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April 27, 2022

BY ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, Filing Room
Harrisburg, PA 17120

Re: Pike County Light and Power Company; Docket No. M-2016-2522508;
Annual Electric Reliability Report 2021 System Performance

Dear Secretary Chiavetta:

Enclosed for filing with the Public Utility Commission is Pike County Light & Power Company's Annual Electric Reliability Report 2021 System Performance.

Should you have any questions or comments, please feel free to contact me directly.

Very truly yours,

/s/ Whitney E. Snyder

Thomas J. Sniscak
Whitney E. Snyder
Bryce R. Beard

WES/das
Enclosure

cc: John Van Zant (jvanzant@pa.gov)
Per Certificate of Service

Pike County Light & Power Company

Annual Electric Reliability Report

2021 System Performance

Submitted by:
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April 27, 2022

INTRODUCTION

Pursuant to the requirements of 52 Pa. Code §57.195, Pike County Light & Power Company ("Pike", "PCL&P" or the "Company") submits this Annual Reliability Report ("Report") to the Pennsylvania Public Utility Commission ("PAPUC") for its 2021 system performance. Pike is an electric distribution company ("EDC") which has approximately 4,891 electric distribution customers, thereby making it a "smaller EDC" for purposes of 52 Pa. Code §57.195 (c).

§57.195. (b)(1)

An overall assessment of the state of the system reliability in the EDC's service territory including a discussion of the EDC's current programs and procedures for providing reliable electric service.

Overall Current Assessment

The PCL&P service territory is primarily fed from two 34.5 kV feeders that originate from Orange and Rockland Utilities (ORU). The Borough of Matamoras is served by two 13.2 kV feeders from a substation with backup tie capability to distribution circuitry from ORU. The substation is normally fed by a 34.5 kV feed from ORU circuit 116-2-34, with backup service being provided by ORU 34.5 kV circuit 116-4-34 through an automatic transfer scheme at the substation. The western portion of the Pike service territory is supplied by a radial feed from the ORU circuit 116-4-34.

The most recent vegetation 34.5 kV cycle was completed in completion in the first quarter of 2022. The most recent 13.2 kV circuit cycle was completed in 2017 and is scheduled next for completion in 2022/23. There will be an emphasis on dead tree removals along the Avenue C on the 34.5 kV and next year on Delaware Drive and Heaters Hill on the 13.2 kV circuits.

In prior years, the Company has been effective in removing danger trees. The Company will remove danger trees within rights-of-way areas when identified. Those danger trees that exist outside of the Company's right-of-way areas can only be removed with customer or municipal authorization. PCL&P works with the County Commissioners' office, the Boroughs of Matamoras and Milford, the Townships of Westfall and Milford, and the Milford Shade Tree Commission to address danger trees that represent a hazard to the Company's electrical system located within and outside of right-of-way areas.

The current cycle of the pole inspection program began with 1,046 poles inspected in 2019 and continued with 425 pole inspections in 2020, zero poles in 2021 and proposed 750 pole inspections in 2022. The emphasis on replacement of defective poles was to focus on the "main-line" of the two 34.5 kV circuits from the Delaware River into Milford Borough and Township and laterals. The second stage of priority is to replace defective poles with equipment installed, such as transformers, regulators and reclosers.

In addition, 95% of the pad-mount transformers were inspected in 2019 and the remaining 5% were completed in 2020. A visual inspection of the interior and exterior of the transformers along with cable end tag verification, open point-map confirmation and condition of the transformer tank, cable accessories and accessibility.

The PAPUC's service reliability standards for Pike, last revised on August 17, 2006, are as follows:

- 12-Month System Average Interruption Frequency Index ("SAIFI", or "Frequency") of 0.82 interruptions per customer served;
- 12-month Customer Average Interruption Duration Index ("CAIDI" or "Restoration") of 235 minutes of interruption per customer interrupted; and
- 12-month System Average Interruption Duration Index ("SAIDI" or "Duration") of 195 minutes per customer served.

In 2021 the Pike service territory experienced a Frequency of 1.40 interruptions per customer served, a Restoration of 153 minutes, and Duration of 216 customer-minutes of interruption. SAIFI was 70% above the standard, CAIDI was 21 minutes below the benchmark, and SAIDI was 21 minutes above the standard. These results are detailed on Page 7 of this Report, along with the most recent three-year history for these indices.

The three-year reliability standards for Pike are as follows:

- Three-year annualized SAIFI of 0.67 interruptions per customer served;
- Three-year annualized CAIDI of 191.4 minutes of interruption per customer interrupted; and
- Three-year annualized SAIDI of 129 minutes per customer served.

For the three-year period ended December 2021, Pike experienced an annualized frequency of 0.74 interruptions per customer served, a restoration of 164 minutes, and duration of 122 customer minutes of interruption.

There were two major events that affected Pike's service territory during 2021 that were accepted by the PAPUC for exclusion from the reliability statistics. These major events affected 4,214 customers and are detailed in the next section of this Report (starting on Page 5).

The table on Page 8 summarizes, by cause, Pike customer interruptions experienced in 2021, with pre-arranged and major events removed. The leading cause of outages was tree contacts, with 32 interruptions affecting 3,482 customers for a total of 756,865 customer-minutes.

The service reliability program targeted to manage these outages is the 34.5 kV circuit three-year, cycle-based tree clearance program and 13.2 kV is on 5-year cycle and the pole inspection and defective pole replacements.

The distribution inspection and maintenance goals/objectives and capital expenses are listed starting on Page 10 of this Report. Pike has no transmission lines.

§57.195. (b)(2)

A description of each major event that occurred during the year being reported on, including the time and duration of the event, the number of customers affected, the cause of the event and any modified procedures adopted to avoid or minimize the impact of similar events in the future.

Major Events

Date	Cause	Time	Duration (hours)	Customers Affected	Customer Minutes of Int
1/18/21	Equipment Failure	2:17 PM	4.35	2,367	91,507
5/18/21	Equipment Failure	11:30 AM	1.88	1,847	119,432
			Totals	**4,214**	**210,939**

a. <u>January 18, 2021</u>

On the afternoon of January 18, the failure of an underground elbow caused both the violent failure of the transformer it was connected to and the upstream recloser to trip until it locked out. The weather was not a factor in this outage.

The failure of the underground elbow caused the transformer to catch fire. This specific transformer was last inspected during the 2019-2020 pad mount transformer inspection cycle at which time no visible defects were witnessed.

This outage marks the third transformer failure in this underground development within the past six months. Based on the age of the underground installation, materials used at the time of installation and the recent outages, PCL&P had already made the decision to rebuild the underground development. Orders for the capital equipment had been placed before this outage. PCL&P is currently waiting on delivery of said materials to start construction.

b. <u>May 18, 2021</u>

On May 18 at approximately 11:30 a.m., line 116-2-34 and circuit 104-1-13 locked out in the Deerpark substation and the Matamoras substation respectively. This was due to a conductor from circuit 116-2-34 sagging low enough to make contact with a conductor from circuit 104-1-13. The sagging was the result of the loading and the 300' length of the span.

In the event of a loss of voltage on line 116-2-34 the Vista switch installed at the Matamoras substation is designed to automatically transfer the load from line 116-2-34 to line 116-4-34 but this did not happen. Prior to the event, PCL&P contracted the manufacturer, S&C Electric, to conduct the recommended maintenance and testing on the Vista switch as per the maintenance plan. The non-operation of the Vista switch was the correct response based on the

nature of the double circuit fault. The lack of engagement of the alternate supply (circuit 116-4-34) caused circuit 104-3-13 to be de-energized at 11:30 a.m. as well. Both circuits 104-1-13 and 104-3-13 were able to be re-energized via distribution field switching.

A project was designed and completed by September 2021 that eliminated the crisscrossing of the two circuits, the long span lengths and the high exposure of tree outages, all to improve reliability in the area.

§57.195. (b)(3)

A table showing the actual values of each of the reliability indices (SAIFI, CAIDI, SAIDI, and if available, MAIFI) for the EDC's service territory for each of the preceding 3 calendar years. The report shall include the data used in calculating the indices, namely the average number of customers served, the number of sustained interruptions, the number of customers affected, and the minutes of interruption. If MAIFI values are provided, the number of customer momentary interruptions shall also be reported.

Year	SAIFI	CAIDI	SAIDI	Average No. of Customers Served	No. of Interruptions	Customers Affected	Customer Minutes of Interruption
2018	0.85	236	200	4,797	48	4,057	959,178
2019	0.39	177	69	4,819	42	1,870	331,355
2020	0.45	184	83	5,227	55	2,356	432,428
2021	1.40	153	216	4,891	66	6,890	1,058,853

MAIFI data is not currently available.

§57.195. (b)(4)

A breakdown and analysis of outage causes during the year being reported on, including the number and percentage of service outages, the number of customers interrupted, and customer interruption minutes categorized by outage cause such as equipment failure, animal contact, tree related, and so forth. Proposed solutions to identify service problems shall be reported.

Causes of Interruption				
Cause Description	**No. of Inter.**	**% of Inter.**	**Customers Affected**	**Customer Minutes**
Animal Contact	7	10.6%	161	16,311
Tree Contact	32	48.5%	3,482	756,865
Work Error	2	3.0%	1,958	63,290
Equip. Failure	17	10.6%	74	8,089
Non-Comp Acc.	1	1.5%	21	168
Loss of Feed	5	7.6%	339	135,995
Unknown-Other	12	18.2%	855	78,135
Totals	**66**		**6,890**	**1,058,853**

As noted in the above table, the primary cause of interruptions in 2021 was “Tree Contact”, followed by “Work Error”.

In 2021, the effects of Pike’s reliability programs such as hot spot tree trimming and select hazardous tree removals; accelerated pole inspections and replacement; and accelerated pad-mount transformer/underground cable end inspection programs results are beginning to be reflected in the indices associated with reduction in total interruptions, customers affected and customer minutes. The programs will continue with expected positive results.

§57.195(b)(5)

A list of the major remedial efforts taken to date and planned for circuits that have been on the worst performing 5% of circuits list for a year or more.

Pursuant to Pike's exemption as set forth in §57.195(c), Pike is not required to address this subsection.

§57.195. (b)(6)

A comparison of established transmission and distribution inspection and maintenance goals/objectives versus actual results achieved during the year being reported on. Explanations of any variances shall be included.

T/D Inspection/Maintenance Goals/Objectives

Goals/Objectives vs. Results

For distribution goals and objectives, the Company focused on completing all scheduled preventive maintenance on its distribution facilities. As set forth below, Pike met these goals. Pike has no transmission facilities.

- Distribution Vegetation Management
  - In 2021, primarily hot spotting of the distribution system was implemented along with some danger trees removals in Matamoras and Milford Boroughs. The cycle-based tree clearance program for the 34.5 kV circuits (58.75 miles, three-year cycle) began in December 2021, and the 13.2 kV circuits (42 miles, five-year cycle) will commence in November of 2022 per the Company's line clearance specifications. In 2021, the Company also responded to several requests from customers and municipalities for tree trimming and hazard tree removal. In addition, known hot spot areas are scheduled each year to be trimmed.
- Pole Inspection Program
  - Distribution poles are inspected on a twelve-year cycle. PCL&P will inspect 750 poles in the spring of 2022.
- Distribution Overhead Line Inspections
  - In 2021, the Company did not perform infrared and pole top equipment inspections.
- Power Quality
  - The 2021 maintenance program required inspection of seven capacitors and five regulators, which PCL&P did not complete as planned. This work will resume in 2022. There have been no power quality customer complaints since before 2017.
- Recloser Program
  - The 2021 maintenance program required visual inspection of all reclosers annually, and a functional test every three years. Pike completed the four visual inspections and the functional tests were last completed in 2020.

- Substation Maintenance and Inspection Program
    - The 2021 maintenance program required completion of all inspection and maintenance requirements as listed in Appendix I for the Matamoras Substation. The monthly visual inspections were performed, the other inspections were completed in 2021.
- Transformer Inspection Program
    - PCL&P inspects all pad mount transformers on a five-year cycle. The pad-mounted transformer inspection portion of the PA Inspection & Maintenance Plan five-year cycle was completed in 2019 and 2020.
    - PCL&P inspects all overhead distribution transformers on a two-year cycle as part of the overhead distribution line inspection program. PCLP did not complete this inspection in 2021 and it is scheduled to be completed in 2022.

§57.195. (b)(7)

A comparison of budgeted versus actual transmission and distribution operation and maintenance expenses for the year being reported on in total and detailed by the EDC's own functional account code or FERC account code as available. Explanations of any variances 10% or greater shall be included.

T/D Operation and Maintenance

2021 O&M Expenditures	2021 Budget ($,000)	2021 Actual ($,000)
5800 Operation Supervision and Engineering	475	550
5810 Load Dispatching	0	0
5820 Station Expenses	0	0
5830 Overhead Line Expenses	0	0
5840 Underground Line Expenses	0	0
5860 Meter Expenses	0	0
5870 Customer Installations Expenses	0	0
5880 Miscellaneous Distribution Expenses	0	0
5890 Rents	0	0
5920 Maintenance of Station Equipment Distribution	0	0
5930 Maintenance of Overhead Lines Distribution	609	334
5940 Maintenance of Underground Lines Distribution	92	0
5960 Maintenance of Street Lighting and Signal Systems	4	0
5980 Maintenance of Miscellaneous Distribution Plant	0	0
Total Distribution	1,180	884

The 2021 Actual Operation and Maintenance Expenses under ran the budgeted amount by $296k (25%). The under run was due to a shift in work from maintenance to capital projects. Prime examples are new business and LTIIP projects.

§57.195. (b)(8)

A comparison of budgeted versus actual transmission and distribution capital expenditures for the year being reported on in total and detailed by the EDC's own functional account code or FERC account code as available. Explanations of any variances 10% or greater shall be included.

T/D Capital Expenditures

Account#	Capital Project	2021 Budget ($,000)	2021 Actual ($,000)
1070	New Installations	75	130
1070	Other Replacement	63	57
1070	Pole Replacement	130	562
1070	Residential Meters	10	0
1070	Non-Residential Meters	12	0
1070	Voltage Regulation	20	0
1070	Transformers	80	213
1070	Safety Equipment	8	0
1070	System Reinforcement	110	996
1070	Computers/Printers	82	48
	Total Capital	**590**	**2,006**

The 2021 overall Capital Expenditures were $1,416k (240%) above the budget. The increased spending was due to unanticipated new business work and a LTIIP capital projects to improve reliability.

§57.195. (b)(9)

Quantified transmission and distribution inspection and maintenance goals/objectives for the current calendar year detailed by system area (that is by transmission, substation and distribution.)

T/D Inspection and Maintenance Goals/Objectives Quantified

Inspection and maintenance programs, designed with the intention of improving frequency of interruption and minimizing the resultant increases in restoration (as frequency is improved), have been in effect in Pike's service territory for over ten years. In addition, the "Biennial Inspection, Maintenance, Repair and Replacement Plan" became effective on January 1, 2012. This plan along with the associated programs are focused on field facilities and customer satisfaction, and are effective in minimizing the probability of an interruption while limiting the number of customers affected per interruption. The major programs are:

- Distribution Vegetation Management
  - The not to exceed five-year cycle trimming and various spot trimming and hazard tree removal are performed as conditions are identified.
- Pole Inspections Planned
  - 750 Poles are scheduled to be inspected in 2022.
- Power Quality
  - The 2022 annual maintenance program will require inspection of seven capacitors and five regulators.
- Recloser Program
  - The 2022 maintenance program will require visual inspections of four reclosers.
- Substation Maintenance and Inspection Program
  - The 2021 maintenance program will require the completion of all monthly and annual inspection and maintenance requirements, as listed in Appendix I for the Matamoras Substation.
- Distribution Overhead Line Inspections
  - All circuit 3 phase mainlines are planned to be inspected in the next inspection cycle scheduled for 2022.
- Distribution Transformer Inspections
  - All overhead transformers were inspected in 2018. The next inspection of overhead transformers is scheduled to be completed in 2022. The pad mounted transformers inspections were 100% completed in 2019/20. The inspection of pad mount transformers is completed over a five-year cycle.

§57.195. (b)(10)

Budgeted transmission and distribution operation and maintenance expenses for the current year in total and detailed by the EDC's own functional account code or FERC account code as available.

T/D Operation and Maintenance

O&M	Capital Project	2022 Budget ($,000)
5800	Operation Supervision and Engineering	596
5820	Station Expenses	0
5830	Overhead Line Expenses	0
5840	Underground Line Expenses	0
5860	Non-Specific Project	0
5880	Miscellaneous Distribution Expenses	0
5890	Rents	0
5920	Maintenance Of Station Equipment Distribution	0
5930	Maintenance Of Overhead Lines Distribution	362
5940	Maintenance Of Underground Lines Distribution	0
5960	Maintenance Of Street Lighting and Signal Systems	0
	Total Distribution	**958**

§57.195. (b)(11)

Budgeted transmission and distribution capital expenditures for the current year in total and detailed by the EDC's own functional account code or FERC account code as available.

T/D Capital Expenditures

Account No.	Capital Project	2022 Budget ($,000)
330	Electric Meter Purchases	75.00
330	Pole Inspection Blanket (PARC)	243.75
330	Electric Distribution Blanket/ Electric Meter 1st Install Blanket and Transformers	361.25
	Total Capital	**680.0**

§57.195. (b)(12)

Significant changes, if any, to the transmission and distribution inspection and maintenance programs previously submitted to the PAPUC.

T/D Inspection and Maintenance Programs - Significant Changes

Inspection & Maintenance Changes

There were no significant changes to Pike's Inspection and Maintenance programs in 2021. Inspection programs in 2022 will be performed in accordance with the Company's "Biennial Inspection, Maintenance, Repair and Replacement Plan" filed with the PAPUC.

Appendix I Substation Maintenance and Inspection Program

Item Description:

Examine individual utility substation maintenance programs to validate proper maintenance procedures and verify that maintenance is being performed. Review recent operating data to verify that no adverse trends exist.

PCL&P Program:

The following details the different class inspections and maintenance programs and their associated time cycles. Intervals vary dependent on equipment type, style and maintenance history.

CLASS #1 INSPECTION – Monthly Visual Inspection

- Transformer and oil breakers for oil leaks, oil levels, nitrogen pressure, connections, condition of bushings and Oil Circuit Breaker (OCB) operating mechanism.
- Battery bank, charger, control board indicating lights, control house lights, yard lights.
- Minor equipment including Potential Transformers (PTs), Current Transformers (CTs), Capacitive Coupled Potential Devices (CCPDs), disconnect switches and bus connections.
- Structures, fences and yard surfaces.
- Counter readings taken of OCBs, reclosers and tap changers.

STATION BATTERY TESTS – Semi Annually

- Measure specific gravity and cell voltage. Test battery impedance, clean batteries and check cell levels.

FANS, PUMPS, HEATERS AND COMPRESSORS - Annually

- Check for proper operation prior to winter for heaters and compressors and prior to summer for fans and pumps.

TRANSFORMER GAS IN OIL ANALYSIS – Quarterly/Annually

- Take oil sample from each power transformer compartment and analyze for combustible gas content.

DOBLE POWER FACTOR TEST - Every Three - Ten Years

- Use Doble instrument to measure the integrity of the insulating medium of applicable device.

OCB TIMING - Every Three - Ten Years

- Check the time it takes for each operation of breakers.

RELAY MAINTENANCE - Every four years, electromechanical; six years microprocessor

- Clean, test and calibrate as required all relays involved in protective relay schemes. After testing and calibrating, perform a trip test to assure proper operation.

CLASS #3 INSPECTION - Every Three - Ten Years

The Class #3 inspection on transformers is to include, but is not limited to the following items:

- Test oil
- TTR - Test, Megger test;
- Inspect all connectors, bushings;
- Inspect for leaks (oil - nitrogen);
- Check CT connections, alarm systems on banks; and
- Doble Power Factor Test.

<u>Transformer Load Tap Changer</u>

- Test Oil in LTC cabinet; and test LTC control for proper operation.

The Class #3 inspection on OCB's is to include, but is not limited to the following items:

- Test Oil
- DLRO (Ductor Test) before and after
- Inspect and clean control cabinet;
- Inspect and clean Pneumatic-Hydraulic or spring charged operating system; and
- Operational Test.

The Class #3 inspection on reclosers is to include, but is not limited to the following items:

- Test Oil
- DLRO (Ductor Test) before and after;
- Control cabinet clean, checkout and operational test; and

The Class #3 inspection on ACB's is to include, but is not limited to the following items:

- DLRO (Ductor Test) before and after;
- Inspect all contacts (action to be taken, if needed);
- Inspect and test all Micro and Aux. contacts (close and trip circuit); and
- Operational Testing

CLASS #4 INSPECTION - Various intervals (four - twelve years or as necessitated by Class #3 Inspection results) dependent on equipment type, style and maintenance history.

The Class #4 inspection consists of a thorough inspection and testing of the apparatus listed below and includes all inspections included in a Class #3.

Transformer Load Tap Changer

- Drain oil from LTC cabinet, inspect all contacts;
- Inspect and tighten all connections;
- Clean complete LTC cabinet;
- Filter or replace oil; and
- Test LTC control for proper operation.

The Class #4 inspection on OCB's is to include, but is not limited to the following items:

- DLRO (Ductor test) before and after;
- Drop tanks - inspect and tighten all connections. Clean all parts and tanks;
- Test and filter or replace oil;
- Inspect and clean control cabinet;
- Inspect and clean pneumatic-hydraulic or spring charged operating systems; and
- Operational test.

The Class #4 inspection on reclosers is to include, but is not limited to the following items:

- Drop tank (filter or replace oil);
- Inspect all contacts - repair or replace (depending on the condition);
- Check and tighten all connections;
- Control cabinet, clean and checkout;
- DLRO (Ductor Test) before and after; and
- Operational test.

The Class #4 inspection on ACB's is to include, but is not limited to the following items:

- DLRO (Ductor Test) before and after;
- Inspect all contacts - clean and put protective grease coating on;
- Inspect and clean all arc chutes;
- Inspect and test all Micro and Aux. contacts (close and trip circuit);
- Check and tighten all connections; and
- Operational test

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true and correct copy of the foregoing document upon the parties, listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a party) and the Commission's March 26, 2020 COVID-19 Suspension Emergency Order.

VIA ELECTRONIC MAIL

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/s/ Whitney E. Snyder
Thomas J. Sniscak
Whitney E. Snyder
Bryce R. Beard

DATED: April 27, 2022