

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the matter of the Annual Report of)
Electric Distribution System Reliability) Case No: 22 -0995 -EL-ESS
Pursuant to Rule 4901:1-10-10(C))

Pursuant to Rule 4901:1-10-10(C) of the Ohio Administrative Code,
AES Ohio
hereby submits the attached annual report for the year 2021 .

I certify that the following report accurately and completely reflects the annual report requirements pursuant to Rule 4901:1-10-10 of the Ohio Administrative Code.

Kathryn N Storm
Signature

Kathryn N. Storm
Printed Name

Vice President, US Smart Grid and Ohio T&D Operations
Title

March 31, 2022
Date

AES Ohio
Rule 10 Report for 2021

1. 4901:1-10-10(C)(1): CAIDI (Customer Average Interruption Duration Index)

<u>Performance Standard</u>	<u>After Exclusions</u>	<u>Before Exclusions</u>
125.04	129.52	181.93

2. 4901:1-10-10(C)(1): SAIFI (System Average Interruption Frequency Index)

<u>Performance Standard</u>	<u>After Exclusions</u>	<u>Before Exclusions</u>
0.88	0.72	0.99

3. 4901:1-10-10(C)(1): Supporting Data

Customers <u>Served</u>	CI* <u>After Exclusions</u>	CI <u>Before Exclusions</u>	CMI* <u>After Exclusions</u>	CMI <u>Before Exclusions</u>
600,136	434,180	592,418	56,235,204	107,779,042

Notes:

*CI = Customer Interruptions
 CMI = Customer Minutes Interrupted

AES Ohio
Rule 10 Report for 2021

4. 4901:1-10-10(C)(2): Major Event Outages

Date	Description	CI	CMI	CAIDI	SAIFI
2/17/2021	Winter Storm	10,138	3,117,003	307.46	1.00
3/18/2021	Wind	10,152	2,828,554	278.62	1.00
3/26/2021	Thunderstorms - Wind	27,908	10,066,148	360.69	1.00
6/18/2021	Thunderstorm	25,229	17,431,797	690.94	1.00
8/26/2021	Thunderstorm	10,853	3,121,508	287.62	1.00
12/11/2021	Thunderstorm	23,482	6,408,200	272.90	1.00
Totals:		107,762	42,973,210		

Notes:

AES Ohio
Rule 10 Report for 2021

5a. 4901:1-10-10(C)(2): Transmission Outages

Outage Start Date	Transmission Circuit Impacted	Outage Start Time	Circuit kV	Outage Cause	Outage Length (minutes)
01/25/2021	Covington - Minster - Rossburg [6625]	12:00 AM	69 kV	Galloping Conductors	40,324
01/25/2021	Covington - Minster - Rossburg [6625]	12:00 AM	69 kV	Galloping Conductors	765,181
02/17/2021	Greenville - West Manchester [6643]	12:00 AM	69 kV	Equipment/Hardware Failure	20,721
03/18/2021	Garage Road - New Westville [3302]	12:00 AM	33 kV	Equipment/Hardware Failure	517,045
03/22/2021	Hutchings - Hillsboro (AEP) [13804]	12:00 AM	138 kV	Equipment/Hardware Failure	26,225
03/26/2021	Covington - Minster - Rossburg [6625]	12:00 AM	69 kV	High Winds	390,591
03/26/2021	Bellefontaine - Blue Jacket - Indian Lake [6648]	12:00 AM	69 kV	High Winds	118,640
03/26/2021	Garage Road - West Manchester [6656]	12:00 AM	69 kV	High Winds	146,139
03/26/2021	Caesars Creek - Webb Road - Wilmington [6917]	12:00 AM	69 kV	High Winds	360,217
03/28/2021	Celina - Coldwater [6688]	12:00 AM	69 kV	Scheduled/Planned Outage	16,411
04/21/2021	Wilmington - Highland (AEP) [6658]	12:00 AM	69 kV	Scheduled/Planned Outage	86,146
04/25/2021	Celina - Coldwater [6688]	12:00 AM	69 kV	Scheduled/Planned Outage	2,495
05/16/2021	Brookville - West Manchester [6639]	12:00 AM	69 kV	Equipment/Hardware Failure	32,081
06/18/2021	Coldwater - Rossburg [6684]	12:00 AM	69 kV	High Winds	369,481
06/18/2021	Caesars Creek - Webb Road - Wilmington [6917]	12:00 AM	69 kV	High Winds	246,378
06/19/2021	Yankee - Trebein - Waynesville - Caesars Creek [6610]	12:00 AM	69 kV	Trees Out of ROW	1,576,958
06/19/2021	Transmission Bus	12:00 AM	12 kV	Transmission Trouble	634,646
06/19/2021	Transmission Bus	12:00 AM	12 kV	Transmission Trouble	829,924

AES Ohio
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5a. 4901:1-10-10(C)(2): Transmission Outages

Outage Start Date	Transmission Circuit Impacted	Outage Start Time	Circuit kV	Outage Cause	Outage Length (minutes)
06/25/2021	Yankee - Trebein - Waynesville - Caesars Creek [6610]	12:00 AM	69 kV	Other	178,042
06/25/2021	Caesars Creek - Webb Road - Wilmington [6917]	12:00 AM	69 kV	Tree Trimmers, Company	185,616
06/25/2021	Transmission Bus	12:00 AM	12 kV	Transmission Trouble	82,746
07/25/2021	Gladly Run - Jamestown - Xenia [6636]	12:00 AM	69 kV	Lightning	1,052,683
07/28/2021	Hutchings - Crystal [6602]	12:00 AM	69 kV	Trees Out of ROW	343,485
08/07/2021	Transmission Bus	12:00 AM	12 kV	Transmission Trouble	183,211
08/27/2021	Indian Lake - New Hampshire [3307]	12:00 AM	33 kV	Equipment/Hardware Failure	28,225
09/18/2021	Staunton - St. Paris [6657]	12:00 AM	69 kV	Equipment/Hardware Failure	136,032
12/28/2021	Garage Road - New Westville [3302]	12:00 AM	33 kV	Vehicle Accident	200,985

Notes:

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5b. 4901:1-10-10(C)(2): Distribution Circuits Impacted by Transmission Outages

Outage Start Date	CI per Outage	CMI per Outage	# of Impacted Circuits	IDs for Impacted Circuits	CI per Circuit	CMI per Circuit
01/25/2021	386	40,324	1	BP1202	386	40,324
01/25/2021	460	227,002	3	BE1203	1,551	765,181
01/25/2021	471	232,611	3	BE1205	1,551	765,181
01/25/2021	620	305,567	3	BE1201	1,551	765,181
02/17/2021	153	20,721	1	LA1201	153	20,721
03/18/2021	369	49,587	2	MB1201	1,462	517,045
03/18/2021	1,093	467,458	2	MB1201	1,462	517,045
03/26/2021	871	146,139	1	MH1203	871	146,139
03/26/2021	1,181	200,573	2	HW1202	2,121	360,217
03/26/2021	940	159,643	2	HW1204	2,121	360,217
03/26/2021	52	8,986	2	EC1202	687	118,640
03/26/2021	635	109,654	2	EC1201	687	118,640
03/26/2021	564	141,818	3	BE1201	1,553	390,591
03/26/2021	518	130,286	3	BE1203	1,553	390,591
03/26/2021	471	118,488	3	BE1205	1,553	390,591
03/28/2021	475	3,642	3	KE1201	1,910	16,411
03/28/2021	1,041	8,311	3	KE1202	1,910	16,411
03/28/2021	394	4,459	3	KE1203	1,910	16,411
03/22/2021	1,049	26,225	1	HM1202	1,049	26,225
04/21/2021	236	22,998	2	JV1202	884	86,146

3/11/2022

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5b. 4901:1-10-10(C)(2): Distribution Circuits Impacted by Transmission Outages

Outage Start Date	CI per Outage	CMI per Outage	# of Impacted Circuits	IDs for Impacted Circuits	CI per Circuit	CMI per Circuit
04/21/2021	648	63,148	2	HD1204	884	86,146
04/25/2021	394	2,495	1	KE1203	394	2,495
05/16/2021	904	25,297	2	MJ1204	1,146	32,081
05/16/2021	242	6,784	2	MJ1206	1,146	32,081
06/18/2021	53	49,237	6	KG1201	2,098	369,481
06/18/2021	261	36,018	6	KG1203	2,098	369,481
06/18/2021	934	73,786	6	LC1201	2,098	369,481
06/18/2021	630	101,430	6	KG1201	2,098	369,481
06/18/2021	110	93,610	6	KG1201	2,098	369,481
06/18/2021	110	15,400	6	KG1201	2,098	369,481
06/18/2021	1,187	137,494	2	HW1202	2,127	246,378
06/18/2021	940	108,883	2	HW1204	2,127	246,378
06/19/2021	920	104,175	4	GF1201	4,112	1,576,958
06/19/2021	1,805	836,136	4	GF1202	4,112	1,576,958
06/19/2021	1,035	473,236	4	GF1203	4,112	1,576,958
06/19/2021	352	163,410	4	GF1204	4,112	1,576,958
06/19/2021	696	321,714	2	HK1208	1,373	634,646
06/19/2021	677	312,932	2	HK1202	1,373	634,646
06/19/2021	866	250,620	3	HW1202	2,127	829,924
06/19/2021	940	431,836	3	HW1204	2,127	829,924

3/11/2022

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5b. 4901:1-10-10(C)(2): Distribution Circuits Impacted by Transmission Outages

Outage Start Date	CI per Outage	CMI per Outage	# of Impacted Circuits	IDs for Impacted Circuits	CI per Circuit	CMI per Circuit
06/19/2021	321	147,467	3	HW1202	2,127	829,924
06/25/2021	1,187	103,586	2	HW1202	2,127	185,616
06/25/2021	940	82,031	2	HW1204	2,127	185,616
06/25/2021	920	39,805	4	GF1201	4,115	178,042
06/25/2021	1,805	78,096	4	GF1202	4,115	178,042
06/25/2021	1,037	44,868	4	GF1203	4,115	178,042
06/25/2021	353	15,273	4	GF1204	4,115	178,042
06/25/2021	696	41,946	2	HK1208	1,373	82,746
06/25/2021	677	40,801	2	HK1202	1,373	82,746
07/25/2021	1,293	398,287	4	GG1202	5,560	1,052,683
07/25/2021	1,151	348,791	4	GS1204	5,560	1,052,683
07/25/2021	2,209	58,870	4	GH1201	5,560	1,052,683
07/25/2021	907	246,734	4	GG1204	5,560	1,052,683
07/28/2021	875	60,404	5	MG1203	5,403	343,485
07/28/2021	1,563	107,899	5	MG1205	5,403	343,485
07/28/2021	35	2,068	5	MK1206	5,403	343,485
07/28/2021	1,209	71,432	5	MK1202	5,403	343,485
07/28/2021	1,721	101,682	5	MK1204	5,403	343,485
08/07/2021	1,018	54,599	5	AM1206	2,832	183,211
08/07/2021	58	4,806	5	AM1215	2,832	183,211

3/11/2022

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5b. 4901:1-10-10(C)(2): Distribution Circuits Impacted by Transmission Outages

Outage Start Date	CI per Outage	CMI per Outage	# of Impacted Circuits	IDs for Impacted Circuits	CI per Circuit	CMI per Circuit
08/07/2021	1,135	51,794	5	AM1202	2,832	183,211
08/07/2021	198	20,519	5	AM1215	2,832	183,211
08/07/2021	423	51,493	5	AM1215	2,832	183,211
08/27/2021	94	28,225	1	ED1202	94	28,225
09/18/2021	1,507	136,032	1	DS1204	1,507	136,032
12/28/2021	1,461	200,985	1	MB1201	1,461	200,985

Notes:

AES Ohio
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5c. 4901:1-10-10(C)(2): Index values during transmission outages

Outage start date	CAIDI during outage	SAIFI during outage
01/25/2021	104.4666	0.0007
01/25/2021	493.3466	0.0027
02/17/2021	135.4333	0.0003
03/18/2021	353.6562	0.0025
03/22/2021	25.0000	0.0018
03/26/2021	251.5076	0.0027
03/26/2021	172.6921	0.0012
03/26/2021	167.7834	0.0015
03/26/2021	169.8333	0.0036
03/28/2021	8.5922	0.0033
04/21/2021	97.4500	0.0015
04/25/2021	6.3332	0.0007
05/16/2021	27.9939	0.0020
06/18/2021	176.1111	0.0036
06/18/2021	115.8333	0.0036
06/19/2021	383.5013	0.0070
06/19/2021	462.2334	0.0024
06/19/2021	390.1851	0.0036
06/25/2021	43.2667	0.0070
06/25/2021	87.2667	0.0036
06/25/2021	60.2666	0.0024
07/25/2021	189.3314	0.0095
07/28/2021	63.5731	0.0093
08/07/2021	64.6933	0.0048
08/27/2021	300.2670	0.0002
09/18/2021	90.2667	0.0026
12/28/2021	137.5667	0.0025

Notes:

AES Ohio
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6a. 4901:1-10-10(C)(3)(a): Data excluding major events and transmission outages

Outage Cause	Events	Customers Interrupted	Customers Minutes Interrupted
Animal/Bird	2,384	26,921	2,524,495
Blast/Explosion/Fire	3	13	5,724
Equipment/Hardware Failure	1,721	102,901	14,883,723
Forced Outage	384	53,727	3,905,198
Galloping Conductors	1	28	5,857
High Winds	283	11,256	3,316,177
Ice/Sleet/Snow	12	1,305	272,519
Lightning	700	22,863	4,633,936
Other	61	12,381	1,028,538
Other Electric Utility	1	392	47,053
Overload	9	115	4,196
Personnel Error	32	5,631	117,062
Scheduled/Planned Outage	2,224	32,473	2,947,938
Transmission Trouble	0	0	0
Tree Trimmers, Company	6	1,321	299,664
Tree Trimmers, Customer	50	1,789	225,593
Trees Inside ROW	162	15,249	2,665,004
Trees Out of ROW	822	46,397	6,731,726
UG Const./Dig-Ins	126	5,218	882,969
Undesired Relay Operation	1	1,741	9,198
Unknown	1,050	28,722	3,011,538
Vandalism	42	4,555	235,257
Vehicle Accident	340	59,182	8,481,840

AES Ohio
Rule 10 Report for 2021

6a. 4901:1-10-10(C)(3)(a): Data excluding major events and transmission outages

Outage Cause	Events	Customers Interrupted	Customers Minutes Interrupted
Totals:	10,414	434,180	56,235,204

Notes:

AES Ohio
Rule 10 Report for 2021

6b. 4901:1-10-10(C)(3)(b): Data for major events only

Outage Cause	Events	Customers Interrupted	Customers Minutes Interrupted
Animal/Bird	28	241	36,318
Blast/Explosion/Fire	0	0	0
Equipment/Hardware Failure	90	16,710	4,547,346
Forced Outage	12	2,461	286,990
Galloping Conductors	0	0	0
High Winds	601	43,403	20,218,205
Ice/Sleet/Snow	0	0	0
Lightning	176	7,333	4,154,724
Other	10	2,365	612,339
Other Electric Utility	0	0	0
Overload	1	284	12,188
Personnel Error	1	699	4,008
Scheduled/Planned Outage	23	630	28,415
Transmission Trouble	0	0	0
Tree Trimmers, Company	1	5	7,338
Tree Trimmers, Customer	0	0	0
Trees Inside ROW	67	3,682	4,902,502
Trees Out of ROW	192	25,078	7,334,777
UG Const./Dig-Ins	5	32	15,723
Undesired Relay Operation	0	0	0
Unknown	35	4,692	769,940
Vandalism	2	2	349
Vehicle Accident	6	145	42,048

AES Ohio
Rule 10 Report for 2021

6b. 4901:1-10-10(C)(3)(b): Data for major events only

Outage Cause	Events	Customers Interrupted	Customers Minutes Interrupted
Totals:	1,250	107,762	42,973,210

Notes:

AES Ohio
Rule 10 Report for 2021

6c. 4901:1-10-10(C)(3)(c): Data for transmission outages only

Outage Cause	Events	Customers Interrupted	Customers Minutes Interrupted
Animal/Bird	0	0	0
Blast/Explosion/Fire	0	0	0
Equipment/Hardware Failure	6	5,411	760,330
Forced Outage	0	0	0
Galloping Conductors	2	1,937	805,505
High Winds	6	9,457	1,631,445
Ice/Sleet/Snow	0	0	0
Lightning	1	5,560	1,052,683
Other	1	4,115	178,042
Other Electric Utility	0	0	0
Overload	0	0	0
Personnel Error	0	0	0
Scheduled/Planned Outage	3	3,188	105,052
Transmission Trouble	4	7,705	1,730,528
Tree Trimmers, Company	1	2,127	185,616
Tree Trimmers, Customer	0	0	0
Trees Inside ROW	0	0	0
Trees Out of ROW	2	9,515	1,920,443
UG Const./Dig-Ins	0	0	0
Undesired Relay Operation	0	0	0
Unknown	0	0	0
Vandalism	0	0	0
Vehicle Accident	1	1,461	200,985

AES Ohio
Rule 10 Report for 2021

6c. 4901:1-10-10(C)(3)(c): Data for transmission outages only

Outage Cause	Events	Customers Interrupted	Customers Minutes Interrupted
Totals:	27	50,476	8,570,628

Notes:

AES Ohio
Rule 10 Report for 2021

7. 4901:1-10-10(C)(4): Momentary Interruptions

Total Number = 658

Notes:

Pursuant to 4901:1-10-10(D), AES Ohio submits the following Action Plan:

Background

AES Ohio has been unsuccessful in meeting its Customer Average Interruption Duration Index (“CAIDI”) performance standard for a third consecutive year (2021). AES Ohio and PUCO Staff met on June 29, 2021, to discuss some of the drivers of this CAIDI performance and collectively agreed on a path forward. This path included the necessity of filing and securing a more timely and representative CAIDI standard in addition to the specific Action Items mentioned below. These Action Items directly correlate with the 2020 Revised Noncompliance Action Plan that AES Ohio submitted in July 2021, after considering feedback from PUCO staff in response to the Company’s initial Action Plan submitted in March, 2021, together with our Rule 10 filing.

Ohio Admin. Code 4901:1-10-10(D) requires that an electric utility file an action plan with the Commission if the annual performance of an electric utility does not meet the electric utility's performance standard for any index. Accordingly, AES Ohio hereby submits the following Action Plan to address AES Ohio’s failure to meet its 2021 annual CAIDI standard. The Company’s Action Plan includes the following items:

1. Vegetation Management
 - a. Program focused on out of right-of-way trees with annual financial commitment
 - b. Vegetation Management Data Analytics
2. System Hardening
 - a. Updated pole standard
 - b. Acceleration of Reclosers
 - c. Continued proactive cutout program
 - d. Continued proactive underground primary program.

Action Plan

On October 21, 2021, AES Ohio filed an application to establish new reliability standards in case number 21-0956-EL-ESS. This case is ongoing with a procedural schedule established.

The Company is committed to maintaining reliability. For example, AES Ohio has changed response time related operations, is making additional commitments regarding tree trimming, is strengthening the infrastructure in the field making it more resilient to damage, and will continue to take a proactive approach to replacing cutouts and underground primary cable.

1. Vegetation Management

As part of AES Ohio’s Revised Action Plan that was submitted in July of 2021, AES Ohio committed to allocating funds from the current vegetation management budget to address

trees out of right-of-way. Specifically, \$500,000 annually for 4 years, for a total of \$2,000,000, would be dedicated to identifying danger trees, prioritizing their removal based on tree risk assessment and out of ROW danger trees based upon their comparable risk. Beginning in the late summer of 2021, AES Ohio implemented this action item by identifying and addressing danger trees on those circuits that were currently being trimmed and those that were in the planning phase. This action was taken on 31 circuits. In addition, due to reliability concerns, action was taken on an additional 4 circuits. As a result, AES Ohio spent \$183,000 on the removal of danger trees. As part of this Action Plan, AES Ohio commits to the continuation of this same action item for years 2022 through 2026. AES Ohio used best efforts upon making the \$500,000 annual spending commitment to complete as much out of right away trimming as possible in the remaining months of the year to reach that commitment in 2021. Obstacles to achieving \$500,000 in trimming during the roughly 5 months that remained in 2021 included adequately identifying and evaluating trees from a risk perspective, securing property owner permission to mitigate the trees that AES Ohio had no legal right to address given that they existed outside of our established legal right of way and then ultimately completing the tree removals. Now that we have a “pipeline” of identified “risk” trees, and have been working on securing owner consents, we do not anticipate issues with achieving the \$500,000 spending commitment in 2022.

Additionally, AES Ohio commits to the continued development of a more robust data analytics model to increase data driven and predictive trim decisions. These actions will improve the Company’s long-term response time as we expect fewer whole-tree outages caused by dead ash trees.

Finally, AES Ohio is currently in a base rate case proceeding which is pending before the Commission and we are seeking a material increase in vegetation management funds so as to enable us to address these out of right-of-way tree hazards driving our failure to meet our CAIDI target.

2. System Hardening

As part of this Action Plan, AES Ohio commits to modifying its pole replacement process such that stronger poles will be installed to reduce the severity of storm outages. Specifically, the Company will no longer install Class 4 poles and instead will install Class 1 and 2 poles. Additionally, AES Ohio commits to continuing its proactive approach to replacing cutouts as well as underground primary cable.

AES Ohio commits to the acceleration of 5 circuits of recloser deployment in 2022. This is expected to improve customer experience by sectionalizing circuits automatically, reducing the number of customers who experience a sustained outage. Adding reclosers will reduce the frequency of customers experiencing an outage.

**This foregoing document was electronically filed with the Public Utilities
Commission of Ohio Docketing Information System on**

3/31/2022 4:36:23 PM

in

Case No(s). 22-0995-EL-ESS

Summary: Annual Report Pursuant to Rule 4901:1-10-10 Electric Distribution
System Reliability electronically filed by Mr. Robert J. Adams on behalf of The
Dayton Power and Light Company d/b/a AES Ohio