COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR A (1) CERTICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION OF TRANSMISSION FACILITIES IN MADISON COUNTY, KENTUCKY; AND (2) DECLARATORY ORDER CONFIRMING THAT A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IS NOT REQUIRED FOR CERTAIN FACILITIES	**)**	**CASE NO. 2022-00314**

RESPONSES TO STAFF'S THIRD INFORMATION REQUEST

TO EAST KENTUCKY POWER COOPERATIVE, INC.

DATED 01/12/2023

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR A (1) CERTICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION OF TRANSMISSION FACILITIES IN MADISON COUNTY, KENTUCKY; AND (2) DECLARATORY ORDER CONFIRMING THAT A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IS NOT REQUIRED FOR CERTAIN FACILITIES	)	**CASE NO. 2022-00314**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Darrin Adams, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Staff's Third Request for Information in the above-referenced case dated January 12, 2023, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

Darrin Adams

Subscribed and sworn before me on this 18th day of January, 2023.

Notary Public

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

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR A (1) CERTICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION OF TRANSMISSION FACILITIES IN MADISON COUNTY, KENTUCKY; AND (2) DECLARATORY ORDER CONFIRMING THAT A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IS NOT REQUIRED FOR CERTAIN FACILITIES	)	**CASE NO. 2022-00314**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Lucas Spencer**,** being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Staff's Third Request for Information in the above-referenced case dated January 12, 2023, 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.

Subscribed and sworn before me on this 18th day of January, 2023.

Notary Public

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

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR A (1) CERTICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION OF TRANSMISSION FACILITIES IN MADISON COUNTY, KENTUCKY; AND (2) DECLARATORY ORDER CONFIRMING THAT A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IS NOT REQUIRED FOR CERTAIN FACILITIES	)	**CASE NO. 2022-00314**

CERTIFICATE

STATE OF KENTUCKY)
)
COUNTY OF CLARK)

Laura LeMaster, being duly sworn, states that she has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Staff's Third Request for Information in the above-referenced case dated January 12, 2023, 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.

Laura LeMaster

Subscribed and sworn before me on this 18th day of January, 2023.

Notary Public

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

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 1
RESPONSIBLE PARTY: Laura LeMaster and Darrin Adams

Request 1. Refer to EKPC's response to Commission Staff's First Request for Information (Staff's First Request), Item 2, and EKPC's response to Commission Staff's Second Request for Information (Staff's Second Request), Item 21. If the Commission determines the construction of the New Industrial Substation is not an ordinary extension of an existing system in the usual course of business, and that it requires prior Commission approval pursuant to KRS 278.020(1), provide the legal basis upon which EKPC proposes that the Commission grant such approval given that EKPC lacks critical, basic information regarding the construction of the New Industrial Substation, including where it will be located and the specifics of its configuration.

Response 1. While final design of the New Industrial Substation would be dependent on the load profile and electrical requirements of the industry to be served, EKPC has evaluated and determined the estimated cost range for this substation based on experience with similar substations designed and constructed as part of the EKPC system. Substations recently designed and constructed by EKPC for industrial loads include North Sharkey, Cedar Grove, and South Marion County Industrial Substations. The cost range provided for the New Industrial Substation

assumes the industrial load can be served solely via the 138 kV system (i.e., a load level up to 179 MW), as discussed in Mr. Adams' testimony. If the load amount is greater than 179 MW, 345 kV transmission-line connections would be required into the area. EKPC recognizes that these potential 345 kV lines would require a separate CPCN, therefore costs associated with load requests greater than 179 MW are not included as part of EKPC's request for a declaratory order associated with the New Industrial Substation. EKPC estimated the cost of the New Industrial Substation to range between $13 million and $19 million, should costs increase over the estimated $19 million, EKPC will seek regulatory approval via a CPCN application.

While some specific project information (e.g. low-side voltage levels, number of transformers, rating for transformers, etc.) is currently unknown, EKPC believes there is adequate critical basic information to develop a sound preliminary scope, estimate, and project plan for this substation. EKPC has constructed numerous substations to serve various industries from high voltage circuits (100kV and above). The general arrangement and protective schemes utilized for the New Industrial Substation would be similar to the industrial substations previously constructed. The substation arrangement would be normal design and scope for EKPC and our system. Similarly constructed industrial substations were the basis for the cost range provided for the New Industrial Substation in the Application. The general arrangement would include a 138-kV high side, a 138 kV breaker, power transformer, metering structure, low voltage structure, bus work, switches, voltage regulators, low voltage reclosers/breakers, and additional controls and telecommunication equipment, as are typically included in all distribution substations.

In regard to the location of the New Industrial Substation, Exhibit DR1-1 provided with the First Request for Information, Item 2, shows the vicinity where the New Industrial Substation

is proposed to be located. While the exact location is unknown, the substation would be located as close as possible to the industry being served and positioned to minimally disrupt the land use for the industry. Moreover, location within the vicinity shown on Exhibit DR1-1, will have extremely minimal impact on the overall cost of the New Industrial Substation. The estimated earthwork cost is approximately 2% of the total estimated construction cost for the New Industrial Substation.

EKPC believes the New Industrial Substation is within the ordinary course of business exemption. EKPC has experience building very similar substations to serve industrial loads, such as the load anticipated in this project area. Based on those substation builds and the knowledge, expertise and experience of EKPC personnel, EKPC knows the equipment that will be needed, the labor involved, and the typical costs for this same type of substation. It is prudent for EKPC to wait to set the specific location of the substation until the exact location and site development plan of the industrial load is known. However, if the Commission disagrees with EKPC and determines that a CPCN is required, EKPC reiterates the information provided above to show that a CPCN should be granted. EKPC knows the equipment, estimated cost and general location of the New Industrial Substation. EKPC has a need for the New Industrial Substation based on the anticipated future need in the area to serve new industrial loads. EKPC has continued, since the filing of the case, to receive inquiries from the Kentucky Economic Development Cabinet regarding their desire to advance the development of this site, and the interest of potential industrial customers in this area. Once a new industrial customer commits to locating in the area, EKPC and Blue Grass Energy will be on a tight timeline to have service available to the customer. Due to possible supply chain issues for equipment and materials that would be needed for the New Industrial Substation, EKPC may see challenges to meet the project timeline. There are no additional facilities in the area that

could support load growth exceeding 3 MW, so this would not result in wasteful duplication. EKPC has provided cost estimates for each portion of the project and provided the information regarding possible alternatives to serving any new load in the area. The proposed project would be the least cost, least impactful to the landscape and the surrounding areas and would allow EKPC to take advantage of double circuiting the 138 kV line along with the necessary rebuild of the 69 kV line. Due to development in the area surrounding the current ROW, EKPC has designed the proposed project to fit safely within the existing right of way (ROW) to minimize the impact on the community and the surrounding landscape.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 2
RESPONSIBLE PARTY: Laura LeMaster

Request 2. Refer to EKPC's response to Staff's Second Request, Item 19. Provide information about the duration of the outages in March 2107 by the five structures that failed during a storm event. Also provide information about the duration of the outages in June 2021 caused by the cross-arm failure.

Response 2. The March 2017 event caused by the failure of five structures caused a 7 minute outage at Alcan #1, Alcan #2, PPG, and Hickory Plains Substations; and caused a 2 hour and 7 minute outage at Crooksville Substation. The June 2021 cross arm failure led to a 52 minute outage at the following substations: Alcan #1, Alcan #2, Crooksville, Hickory Plains, PPG, and Duncannon Lane.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 3
RESPONSIBLE PARTY: Lucas Spencer

Request 3. Refer to EKPC's response to Staff's Second Request, Item 10. Provide the right-of-way (ROW) widths for 138 kV and 69 kV transmission lines and explain whether the existing ROW is sufficient for collocating the 138 kV line with the rebuilt 69 kV line. Provide a citation to any safety regulation or industry-accepted best practice that supports the response.

Response 3. The existing right-of–way (ROW) is sufficient for double-circuiting the 138 kV and 69kV on the same transmission structures, as proposed in the Application. However, the current ROW is not sufficient for collocating the 138 kV and 69 kV lines on separate centerlines and separate structures. EKPC is proposing a double-circuit, which refers to common structures that support both the 138 kV and 69 kV circuits. "Collocation" in this context indicates the 138kV and 69kV lines will be on parallel centerlines and separate, independent structures. In essence, collocation refers to two entirely separate but roughly parallel transmission lines that are adjacent to one another. Please see Exhibit DR3-R3A for a depiction of designs that could be expected for these two alternatives and the differences between the two. To be clear, EKPC is proposing a double-circuit and not a collocation of the 69 kV and 138 kV lines.

Safety regulations pertaining to all electrical clearances are primarily defined in the NESC requirements which are the bare minimum for establishing ROW widths. EKPC's current practice (consistent with industry-accepted best practice and RUS Bulletin 1724E-200 Table 5-3) is to use a 100-150 foot wide ROW for 138 kV transmission lines and a 100 foot wide ROW for 69 kV transmission lines based on standard structure configurations, and design standards. However, transmission structures can be designed to accommodate ROW of lesser width by using different structure types and structures at more frequent intervals along the centerline. For instance, for the proposed double-circuit project, EKPC plans to utilize a variety of construction methods ranging from braced-post insulator framing and more frequent structure placements to ensure that reasonable measures have been taken to manage conductor blowout. EKPC has established design standards to be utilized in situations where ROW width or conditions do not allow enough space for standard construction e.g., densely developed areas. In the proposed project, EKPC is employing atypical structure design for overall cost-effectiveness for the proposed double-circuit rebuild on the existing 69 kV KU Fawkes-Duncannon Lane transmission line.

Exhibit DR3-3A is provided to help illustrate why a future collocation would be unacceptable for the community and from an engineering standpoint. Quadrants A & B of Exhibit DR3-3A show two of the typical structure designs for double-circuit configuration. Additional typical structures that would be utilized in the proposed double-circuit were included with the Application as Exhibit 4. Quadrants C & D of Exhibit DR3-3A show two conceptual depictions of structure designs for collocation configuration. The structure shown in Quadrant A will be utilized for longer spans on the proposed double-circuit rebuild and is a representation of the largest separation between structures and conductors that would be observed during resting or no-

wind conditions. The structure shown in Quadrant B will be utilized for shorter spans on the double-circuit rebuild in the more urban areas traversed by the KU Fawkes – Duncannon Lane transmission line.

The structure depictions in Quadrants C & D in Exhibit DR3-3A show the spacing and location of structures within the 100' of existing ROW for a later collocation of the 69 kV and 138 kV circuits. In Exhibit DR3-3A Quadrant C, there is 25' spacing between the two independent structures in typical locations and would be the 'most' compact and typical structure design alternative to accommodate future collocation of the 138 kV circuit on the existing right of way with the rebuilt 69 kV. In Exhibit DR3-3A Quadrant D, 25' spacing between the two independent structures is indicated as well as an offset from the centerline in areas that require shorter spans in the more densely developed areas traversed by the KU Fawkes-Duncannon Lane line. The centerline offset is needed to avoid development on the existing 69kV ROW. The 25' spacing between the structures would be needed to provide adequate physical space for the operation of heavy equipment for construction and maintenance activities.

Exhibit DR3-3A shows the necessary differences in structures between a double-circuit configuration (A) and a collocation configuration (C), in typical structure locations and between a double-circuit configuration (B) and a collocation configuration (D) which are more suitable for densely developed areas along the proposed line rebuild.

As stated above, double circuiting and collocation are two separate and distinct transmission designs. There are several reasons, both engineering related and community related, why EKPC did not propose collocation. The engineering concerns are as follows:

- A collocated design will likely result in many more homes and other structures with conductors crossing over them. Although permissible by the National Electric Safety Code, EKPC's standard approach and best practice is to avoid crossing over homes and other structures with an energized conductor anywhere it is feasible. A collocated design would require an outage on both circuits for maintenance activities on either circuit individually, to maintain safe working distances. The collocated structures may require crews to work between the poles rather than from the outside edge of the easement. Conversely, easement space is greater for equipment and activities on the outside of the double circuit structures which should provide crews adequate space to access and perform work with one side of the double circuit energized.
- Future collocation would cause unnecessary cluttering of the landscape and likely result in wasteful duplication from the increased number of transmission structures needed along the centerline to control conductor blowout. Future collocation would require an additional extended outage to facilitate the safety of EKPC's employees and contractors for construction of the 138 kV circuit. An additional outage in the future would be problematic on this part of EKPC's transmission system, due to the projected load increase prior to the second circuit construction. This circumstance will further complicate construction sequencing and outage scheduling, which typically add cost and delay.
- A collocated design would result in wasteful duplication and unnecessary cost because all angle/dead-ends structure locations would require all existing 69kV angles/dead-ends would have to be replaced due to spacing requirements and higher mechanical loading.

- For a collocated design, the need may arise to potentially expand the scope of easement rights. This could be driven from an increase in the number of transmission structures and poles.
- A collocated design would require more tree clearing for the safe operation of the transmission line due to the larger structure spacing between the two independent structure alignments.

In addition to the engineering considerations for not proposing collocation, EKPC believes collocation would cause the following unfavorable community impacts:

- The collocated design would have more impact on landowners based on structure locations. For the proposed double-circuit rebuild design, it was a priority to locate structures in approximately the same locations as the existing 69kV structures, as well as removing structures where feasible. This will not be feasible with a collocated design in the more densely developed areas traversed by the KU Fawkes-Duncannon Lane transmission line.
- A collocated design would have a larger footprint within our easement, taking up a wider space on the ground in the middle of the existing easement area, and pushing the structures closer to the edges of the easement.
- A collocated design would potentially require more structures for reasons outlined in the bulleted list of engineering concerns. More structures would result in an increased undesirable effect on property owners due to more structures being located potentially in areas such as parking lots, lawns, and cultivated fields than for the double-circuit design.

- For the proposed double-circuit rebuild there will only be one cycle of entry/disturbance/clean-up required on all impacted property owners during the rebuild. A collocated design would generate two cycles of entry/disturbance/clean-up in what EKPC believes would be a short span of time. EKPC has proposed a double circuit design that optimizes cost efficiency and minimizes the impact to property owners where feasible, avoids unnecessary multiplicity, and achieves needed system improvements.

EKPC's proposed double circuit construction ensures that outages on the 138kV and 69kV circuits will not have to occur simultaneously on both circuits.[1] If the lines were to be collocated, spacing between the collocated poles would likely increase to avoid having to take outages on both circuits for maintenance, and would result in even more structures along the centerline to control blowout. EKPC believes that collocation would result in a greater and unnecessary impact on the affected landowners, cluttering the landscape, and creating "wasteful duplication" that may be demonstrated by showing "unnecessary multiplicity of physical properties."[2]

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[1] *In re the Matter of: Electronic Application of Kentucky Utilities Company for a Certificate of Public Convenience and Necessity for the Construction of Transmission Facilities in Hardin County, Kentucky,* Case No. 2022-00066, Order, p. 21, (P.S.C. July 28, 2022). ("Reliability is part of the Commission's consideration in analyzing whether facility duplication is wasteful.") ("…and separately have approved double circuit transmission lines to address reliability concerns.") ("KU could have proposed, as many utilities in front of the Commission in recent years have, to serve the new load via double circuit 345 kV lines… to ensure that a single outage on either circuit, for whatever reason, does not necessarily lead to an outage on the other circuit.")

[2] *Citizens for Alternative Water Sols. v. Kentucky Pub. Serv. Comm'n,* 358 S.W.3d 488, 490 (Ky. Ct. App. 2011), citing *Ky. Utilities Co*., 252 S.W.2d 885 at 890 (Ky. 1952) ("duplication"…an unnecessary multiplicity of physical properties, such as rights of way, poles and wires.; The use of an easement must be reasonable and as little burdensome to the landowner as the nature and purpose of the easement will permit. *Horky v. Kentucky Utilities Co., Ky.*, 336 S.W.2d 588 (1960). Cf. *Farmer v. Kentucky Utilities Co., Ky.*, 642 S.W.2d 579 (1982). The nature and extent of an easement must be determined in light of its purposes. *Thomas v. Holmes,* 306 Ky. 632, 208 S.W.2d 969 (1948). *Com., Dep't of Fish & Wildlife Res. v. Garner,* 896 S.W.2d 10, 13–14 (Ky. 1995)

The facts outlined above are the reasons why it is not feasible or desirable to rebuild the 69kV transmission line now in a way that allows for a collocated 138kV transmission line on this ROW in the future. EKPC would not propose a collocation of these lines in the future, even if the Commission does not grant EKPC a CPCN in this proceeding.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 4
RESPONSIBLE PARTY: Lucas Spencer

Request 4. Refer to EKPC's response to Staff's First Request, Item 11. Explain the conductor blow-out requirements, or other requirements, when there are collocated 69 kV and 138 kV lines that will not come into contact with each other. Explain what would happen if the two lines did come into contact with each other.

Response 4. Conductor blow out is modeled and calculated based on the application of a consistent wind load on the conductors that results in a displacement of the conductors. Allowable clearances must be maintained from the displaced conductors to objects that are not displaced by the applied wind load like other conductors, transmission structures, guys, or other fixed structures and equipment. If multiple conductors are present, they are modeled with a consistent wind load, which means they are all being displaced by the same wind in the same direction. Based on typical design practice, the conductors would not collide during any reasonably predictable storm event.

Based on the proposed double circuit design there are no blowout violations on the proposed Fawkes – Duncannon Lane 138 kV & 69 kV double – circuit line.

If conductors of the 138 kV and 69 kV lines come into contact, the difference in electrical characteristics will cause various protection systems to detect a fault and operate breakers resulting in a 'blink' or momentary loss of power or, if the fault were sustained, it could result in the breakers operating to 'lockout' which means both circuits will be de-energized until the fault can be found or remedied. This kind of event is detected by system operators to initiate restoration actions.

As per the NESC code, horizontal and vertical clearances must be maintained during wind displaced or 'blowout conditions' (NESC blowout is defined as an ambient temperature of 60°F with a 6 lb/ft^2 wind in NESC Rule 234A). NESC horizontal clearances that must be maintained can be found in the following: NESC Rules 234B, 234C, 234D, 234E, 234F, 234I and tables 234-1, 234-2 & 234-3. NESC vertical clearances that must be maintained can be found in the following: NESC 232A, 232B and Table 232-1. On the proposed double-circuit design all required NESC clearances have been maintained. NESC Code dictates that Phase-to-Phase clearance of conductors of a different circuit be 64.2 inches as dictated by Table 235-1 in the NESC Code.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 5
RESPONSIBLE PARTY: Darrin Adams

Request 5. Refer to EKPC's response to Staff's Second Request, Item 14. Explain whether the 138 kV to 69 kV stepdown transformer is to be installed at the Fawkes/New Industrial Substation to connect the 138 kV and 69 kV systems. If this is not the connection, explain where the two systems will be connected.

Response 5. The 138kV to 69kV step-down transformer will be installed at the new Madison County Switching Station to connect the two systems. No step-down transformer installations are currently planned for the Fawkes substation, and the transformers that will be installed at the New Industrial Substation will be rated at the 138 kV on the high-voltage side, but will be rated at the desired distribution utilization voltage (e.g., 34.5 kV, 25 kV, 12.5 kV, etc.) for the industrial customer on the low voltage side. Connection of the 138 kV system to the 69 kV system at either the Fawkes Substation or the New Industrial Substation is not currently contemplated.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 6
RESPONSIBLE PARTY: Darrin Adams

Request 6. Provide a detailed explanation and analysis of how the 138 kV transmission line and substation upgrades to the existing system proposed in the Application satisfies the need and lack of wasteful duplication standard necessary for Commission approval of a CPCN.

Response 6. This area of the Blue Grass Energy service territory is on the brink of transmission insufficiency and the need for both replacement of aging assets and expansion of transmission capacity is imminent. Constructing transmission infrastructure to meet predictable demand and responding to the addition of new load is patently normal in the course of business for a transmission owner and future growth and load study results clearly support the need for the 138kV transmission line and substation upgrades in this area.[3]

[3] *Kentucky Utilities,* Case No. 2022-00066, Order pp. 18-19. ("Based on evidence of record, including study results that indicate the current transmission system could not adequately serve Ford's demand, not to mention future demand in the area, the Commission finds that KU has demonstrated a need for the additional transmission to provide service…")

The proposed 138 kV transmission line and substation upgrades to the existing system are the least-scope, least-disruptive, and least-cost plan to meet reliability and minimum-cost objectives while preparing for service to potential expanded and/or new industrial facilities in this area. EKPC seeks to take advantage of a necessary transmission upgrade to avoid the waste and duplication of a new right-of-way and new single-line structures for future construction of a new 138 kV transmission line. Implementation of the associated substation projects only when the anticipated industrial load commitment is made and system conditions warrant is for the express purpose of deployment in time to be available only when needed, thereby avoiding wasteful duplication

EKPC would be creating potential wasteful duplication by not prudently taking advantage of the opportunity presented by the necessity to rebuild the 69 kV line to also at the same time construct the 138 kV circuit on the same structures, given the strong likelihood that this line will be needed in the near future. Otherwise, EKPC will likely be left with deciding between either removing a newly rebuilt Fawkes-Duncannon Lane 69 kV line within a few years in order to rebuild the line as a double circuit 138 & 69 kV line at that time, or alternatively, building a new 138 kV line along a new route within a few years of this 69 kV line rebuild project's completion. Neither of these options is the best scenario for EKPC's owner-members, nor for the property owners that will be impacted by implementation of either of those options in the future. An opportunity to address immediate system issues while efficiently and unobtrusively preparing for future needs exists now, but it will not exist two years from now. Not taking advantage of that opportunity would be a disservice to EKPC's stakeholders and the Madison County community.

EKPC's power-flow studies provide evidence that the 138 kV line is not wasteful duplication electrically, since the area cannot be adequately served by the existing system once

more than 3 MW of demand is added in the area. EKPC's recent experience with Winter Storm Elliott in this area provides an indication of the potential risk of higher-than-expected loads. During EKPC's system peak on the evening of 12/23/2022 (at 6:15 PM), the total load in this area was 81.3 MW, which is below the forecasted total amount of 107 MW. However, this is because the load levels at the industrial substations served from this line (Alcan #1, Alcan #2, Duncannon Lane, PPG, and Speedwell Road) were well below the typical peak values for those substations. This appears to be due to the peak occurring during the observed Christmas holiday weekend. The two substations that serve primarily residential end-users in the area (Crooksville and Hickory Plains) experienced peaks that were a total of 5 MW (13%) higher than forecasted. Therefore, had EKPC experienced similar weather during a period when industrial activity in the area was at a normal level, and not during a holiday weekend, the total load in the area would likely have exceeded the level at which EKPC expects to see thermal loading and under-voltage issues. As a result, EKPC expects that the next iteration of load forecasts for substations in the area will result in an overall increase of total load in the area, which should indicate a more immediate need for additional transmission support to serve this increased load.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 7
RESPONSIBLE PARTY: Laura LeMaster

Request 7. Provide an estimate of the cost savings of constructing the 138 kV system upgrade as proposed instead of building a 138 kV system only when the need arises to service increased load in the future. Include in the response, a breakdown of the cost savings. If an estimate can't be provided, explain why.

Response 7. EKPC currently plans to execute the construction of the 138 kV transmission line as part of the required rebuild of the 69 kV KU Fawkes – Duncannon Lane Transmission Line to limit cost and impact to the community associated with two separate transmission line construction projects. The substation work, as outlined in the Application, would not be executed until the need arises. EKPC believes that the need for the 138 kV transmission line into this load pocket is imminent, either to be able to support a new industrial load or to support the 69 kV system due to marginal available capacity of the 69 kV system in the area, as discussed in Mr. Adams' testimony and in Response No. 6. In order to not further impact the local community with additional poles, construction disruption and to avoid additional EKPC capital investment

due to construction of the 138 kV line at a later date, EKPC determined it was prudent to execute the 69 kV rebuild required as a 138 kV and 69 kV double-circuit.

As outlined in Response No. 15 of Commission Staff's Second Request for Information, there are two options that could be implemented in the future to establish the 138 kV circuit, if it is not executed as a double-circuit with the required rebuild of the 69 kV circuit. Those two options outlined in the response were to rebuild the KU Fawkes – Duncannon Lane 69 kV line as a single-circuit at an estimated cost of $8.5 million. When the 138 kV circuit was needed, EKPC would remove the newly built 69 kV single-circuit and replace with a 138 kV and 69 kV double-circuit, for an additional cost of $19 million, resulting in a cost of $27.5 million total for both projects versus the $19 million proposed in the Application, representing a capital cost increase of $8.5 million.

The second option outlined in Response No. 15 of Commission Staff's Second Request for Information was to rebuild the KU Fawkes – Duncannon Lane 69 kV line as a single-circuit 69 kV line at this time at an estimated of $8.5 million. When the 138 kV circuit was needed into the area, EKPC would build a new 138 kV circuit from the EKPC Fawkes substation to Duncannon Lane along an alternate route. Based on a planning level review of the alternative route from EKPC Fawkes to Duncannon Lane an estimated cost range of $18.1 million to $19.6 million was developed, resulting in a total cost ranging between $26.6 million and $28.1 million for both projects as compared to $19 million as proposed in the Application representing a capital cost increase between $7.6 million to $9.1 million.

Planning level estimates were developed for the cost associated with the construction of the single-circuit 69 kV KU Fawkes – Duncannon Lane circuit and for a new 138 kV single-circuit

from EKPC Fawkes – Duncannon Lane using an alternative route. A preliminary design, and bottom up cost estimate was completed for the Fawkes – Duncannon Lane 138 kV and 69 kV double – circuit. Development of planning level estimates, since a preliminary or detailed design have not been completed, utilizes a per mile cost, based on voltage and length. EKPC also utilizes a cost adder for self-supporting structures, due to the additional cost associated with self-supporting structures. This is the same method utilized as part of the Routing Study completed for this project. In fact, the same cost per mile and cost per self-supporting structure were utilized for the planning level estimate as utilized for alternative route cost estimates in the Fawkes – Duncannon Lane Routing Study completed by NV5 Geospatial included in Application as Exhibit 18.

In order to determine a planning level estimate for a new 138 kV single-circuit from EKPC Fawkes – Duncannon Lane using an alternative route, mileage of this line must be estimated. During execution of the Routing Study, all viable alternatives had included a portion of double-circuit of the 69 kV and 138 kV, therefore in order to properly evaluate the cost associated with constructing the 69 kV as a single circuit and then a future alternative route for a 138 kV single – circuit, EKPC could not utilize the alternative route costs developed in the Routing Study. In order to evaluate the length of a greenfield 138 kV single-circuit from EKPC Fawkes – Duncannon Lane, EKPC utilized the total length of Routes 3 and 4 from the Routing Study as the range of potential mileage, and utilized the estimated number of self-supporting structures from the Routing Study and the per mileage cost for a 138 kV line construction and self-supporting structures cost. Due to the congestion in the Richmond Area, collocation of the 138 kV single-circuit with the 69 kV single-circuit on the existing right of way is undesirable, as outlined by Mr. Spencer in Response

No. 3, therefore greenfield routing around the congested area of Richmond was the most viable alternative, which was explored as part of the routing study with Routes 3 and 4. Once out of the congested area of Richmond, EKPC assumed that additional Right of Way could be purchased as necessary adjacent to the KU Fawkes – Duncannon Lane 69 kV circuit, as needed. While a detailed feasibility study was not conducted, this allowed EKPC to develop a planning level estimate for a greenfield 138 kV single-circuit, if built when the need arises.

Based on this information, with all cost estimates provided still being valid, it would be financially prudent to utilize the immediate opportunity to couple the addition of the 138 kV circuit with the required rebuild of the 69 kV Fawkes –Duncannon Lane Transmission line. Executing this work at the time the need arises would result in EKPC spending at least 40% more to establish the 138 kV Fawkes- Duncannon Lane Transmission Line. In addition to the increase in cost associated with executing these projects separately, doing so would lead to increased impact on the community due to additional construction projects, additional outages while construction is performed, and additional unnecessary clutter of the landscape with additional poles.

EAST KENTUCKY POWER COOPERATIVE, INC.
CASE NO. 2022-00314
THIRD REQUEST FOR INFORMATION RESPONSE

STAFF'S REQUEST DATED 01/12/2023
REQUEST 8
RESPONSIBLE PARTY: Darrin Adams

Request 8. Provide an estimate of the anticipated future load to be serviced by the 138 kV upgrade. Also explain when EKPC anticipates experiencing load growth at a level to justify the need for a 138 kV line at the location identified in the Application.

Response 8. Based upon EKPC's current load forecast for the substations in the area, the expected coincident peak demand is approximately 107 MW. EKPC has estimated that with currently planned 69 kV improvements – including the rebuild of the Fawkes-Duncannon Lane 69 kV line using 795 MCM ACSR conductor – 110 MW of demand can be served on the circuit. Beyond that load level, the 138 kV line is needed to support load on the 69 kV system and/or to serve load directly from the 138 kV system via the New Industrial Substation. This 138 kV addition can support service of 179 MW of demand at the New Industrial Substation. Alternately, the 138 kV line can be connected to the existing 69 kV system via a 138-to-69 kV step-down transformer at the proposed Madison County substation to serve an additional 55 MW of load from the 69 kV system in the area – therefore, a total load of 165 MW from the 69 kV circuit.

Assuming no additional industrial load growth in the area beyond that already confirmed and included in EKPC's existing substation forecasts, the 138 kV line would be needed in 2044 -- although, as indicated in the response to Request No. 6 above, the actual load experienced on 12/23/2022 at the Crooksville and Hickory Plains substations is likely to drive a more immediate need once the substation forecasts for the area are revised to reflect this recent experience. Furthermore, a single modest industrial load addition of more than 3 MW in the area would create an immediate need for the 138 kV line addition. The Blue Grass Energy service territory in this area is highly conducive to industrial load additions, given the geographic location, the presence of Interstate 75, and the adjacent industrial parks and potential industrial sites along this major highway. Therefore, the expectation is that additional industrial load will materialize in the area well before 2044, creating the need for the 138 kV line sooner than forecasted. EKPC continues to see strong interest in the area from potential industrial customers, including several more inquiries for potential industrial projects on property adjacent to the Duncannon Lane/Interstate 75 interchange since EKPC submitted its Application for a Certification of Public Convenience and Necessity in this proceeding.