

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF DUKE ENERGY KENTUCKY,)
INC. FOR A CERTIFICATE OF PUBLIC) CASE NO.
CONVENIENCE AND NECESSITY AUTHORIZING) 2026-00086
THE PHASE FIVE REPLACEMENT OF THE AM07)
PIPELINE)

DIRECT TESTIMONY OF

DAVID A. KLEIN

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

March 31, 2026

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Attachment:

CONFIDENTIAL DAK-1 – Detailed Cost Breakdown of Project

I. INTRODUCTION AND PURPOSE

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

2 A. My name is David A. Klein and my business address is 139 E 4th Street, Cincinnati,
3 OH 45202.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am employed by Duke Energy Business Services LLC (DEBS) as Senior Project
6 Manager for Duke Energy Kentucky, Inc. (Duke Energy Kentucky or the
7 Company) and affiliated natural gas utilities. DEBS provides various administrative
8 and other services to Duke Energy Kentucky and other affiliated companies of
9 Duke Energy Corporation (Duke Energy).

10 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND
11 AND PROFESSIONAL EXPERIENCE.**

12 A. I earned a Bachelor of Science in Civil and Environmental Engineering from the
13 University of Cincinnati in 2004. From 2004 to 2016 I was employed as a Project
14 Engineer/Project Manager/Senior Project Manager for a construction company in
15 Cincinnati, Ohio, with a focus of new building construction for clients in industries
16 such as secondary education, healthcare, and manufacturing. I began my career
17 with Duke Energy in 2016, with the Sales group as a Gas Marketing Specialist. My
18 responsibilities included completing customer-driven new gas services and gas
19 main extensions, sizing customers' natural gas service, piping, meters, and
20 regulators.

21 In 2018, I assumed the position of Project Manager I, where my
22 responsibilities included leading projects of copper gas services replacements, curb

1 box maintenance, and inside piping inspections. In 2020, I obtained my Project
2 Management Professional Certification.

3 In 2020, I assumed the position of Project Manager II in the Natural Gas
4 Major Projects group. My primary responsibilities included management of large
5 infrastructure projects on our high-pressure distribution and transmission pipeline
6 system. I oversaw the entire scope of the project, as well as schedule and budget.
7 In 2024, I began my current role as Senior Project Manager.

8 **Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AS SENIOR**
9 **PROJECT MANAGER.**

10 A. I am responsible for managing the execution of major projects within the natural
11 gas business unit in Kentucky and Ohio. My role includes leading a project team of
12 subject matter experts within the Company and facilitating coordination of project
13 activities while providing oversight of the scope, schedule, and budget. I ensure the
14 projects comply with the Company's requirements for project management best
15 practices and provide reporting to senior management.

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

18 A. Yes.

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

21 A. The purpose of my testimony is to discuss and support Duke Energy Kentucky's
22 request for approval of a certificate of public convenience and necessity (CPCN) to
23 commence construction of the fifth phase of its AM07 natural gas pipeline

1 replacement project (Phase Five). I describe how Duke Energy Kentucky will
2 implement and execute the AM07 Replacement, including, but not limited to,
3 supporting the construction maps, plans, and specifications. I discuss the cost of the
4 Phase Five construction and how that compares to the alternatives, thereby
5 demonstrating that the AM07 continues to be the least cost and most reasonable
6 solution to meet customer needs and provide safe and reliable natural gas service.
7 I also support the estimated costs of the construction and the ongoing cost of
8 operation for the pipeline project.

II. OVERVIEW OF THE PROJECT

9 Q. PLEASE BRIEFLY DESCRIBE THE AM07 PIPELINE.

10 A. AM07 is the primary artery that transports natural gas from upstream suppliers,
11 extending sixteen miles to the Ohio River, and supports natural gas delivery
12 throughout the Duke Energy Kentucky natural gas delivery system via connected
13 pipelines. The AM07 pipeline was constructed in the 1950's, in accordance with
14 existing regulations at the time. Today, AM07 is of a vintage where the materials
15 are no longer industry standard. Duke Energy Kentucky has needed to replace
16 certain sections of its AM07 pipeline, totaling approximately 13.7 miles, and
17 associated regulator stations through its Northern Kentucky territory over the next
18 few years to comply with Pipeline and Hazardous Materials Safety Administration
19 (PHMSA) regulations. Construction activities for Phases One, Two, and Three of
20 this replacement have been completed. Construction activities for Phase Four have
21 commenced. In this Application, the Company seeks approval for the fifth and final
22 phase of the replacement, Phase Five.

1 **Q. PLEASE DESCRIBE THE COMPANY’S PROPOSAL FOR THE PHASE**
2 **FIVE AM07 REPLACEMENT.**

3 A. Duke Energy Kentucky witness Mr. Huey summarizes the total AM07
4 Replacement project in his direct testimony. For Phase Five of the AM07
5 Replacement that is the subject of this Application, Duke Energy Kentucky is
6 proposing to abandon 1.42 miles¹ of AM07 east of the existing AM07 section that
7 was replaced in Phase Two. The new route, which is approximately 2.02 miles of
8 this 24-inch section will be made with new, industry standard material that will
9 comply with PHMSA regulations as detailed by Mr. Huey.

10 **Q. WILL THE NEW PIPELINE BE PHYSICALLY LOCATED IN PUBLIC**
11 **RIGHTS-OF-WAY OR IN PRIVATE EASEMENTS?**

12 A. Duke Energy Kentucky anticipates approximately 91.1 percent of Phase Five will
13 be located in private easements that will be obtained with the approval of this
14 Application. Where private easements are not feasible, the Company will locate the
15 Project within existing public rights-of-way.

16 **Q. WILL THE COMPANY NEED TO OBTAIN ANY PERMITS FOR**
17 **CONSTRUCTION OF THE PROJECT?**

18 A. Yes. Duke Energy Kentucky will have to obtain the following permits/approvals to
19 complete the Project:

20 a) Kentucky Transportation Cabinet permit to cross state and federal roads
21 and to install the pipeline inside road right-of-way, and construction
22 access;

¹ In addition to abandonment of 1.42 miles, the project will also downrate 0.47 miles of existing AM07 (transmission) to high pressure distribution.

- 1 b) Energy and Environmental Protection Cabinet - Division of Water,
2 Application for a Permit to Construct Along or Across a Stream and/or
3 Water Quality Certification;
- 4 c) Kenton County Local Floodplain permit
- 5 d) US Army Corp Section 404/General Nationwide Permit 12 (including
6 Section 7 Threatened and Endangered Species Act of 1973, Section 106
7 National Historic Preservation Act of 1966, and Section 10 – River and
8 Harbors Act of 1899 clearances);
- 9 e) City of Edgewood Excavation Permit
- 10 f) City of Fort Wright Excavation and Construction Permit
- 11 g) City of Crestview Hills Encroachment Permit
- 12 h) CSX RR Permit
- 13 i) Coordination with the Kentucky Heritage Council (KHC) regarding
14 cultural resources, including cultural resource investigations/digs and
15 potential viewshed impacts to architectural resources along the project
16 route;
- 17 j) Coordination with the U.S. Fish and Wildlife Service (USFWS) and
18 Kentucky Department of Fish and Wildlife Resources (KDFWR) with
19 respect to federal and state endangered, threatened, and otherwise
20 protected species;
- 21 k) Sanitation District No. 1 Land Disturbing Permit; and
- 22 l) KDOW Construction Storm Water Permit KYR10.
- 23 m) Hydrostatic Test Water Discharge

1 Duke Energy Kentucky has already applied for permits (a), (e), (g), (h), (i),
2 and (j). Please see Exhibit 3 to the Application. Permits (b), (c), and (d) will be
3 applied for in the coming months while permits (f), (k), (l), and (m) will be applied
4 for closer to construction as those permits are required immediately before actual
5 construction begins. There has been no indication that the permit applications will
6 not be approved. The Company will supplement the application as the remaining
7 permit approvals are received.

8 **Q. HAS THE COMPANY DEVELOPED CONSTRUCTION**
9 **SPECIFICATIONS TO BE USED IN THE PROJECT?**

10 A. Yes. Confidential Exhibit 4 to the Application contains, among other things, maps
11 depicting the location of the proposed Project along the Company's natural gas
12 delivery system, engineering plans, drawings, and the construction specifications
13 for the Project. Confidential Exhibit 4 shows the connection of the new route to the
14 existing delivery system, the design of the Project and proposed route for the new
15 24-inch steel pipeline. Due to the sensitive nature of gas utility infrastructure,
16 Confidential Exhibit 4 is being provided under petition for confidential treatment.

17 **Q. IS THE DESIGN OF THE PROJECT SUBSTANTIALLY COMPLETE?**

18 A. Yes. Duke Energy Kentucky has submitted stamped engineering drawings for the
19 Project depicting the design and route for the Project in Confidential Exhibit 4. The
20 route is based upon best available information at this time, acknowledging that
21 Duke Energy Kentucky must still complete negotiations and acquisitions for private
22 easements where applicable along the route. The Company anticipates that there
23 may be minor deviations in the estimated length and location of the pipe due to not

1 wanting to interfere with trees, fences, power poles, sewers, water mains, municipal
2 right of way issues, and in accordance with any restrictions in acquired easements
3 that are yet to be determined.

4 **Q. PLEASE DESCRIBE HOW THE PROJECT WILL BE CONSTRUCTED.**

5 A. The new pipeline will be constructed in accordance with Duke Energy Kentucky's
6 work specifications, standards, and procedures. Confidential Exhibit 4 contains
7 these work specifications. The Company and contractor crews are qualified to
8 perform the work in accordance with design specifications prior to installing any
9 facilities. Duke Energy Kentucky personnel will provide oversight to any
10 contractor crews installing facilities on the Company's behalf.

11 **Q. PLEASE BRIEFLY DESCRIBE HOW THE COMPANY WILL EXECUTE
12 AND COMPLETE CONSTRUCTION UNDER THE PROJECT.**

13 A. Duke Energy Kentucky will use both Company and contractor crews where
14 appropriate to complete this project. If contractor crews are deployed, awarding of
15 contracts will be accomplished through a bidding process similar to that the
16 Company has successfully employed in prior construction projects, such as
17 previous phases of the AM07 and the UL60 Pipeline. Duke Energy Kentucky will
18 use industry standard equipment, materials, and designs to construct the pipeline in
19 accordance with the work specifications.

1 **Q. WHAT IS THE REASON FOR REQUESTING EXPEDITED TREATMENT**
2 **OF THIS APPLICATION AND WHAT IS THE ESTIMATED TIMELINE**
3 **FOR CONSTRUCTION OF THE PROJECT?**

4 A. The estimated timeline is dependent upon the approval of the project. Duke Energy
5 Kentucky has requested expedited treatment in order to be able to accommodate a
6 municipal road project on Horsebranch Road of the City of Crestview Hills. In
7 order to be able to accommodate this municipal project, Duke Energy Kentucky
8 will need approval prior to August 1, 2026, so that it can begin construction on
9 approximately two hundred (200) feet of Phase V pipe and complete such
10 construction by September 30, 2026, to avoid any conflict with the City of
11 Crestview Hills road project. This section of the project can be viewed on the map
12 on page 7 of Confidential Exhibit 4 to the Application.

13 Duke Energy Kentucky has developed the below timeline with key
14 milestones to ensure the Phase Five of the AM07 Replacement is completed in time
15 to comply with PHMSA requirements as explained by Mr. Huey. This schedule is
16 based upon the Company receiving CPCN approval by third quarter of 2026, to
17 allow the accommodation for the City of Crestview Hills project, sufficient time to
18 make necessary procurements, easement acquisitions and commence construction
19 in the spring of 2027, except for the 200 feet discussed earlier, which would be
20 completed between August 1, 2026 and September 30, 2026. The entire project is
21 projected to be in service by October 2027.

Estimated Project Schedule (Apart from the 200 Feet To Be Completed Earlier)

February 2026	Design substantially complete
	Design complete
August 2026	Bid for construction
January 2027	Award construction contract
Q3 2026	Anticipated CPCN Approval
March 2027	Construction begins
October 2027	Project in service*

* Assumes no delays in outstanding approvals/permitting.

1 **Q. WHAT IS THE ESTIMATED COST OF CONSTRUCTION FOR PHASE**
2 **FIVE?**

3 A. The current estimated project cost is approximately \$34.89 million dollars as
4 detailed in the chart below. Please refer to Confidential Attachment DAK-1 which
5 shows a detailed cost breakdown of the various areas of cost associated with the
6 project. A summary of the costs is as follows:

Task	Total in millions
Design	\$2.89
Land	\$3.80
Construction	\$24.47
Materials	\$3.73

7 The current estimated costs of the entire AM07 replacement are
8 approximately \$230.7 million. This estimate includes inflationary costs that the
9 Company has experienced during Phase One due primarily to higher than initially
10 estimated easement and right-of way acquisition costs, increases in labor and
11 materials expenses for contractors, and inflation due to supply chain constraints.²

² See *In the Matter of the Electronic Application of Duke Energy Kentucky, Inc. for a Certificate of Public Convenience and Necessity Authorizing the Phase One Replacement of the AM07 Pipeline*, Case No. 2022-00084, Post Case Correspondence Letter (Jun. 14, 2023), explaining increased costs for Phase One.

1 **Q. HOW WAS THAT ESTIMATE DERIVED?**

2 A. This Class 4 (-30%/+50%) estimate is based on the pricing Duke Energy Kentucky
3 has already received for design services and anticipated expenses for easement
4 acquisition and construction (labor and materials). Duke Energy Kentucky
5 compared these figures to other recently completed projects and it is confident in
6 the estimate being provided.

7 **Q. WHAT IS THE ESTIMATED ONGOING COST OF OPERATION OF THE**
8 **NEW PIPELINE ONCE CONSTRUCTED?**

9 A. The Company anticipates that there will be minimal (<\$10,000 per year)
10 incremental operational and maintenance expense (O&M) associated with the
11 ongoing operation of the new pipeline except for required periodic inspections
12 and/or testing. The Company does not anticipate that operations & maintenance
13 (O&M) expense will be different to maintain the new pipeline than it is to maintain
14 the old pipeline. The Company does not track O&M by project. The Company only
15 tracks O&M by FERC account number, and these costs are recorded to FERC
16 Account 863.

III. COST EFFECTIVENESS OF PIPELINE REPLACEMENT
VERSUS RETROFIT

17 **Q. PLEASE EXPLAIN WHY THE AM07 REPLACEMENT IS BETTER FOR**
18 **CUSTOMERS THAN A RETROFIT?**

19 A. The existing AM07 pipeline is of a vintage that predates current PHMSA
20 requirements that require a baseline pressure test for all transmission pipelines. As
21 previously explained, the records of initial pressure tests simply do not currently
22 exist. Therefore, an initial pressure test is required regardless of retrofit or

1 replacement. Because the material of the AM07, A.O. Smith manufacturer, is now
2 a known integrity risk, performing a pressure test presents significant risks on the
3 existing pipeline because of unknown issues that may be discovered due to failures,
4 which may prompt replacements. Also, the design of the existing AM07 does not
5 accommodate the use of an in-line inspection (ILI) tool. Therefore, the existing
6 AM07 would either need to be pressure tested to establish a baseline with ongoing
7 pressure test confirmations or retrofit to accommodate an ILI tool going forward.

8 **Q. PLEASE FURTHER DISCUSS THE PRESSURE TESTING**
9 **ALTERNATIVE TO REPLACEMENT.**

10 A. The estimated cost of hydro pressure testing of this existing section of pipeline
11 (excluding retrofit), is approximately \$11 million. This does not include any costs
12 to repair deficiencies identified while performing the hydrotest. Additional costs to
13 repair discovered deficiencies would be incremental and would take the line out of
14 service for additional time and at an unknown and incalculable incremental cost,
15 especially considering the risks to the system and customer reliability related to
16 continuing natural gas service if the repairs could not be accommodated to put the
17 line back in service in time for winter heating seasons. Additionally, a hydrotest of
18 AM07 Phase Five pipeline would be required on a 7-year cycle at an approximate
19 cost of \$11 million (not including inflation) each time the hydrotest is performed
20 as opposed to the \$34.89 million upfront cost to replace the line and perform an ILI
21 every 7 years.

1 **Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN PRESSURE TESTING**
2 **AND ILI.**

3 A. The purposes of pressure testing and ILI inspections are different. Pressure testing
4 establishes and confirms the strength of the pipeline at the time of initial installation
5 or at the time of a transmission integrity management program (TIMP) assessment
6 (i.e., hypothetical retrofit and pressure test), which is now required per PHMSA
7 CFR 192. The ILI is an ongoing integrity management inspection tool that can
8 easily be used for the duration of the pipeline's life going forward. It is used to
9 check for pipe wall loss due to dents, gouges, or corrosion related to third party
10 damage that may develop during the lifetime operation of the pipeline. Unlike
11 pressure testing, an ILI inspection can be performed out of cycle and without taking
12 the pipeline out of service. Accordingly, both ILI and Pressure Testing are
13 necessary going forward to meet PHMSA requirements for new pipelines. And ILI
14 and Pressure Testing would be required for a hypothetical retrofit where existing
15 records do not exist to confirm pressure. With a retrofit strategy, there are additional
16 risks in which a failure of a pressure test could make a retrofit of the existing
17 pipeline impractical, if not impossible, as a full replacement at additional and
18 incremental costs could then be required.

19 **Q. PLEASE FURTHER DISCUSS THE ILI ALTERNATIVE TO**
20 **REPLACEMENT.**

21 A. Even with an ILI, an initial pressure test must occur at an initial cost of
22 approximately \$11 million, exclusive of any unknown and unpredictable
23 deficiencies that are identified and need corrected. The Company has previously

1 estimated the costs of retrofitting existing pipeline to accommodate an ILI tool as
2 approximately \$8.75 million. This cost is separate from a hydrotest cost that would
3 still need to be done. Then, ongoing, the inspection must occur every seven years
4 to comply with CFR 192 Subpart O – Gas Transmission Pipeline Integrity
5 Management requirements. A typical ILI on a seven-year basis would cost
6 approximately \$400,000-\$500,000. This does not include the cost for any retrofit
7 work that is found as a result of the ILI work itself.

8 **Q. WILL ILI AND PRESSURE TESTING BE REQUIRED FOR THE AM07**
9 **REPLACEMENT?**

10 A. Per CFR 192 PHMSA regulations, pressure testing must occur on any pipe that is
11 to be placed in service. Pressure testing for new construction ensures a leak free
12 system and validates the mechanical strength of all components in that pipeline.
13 Additionally, pressure testing is one of four options to assess TIMP risk. Those four
14 include, pressure testing, in-line inspection, direct assessment, or replacement.

15 Part of the Phase Five segment of pipe required a TIMP pressure test to
16 mitigate manufacturing threats associated with insufficient pressure test records at
17 time of installation in the 1950s. While a valid pressure test provides the level of
18 requirement needed to satisfy the pipelines ability to handle the operating pressure,
19 it does not provide the level of detail regarding physical integrity of the pipeline
20 that an in-line inspection otherwise would. As is the case, both ILI retrofit work
21 and pressure testing would need to be employed to maximize the potential for a
22 successful pressure test and to minimize the risk of pipe failure during the pressure
23 testing activity.

1 **Q. IF ILI AND PRESSURE TESTING ARE REQUIRED FOR BOTH A**
2 **RETROFIT AND A REPLACEMENT, PLEASE EXPLAIN WHY A**
3 **REPLACEMENT STRATEGY IS THE BEST SOLUTION AND LEAST**
4 **COST SOLUTION FOR CUSTOMERS.**

5 A. Liquid natural gas (LNG) would be needed for all phases of a hypothetical AM07
6 retrofit and pressure test because the Company would need to take segments out of
7 service for an extended period of time (e.g., weeks) to maintain customer service.
8 Once the hypothetical retrofit would be completed, LNG would not be needed for
9 ongoing ILI inspections (absent an integrity issue being discovered) because ILI
10 inspections can be performed while the pipeline is in operation. In instances where
11 pressure testing is selected for TIMP risk mitigation purposes, consideration for a
12 customer's natural gas usage must be implemented while facilities are out of service
13 to facilitate pressure testing. Temporary LNG would be required.

14 The cost associated with each phase of a hypothetical retrofit and pressure
15 test for each phase and corresponding activities is broken down as follows:

16 • Phase I (4.5 miles): ILI Retrofit work - \$15,750,000 (\$3.5 million/mile)

17 Temp LNG and Pressure Testing: \$14,750,000

18 Permanent receiver barrel: \$3,375,000

19 • Phase II (3.25 miles): ILI Retrofit work - \$11,375,000 (\$3.5
20 million/mile)

21 Temp LNG and Pressure testing: \$12,350,000

22 • Phase III (4.3 miles): ILI Retrofit work - \$15,050,000 (\$3.5
23 million/mile)

1 Temp LNG and Pressure testing: \$14,750,000

- 2 • Phase IV (2.5 miles): ILI Retrofit work - \$8,750,000 (\$3.5 million/mile)

3 Temp LNG and Pressure testing: \$11,000,000

4 Permanent receiver barrel: \$3,375,000

- 5 • Phase V (1.9 miles): ILI Retrofit work - \$6,650,000 (\$3.5 million/mile)

6 Temp LNG and Pressure testing: \$10,000,000

7 For these reasons, the Company, with Commission authorization, has
8 endeavored to replace (not retrofit) the existing AM07 in segments.

IV. FILING REQUIREMENTS SPONSORED BY WITNESS

9 **Q. PLEASE DESCRIBE THE FILING REQUIREMENTS CONTAINED IN**
10 **THE COMPANY’S APPLICATION FOR A CERTIFICATE OF PUBLIC**
11 **CONVENIENCE AND NECESSITY THAT YOU ARE SPONSORING AND**
12 **SUPPORTING.**

13 A. I sponsor data that is responsive to the filing requirements in accordance with 807
14 KAR 5:001:

- 15 • Exhibits 3(a)(1), 3(a)(2), 3(e), 3(g), 3(h), 3(i), 3(j), Section 15(2)(b): permits
16 required for construction;
- 17 • Confidential Exhibit 4; Section 15(2)(c), Section 15(2)(d)(1)-(2): Full
18 description of the proposed location, route, or routes, including a
19 description of the manner in which the facilities will be constructed,
20 drawings, and map of the construction area, and work specifications;

- 1 • Confidential Attachment DAK-1, Section 15(2)(e): The manner in detail in
2 which the applicant proposes to finance the proposed construction or
3 extension; and
- 4 • Section 15(2)(f): An estimated annual cost of operation after the proposed
5 facilities are placed into service.

V. CONCLUSION

6 **Q. WERE EXHIBITS 3 AND 4 TO THE COMPANY’S APPLICATION AND**
7 **CONFIDENTIAL ATTACHMENT DAK-1 PREPARED BY YOU OR**
8 **UNDER YOUR DIRECTION AND CONTROL?**

9 A. Yes.

10 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

11 A. Yes.

CONFIDENTIAL PROPRIETARY TRADE SECRET

CONFIDENTIAL ATTACHMENT DAK-1

FILED UNDER SEAL