

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Power Company	)	
For A Certificate Of Public Convenience And	)	
Necessity To Construct 69kV Transmission Lines	)	Case No. 2026-00184
And Associated Transmission Grid Upgrades In Pike	)	
County, Kentucky (Breaks-Dorton Project)	)	

DIRECT TESTIMONY OF

OMAR K. EL-SAFTY

ON BEHALF OF KENTUCKY POWER COMPANY

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TESTIMONY INDEX

<u>SECTION</u>	<u>PAGE</u>
I. INTRODUCTION	1
II. BACKGROUND	1
III. PURPOSE OF TESTIMONY	1
IV. THE PROPOSED PROJECT	2
V. SUMMARY OF PROJECT COMPONENTS.....	7
VI. PROJECT ALTERNATIVE.....	7
VII. PERMITTING AND ENVIRONMENTAL STUDIES.....	8

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I. INTRODUCTION

1 **Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.**

2 A. My name is Omar K. El-Safty. I am employed by American Electric Power Service Corp.
3 (“AEPSC”) as a Transmission Station Engineer. My business address is 40 Franklin Road
4 SW, Roanoke, VA 24011. AEPSC is a subsidiary of American Electric Power Company,
5 Inc. (“AEP”) that provides support services to the operating subsidiaries of AEP, including
6 Kentucky Power Company (“Kentucky Power” or the “Company”).

II. BACKGROUND

7 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**
8 **BUSINESS EXPERIENCE.**

9 A. I received a Bachelor of Science Electrical Engineering degree from the University of
10 Michigan in 2021. I have been employed by AEPSC for four years as a Station Engineer.

11 **Q. WHAT ARE YOUR RESPONSIBILITIES AS RELATED TO THE PROPOSED**
12 **PROJECT?**

13 A. As a Station Engineer, my primary duties involve the oversight of the engineering,
14 logistical, and other technical requirements associated with the construction of the station
15 components of the Proposed Project.

III. PURPOSE OF TESTIMONY

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

17 A. I am testifying in support of Kentucky Power’s application for a certificate of public

1 convenience and necessity authorizing the Company to construct the Breaks-Dorton
2 Project (the “Proposed Project”) primarily located in Pike County, Kentucky. I will
3 provide information related to the upgrade, replacement, and installation work in
4 connection with facilities and equipment at Kentucky Power’s existing Breaks Substation,
5 Dorton Substation, Burdine Substation, Henry Clay Substation, Ratliff Substation, Elwood
6 Substation, and Draffin Substation.

IV. THE PROPOSED PROJECT

7 **Q. PLEASE DESCRIBE THE EXISTING SUBSTATIONS.**

8 A. Please see the following for a description of each of the existing substations.

9 Dorton Substation

10 The existing Dorton Substation was built in approximately 1987 and is located in Jenkins,
11 Kentucky. The Substation sits along Kentucky Route 805 and consists of a single
12 138/46kV yard with three 138kV transmission lines, one power transformer, and two 46kV
13 sub-transmission circuits.

14 Burdine Substation

15 The existing Burdine Substation was built in approximately 1999 and is located in Letcher
16 County, Kentucky. The Substation consists of a single 46/12kV yard with one 46kV sub-
17 transmission line, a power transformer, and two 12kV distribution circuits.

18 Henry Clay Substation

19 The existing Henry Clay Substation and the associated Henry Clay Switching Station,
20 originally built in 1987, are located in Pike County, Kentucky. The 46/34.5kV yard is in a
21 narrow, constrained space across from KY Route 195/Marrowbone Creek Road and is
22 approximately 0.8 miles southwest of Lookout, KY (see EXHIBIT 4). The Substation and

1 associated Switching Station consist of one three-way 46kV phase-over-phase switching
2 pole, one 46kV two-way phase-over-phase switching pole, one 46/34.5kV yard with three
3 46kV sub-transmission lines, two 34.5kV sub-transmission lines, a 46/34.5kV power
4 transformer, a 69kV capacitor bank (operated at 46kV), a 69kV capacitor bank circuit
5 switcher, and two 34.5kV circuit breakers.

6 Breaks Substation

7 The existing Breaks Substation was built in approximately 2016 and is located in Elkhorn
8 City, Kentucky. The Substation sits along Kentucky Route 80 and consists of a single
9 69/46/12kV yard with two 69kV sub-transmission lines, one 46kV sub-transmission line,
10 a 69/46kV power transformer, a 69/12kV power transformer, and two 12kV distribution
11 circuits.

12 Elwood Substation

13 The existing Elwood Substation was built in approximately 1929 and is located in Ellwood,
14 Kentucky. The Substation consists of a single 46/34.5kV yard with three 46kV sub-
15 transmission lines, two 34.5kV sub-transmission lines, a 46/34.5kV power transformer,
16 and a 69kV capacitor bank (operated at 46kV).

17 Draffin Substation

18 The existing Draffin Substation was built in approximately 1999 and is located in Pike
19 County, Kentucky. Draffin Substation is being replaced by the new Ratliff Substation. The
20 existing Draffin Substation consists of two 46kV sub-transmission lines, two 12kV
21 distribution lines, a 46/12kV power transformer, and a three-way 46kV Phase over Phase
22 switching pole.

23 **Q. HOW WILL THE PROPOSED PROJECT ADDRESS STATION ISSUES?**

1 A. The main issue to be resolved is converting the obsolete and outdated 46kV lines and
2 substations to modern 69kV equipment. The substations must be upgraded to facilitate the
3 new voltage on the transmission lines. For more information on the transmission line
4 upgrades, please see Company Witness McAllister's Direct Testimony. The Proposed
5 Project will address the Substation needs as follows:

6 Dorton Substation

7 Due to the poor condition of the existing 46kV lines at the Elwood Substation, Henry Clay
8 Substation, and Breaks Substation, a new 69kV line will be built to remove the existing
9 46kV equipment. As a result, the 46kV Breaks – Elwood transmission line will be retired
10 at Dorton Substation and the existing 46kV bus will be converted to 69kV by connecting
11 it to the secondary of the transformer. Breakers A, H, and D will be re-used as the new
12 69kV line breakers. This work will re-establish the transmission line to the Breaks
13 Substation (via the Henry Clay Substation) by converting the 46kV bus to 69kV, adding a
14 new 69kV 50KVA Substation Service Voltage Transformer ("SSVT") located on the 69kV
15 bus, and adding a 69kV SSVT which will be connected from the original Burdine
16 Substation line position. Additionally, the Company will replace surge arrestors and install
17 Coupling Capacitor Voltage Transformer (CCVTs).

18 Burdine Substation

19 As a result of the 69kV conversion of the Breaks-Dorton transmission line, the Burdine-
20 Dorton transmission line must also be converted to 69kV. This conversion is required to
21 avoid leaving the Burdine Substation as single sourced with no tie options. A new 69kV
22 power transformer will be installed to support this voltage level, as well as arresters, fusing,
23 and disconnect switches for the Dorton transmission line. The Company will also upgrade

1 the Substation's service for added reliability.

2 Henry Clay Substation

3 The Henry Clay Substation will be rebuilt with a new 69/34.5kV 30MVA transformer with
4 a high-side circuit switcher and four low-side circuit breakers. Two 69kV Supervisory
5 Control And Data Acquisition ("SCADA") controlled Motor Operated Air Breaks
6 ("MOABs") will be installed on the 69kV side. A new drop-in-control-module ("DICM")
7 will also be installed at the Substation. During a Geotechnical survey, it was discovered
8 that the soil at the Henry Clay Substation contained mining spoils from historical mining
9 in the Upper Elkhorn No 1 and 2 coal seams. As a result of these soil conditions, the
10 Company is updating the grounding at Henry Clay Substation and designing a custom
11 foundation for the new 69/34.5kV power transformer.

12 Breaks Substation

13 The 69/46kV Transformer #1 and circuit switcher XT1 will be removed, and Circuit
14 Breaker A will be reused to connect to the expanded 69kV bus and connect the rebuilt
15 69kV line. The Company will also replace surge arresters with 48kV Maximum
16 Continuous Operation Voltage, replace potential transformers with 69kV CCVTs reusing
17 existing structure, and the distribution fed station service will be replaced with a new 69kV
18 SSVT to improve reliability of the station AC system. A motor operator will be added to
19 the Transformer 2 High Side Switch to support relayed operation. This will also entail
20 upsizing the Substation service to a 69kV 100KVA unit for added system reliability.

21 Ratliff Substation

22 The Ratliff Substation will provide the same function as Draffin Substation; however, it
23 will be built in a new greenfield location. New 69kV/12kV 20MVA transformer with a

high side circuit switcher and three low side circuit breakers will be installed, along with one 69kV SCADA controlled MOAB on the 69kV bus towards the Henry Clay Substation, a new Parkline Building, and a 69kV 17MVAR capacitor bank with a circuit switcher.

Elwood Substation

As a result of the 69kV conversion, the existing line terminal at Elwood Substation for the Breaks-Dorton Line will need to be removed and retired. The work at Elwood Station will be to remove the line going to Breaks/Dorton via Henry Clay, removing CB-C and the overhead line conductor tapping to the 46kV Box Bay. CB-C's Foundation will be abandoned in place, and the control cables will be cut to below grade and abandoned.

Q. WHY IS IT NECESSARY TO EXPAND THE HENRY CLAY SUBSTATION?

A. There are currently size limitations at Henry Clay Substation that prevents adding the equipment necessary to facilitate the necessary upgrades. The expansion is necessary to fit the 69kV equipment. Originally, the Company intended to acquire land for a greenfield substation that would have retired the Henry Clay Substation. However, that option was dismissed due to land acquisition limitations and the adjacent housing in the planned area. For more information regarding project alternatives, see Company Witness Koehler's direct testimony.

Q. WILL THE PROJECT RESULT IN WASTEFUL DUPLICATION FROM AN ENGINEERING PERSPECTIVE?

A. No. For the reasons stated above, the Proposed Project will not result in wasteful duplication from an engineering perspective.

V. SUMMARY OF PROJECT COMPONENTS

1 **Q. HAS THE COMPANY PREPARED A DOCUMENT TO SUMMARIZE THE**
2 **VARIOUS COMPONENTS OF THE BREAKS DORTON PROJECT?**

3 A. Yes. As part of its Application, the Company prepared a table to succinctly summarize the
4 various Proposed Project components (see **EXHIBIT 6** to the Company's Application).

VI. PROJECT ALTERNATIVE

5 **Q. DID THE COMPANY CONSIDER AN ALTERNATIVE SOLUTION TO THE**
6 **PROPOSED PROJECT?**

7 A. Yes. The Company considered and rejected a less electrically robust project alternative
8 which would include maintaining the system at 46kV, rather than upgrading to modern
9 69kV standards. This alternative is inferior because 46kV is a voltage at which the
10 Company no longer sources due to vendors no longer producing 46kV equipment. This
11 makes finding new equipment and maintaining that equipment significantly more costly.
12 For instance, if there was a system outage, finding a mobile unit to feed the 46kV would
13 be more difficult to source. For further discussion on the project alternatives, please see
14 Company Witness Koehler's direct testimony.

15 **Q. PLEASE DESCRIBE THE REJECTED PROJECT ALTERNATIVE FROM A**
16 **STATION ENGINEERING PERSPECTIVE.**

17 A. Generally, the alternative would be to keep the transmission lines and substations at their
18 existing 46kV rating with mostly like-for-like replacement. This alternative would utilize
19 Elwood Substation as a fly-through station, largely disconnecting it from the system and
20 connecting Pike 29 Substation to Henry Clay Switching Station. Due to the Company no
21 longer sourcing 46kV equipment, 69kV equipment would be utilized for the alternative

1 solution even though it would still be operated at 46kV.

2 **Q. WHY IS THE PROJECT ALTERNATIVE INFERIOR TO THE PROPOSED**
3 **PROJECT?**

4 A. The project alternative was rejected for several reasons. First, keeping the system running
5 on 46kV equipment is outdated making it difficult to maintain and source replacement
6 equipment. Second, maintaining 46kV-rated equipment would be a short-term solution
7 and eventually the entire system would need to be replaced with 69kV equipment. This
8 would make the alternative solution redundant in the long-term and would be more costly
9 to convert the 69kV equipment in the future. Maintaining 46kV equipment would become
10 more difficult to project timelines, in regards to outage timing, and more expensive to
11 source materials. Failed substations with multiple feeds would lead to wider outages and
12 require more resources to address and keep customers energized. Ultimately, it would lead
13 to a less reliable system. For more information on why the alternative solution was rejected
14 please see the direct testimonies of Company Witnesses Koehler and McAllister.

VII. PERMITTING AND ENVIRONMENTAL STUDIES

15 **Q. WHAT ENVIRONMENTAL PERMITTING OR STUDIES ARE ANTICIPATED**
16 **FOR THIS PROPOSED PROJECT, FROM A STATION PERSPECTIVE?**

17 A. The Company completed bat studies – mist netting, with no captures and harp netting –
18 with no captures; conducted both archeological and architectural studies – with no
19 significant findings; and a Waters of the United States evaluation was also conducted for
20 wetlands and streams. These were completed for the Ratliff Substation and Henry Clay
21 Substation. The Company is awaiting concurrence from their respective agencies.

1 The Ratliff Substation and related feeding transmission line component will require
2 a permit from the United States Army Corps of Engineers (“Corps”) under Section 10 of
3 the Rivers and Harbors Act. The Company will also seek coverage from the Corps under
4 Nationwide Permit 57. In addition, the Company will seek coverage from the Kentucky
5 Division of Water under the General Permit for Stormwater Discharges Associated with
6 Construction Activities (KPDES Permit KYR100000) and obtain a floodplain permit for
7 the Ratliff station crossing.

8 **Q. DOES THE COMPANY ANTICIPATE THAT THE PROJECT WILL EFFECT**
9 **ANY FEDERALLY- OR STATE-PROTECTED SPECIES?**

10 A. No. There is no anticipated effect on any protected species.

11 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

12 A. Yes

VERIFICATION

The undersigned, Omar K. El-Safty, being duly sworn, deposes and says he is a Transmission Station Engineer for American Electric Power Service Corporation, that he has personal knowledge of the matters set forth in the foregoing testimony and the information contained therein is true and correct to the best of his information, knowledge, and belief after reasonable inquiry.

Signed by:

Omar K. El-Safty

Omar K. El-Safty

Commonwealth of Kentucky)
County of Boyd)

Case No. 2026-00184

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Omar K. El-Safty, on 8/26/2026 | 11:10 AM EDT.

Signed by:

Michelle Caldwell

Notary Public

MARILYN MICHELLE CALDWELL
ONLINE NOTARY PUBLIC
COMMONWEALTH OF KENTUCKY
Commission #KYNP71841
My Commission Expires 5/5/2027

My Commission Expires 05/05/2027

Notary ID Number KYNP71841