COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Power Company	)	
For 1) A Certificate Of Public Convenience And	)	
Necessity To Construct A Mechanical Draft Cooling	)	
Tower At The Mitchell Plant 2) Approval Of Certain	)	Case No. 2026-00001
Regulatory And Accounting Treatments, And 3) All	)	
Other Required Approvals And Relief	)	

DIRECT TESTIMONY OF

DANIEL W. PIZZINO

ON BEHALF OF KENTUCKY POWER COMPANY

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I. INTRODUCTION

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

A. My name is Daniel W. Pizzino. My business address is 1 Riverside Plaza, Columbus, Ohio 43215. I am employed by American Electric Power Service Corporation ("AEPSC") as Director of Generation Engineering. AEPSC is a wholly owned subsidiary of American Electric Power Company Inc. ("AEP"), the parent Company of Kentucky Power Company ("Kentucky Power" or the "Company").

II. BACKGROUND

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I hold a Bachelor of Science in Civil Engineering from The Ohio State University. I have been employed with American Electric Power Company, Inc. ("AEP") for over 14 years, where I have held various positions of increasing responsibility within AEP Generation Engineering Services. I have worked as a Geotechnical Engineer, Renewables Engineering Manager, New Project Development Manager and Director of New Generation and Project Engineering. In December of 2024, I was named Director – Civil Engineering. Prior to my time at AEP, I worked for a civil engineering consultant for almost eight years.

Q. WHAT ARE YOUR RESPONSIBILITIES AS DIRECTOR OF GENERATION ENGINEERING?

A. I lead a multidisciplinary civil engineering team which includes Geotechnical Engineers, Structural Engineers and Hydroelectric Dam Safety Engineers providing support for AEP's fossil-fueled and hydroelectric generating assets and for new generation projects across AEP's footprint. My responsibilities include delivering technical consulting on power plant structures, foundations, dams, and hydroelectric dam safety, ensuring code compliance and balanced technical recommendations, providing design and construction support, and coordinating with plant operations, project teams, and other stakeholders to provide safe, reliable, and compliant engineering solutions.

III. PURPOSE OF TESTIMONY

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

A. The purpose of my testimony is to describe the need to construct a new cooling tower for Unit 2 at the Mitchell Plant. I will also discuss the issues with the existing Unit 2 Cooling Tower and the repairs made up to this point. I will discuss the options for repair and replacement of the cooling tower.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. I am sponsoring the following exhibits:

- Confidential Exhibit DWP-1 is a site plan showing where the new mechanical draft cooling tower will be located on the Mitchell Plant site.
- Exhibit DWP-2 shows the application of the cementation material and additional pictures of the area under repair.

IV. MITCHELL UNIT 2 GENERATING FACILITY

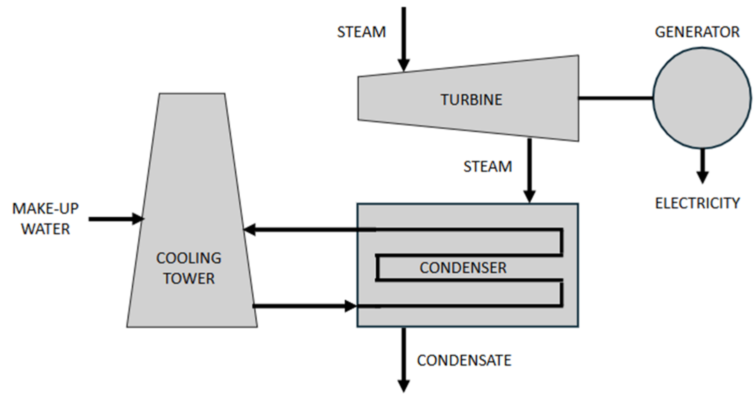
Q. PLEASE DESCRIBE MITCHELL UNIT 2 POWER GENERATING FACILITY.

A. The Mitchell Plant is located approximately 12 miles south of Moundsville, West Virginia on the Ohio River. Kentucky Power owns an undivided 50% interest in the Mitchell Plant; the other 50% interest is owned by Wheeling Power. The Mitchell Plant is operated by Wheeling Power. Mitchell Unit 2 is a super-critical pulverized coal-fired unit and was placed in service in 1971 with a generating capacity of 790 MW.

Q. THIS CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FILING IS TO REPLACE THE MITCHELL UNIT 2 COOLING TOWER. WHAT IS THE PURPOSE OF THE COOLING TOWER?

A. Mitchell Unit 2 is a super-critical coal-fired power generating facility which operates with a closed loop water system. In a closed loop water system, water converted to steam in the steam generator and used to turn the turbines is cooled back to water to repeat the cycle. This transfer from steam to water is accomplished using the condenser and cooling tower. Steam exhausted from the turbines enters the condenser where it makes contact with bundles of tubes with cooling water flowing through the tubes. Mitchell Unit 2 pumps cooling water, water drawn from the Ohio River, through the condenser where it absorbs heat from the steam. This cooling water is then transported into the cooling tower where the cooling water mixes with air transferring heat into the atmosphere. This process recovers cooled water, reducing the need to constantly resupply water to the system from the Ohio River and eliminates the release of hot water into natural bodies of water. A basic layout of a closed loop water system is shown in Figure DWP-1.

Figure DWP-1



Q. IS A COOLING TOWER AN ESSENTIAL PART OF THE MITCHELL UNIT 2 GENERATING SYSTEM?

A. Yes. The cooling tower is required to operate the plant. As long as Mitchell 2 utilizes the steam generator as the source of steam for the turbines, a cooling tower is a necessary part of the process. A cooling tower is required regardless of the fuel burnt to produce steam (e.g. coal or natural gas).

V. MITCHELL UNIT 2 COOLING TOWER

Q. PLEASE DESCRIBE THE ISSUE WITH THE MITCHELL UNIT 2 COOLING TOWER.

A. Like the Unit 1 Cooling Tower, the Mitchell Unit 2 Cooling Tower is a reinforced concrete-and-steel hyperbolic structure approximately 376 feet tall with a 288-foot diameter. Unlike the Unit 1 Cooling Tower, however, the Mitchell Unit 2 Cooling Tower has several areas of surface irregularities and deformations of the concrete shell, which have weakened the structure. Due to these distortions, the concrete shell has exhibited deterioration and cracking which has not been seen on other cooling towers owned by AEP operating companies. The results of the engineering analysis performed on the Unit 2 Cooling Tower's condition show reduced structural capacity that necessitates repair or replacement. Moreover, the tower is continuing to deteriorate such that it could soon become unsafe and unfit for service.

Q. WHEN WAS THIS ISSUE DISCOVERED?

A. Plant personnel first observed the structural anomalies in April 2016. This observation prompted an initial structural engineering assessment, which determined that the deformations likely originated years prior. This assessment also revealed other surface cracking and deterioration related to the anomalies. A subsequent detailed engineering analysis was commissioned and conducted by a third party to determine the full extent of the issues and determine the structural stability of the cooling tower with recommendations for reinforcing the structural integrity of the cooling tower. This effort includes monitoring and inspection program, which is still ongoing.

Q. WHAT REPAIRS WERE TO BE PERFORMED ON THE COOLING TOWER?

A. In 2024, a capital project was initiated to reinforce the shell structure with the intent of restoring the structural integrity of the tower (the "Initial Repair Project"). The Initial Repair Project included a multi-step process to repair the damaged areas of concrete and reinforce the shell. First, the area was to be pressure-washed with high-pressure water. Next, areas of deteriorated concrete and rebar were to be repaired, and cracks were to be sealed with epoxy. Once the area was repaired, a three-layered fiber-reinforced cementitious matrix system ("FRCM") was to be applied to the external surface of the structure, which included 105,000 square feet of surface area.

To apply the FRCM, the initial layer cementitious material is applied to the shell surface. While that layer is still workable, the mesh is embedded into it, and then finishing layer of cementitious material is placed over the mesh. All these steps need to be performed at optimal weather conditions to allow adherence to the surface and proper time for the material to set. Additionally, concrete stiffening rings were to be installed in three locations to resist buckling of the overall concrete shell structure. Had the Initial Repair Project been completed as planned, the expected additional useful life of the Unit 2 Cooling Tower would have been 10 more years. Please see Exhibit DWP-2 for pictures of the process and materials used for the repairs.

Q. WHY WAS THE REPAIR WORK STOPPED?

A. In July 2025, after work on the Initial Repair Project began, the estimated costs had increased, and the planned schedule extended to the point that AEP Generation Projects team determined additional engineering solutions and repair options should be evaluated. Work on the Initial Repair Project was halted to determine the best solution going forward by evaluating the costs, risks and project schedule of the various options. This pause was necessary to identify the most economic and efficient path forward to ensure the continued safe and reliable operation of the Mitchell Plant for the Company's customers.

Q. WHAT SPECIFICALLY CAUSED THE PROJECT'S ESTIMATED COST TO INCREASE AND SCHEDULE TO EXTEND BEYOND ORIGINAL EXPECTATIONS?

A. Inspections during the construction phase of the Initial Repair Project, which were not possible until work commenced, revealed more cracking and deterioration than originally anticipated. This increased cracking and deterioration would require additional repair work. Additionally, the application of the FRCM material proved more difficult to apply for the contractor than anticipated. Because of the escalating costs, schedule impacts, and material application issues, continuing with the original repair plan was not a practical solution.

Q. WHY WAS THE EXTENT OF THE DETERIORATION NOT UNDERSTOOD PRIOR TO COMMENCING THE INITIAL REPAIR PROJECT?

A. The initial observations utilized drones and binoculars to visually see the cracks. It wasn't until the scaffold was installed and the high-pressure water wash took place, that the extent of the cracking and damage was revealed. The high-pressure wash removed the outer layer of material from the surface at which point it was determined that the cracking was more extensive than the project scope.

Q. WHAT ARE THE SAFETY CONCERNS OF OPERATING THE UNIT 2 COOLING TOWER?

A. Although some FRCM has been applied to the structure and some crack sealing and concrete repair have occurred, there remain significant concerns about the long-term continued operation of the cooling tower due to the deformations, extensive cracking, and concrete deterioration of the shell, all of which have reduced the structural capacity of the Unit 2 Cooling Tower. Although the Unit 2 Cooling Tower remains in service, the safety margin is diminished, and the shell no longer reliably meets design loads. Under a rare but extreme wind event, deformations and cracking could spread rapidly, requiring permanent shutdown of the tower and unit and, in the worst case, leading to structural failure. On-going accelerated cracking and deterioration due to the deformations are expected to continue and will ultimately cause the concrete shell on the Unit 2 Cooling Tower to fail even under routine loading. A thorough monitoring program has been implemented to ensure safe operation until a new cooling tower can be constructed in its place.

Q. WHAT TYPE OF MONITORING IS BEING PERFORMED ON THE COOLING TOWER?

A. The monitoring program is composed of four key elements: continuous structural monitoring, annual drone inspections, bi-annual LiDAR assessments, and Wind Weather monitoring.

Continuous Structural Monitoring involves the use of three automated laser Total Station survey devices strategically positioned around the Unit 2 Cooling Tower. These devices measure survey prisms affixed to the tower. In total, there are 121 prisms installed on the shell which are being monitored around the clock for structural movement. In the event that any unusual movement is detected, the system promptly sends a notification to plant personnel. Additionally, the collected data is reviewed monthly by an engineer to ensure ongoing safety and structural integrity.

Drone Assessment involves deploying a drone around the tower to capture images and identify areas of concrete distress conditions. A 3D model of the structure is then created from the stitched-together images to assess the tower's condition. This is being conducted annually.

LiDAR Assessment utilizes laser scanning equipment to produce a comprehensive 3D scan of the tower. The new scan is compared to previous scans to identify any changes in the tower's shape. This evaluation is and will continue to be conducted bi-annually.

Wind Weather Monitoring system consists of 8 weather stations located around the tower. If excessive wind is detected plant personnel will be alerted. Engineers can then perform a visual inspection and complete an engineering assessment if needed. Engineers will utilize the monitoring techniques described above to identify any unusual movements, signs of concrete distress such as cracking or spalling, and changes to the overall shape of the tower. Should any anomalies be detected, an engineering assessment will be conducted to evaluate the need for immediate actions or repairs.

VI. UNIT 2 COOLING TOWER STRUCTURAL NEEDS AND ALTERNATIVE OPTIONS FOR THE NEEDS

Q. WHAT OPTIONS WERE CONSIDERED TO FULLY ADDRESS THE STRUCTURAL NEEDS OF MITCHELL UNIT 2 COOLING TOWER?

A. The engineering review conducted during the pause of the Initial Repair Project identified four options to address the structural needs of the Mitchell Unit 2 Cooling Tower:

- Option 1: Expand and extend the paused exterior shell reinforcement project;
- Option 2: Retire Unit 2 and partially demolish the existing cooling tower;
- Option 3: Construct a new mechanical draft cooling tower and partially demolish the existing cooling tower; and
- Option 4: Reduce the height of the existing cooling tower and continue with a reduced scope of exterior shell reinforcement.

Q. DOES EACH OF THESE OPTIONS ADDRESS THE STRUCTURAL NEEDS OF UNIT 2'S COOLING TOWER?

A. Yes. However, each option comes with its own set of costs, risks, benefits, and implementation timelines, as further discussed by Company Witness Malone.

Q. ARE THERE ANY OTHER REASONABLE ALTERNATIVES FOR ADDRESSING THE STRUCTURAL NEEDS OF THE MITCHELL UNIT 2 COOLING TOWER?

A. No. The four options identified following the engineering review of alternatives are the reasonable alternatives for addressing the structural needs of the Mitchell Unit 2 Cooling Tower.

Q. HAS THE COMPANY MADE A DECISION ON HOW IT WILL ADDRESS THE STRUCTURAL NEEDS OF THE MITCHELL UNIT 2 COOLING TOWER?

A. Yes, the Company has chosen Option 3 and plans to construct a new mechanical draft cooling tower and partially demolish the existing cooling tower (the "Mitchell Cooling Tower Project") upon receipt of the required regulatory approvals. A site plan showing where the new mechanical draft cooling tower will be located on the Mitchell Plant site is included as Confidential Exhibit DWP-1.

Q. WHAT ARE THE DIFFERENCES OF THE MECHANICAL DRAFT COMPARED TO THE HYPERBOLIC COOLING TOWER?

A. Mechanical draft cooling towers use fans for air-controlled airflow making them smaller and more versatile for various applications as compared to hyperbolic cooling towers. This small footprint makes the construction on space-constrained sites like at

Mitchell more feasible, and they require less capital to construct than a hyperbolic cooling tower. Thus, mechanical-draft cooling towers are generally the industry standard and are preferred for new cooling-tower construction at power plants. The hyperbolic cooling towers are natural draft towers, which means they use the hyperbolic shape to pull the draft up and through the structure instead of fans. To perform this natural draft, the hyperbolic structure must be large enough to create the draft requiring extremely large structures. The size of the existing hyperbolic cooling towers at Mitchell are approximately 288 feet in diameter and 376 feet tall.

Q. WHAT ARE THE RISKS OF NOT CONSTRUCTING THE MITCHELL COOLING TOWER PROJECT?

A. As I described above, the continued use of the existing cooling tower at Unit 2 is not a long-term option. Due to the structural anomalies of the Unit 2 cooling tower, its safety factors will continue to deteriorate to a point where it will no longer be useful or safe to use.

Q. WILL THERE BE ANY OPERATIONAL IMPROVEMENTS OR DETRIMENTS ON MITCHELL UNIT 2 AFTER THE PROJECT COMPLETION?

A. The process of cooling the hot water is basically the same for both the mechanical tower and the hyperbolic tower. The new mechanical draft cooling tower will be designed to meet the performance of existing hyperbolic cooling tower. The fans do require the use of auxiliary power so there will be a slight reduction in output of Mitchell Unit 2 when compared to the existing configuration with the hyperbolic tower.

VII. <u>CONCLUSION</u>

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Confidential Exhibit DWP-1 is redacted in its entirety.

Mitchell U2 Cooling Tower
DRAFT Example repair photographs
February 2026

Photo 1 – Repair Working Platform

Photo 2 – Repair working platform

Photo 3 – Example of a partial depth concrete and rebar repair

Photo 4 – Example of full depth concrete and rebar repairs

Photo 5 – Example of crack identification after power washing surface

Photo 6 – Example of epoxy crack injection

Mitchell U2 Cooling Tower
DRAFT Example repair photographs
February 2026

Photo 7 – Application of FRCM (Cement – Mesh – Cement)

Photo 8 – Photo of completed FRCM and concrete repair in progress

VERIFICATION

The undersigned, Daniel W. Pizzino, being duly sworn, deposes and says he is the Director of Civil Engineering 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.

Daniel W. Pizzino

State of Ohio)
County Franklin) Case No. 2026-00001
)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Daniel W. Pizzino, on February 5TH 2026.

Notary Public

NATARIA L. SCALES NOTARY PUBLIC · STATE OF OHIO MY COMMISSION NO. 2017-RE-637054 MY COMMISSION EXPIRES MARCH 7, 2027

My Commission Expires 03-07-2027

Notary ID Number 2017-RE-637054