milder winters, hotter summers, and the changing patterns in frequency and severity of extreme events are incorporated in scenario analyses and explained in Section 7 of the LTLF.

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REQUEST 10

RESPONSIBLE PARTY: Julia J. Tucker

Request 10. Please refer to the LTLF at page 17, which states “[p]rojections of appliance efficiencies are sourced from the Energy Information Administration (EIA) Annual Energy Outlook,” and provide the exact vintage and appliance efficiency numbers used in your SAE model. If they are not the most up to date assumptions, provide an explanation.

Response 10. EKPC used the 2023 EIA Annual Energy Outlook (“AEO”). This is the most recent AEO published by the EIA. See attached *JI 10 – Appliance Efficiencies.xlsx*.

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REQUEST 11

RESPONSIBLE PARTY: Julia J. Tucker

Request 11. Please refer to the LTLF at page 17, which states “Normal weather is based on historic 20-year values (2003-2023),” and respond to the following requests:

- a. Since member-owner forecasts are based on a single point forecast near the service territory, explain any measures taken to correct the weather data to be representative of conditions throughout the service territory.
- b. Also, provide a description (ideally quantitative) of weather-related forecast bias by member-owner forecasts, remarking on those with the best and worst performance.

Response 11. a. Weather data used in each owner-member forecast is assumed to be representative of the service territories. No additional measures are taken.

b. Weather assumptions for each owner-member are based on 20-year historic averages of weather stations representative of each owner-member's service territory. By assuming normal weather, the load forecasts are assumed to be unbiased.

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REQUEST 12

RESPONSIBLE PARTY: Julia J. Tucker

Request 12. Please refer to the LTLF at page 18, which states “GDS developed this element of the forecast using information from each owner-member’s load forecast (number of consumers), the US Census, the EIA Annual Energy Outlook 2023, and the Bureau of Transportation Statistics,” and respond to the following requests:

- a. Explain each variable used in the EV load forecast and the associated variable weight if the algorithm differentiated variable weights.
- b. Does EKPC agree that EV adoption is linked to a variety of demographic factors?

Response 12. a. The EV stock model is based on a linear adoption assumption. The energy projections use the results from the stock model along with assumptions for vehicle kWh usage per mile and miles driven per year. The EV stock and energy forecast is based on the variables below. The number of consumers for the owner-members varies. Other assumptions remain the same.

- Number of consumers
- Unit sales per year (total vehicles)

- Vehicle lifespan (years)
- Unit sales per year (EVs)
- Vehicles per household
- kWh per mile driven
- Miles driven per year

b. EKPC does not have an analysis identifying demographic factors that drive EV adoption.

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REQUEST 13

RESPONSIBLE PARTY: Julia J. Tucker

Request 13. Please refer to the LTLF at page 30, which states “Heat Pump Retrofit Program provides incentives for end-use members to replace their existing resistance heat source (electric furnace, ceiling cable heat, baseboard heat, or electric thermal storage) with a more efficient heat pump. Most high bill complaints are from end-use members with homes that are heated with electric resistive heat instead of a heat pump. Installing an electric heat pump lowers electric bills significantly for those end-use members,” and respond to the following requests:

- a. Given the prevalence of resistance heating within your member-owners’ territories,
 - i. please provide your assumed heat pump adoption curve; and
 - ii. the details of how heat pump adoption interacts with your peak load projection in both summer and winter.
- b. How would faster than assumed heat pump adoption affect your total load forecast and peak forecasts?

Response 13.

a. i. Heat pump saturations vary by owner-member cooperative and are based on the 2022 End Use Survey. *See attached JI 13 – Heat Pump Saturations.xlsx.*

ii. The models for owner-member peak load growth are structured similarly to the SAE energy models described on page 15 of the LTLF. Heat pump saturations and efficiencies are incorporated with other electric appliances assumptions and index variables for heating, cooling, and base are calculated. The dependent variable in the regression equation is the owner-member's monthly peak and the independent variables are the heating, cooling, and base indices as well as monthly and/or annual binary variables where appropriate.

b. A formal analysis of faster than assumed heat pump adoption has not been performed. It is important to consider other appliance saturations that change when heat pump adoption increases. If heat pump adoption increases due to a decrease in non-electric heating appliances (natural gas, propane, or coal/wood burning stoves), the load and peak forecasts could increase. If heat pump adoption increases due to a decrease in other electric heating appliances (furnaces, resistive heat, etc.), the load and peak forecasts could decrease.

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REQUEST 14**

RESPONSIBLE PARTY: Jerry Purvis

Request 14. Please provide any documentation related to compliance with the National Environmental Policy Act ("NEPA") related to the Liberty RICE project, or associated electric transmission or gas transmission.

Response 14. Please refer to EKPC's response to the Staff's initial request for information, Items 21e, 21f, 21g, and 21h.

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REQUEST 15**

RESPONSIBLE PARTY: Brad Young

Request 15. Please refer to the Direct Testimony of Brad Young, and Attachment BY-2, and explain how the impacts of any pollutants emitted from the proposed facility were accounted for in the site assessment report, if at all.

Response 15. The impact of pollutants emitted from the proposed facility were evaluated as part of the Property Value Impact Study portion of the Site Assessment which determined that no impact to property value is expected based on the case history evaluated.

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REQUEST 16

RESPONSIBLE PARTY: Mark Horn and Brad Young

Request 16. Please refer to the Direct Testimony of Brad Young at page 3 lines 1-8, as well as the Direct Testimony of Craig Johnson at pages 7-8, and respond to the following questions:

a. Where will the mainline proposed by Columbia Gulf Transmission (“CGT”) be located?

Please provide maps or diagrams.

b. What approvals or permits does the mainline proposed by CGT require?

c. What approvals or permits have been obtained for the mainline proposed by CGT?

d. What costs has CGT or EKPC paid or committed to pay related to the mainline?

e. Provide any cost estimates for the natural gas pipeline and other natural gas transportation costs to the proposed RICE facility that were included in EKPC’s cost analysis. If EKPC did not include such costs in its analysis, provide that cost now or explain why it did not.

f. Are costs for the gas supply pipeline, dew point heater, metering and regulating station, and diesel fuel oil storage tanks included in the projected costs in the CPCN application?

Response 16.

- a. The CGT mainline is not proposed, it has been in service for several years. Maps are publicly available.
- b. Not applicable.
- c. Not applicable.
- d. To date, no costs have been paid or committed by either party.
- e. EKPC utilized a proprietary evaluation model for the negotiated mainline transportation costs based on the tariff rates and the cost of physical natural gas based on the forward curve for natural gas. Final terms and conditions, that will be defined in the proposed Precedent Agreement, are still being negotiated.
- f. EKPC has no projected cost for physical assets such as the gas supply pipeline, dew point heater, or metering and regulating station to be included in the CPCN application, as these assets will be owned and operated by the pipeline company. Direct installation costs for the gas supply pipeline, dew point heater, metering, and regulating station are not included in the CPCN application costs since they are included in a separate contract with the pipeline company. These costs will be paid to the pipeline company as part of the gas supply rate included in the O&M costs in the CPCN application. Diesel fuel oil storage tank costs are included in the projected costs in the CPCN application.

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REQUEST 17**

RESPONSIBLE PARTY: Julia J. Tucker

Request 17. Please provide any analysis conducted by EKPC evaluating the potential cost impacts of gas price sensitivity or volatility on the relative viability of resource alternatives, including the relative benefit of resources that do not rely on fuel inputs. If EKPC did not conduct such an analysis, explain why.

Response 17. Refer to EKPC's response to Commission Staff's first request for information, Item 6.

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REQUEST 18

RESPONSIBLE PARTY: Julia J. Tucker

Request 18. Please refer to the Direct Testimony of Julia Tucker at page 21, lines 14-18, and provide documentation of whether and how EKPC evaluates battery energy storage system as an alternative to RICE units to support solar integration, or if not, please explain why.

Response 18. EKPC did not directly compare a battery energy storage system (“BESS”) against the RICE units. Available BESS technology is not able to provide several key characteristics which the RICE units possess. These include but are not limited to the ability to maintain rated output during long-duration extreme weather events such as Winter Storms Elliott and Gerri, the ability to dispatch when needed without concern for available stored energy, and the viability of long-term maintenance. EKPC did directly compare the RICE units to a Combustion Turbine, as stated throughout the application and discovery.

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**MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE COMMONWEALTH'S
REQUEST DATED DECEMBER 2, 2024
REQUEST 19**

RESPONSIBLE PARTY: Julia J. Tucker

Request 19. Please refer to the Direct Testimony of Julia Tucker at page 22 line 7 to page 23 line 4, and respond to the following requests:

a. Provide documentation of how EKPC considers generation options including solar, wind, solar-plus-battery and standalone battery energy storage system resources in assessing the resource portfolios;

b. Provide documentation of whether and how EKPC considers battery energy storage system as a capacity resource, or if not, please explain why;

c. Provide documentation of whether and how EKPC considers battery energy storage system resources as the ramping resources to displace gas generation, including any analysis, workpapers, or other sources that EKPC conducted or consulted in making its decision; if not considered explain why;

d. How would each of the following options compare to the ramp-up time of the proposed RICE units:

- i. Battery,
- ii. Virtual Power Plant,

- iii. Aero-derivative, and
- iv. H-Frame combustion turbine
- e. What is the estimated 30 minute start-up time for a CT based on?
- f. Do the RICE units require preheating?
- g. Do the RICE units require additional time to achieve synchronization or frequency control?

Response 19. a. EKPC compared multiple power supply resources in its 2022 Integrated Resource Plan (“IRP”). The input data for that analysis was provided in Section 8.4, pages 162-165.

b. EKPC views BESS resources as having the capability to provide some capacity value, however, that value is determined by the total duration of the resource. Long-duration BESS resources remain uneconomic when compared to traditional resources such as combustion turbines or RICE units.

c. Refer to EKPC’s response to Item 18, above.

d. i. BESS resources can generally ramp up within seconds to full output. Specific ramp rates are technology dependent. However, this assumes that the BESS resource is charged, which is not always the case.

ii. Refer to EKPC’s Backup Generator Control Program as filed in PSC Case No. 2024-00370. EKPC expects to provide at least a one-hour advanced notice to participants in the program to ensure the assets are online and producing energy when needed.

iii. Original Equipment Manufacturers (“OEM”) specification sheets for the General Electric LMS-100 aeroderivative combustion turbine states an 8-minutes fast start capability from cold start to full load. However, fast start conditions can result in additional maintenance expenses because it stresses the metal components to higher heat conditions to force a faster start. Normal, everyday operations do not utilize fast start as startup and utilize a more controlled sequence which takes closer to 30 minutes to start.

e. OEM specification sheets for an F-frame class combustion turbine.

f. No.

g. No.

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**MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE COMMONWEALTH'S
REQUEST DATED DECEMBER 2, 2024
REQUEST 20**

RESPONSIBLE PARTY: Julia J. Tucker

Request 20. Please refer to the Direct Testimony of Julia Tucker at page 23 line 5 to page 24 line 16, and respond to the following requests:

a. Refer in particular to the statement at page 23 lines 22-23 that “[i]t takes a run time of over 6,000 hours to equalize the total cost between the two technologies”, and

i. Provide any analysis or workpapers, in spreadsheet format and with formulas intact, used by EKPC to validate this claim;

ii. Provide documentation of whether and how EKPC established any runtime or resource adequacy criteria required for generation resources to be considered as an alternative for this capacity need in evaluating generation resource alternatives. If so, provide a full set of these criteria and justify each of their inclusion in EKPC’s analysis. If not, please explain why;

iii. Provide all relative economic analysis of generation resource alternatives conducted by EKPC to meet resource adequacy needs; and

iv. Provide documentation of whether the 6,000 hours are estimated based on the system energy or capacity needs to be met by the proposed resources, or it is purely an

economic break-even analysis that is only based on the comparison of RICE unit and CT unit.

b. Were the following options considered in comparing the economic competitiveness of various resources? Please provide any documentation, calculations, or comparison of the cost of each, or explain why it was not considered:

- i. Battery,
- ii. Virtual Power Plant,
- iii. Aero-derivative, and
- iv. H-Frame combustion turbine;

c. Provide documentation of whether and how EKPC established any runtime or resource adequacy criteria required for generation resources to be considered as an alternative for this capacity need in evaluating generation resource alternatives. If so, provide a full set of these criteria and justify each of their inclusion in EKPC's analysis. If not, please explain why.

d. Please provide support for the assertion that "RICE engines have lower operating and maintenance ('O&M') costs than the traditional combustion turbine."

e. To what extent were the following Inflation Reduction Act ("IRA") benefits considered in determining the most suitable option? Provide documentation for each considered, or state why it was not considered:

- i. the production tax credit and investment tax credit (26 U.S.C. §§ 45 & 45Y, 48 & 48E);
- ii. The Grid Resilience and Innovation Partnerships ("GRIP") Program;

iii. the elective pay provisions that would provide direct rebates for EKPC for clean energy resources; or

iv. other financing programs such as the Energy Infrastructure Reinvestment Program (EIR) or the New ERA program, the latter of which has already been awarded to EKPC?

f. Provide documentation of whether and how EKPC conducted an all-source RFP to determine the portfolio selection of the RICE unit, or if not, please explain why.

Response 20.

a. i. Refer to EKPC's response to Commission Staff's first request for information, Item 6.

ii. EKPC did not establish resource adequacy criteria for the express purpose of selecting the RICE units as a viable generation resource alternative. However, EKPC modeling indicates that the RICE units will have a 73% capacity factor, and the operational flexibility of the RICE units, as discussed throughout the testimony, will further enhance the reliability of EKPC's generation portfolio.

iii. Refer to the direct testimony of Julia J. Tucker in the application and to EKPC's response to Commission Staff's first request for information, Item 6.

iv. Refer to EKPC's response to Commission Staff's first request for information, Item 6.

b. i. No. See response to Item 18, above.

ii. No. VPPs were not considered as a viable alternative to the RICE units due to the relative size and operational characteristics needed. VPPs rely on the aggregated output of many small assets such as generators and batteries, most commonly at residential locations where the magnitude of capacity and volume of energy is at a disproportionate scale when compared to capacity and energy needs of the EKPC system as a whole. Assuming the capacity of a common residential backup power solution at 10kW, or 0.01 MW, it would take 21,400 of these residential assets working in concert to provide the same 214 MW of available capacity of the RICE facility. EKPC performed a comprehensive “Potential Study” to identify conceivable demand side operations that could be feasible for its system. Multiple demand side programs are being developed in addition to the RICE facility. A request to update those tariffs is included in EKPC’s Case No. 2024-00370. So VPPs were considered in addition to the RICE but not instead of the RICE.

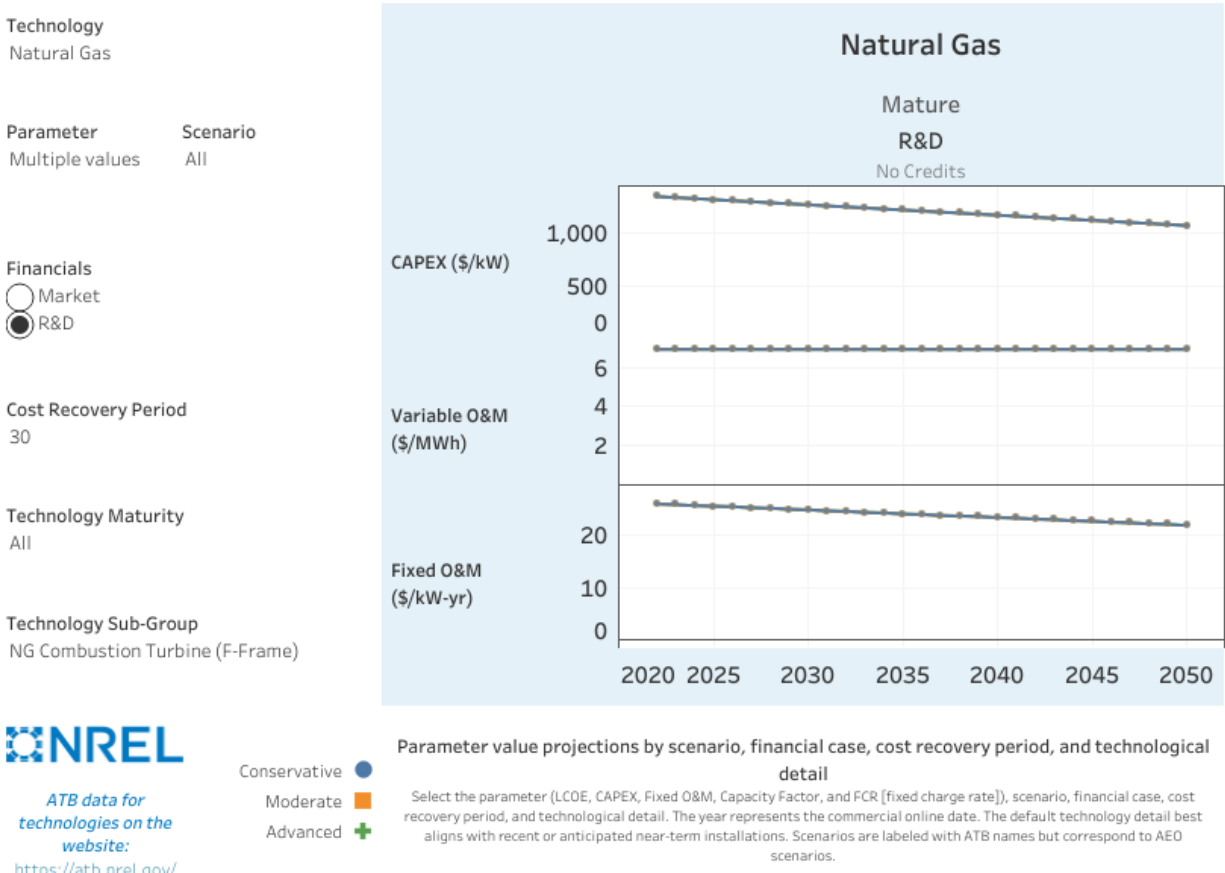
iii. No. Aero-derivative combustion turbines were not considered as a viable alternative to the RICE units due to the relative risk of unit outages and lack of readily available spare parts. EKPC’s experience with its two General Electric LMS-100s is that maintenance and repairs are lengthy because spare parts and OEM support are extremely limited.

iv. No. The H-Frame combustion turbine was considered to be “new” technology without widespread maintenance and spare parts support networks. The F-Frame parts and maintenance experts are widely available and supported throughout OEMs and third-party service providers.

c. EKPC did not establish runtime criteria for the express purpose of selecting the RICE units as a viable generation resource alternative. The RICE units are forecasted to run over 6,000 hours per year, providing reliable and necessary energy to EKPC's owner-members.

d. Refer to the direct testimony of Julia J. Tucker, page 23, lines 14-23. Operations and maintenance costs ("O&M") for the F-Class CT were sourced from the National Renewable

Energy Lab (“NREL”) Annual Energy Baseline (“ATB”)¹, see image below for reference:



Comparable O&M costs for the RICE units were sourced from Attached BY-1, the Project Scoping Report submitted in this Application, page 1-5, Table 1-2: Annual O&M Costs.

e. i-iv. The IRA benefits available to EKPC do not apply to the RICE units and therefore they were not considered as part of the economic evaluation within this application.

¹ https://atb.nrel.gov/electricity/2024/fossil_energy_technologies

f. EKPC did not conduct an all-source RFP for a third-party developer or power purchase agreement related to the selection of the RICE units. EKPC's recent experience during multiple RFPs for renewable energy resulted in several attempts to contract with various companies, however those companies could not deliver on time or at the agreed upon price. Refer to EKPC's CPCN application in PSC Case No. 2024-00129, the direct testimony of Julia J. Tucker, page 12 line 5 through page 15 line 5.

EKPC's need for new generation has been expedited by the load experienced during the past two winter peak seasons. As stated in the Direct Testimony of Don Mosier, page 5 line 7 through page 6 line 2, EKPC is nearly 300 MW short of installed capacity to meet its winter obligation, along with grid reliability issues in the southern Kentucky region. EKPC cannot risk negotiations with a third party for a year or more, then realize at the end of that time that they cannot reach mutual agreement to move forward with a contract. This risk would exist with a third-party developer or a power purchase agreement. Time is of the essence to address the load and reliability issues. The most expeditious manner to get new power supply in service to meet these issues is to have complete control of development for the project. EKPC did and will continue to seek solicitations from multiple vendors for materials and services to ensure best practices in project development.

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**MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE COMMONWEALTH'S
REQUEST DATED DECEMBER 2, 2024
REQUEST 21**

RESPONSIBLE PARTY: Julia J. Tucker

Request 21. Please summarize EKPC's scenario development approach for evaluating multiple potential future conditions related to key IRA provisions and provide associated workpapers and analysis. Provide scenario approaches, including the number of scenarios and differentiating features, for the following IRA-related topics:

- a. Energy efficiency and demand-side management,
- b. Distributed energy resources, and
- c. Unit retirement and replacement timelines (and use of New ERA funding).

Response 21 a-c. The RICE units do not benefit from the available IRA provisions and therefore this question is not pertinent to the application. Refer to EKPC's CPCN application in PSC 2024-00370 for more information regarding EKPC's Energy Efficiency and Demand Side Management future plans. EKPC does not intend to retire any generators at this time.

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**MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE COMMONWEALTH'S
REQUEST DATED DECEMBER 2, 2024
REQUEST 22**

RESPONSIBLE PARTY: Darrin Adams

Request 22. Please provide documentation of whether and how EKPC analyzed grid-enhancing technologies (GETs) or other alternatives in its power-flow study that could meet the same transmission upgrade requirements at lower cost. If EKPC did not consider GETs or other alternatives, please explain why.

Response 22. EKPC did not analyze utilization of grid-enhancing technologies or other alternatives in its power-flow studies. The scope of work identified for the proposed network upgrades is the anticipated minimum scope of work necessary to achieve the thermal ratings that are expected to be needed for these facilities. In some cases, the anticipated scope of work is increasing ground clearances for conductors in certain spans of transmission lines to allow the conductors to operate at higher temperatures. In other cases, replacement of conductors and transmission structures in existing lines is anticipated to be necessary to achieve the desired ratings. Finally, one upgrade of existing equipment in an EKPC substation is anticipated to be necessary. EKPC has identified these upgrades as the potential list of projects that may be identified via the

PJM generator-interconnection study process, but these needs are preliminary, since the PJM studies have not yet started for the Liberty RICE generation facility. EKPC has not yet considered other alternatives – including grid-enhancing technologies – to address these overloads at this time since the results of the analysis are preliminary. When the PJM generator-interconnection studies identify the final set of transmission facility overloads, EKPC will evaluate what the best solutions are to address the overloads, considering the magnitude of the overloads, real-time operational considerations, and cost effectiveness of the solutions.

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REQUEST DATED DECEMBER 2, 2024
REQUEST 23**

RESPONSIBLE PARTY: Julia J. Tucker

Request 23. Provide documentation of whether and how the planned projects associated with EKPC's New ERA application were integrated into the CPCN inputs or quantitative modeling. If the planned projects are not considered as part of the CPCN, please explain why.

Response 23. EKPC's multiple applications currently underway at the Commission are all inclusive of all projects. EKPC has developed a comprehensive long-range view of its needs and is presenting that view in its entirety throughout these proceedings. Change in any one component of the plan will have an impact on all aspects. The New ERA projects were developed with a focus of maximizing the value of budgeted funds offered by RUS. Those projects provide clean energy to serve the EKPC portfolio and its Sustainability Goals, but they do not provide capacity that can be dispatched during winter peak load periods. To meet the long-term reliability needs of the system, EKPC will need dispatchable generation that can be called on during peak load conditions. Data provided in all of the current applications are inclusive of all projects and anticipate moving forward with all requested projects.

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**MOUNTAIN ASSOCIATION AND KENTUCKIANS FOR THE COMMONWEALTH'S
REQUEST DATED DECEMBER 2, 2024
REQUEST 24**

RESPONSIBLE PARTY: Julia J. Tucker

Request 24. Please refer to Case No. 2022-00098, Electronic 2022 Integrated Resource Plan of East Kentucky Power Cooperative, Inc., EKPC's 2022 Integrated Resource Plan dated 04-01-22 ("2022 IRP") at pages 66, 115-119, & 161. What demand (energy, winter peak, and summer peak) reduction has EKPC achieved through DSM since the IRP?

Response 24. Refer to EKPC's Certificate of Public Convenience and Necessity ("CPCN") application in PSC Case No. 2024-00370.