

**VERIFICATION**

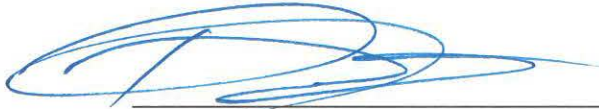
STATE OF OHIO                    )  
  )     SS:  
COUNTY OF HAMILTON        )

The undersigned, John K. Rogers, Manager Transmission Engineer, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests and that the answers contained therein are true and correct to the best of his knowledge, information and belief.



\_\_\_\_\_  
John K. Rogers Affiant

Subscribed and sworn to before me by John K. Rogers on this 21 day of August, 2024.



\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires:



**ROCCO O. D'ASCENZO**  
**ATTORNEY AT LAW**  
Notary Public, State of Ohio  
My Commission Has No Expiration  
Section 147.03 R.C.

VERIFICATION

STATE OF INDIANA            )  
  )  
COUNTY OF *Hendricks*        )        SS

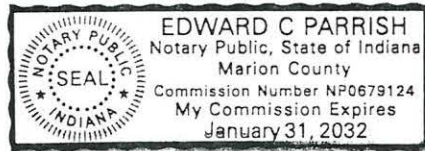
The undersigned, Betsy Ewoldt, Lead Transmission Siting Manager, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing testimony and that it is true and correct to the best of her knowledge, information and belief.

  
\_\_\_\_\_  
Betsy Ewoldt Affidavit

Subscribed and sworn to before me by Betsy Ewoldt on this 22 day of August, 2024.

  
\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires: 1-31-2032



VERIFICATION

STATE OF OHIO                    )  
  )  
COUNTY OF HAMILTON        )        SS:

The undersigned, Jeff Turner, Principal Engineer, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
Jeff Turner Affiant

Subscribed and sworn to before me by Jeff Turner on this 21<sup>st</sup> day of August,  
2024.

  
\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires:



**ROCCO O. D'ASCENZO**  
ATTORNEY AT LAW  
Notary Public, State of Ohio  
My Commission Has No Expiration  
Section 147.03 R.C.

**KyPSC Case No. 2024-00158**  
**TABLE OF CONTENTS**

<b><u>DATA REQUEST</u></b>	<b><u>WITNESS</u></b>	<b><u>TAB NO.</u></b>
STAFF-DR-01-001	Betsy Ewoldt .....	1
STAFF-DR-01-002	Betsy Ewoldt .....	2
STAFF-DR-01-003	Jeff Turner .....	3
STAFF-DR-01-004	Betsy Ewoldt .....	4
STAFF-DR-01-005	John Rogers .....	5
STAFF-DR-01-006	Betsy Ewoldt .....	6
STAFF-DR-01-007	Betsy Ewoldt .....	7
STAFF-DR-01-008	Betsy Ewoldt .....	8

**Duke Energy Kentucky**  
**Case No. 2024-00158**  
**STAFF's First Set Data Requests**  
**Date Received: August 8, 2024**

**STAFF-DR-01-001**

**REQUEST:**

Refer to the Direct Testimony of Yanthi W. Boutwell (Boutwell Direct Testimony), page 3, lines 12-21 and page 4, lines 1-16 and Exhibit 8, Figure A-4. Provide a cross reference between Ms. Boutwell's testimony and the line segments depicted on Figure A-4.

**RESPONSE:**

The lines referenced in DR-01-001 are only partially represented by Exhibit 8, Figure A-4. The figure represents the proposed new route that the routing study was conducted for, but does not include the rebuild, retired, or additional areas that are mentioned in Yanthi Boutwell's Direct Testimony. Those additional areas are shown in STAFF-DR-01-001 Attachment.

**PERSON RESPONSIBLE:**           Betsy Ewoldt







**Duke Energy Kentucky  
Case No. 2024-00158  
STAFF's First Set Data Requests  
Date Received: August 8, 2024**

**STAFF-DR-01-002**

**REQUEST:**

Refer to the Boutwell Direct Testimony, page 20, lines 15-21 and Exhibit 8, Figure A-4. Explain whether this portion of the testimony corresponds in part to the line segments 25, 26, and 27 in Figure A-4. If not, provide further explanation of which figure in the application corresponds to the referenced testimony.

**RESPONSE:**

Yes, Yanthi Boutwell's Direct Testimony, page 20, lines 15-21 does correspond in part to the line segments 25, 26, and 27 in Exhibit 8, Figure A-4.

**PERSON RESPONSIBLE:** Betsy Ewoldt

**Duke Energy Kentucky**  
**Case No. 2024-00158**  
**STAFF's First Set Data Requests**  
**Date Received: August 8, 2024**

**STAFF-DR-01-003**

**REQUEST:**

Refer to the Application, Exhibit 8, Figures A-2 and A-4 and Exhibit 16. It appears that line segments 25, 26, and 27 represent the current path of the existing 69 kV line paralleling North Bend Road. If the preferred route is approved, confirm that this portion of the line will remain energized and tie into the proposed Litton Substation.

**RESPONSE:**

No, that section of transmission line is being retired and this section of the pole will be removed. The remaining portion of the pole is for distribution circuits that will remain in place. The existing configuration of Feeder 15268 consists of a section built on steel towers between the Duke Energy Kentucky Hebron and Constance substations, and a pole line section which taps onto the tower line section and extends south to Limaburg Substation. The point of the entire project is to eliminate this existing 3-terminal configuration on Feeder 15268 and increase capacity. This is to be accomplished by building the new line section from Hebron Substation to a point on the 15268 pole line section south of the point where it currently connects to the 15268 tower line section and disconnecting the tap line from the tower line section. The portion of the existing pole line between the location where it connects to the tower line and where the new line from Hebron will connect to the existing pole line section will be superfluous and serve no transmission purpose. Therefore, leaving this section of line intact would not make sense electrically for the grid, and the



transmission conductors are to be removed. Litton Substation will be supplied from Feeder 15268 south of the point where the new line section joins the existing line route.

**PERSON RESPONSIBLE:** Jeff O. Turner

**Duke Energy Kentucky**  
**Case No. 2024-00158**  
**STAFF's First Set Data Requests**  
**Date Received: August 8, 2024**

**STAFF-DR-01-004**

**REQUEST:**

Refer to the Direct Testimony of Betsy Ewoldt (Ewoldt Direct Testimony), page 20, lines 14-23 and page 21, lines 1-4 and Exhibit 8, Figure A-4. The proposed East Kentucky Power Cooperative (EKPC) transmission line route is crossed by line segments 25 and 26 and by line segments 15 and 19. Explain why the additional potential cost that would be required by the line segments 25 and 26 would not also be required by line segments 15 and 19.

**RESPONSE:**

The elevation of the structures and the distribution underbuild push the structures at this location to a higher elevation that comes into play with the FAA. Also, additional structures would be required to be installed in highway right of way that are frowned upon by the FHWA and KYTC.

In addition to the Duke Kentucky Energy distribution under-build to account for at the crossing along the highway (segments 25 & 26), the EKPC structures there are ~30 ft taller than at the other crossing location (15 & 19).

**PERSON RESPONSIBLE:** Betsy Ewoldt

**Duke Energy Kentucky**  
**Case No. 2024-00158**  
**STAFF's First Set Data Requests**  
**Date Received: August 8, 2024**

**STAFF-DR-01-005**

**REQUEST:**

Refer to the Ewoldt Direct Testimony, Attachment BE-1, page 1. The cost study states that the new conductor will be 954ACSR45x7.

- a. Explain whether this conductor is of the type that Duke Kentucky, or its regulated affiliates, is installing currently on new reconductoring projects.
- b. Explain how 954ACSR45x7 conductor compares and contrasts with advanced conductors (conductors having composite cores).
- c. Explain whether advanced conductors are widely available and whether Duke Kentucky or its regulated affiliates have installed any within any part of Duke Kentucky's transmission system. If so, identify the advanced conductor by both make and model as well as location of the installation.

**RESPONSE:**

- a. Yes, 954ACSR45x7 is one of Duke Energy Kentucky's two standard wire types we are using on new transmission lines.
- b. 954ACSR 45x7 conductor uses a steel core which makes it more robust to bending compared to composite core and allows crews to construct using standard equipment and work practices. Composite core wire is sensitive to bending that often occurs during installation of the wire when using standard construction methods. Composite core wire of approximately the same diameter and cross section of ACSR have: lower weight, lower coefficient of linear expansion (less

sag) and lower modulus of elasticity. The cost of composite core conductor is typically 3 to 10 times the cost of an equivalent standard conductor. Due to the cost, we typically cannot justify the cost except in two instances. One instance is if we can avoid replacing existing structures but since all of the sections of line in this case are either new route or have to be rebuilt to 138kv construction we cannot avoid replacing structures by using composite core conductor. The second instance is if we have to have very large spans (2,000 plus feet, typically river crossings) and standard conductor would require much larger and more expensive structures that could be much shorter and cheaper (but still very costly for such a large span) if we used a composite core conductor. Duke Energy Kentucky's sister utilities in other states have experience with composite core conductors that have experienced breakage during installation and/or shortly after installation on a couple of projects. Duke Energy Corp is working with product manufacturers and construction contractors to address the installation concerns. The Company is also reviewing new composite core conductors in the market by being involved in the EPRI's on-going research in this area.

- c. Yes, it is widely available, but not utilized by Duke Energy Kentucky.

**PERSON RESPONSIBLE:** John K. Rogers



**REQUEST:**

Refer to the Ewoldt Direct Testimony, page 19, regarding “Class 5” cost estimates.

- a. Define Class 5 cost estimates and explain what makes the project alternative cost estimates Class 5 estimates.
- b. Explain the methodology used to create a Class 5 cost estimate.
- c. Explain how the accuracy range of a Class 5 cost estimate is determined.

**RESPONSE:**

- a. We classify Class 5 cost estimates per the *AACE International Recommended Practice 56R-08 Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Building and General Construction Industries*. Typical accuracy ranges for Class 5 estimates are -20% to -30% on the low side, and +30% to +50% on the high side, depending on extenuating circumstances.
- b. Regarding what makes the cost estimates Class 5 estimates and the methodology:
  - All structure and wire quantities were estimated by reviewing the line route alternatives at as desktop level in Google Earth (assuming typical span lengths, structure types, and structure heights);
  - All foundation sizes are assumed due to lack of geotechnical data;
  - All environmental data considered at this stage is from desktop-level studies and publicly available information;

- Access plans were only considered from a desktop level in Google Earth;
  - Land acquisition costs are based on known information about zoning/land use along the routes; and,
  - The end use is assessment of initial viability, evaluation of alternate schemes, and project location studies.
- c. Expected Accuracy Range of Class 5 cost estimates is determined by the AACE based on differences in the construction complexity of the project, appropriate reference information and other risk (after inclusion of an appropriate contingency determination). Ranges could exceed those shown if there are unusual risks.

**PERSON RESPONSIBLE:** Betsy Ewoldt

**Duke Energy Kentucky**  
**Case No. 2024-00158**  
**STAFF's First Set Data Requests**  
**Date Received: August 8, 2024**

**STAFF-DR-01-007**

**REQUEST:**

Refer to the Ewoldt Direct Testimony, page 17, regarding quantitative route scores and page 20, regarding issues with using line segments 25 and 26.

- a. State the purpose of the quantitative scores since they are not proxies for cost and do not account for the issues that make line segments 25 and 26 undesirable.
- b. Describe Duke Kentucky's policy and method regarding how it balances quantitative scores and estimated cost to select a preferred route, i.e., what quantitative score differential would override what estimated cost differential or vice versa.
- c. Explain how risk factors that could add to cost, such as the ones applicable to line segments 25 and 26, influence the selection policy and method used to choose a preferred route.

**RESPONSE:**

- a. While not all quantitative criteria have a direct relationship to cost, the quantitative analysis still measures which routes are least impactful to the environment, land use, and cultural resources within the Study Area in addition to measuring engineering constraints, most of which are proxies for cost. All analyses include both quantitative and qualitative assessments. There are certain aspects that are unique to a specific project and/or are difficult to quantitatively assess but still need

to be included in the selection process. It is the combination of quantitative scores, cost analysis, and qualitative analysis that results in the preferred route decision.

- b. Not just cost differential, but complexity of construction and how Duke Energy Kentucky operates and maintains the infrastructure in the future. Duke Energy Kentucky's experience with similar situations on projects in the area influenced the selection and method used to choose a preferred route, i.e., moving a gas station awning or underground storage tanks. There is no specific set quantitative score differential that would override a specific cost differential. The Siting Team considers what the actual quantitative impacts would be for each route and tries to balance that with the qualitative factors and cost. The same approach is taken with every route when balancing all of those factors.
- c. In all Duke Energy Kentucky routing and siting studies, both quantitative and qualitative factors are considered. Once the quantitative analysis is completed, all routes are qualitatively reviewed to ensure that all potential constraints were properly accounted for prior to selecting a preferred route. During this review, additional factors that may not have been realized initially or encompassed in the quantitative review are often found. This can be due to a variety of factors, including other planned developments that were not initially known, further discussions with subject matter experts to better understand engineering needs of particular segments, etc. Rather than attempt to quantify these often abstract issues that may be unique to a specific segment, these constraints are considered in a qualitative manner. Should risk factors that could add cost be identified during the qualitative review process, those factors are taken into account during the cost analysis. As shown in the cost analysis provided (Attachment BE-1), the qualitative



factors identified for segments 25 and 26 resulted in much higher cost estimates for routes that utilized those segments.

**PERSON RESPONSIBLE:** Betsy Ewoldt

**Duke Energy Kentucky**  
**Case No. 2024-00158**  
**STAFF's First Set Data Requests**  
**Date Received: August 8, 2024**

**STAFF-DR-01-008**

**REQUEST:**

Refer to the Ewoldt Direct Testimony, pages 20-21 regarding comparisons between Route L and Route R.

- a. Confirm that the only difference between Route L and Route R is that Route L uses segments 7 and 13, while Route R instead uses segments 6 and 9.
- b. State whether the comparison between Route L and Route R in Ewoldt Direct Testimony, page 21, lines 9-21, describe the differences between segments 7 and 13 contrasted with segments 6 and 9.
- c. Identify any other differences between segments 7 and 13 contrasted with segments 6 and 9.

**RESPONSE:**

- a. That is correct.
- b. That is correct. Those segments are the only differences between Route L and Route R; therefore, any comparisons between the two routes are specific to those segments.
- c. All differences between those segments have been accounted for and discussed in the CPCN application.

**PERSON RESPONSIBLE:**           Betsy Ewoldt