

**BEFORE THE**  
**PUBLIC UTILITIES COMMISSION OF OHIO**

**THE DAYTON POWER AND LIGHT COMPANY D/B/A AES OHIO**

**CASE NOS. 22-0900-EL-SSO**  
**22-0901-EL-ATA**  
**22-0902-EL-AAM**

**DIRECT TESTIMONY OF**  
**MARK L. VEST**

- ☐ **MANAGEMENT POLICIES, PRACTICES, AND ORGANIZATION**
- ☐ **OPERATING INCOME**
- ☐ **RATE BASE**
- ☐ **ALLOCATIONS**
- ☐ **RATE OF RETURN**
- ☐ **RATES AND TARIFFS**
- ☒ **OTHER**

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**ON BEHALF OF  
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**TABLE OF CONTENTS**

<b>I.</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>II.</b>	<b>PURPOSE OF TESTIMONY.....</b>	<b>2</b>
<b>III.</b>	<b>BACKGROUND.....</b>	<b>3</b>
<b>IV.</b>	<b>DISTRIBUTION INVESTMENT PLANS.....</b>	<b>7</b>
<b>V.</b>	<b>VEGETATION MANAGEMENT .....</b>	<b>10</b>
<b>VI.</b>	<b>CONCLUSION .....</b>	<b>11</b>

1    **I.    INTRODUCTION**

2    **Q.    Please state your name and business address.**

3    A.    My name is Mark L. Vest. My business address is 1900 Dryden Road, Dayton, Ohio  
4        45439.

5    **Q.    By whom and in what capacity are you employed?**

6    A.    I am employed by AES U.S. Services, LLC ("AES Services"), an affiliate of The Dayton  
7        Power & Light Company d/b/a AES Ohio ("AES Ohio"), as Senior Director of Ohio  
8        Transmission and Distribution Operations.

9    **Q.    How long have you been in your present position?**

10   A.    I assumed my present position in March 2021. Prior to that time, I was Director,  
11        Maintenance, Inspection & Contract Management, Reliability Programs in the U.S.  
12        Utilities Strategic Business Unit ("U.S. SBU") of The AES Corporation ("AES"), with  
13        responsibilities for AES Ohio and AES Indiana.

14   **Q.    What are your responsibilities in your current position?**

15   A.    In my current position, I am responsible for the safe and reliable operation of the  
16        transmission and distribution systems of AES Ohio. Additionally, I am responsible for  
17        the fleet, facilities, real estate and right-of-way functions and budgeting oversight for  
18        both Capital and Operations and Maintenance ("O&M") activities within the AES Ohio  
19        Service Operations organization.

**Q. Will you describe briefly your educational and business background?**

A. I received a bachelor's degree in Accountancy from Wright State University in 1986. Prior to my employment at AES Ohio, I spent several years in public accounting, petroleum wholesale and construction industries.

**Q. Have you previously provided testimony before the Public Utilities Commission of Ohio ("PUCO" or the "Commission"), any other state utilities commission, or the Federal Energy Regulatory Commission ("FERC")?**

A. Yes. I sponsored testimony before the PUCO in Case No. 20-1651-EL-AIR.

**II. PURPOSE OF TESTIMONY**

**Q. What is the purpose of this testimony?**

A. The purpose of this testimony is to support and explain AES Ohio's plans to make capital investments in its distribution system, which will maintain and/or improve system reliability and resiliency. These capital investments are proposed to be recoverable through a Distribution Investment Rider ("DIR") as described by Company Witness Adams. I will also support and explain AES Ohio's plans to expand its vegetation management program which will also maintain and/or improve system reliability. These vegetation management expenditures are proposed to be recoverable through a Proactive Reliability Optimization ("PRO") Rider as also described by Company Witness Adams.

**Q. Are you supporting any exhibits?**

A. I am supporting the following exhibit to my testimony:

- MLV-1

**III. BACKGROUND**

**Q. How has AES Ohio's distribution infrastructure performed, as measured by the Company's PUCO-approved reliability standards?**

A. For the years 2016-2021 AES Ohio's distribution system has achieved the SAIFI reliability standard approved by the Commission pursuant to Ohio Adm. Code Section 4901:1-10-10(B)(2). However, AES Ohio has failed to achieve its CAIDI reliability standard for 2019, 2020, and 2021. Since 2016, both metrics have been deteriorating:

Year	CAIDI Standard	CAIDI	SAIFI Standard	SAIFI
2021	125.04	129.52	0.88	0.72
2020	125.04	132.17	0.88	0.84
2019	125.04	133.29	0.88	0.88
2018	125.04	118.41	0.88	0.83
2017	125.04	133.07	0.88	0.68
2016	125.04	119.08	0.88	0.69

**Q. Has AES Ohio recently made cuts to its distribution expenditures?**

A. Yes. Due to a lack of available funds, AES Ohio recently has made the following cuts to its typical reliability expenditures:

- Pole replacements – We have deferred pole replacements, which includes the replacement of all the associated components housed on wood poles that are all potential failure points which could cause customer outages.
- Underground cable replacements have been deferred and cable failures have been manually repaired. This practice restores the current interruption but leaves customers at risk of subsequent failures due to degraded cable and ties up crews who would

otherwise be available to respond to other outages. These degraded sections of cable, if left in service, could compromise system resiliency as this cable may serve as an alternate source of electric service (loop or backup feed) in the event of future outages.

- Vegetation management costs have increased rapidly in recent years due to labor and equipment cost increases in the industry and an inability to consistently secure qualified crews to the degree needed, resulting in fewer miles of lines maintained.

**Q. Can you identify the principal reasons that AES Ohio has not achieved its CAIDI metrics and that its reliability metrics have been in decline?**

A. Yes, there are four principal reasons. First, AES Ohio has not been able to make needed investments in its infrastructure in recent years. For example, 45% of AES Ohio's substation assets are over 30 years old, while 24% of those assets are over 50 years old. Over 45% of AES Ohio's distribution poles are more than 40 years old, 35% are over 50 years old, and almost 20% of the distribution poles on the system are over 60 years old. AES Ohio has had to defer the replacement of over 11,000 wood poles and associated equipment which puts the distribution system at increased risk of failures and extended customer outages.

Indeed, as demonstrated in MLV-1 and as summarized in the chart below, AES Ohio's transmission and distribution assets have a higher accumulated depreciation percentage of plant in service as compared to other Ohio utilities, meaning that AES Ohio's assets are older than those of other Ohio utilities.

**Accumulated Depreciation % of Plant In Service**

	<b>Transmission</b>	<b>Distribution</b>
<b>AES Ohio</b>	53%	47%
<b>Duke</b>	19%	23%
<b>AEP</b>	31%	30%
<b>FE</b>	24%	41%

The investment plan that I describe below is intended to upgrade and replace this aging infrastructure.

Second, due to significant increases in vegetation management costs and a lack of available qualified labor, AES Ohio has not been able to fund the expenditures necessary to achieve the level of vegetation management included in its Commission-approved vegetation management plan. On average, it cost AES Ohio \$5,148 to clear a mile of vegetation in 2015; in 2019, that cost had increased by 170% to \$13,910 and in 2021 that cost was still \$11,015 per mile, 114% of the 2015 cost. This cost can vary year by year due to the mix of circuits being trimmed (urban circuits are more expensive than rural circuits) but the average of 2019 and 2021 is \$12,463 which is still 142% over the 2015 level which shows a broader sample size and evidence of a continued escalation of cost. The increased spending on vegetation management that I describe below is intended to alleviate this issue.

Third, AES Ohio's current CAIDI standard of 125.04 minutes is based upon historical data from 2009-2011, which was prior to the height of the Emerald Ash Borer, which has significantly increased outages for "Trees out of right of way (ROW)." "Trees out of ROW" in 2010-2011 had an average CAIDI of 128.27 versus a 2018-2021 average CAIDI of 175.55 due to the more catastrophic damage caused in significant part by the

1 Emerald Ash Borer. This escalation in outage duration has driven our overall system  
2 CAIDI up.

3 Fourth, the replacement of thousands of porcelain cutouts eliminated many potential  
4 outages that were typically short in duration. While eliminating those short outages is  
5 positive for customers, doing so has the effect of increasing the system CAIDI.

6 **Q. Does AES Ohio measure customer expectations as it relates to the Company's**  
7 **reliability standards?**

8 A. Yes. As required by Ohio Adm. Code Section 4901:1-10-10(B)(4)(b), the Company  
9 performs a customer perception survey under PUCO Staff oversight. The objective of the  
10 survey is to measure customer perceptions, including but not limited to expectations and  
11 achievements of electric service reliability.

12 **Q. Can you describe briefly the results of AES Ohio's latest residential customer**  
13 **perception survey as it pertains to sustained outages experienced?**

14 A. Yes. The periodic survey of customer expectations makes two significant findings. First,  
15 despite the declining reliability metrics discussed above, most customers are satisfied  
16 with AES Ohio's reliability performance, with 76% of surveyed residential customers  
17 saying they were "very satisfied" and an additional 16% saying they were "somewhat  
18 satisfied." The surveyed business customers had similar views. Second, customers were  
19 asked both how many outages per year and how many minutes per year of outages would  
20 be acceptable to them and the resulting values were higher than AES Ohio's current and  
21 proposed standards. Residential customers, on average, indicated that 2.04 outages per  
22 year would be acceptable; AES Ohio proposed SAIFI is .88 – less than half of that



1 number. Commercial customers indicated that 1.98 outages per year would be acceptable  
2 – far higher than the .88 SAIFI that is proposed. For duration, residential customers on  
3 average found acceptable 252 minutes of non-storm related outages and 900 minutes of  
4 storm related outages. Commercial customers were at 198 minutes (non-storm) and 786  
5 minutes (storm related). AES Ohio has proposed a CAIDI of 147.22<sup>1</sup>; substantially  
6 below these customer-focused metrics communicated through the surveys.

7 While customers have been satisfied with AES Ohio's reliability in the recent past, we do  
8 not expect that to continue if AES Ohio's reliability metrics continue to deteriorate.

9 Additionally, as mentioned above, the Company has missed certain reliability standards  
10 in the last three years. The proposed distribution capital investment program and  
11 expanded vegetation management expenditures are expected to maintain and/or improve  
12 system reliability and resilience, ultimately enhancing customer satisfaction.

#### 13 **IV. DISTRIBUTION INVESTMENT PLANS**

14 **Q. What are AES Ohio's plans for future investments?**

15 A. In addition to routine distribution capital expenditures, AES Ohio plans to make focused  
16 investments in three areas of growing risk that are concerns today across the utility  
17 industry.

- 18 1. Aging equipment or equipment with known industry-wide failure risks;
- 19 2. Technology migration; and
- 20 3. New Growth Capital Investment.

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<sup>1</sup> AES Ohio Case No. 21-956-EL-ESS, Amended Application at 4.

1   **Q.     Please describe the first part of the investment program, equipment with known**  
2       **failure risks.**

3   A.    AES Ohio is proposing that its distribution investments focus on equipment that has  
4       known industry-wide failure risks as well as replacement of older assets where the  
5       distribution system can benefit from newer technologies or replacement of obsolete  
6       equipment. AES Ohio will review asset performance and operating trends both within  
7       the utility itself as well as across the entire industry. Specifically, there are industry-wide  
8       equipment problems where products are known to be pre-disposed to certain risks of  
9       failure or have identified design concerns, which can result in equipment failure. There  
10      are also assets with older technology where the operation of the asset is more prone to  
11      failure or may operate ineffectively due to the type of technology and design of the asset.  
12      AES Ohio's goal with the distribution capital program is to prevent additional outages  
13      and the erosion of reliability and/or customer satisfaction. Both will suffer if the  
14      Company does not take any action to address these identified assets.

15   **Q.     Please provide an example of equipment or conditions with industry-wide known**  
16       **failure risks.**

17   A.    A specific example is underground cable with a bare concentric neutral. This type of  
18       cable has been widely observed across the electric industry to experience  
19       deterioration of the neutral conductor due to exposure directly to the earth. Such  
20       deterioration may ultimately result in a fault or failure of the cable, which necessitates  
21       repairing or replacing the cable. Sections of this type of underground cable, if left in  
22       service, could compromise system resiliency as this cable may serve as an alternate  
23       source of electric service (loop or backup feed) in the event of future outages.

1 Other examples of conditions with industry wide failure risks or when existing equipment  
2 is old and requires replacement include wood poles, porcelain cutouts, overhead  
3 conductors, reclosers, line arrestors, substation transformers and switchgear, downtown  
4 network protectors, substation riser cables and vault tops.

5 **Q. Please describe the second part of the investment program, "Technology**  
6 **Migration."**

7 A. Technology Migration is the second area of identified risk for AES Ohio's aging  
8 infrastructure. This portion of the investment program will include replacement of  
9 outdated, and/or inefficient equipment or equipment that is prone to operational problems  
10 with equipment that is more efficient and reliable. An example of Technology Migration  
11 is the conversion of AES Ohio's 4kV system to a standard 12kV configuration. The 4kV  
12 system was installed over 50 years ago and the design is less efficient than a 12kV  
13 system. Conversion of the 4kV system will provide benefits such as lower line losses and  
14 a more efficient distribution system, which will reduce costs to customers.

15 **Q. Please describe the third part of the investment program, "New Growth Capital**  
16 **Investment."**

17 A. New Growth Capital Investment will include new infrastructure required to serve new  
18 customer growth and/or add a heightened level of reliability and resiliency. For example,  
19 new commercial and industrial development will require new substation construction to  
20 adequately serve the loads, and new growth is approaching AES Ohio very rapidly. New  
21 growth investment will also include expansion of our distribution system to build

1 additional redundancy to areas where customers are currently at risk of long outages due  
2 to single electrical source configurations (radial feeds).

3 New Growth Capital Investment will generate incremental operation & maintenance  
4 (O&M) expense moving forward as these new assets will require periodic inspection &  
5 maintenance to ensure safe and effective operation. For example, newly constructed  
6 substations will come under the purview of AES Ohio's PUCO mandated monthly  
7 substation inspection program.

8 **Q. How does AES Ohio propose that it recover the expenditures that you describe?**

9 A. AES Ohio proposes that it recover those expenditures through the Distribution  
10 Investment Rider ("DIR"). In addition, the DIR Rider will recover expenditures  
11 associated with capital improvements made in response to storms, new customers, the  
12 costs of complying with FERC 2222, and new customer projects. The operation of the  
13 DIR Rider is discussed in the testimony of Company Witness Adams.

14 **V. VEGETATION MANAGEMENT**

15 **Q. Please describe the AES Ohio's vegetation management plan.**

16 A. As described at length in my testimony in AES Ohio's 2020 distribution rate case (Case  
17 No. 20-1651-EL-AIR), AES Ohio proposes to make substantial increases in its vegetation  
18 management expenditures. The proposed expense increases include, but are not limited  
19 to circuit maintenance trimming, intra-cycle "hot-spotting" or reliability-based trimming  
20 and a "danger/hazard" tree trimming program. The cost estimates associated with these  
21 programs are based upon historical costs and do not reflect future market conditions that  
22 are not foreseeable at this time (labor and material/equipment shortages, lack of available

1 qualified crews or per diem costs associated with off system crew mobilization etc.).

2 Therefore, cost and execution risks do exist and will be addressed through competitive  
3 bidding and innovative procurement strategies, temporary utilization of traveling "off  
4 cycle" crew resources and the use of technology and specialized equipment to the fullest  
5 extent possible. The impact and significance of this vegetation management work from  
6 service reliability perspective makes the need to incur and recover these costs very  
7 important.

8 **Q. How does AES Ohio propose to recover those expenditures?**

9 A. As described in the testimony of Company Witness Adams, AES Ohio proposes to  
10 recover those expenditures through the PRO Rider.

11 **VI. CONCLUSION**

12 **Q. Please summarize your testimony.**

13 A. Implementing AES Ohio's distribution capital plan will reduce the risk associated  
14 with aging infrastructure, which is an industry-wide area of concern. Continuing to  
15 operate older assets that have been identified with potential failure risks could pose a  
16 higher likelihood of outages, thereby eroding reliability and customer satisfaction. AES  
17 Ohio also plans to expand its vegetation management expenditures, which is needed to  
18 improve the reliability of AES Ohio's system.

19 **Q. Does this conclude your direct testimony?**

20 A. Yes, it does.

	Electric Plant In Service				Accumulated Depreciation				Net Balance			
2020	AES Ohio	Duke	AEP	FE	AES Ohio	Duke	AEP	FE	AES Ohio	Duke	AEP	FE
Intangible Plant <sup>1</sup>	\$ 39,293,683	\$ 107,444,186	\$ 210,327,269	\$ 371,668,281	\$ -	\$ -	\$ -	\$ -	\$ 39,293,683	\$ 107,444,186	\$ 210,327,269	\$ 371,668,281
Steam Plant Production <sup>2</sup>	\$ -	\$ -	\$ -	\$ 312,205	\$ -	\$ -	\$ -	\$ 13,910,994	\$ -	\$ -	\$ -	\$ (13,598,789)
Other Production Plant <sup>3</sup>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Production Plant <sup>4</sup>	\$ -	\$ -	\$ -	\$ 312,205	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 312,205
Transmission Plant <sup>5</sup>	\$ 451,132,036	\$ 1,174,534,297	\$ 2,829,331,360	\$ 6,333,266,970	\$ 239,238,501	\$ 221,232,622	\$ 880,336,863	\$ 1,518,520,398	\$ 211,893,535	\$ 953,301,675	\$ 1,948,994,497	\$ 4,814,746,572
Distribution Plant <sup>6</sup>	\$ 1,952,680,211	\$ 3,055,478,337	\$ 5,706,016,684	\$ 7,008,233,727	\$ 912,942,289	\$ 697,493,486	\$ 1,710,961,712	\$ 2,879,996,150	\$ 1,039,737,922	\$ 2,357,984,851	\$ 3,995,054,972	\$ 4,128,237,577
General Plant <sup>7</sup>	\$ 31,355,882	\$ 400,370,730	\$ 649,302,038	\$ 738,877,858	\$ 18,810,052	\$ 93,821,819	\$ 110,763,528	\$ 280,881,846	\$ 12,545,830	\$ 306,548,911	\$ 538,538,510	\$ 457,996,012
EOY Balance	\$ 2,474,461,812	\$ 4,737,827,550	\$ 9,394,977,351	\$ 14,452,359,041	\$ 1,170,990,842	\$ 1,012,547,927	\$ 2,702,062,103	\$ 4,693,309,388	\$ 1,303,470,970	\$ 3,725,279,623	\$ 6,692,915,248	\$ 9,759,049,653

Accumulated Depreciation		
	Transmission	Distribution
AES Ohio	53%	47%
Duke	19%	23%
AEP	31%	30%
FE	24%	41%

Source: FERC Form 1

Electric Plant in Service	Accumulated Depreciation
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<sup>1</sup>Pg. 204-207, Column G, Line 5<sup>2</sup>Pg. 204-207, Column G, Line 16 <sup>2</sup>Pg. 219, Column B, Line 20<sup>3</sup>Pg. 204-207, Column G, Line 45 <sup>3</sup>Pg. 219, Column B, Line 24<sup>4</sup>Pg. 204-207, Column G, Line 46<sup>5</sup>Pg. 204-207, Column G, Line 58 <sup>5</sup>Pg. 219, Column B, Line 25<sup>6</sup>Pg. 204-207, Column G, Line 75 <sup>6</sup>Pg. 219, Column B, Line 26<sup>7</sup>Pg. 204-207, Column G, Line 99 <sup>7</sup>Pg. 219, Column B, Line 28

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Summary: Testimony Direct Testimony of Mark L. Vest electronically filed by Mr.  
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