

COMMONWEALTH OF PENNSYLVANIA
(Public Utility Commission)

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BRUCE GOODAY, :
Complainant, : Docket No.:
vs. : C-2025-3053930
PPL ELECTRIC UTILITIES :
CORPORATION, :
Respondent. :
-----*

Pages 1 through 59 TELEPHONIC HEARING
Judge's Chambers
State Office Building
801 Market Street
Philadelphia, PA 19107

Friday, June 6, 2025
Met, pursuant to notice, at 10:28 a.m.

BEFORE: THE HONORABLE ALPHONSO ARNOLD III
Administrative Law Judge

INDEX TO EXHIBITS
Docket No.: C-2025-3053930
Hearing Date: June 6, 2025

EXHIBITS INDEX

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PPL ELECTRIC UTILITIES CORPORATION:		
3	(Outage history going back to 2021)	45
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EXHIBIT B

POWER OUTAGES FOR BALD MOUNTAIN RD (2023)

5/3	1:04am	5/3	8:15am	7hr 11min
7/21	6:17am	7/21	7:26am	1hr 9min

POWER OUTAGES FOR BALD MOUNTAIN RD (2024)

<u>Date & Time Power Off</u>	<u>Date & Time Power Restored</u>	<u>Total Time Power Off</u>
1/14 1:35pm	1/15 12:17am	10hr 42min
2/28 6:39pm	2/29 12:24pm	17hr 45min
4/2 10:47am	4/2 10:59am	0hr 12min
4/4 12:17pm	4/4 4:44pm	4hr 27min
6/24 2:05pm	6/24 6:50pm	4hr 45min
11/21 11:37pm	11/24 3:10pm	63hr 33min
12/11 1:56pm	12/11 4:55pm	2hr 59min

Avg OutageTime(Hrs)/9 Outages: 12.53hr/Outage

PA PUC Benchmark Set for Outages: 2.47hr/Outage

Results are 5X higher than the PUC Benchmark

PPL ELECTRIC
EXHIBIT 3

Customer History

Customer Information:

Bill Account Number	Customer Name	Customer Type	Service Address	Area Code	Primary Phone Num	Transformer Grid	Map Links
██████████	BRUCE GOODAY	Individual	1777 BALD MOUNTAIN RD	570	822-8844	55350N40199	Google Maps

OMS Outage History:

Trouble Date & Time	Restored Date & Time	Duration	Job Number	Order Description	Cause	Weather Type	Comments
3/1/2021 7:49:36 PM	3/2/2021 1:40:00 AM	351	6096972-1	NL Order	Trees-Not Trimming Related	Wind	::MDT No Required Permit per E187112 ::
3/14/2021 2:30:00 PM	3/14/2021 9:09:00 PM	399	6118750-1	NL Order	Trees-Not Trimming Related	Wind	::MDT No Required Permit per E40098 :::Order restored by DMS::21002786
8/12/2021 2:52:19 PM	8/12/2021 5:47:26 PM	175	6199934-1	NL Order	Trees-Not Trimming Related	Wind	Modified task restoration time to earliest power_up time;::MDT Required Permit186871-1 as per E186871 ..
8/16/2021 10:01:32 AM	8/16/2021 10:25:00 AM	24	6202813-1	NL Order	Trees-Trimming Related	Wind	::MDT No Required Permit per E171395 ::
12/6/2021 12:54:55 PM	12/6/2021 3:50:00 PM	176	6279545-1	NL Order	Trees-Not Trimming Related	Wind	::MDT Required Permit171395-1 as per E171395 ::

2/4/2022 11:47:42 AM	2/4/2022 5:16:00 PM	329	6322766-1	NL Order	Trees-Not Trimming Related	Ice/Sleet/Snow	::MDT Required Permit186006-1 as per E186006 ::
3/28/2022 7:14:00 PM	3/28/2022 10:18:00 PM	184	6383521-1	NL Order	Equipment Failures	Not a Factor	22003284 Between LBDs at pole 53620n39088 and LBDs at pole 53632n39138 - Failed UG Primary Cable.
5/3/2023 1:04:12 AM	5/3/2023 8:15:00 AM	431	6623919-1	NL Order	Vehicles	Not a Factor	::MDT No Required Permit per E171395 :::MDT undefined::Crew: 306010::Comments:Order Assessed::Date:May 3rd 2023, 5:03:06 am::c/o 5 hi 1 low to relace pole 54325n40088, pa1# 20231230009 @ 0303 dig time 0503.
7/21/2023 6:16:00 AM	7/21/2023 7:26:00 AM	70	6911867-1	NL Order	Trees-Not Trimming Related	Not a Factor	::MDT No Required Permit per E171395 ::

1/14/2024 1:35:00 PM	1/14/2024 11:49:00 PM	614	7155867-1	NL Order	Trees-Not Trimming Related	Wind	::MDT Required Permit171395-2 as per E171395 :::MDT undefined::Crew: E155024::Comments:Order Assessed::Date:January 14th 2024, 4:32:13 pm:: Replay of 7143880
2/28/2024 6:38:32 PM	2/29/2024 12:24:00 PM	1066	7174226-1	NL Order	Trees-Not Trimming Related	Wind	::MDT Required Permit190946-1 as per E186325 :::MDT undefined::Crew: E04842::Comments:Order Assessed::Date:February 28th 2024, 10:28:23 pm:: PA1 SERIAL #20240593638 DIG TIME 01:15 FOR POLE 54984N40246
4/2/2024 10:59:00 AM	4/2/2024 2:55:00 PM	236	7193377-1	NL Order	Trees-Not Trimming Related	Wind	::MDT No Required Permit per E04842 ::24006089

4/4/2024 12:16:19 PM	4/4/2024 4:44:00 PM	268	7219925-1	NL Order	Trees-Not Trimming Related	Wind	::MDT Required Permit190145-2 as per E02086 Trees - Removed from line:: <mdt </mdt undefined::Crew: E187630::Comm ents:Order Assessed::Date:A pril 4th 2024, 12:38:43 pm::
6/24/2024 2:04:57 PM	6/24/2024 6:50:00 PM	286	7277076-1	NL Order	Trees- Trimming Related	Wind	::MDT No Required Permit per E04842 ::

11/21/2024 11:36:22 PM	11/24/2024 3:47:00 PM	3851	7637728-1	NL Order	Trees-Not Trimming Related	Ice/Sleet/Snow	::MDT No Required Permit per E04932 :::MDT No time left in shift::Crew:E400 98::Comments::: Date:November 22nd 2024, 6:33:13 am::TREE ON PRIMARY AT GRID 53866N39537 Will require a bigger crew to handle the rest of the job. There are a large amount of branches across the line that they didn't get to scope out Need Pole 54070N40616 replaced 40 c13 15kva PA one call serial number 20243280152 dig time 11/23/2024 after 6pm
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11/23/2024 6:13:41 PM	11/24/2024 3:09:00 PM	1256	7650933-1	NL Order	Trees-Not Trimming Related	Ice/Sleet/Snow	::MDT No Required Permit per E04932 need pole picked up at 54070n40616 inaccessible take pickup when ground dry or frozen; Pole - Need pole picked up (explain); WAM WR Created; ::
12/11/2024 1:55:17 PM	12/11/2024 4:55:00 PM	180	7689401-1	NL Order	Trees-Not Trimming Related	Rain	::MDT Required Permit166383-1 as per E02086 ::Tree reported on primary/neutral between poles 54112n39818 and 54099n39802

**PPL ELECTRIC
EXHIBIT 4**

Kimberly A. Klock
Assistant General Counsel

PPL
Two North Ninth Street
Allentown, PA 18101-1179
Tel. 610.774.5696 Fax 610.774.4102
KKlock@pplweb.com



E-FILE

October 3, 2022

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, Pennsylvania 17105-3265

**Re: PPL Electric Utilities Corporation
Biennial Inspection, Maintenance, Repair and Replacement Plan
For the Period January 1, 2024 – December 31, 2025
Docket No. M-2009-2094773**

Dear Ms. Chiavetta:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") an original of PPL Electric's Biennial Inspection, Maintenance, Repair and Replacement Plan for the Period January 1, 2024 – December 31, 2025 ("I&M Plan"). PPL Electric's I&M Plan is being filed pursuant to the Commission's regulations at 52 Pa. Code §§ 57.198.

Pursuant to 52 Pa. Code § 1.11, the enclosed document is to be deemed filed on October 3, 2022, which is the date it was submitted electronically via the Commission's E-Filing system.

If you have any questions, please call me or Steve Selkregg, PPL Electric's Director – Distribution Asset Management and Engineering at (610) 774-6545.

Respectfully submitted,

A handwritten signature in blue ink that reads "Kimberly A. Klock". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Kimberly A. Klock

Enclosures

cc via email: Paul Diskin
Harry Bidelspach

Patrick Cicero, Esquire
NazAarah Sabree

PPL Electric Utilities Corporation

Biennial Inspection, Maintenance, Repair and Replacement Plan of PPL Electric Utilities Corporation

For the Period of January 1, 2024 – December 31, 2025

Submitted by:


Steven D Selkregg (Oct 3, 2022 09:25 EDT)

Steve Selkregg
Director – Distribution Asset Management and Engineering
Two North Ninth Street
Allentown, PA 18101
(610) 774-6545
sdselkregg@pplweb.com

Dated: October 3, 2022

PPL Electric Utilities Corporation

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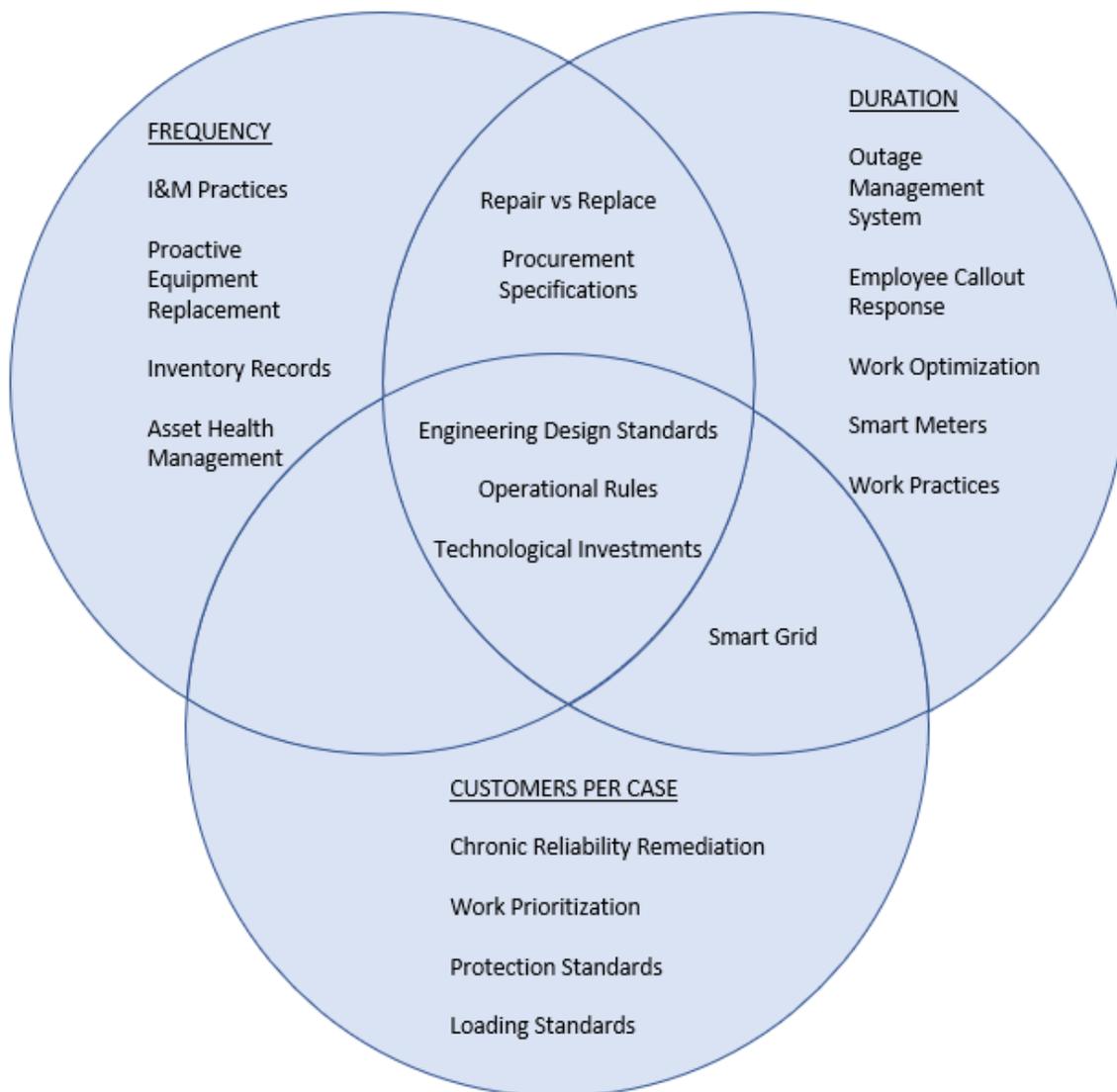
Introduction

PPL Electric Utilities Corporation (“PPL Electric” or “Company”) is firmly committed to maintaining high levels of customer satisfaction. Customer surveys show that high levels of customer satisfaction are achieved by providing reliable performance at a reasonable cost. PPL Electric has established a strong, long-term record of customer satisfaction and electric reliability. In 2021, PPL Electric ranked highest in the East Large Segment in the J.D. Power annual study of residential customer satisfaction for the 10th consecutive year.

Ultimately, the costs of maintaining reliability are borne by the ratepayers. Therefore, managing finite resources to produce optimal results is essential to deliver excellence in customer satisfaction. Criteria for program inclusion is not whether any single activity produces a positive reliability result, but rather, which portfolio of activities produces the best result for a given expenditure. PPL Electric’s goal is focused on results (i.e., the reliability experienced by customers and associated rate impacts), not the rote execution of particular tasks.

Reliability performance is driven by a mixture of manageable and unmanageable factors. The most impactful of the unmanageable factors is the frequency and severity of weather events, which can vary dramatically over time and geography. The manageable factors have an effect on service interruption frequency, duration, or number of customers affected, or a combination of all three. The figure below depicts a portfolio of manageable factors with inspection and maintenance (“I&M”) practices being one of many.

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Reliability Programs and Policies

PPL Electric’s philosophy is that the first step in improving reliability is to prevent outages altogether. The primary focus is, therefore, on the manageable factors that reduce the frequency (number) of cases. Efforts that typically overlap are those designed to minimize the number of customers affected should an outage occur. Realizing that not all outages are preventable, PPL Electric also directs rigorous efforts designed to reduce the duration of the outages that do occur. Examples of PPL Electric initiatives addressing each of the three reliability sectors, frequency (number of cases), customers affected per case, and duration are addressed below.

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Frequency (number of cases)

- **Inspection and maintenance practices and programs:** PPL Electric remains focused on equipment performance and service interruption avoidance through the application of effective inspection and maintenance practice and programs. A comprehensive discussion has been provided to the Pennsylvania Public Utility Commission (“PUC” or “Commission”) via PPL Electric’s I&M filing on a biennial basis since the initial report in 2010. The scope of these programs, procedures and activities covers all areas of the electrical infrastructure to include transmission, substations, distribution, and vegetation.

Transmission

Transmission inspection programs include aerial patrols conducted via helicopter or UAV (Unmanned Aerial Vehicle). These patrols focus on comprehensive inspections and routine “stop and go” inspections for identification of maintenance work. Inspections focus on all transmission line equipment, including poles, arms, line switches, interrupters, arresters, grounding, guying, anchors, and other key components. Proactive replacement programs are in place to target specific risk areas (e.g., cellon treated wood poles, upswept wood arms, etc.) and to apply data-driven approaches to mitigate known reliability risks (e.g., avian interference, lightning performance, etc.).

Substation

Substation maintenance programs include inspections and overhauls of equipment. Some equipment is maintained on a time basis; other equipment is condition-monitored. These two methods help ensure that maintenance work is performed in a cost-effective manner and keep rates low for our customers. Besides time and condition-based maintenance, thermo-graphic inspections help ensure that substation equipment does not operate at elevated temperature levels for an extended period of time, which helps prevent equipment failure.

Distribution

Distribution programs encompass many maintenance aspects similar to transmission and substations, and also include load surveys that help engineers determine peak load requirements, circuit analyses for the identification of lines requiring maintenance work, voltage relief, or other capital improvements. Overhead line inspections identify damaged or deteriorated equipment that is repaired or replaced proactively. In addition, distribution maintenance includes inspections of poles and other key distribution equipment.

Vegetation

The vegetation on PPL Electric’s transmission and distribution rights-of-way (“ROWs”) is maintained utilizing a combination of several management techniques. These include tree pruning, tree removal, re-clearing, and herbicide application. Lines are field surveyed on a regular basis. The work is scheduled and budgeted based on the conditions

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observed and past performance. Outside of the ROW, danger trees with the potential to fall into the ROW are removed when possible.

Each of these programs is more fully described in Appendices A through D.

- **Asset Optimization Strategy (“AOS”):** Since 2018, PPL Electric has developed several data-driven failure probability models based on relevant failure modes. These data model projects were initiated to drive smarter, targeted asset investment strategies throughout the portfolio and to address the challenges created by the Company’s aging infrastructure. As a result, several asset investment strategies across multiple asset classes have been revised to address these challenges. PPL Electric conducts effectiveness reviews of the various programs comprising this strategy to ensure that aging infrastructure continues to be appropriately addressed.
- **Asset Health Assessment:** PPL Electric is continuously expanding its use of data-driven decision making. Where feasible, asset health and criticality scores are captured and employed to refine programs to deliver the most effective reliability impact per dollar invested. PPL Electric continuously monitors the accuracy and effectiveness of these asset health and criticality scores, and in early 2018 began an initiative to develop predictive failure models of vital assets with the intention of continuously improving the health and criticality scores. These continued health calculation efforts enable PPL Electric to mitigate risk and optimize reliability more effectively. Among the areas where health and criticality scores are employed are substation and Low Tension Network equipment, reclosers, and underground cables.
- **Long Term Infrastructure Improvement Plan:** In September 2022, PPL Electric submitted its third Long Term Infrastructure Improvement Plan (“LTIP”). This Plan was submitted pursuant to the requirements of Subchapter B, Distribution Systems, of the Public Utility Code, 66 Pa. C.S. §§ 1350-1360, and the PUC’s Implementation Order for Establishment of a Distribution System Improvement Charge (“DSIC”). The Plan is a continuation of AOS infrastructure replacements in addition to prudent capital investments such as the proactive installation of animal guards, new sectionalizing devices, distribution automation, asset life extension methods, replacement of deteriorated equipment, and capital projects aimed at addressing worst performing circuits (“WPCs”).
- **Reliability Preservation Program:** In 2019, the legacy Customers Experiencing Multiple Interruptions (“CEMI”) and Momentary Average Interruption Frequency Index (“MAIFI”) Programs were combined with the Reliability Preservation Program. This was strategically done to ensure all reliability-based projects were prioritized and addressed together for efficiency and timeliness of remediation. All projects are vetted and prioritized against a common prioritization methodology to ensure consistency and systematic benefits are quantified across the portfolio. Reliability performance of PPL Electric’s circuits are reviewed on a quarterly basis to ensure investment plans are optimized.

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- **Proactive Circuit Analysis (“PCA”):** PCAs are performed on each circuit on a four-year cycle. The review analyzes and addresses both operational and reliability characteristics of each circuit. Voltage support, phase balancing, protection coordination, power factor maintenance and loading issues are addressed from an operational perspective. Service outage analysis, exposure analysis and field checks address reliability and power quality.
- **Reliability Principles and Practices (“P&P”) Revisions:** The P&P sets forth a set of principles that PPL Electric follows to plan, protect, and operate the Electrical Distribution System (“EDS”). These principles are implemented through a set of standard practices that are used as guidelines in designing the EDS. These practices are reviewed regularly to ensure they remain reasonable and acceptable and align well in accordance with good utility practices.

Duration (minutes/case)

- **Distribution Automation:** In 2010, PPL Electric launched a “smart grid” pilot project that enables the Company to react rapidly to changes on the delivery system, and to automatically re-route power around problems that occur. The project initially focused on the Harrisburg, Pa. area, but has since been expanded to cover all of the Company’s service territory. The project included the implementation of an advanced Distribution Management Systems (“DMS”), which was a breakthrough technology that enables the Company’s operators to see the status of PPL Electric’s distribution network in real-time. In 2016, PPL Electric completed a system wide rollout of Fault Isolation and Service Restoration (“FISR”) technology. FISR identifies faulted sections and quickly develops an optimized restoration plan, then automatically executes that plan. Customers typically can be restored within five minutes from the start of the outage. This milestone is an industry first and has saved over one million customer interruptions to date. Over 8,600 automated smart devices have been installed, which has allowed for remote operation and monitoring of circuit sectionalizing equipment.

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PPL Electric Reliability Results

The reliability planning and investment process employed by PPL Electric has been very effective, as evidenced by its reliability performance. This has been accomplished while preserving a reasonable cost of providing service.

PPL Electric Reliability Planning Process

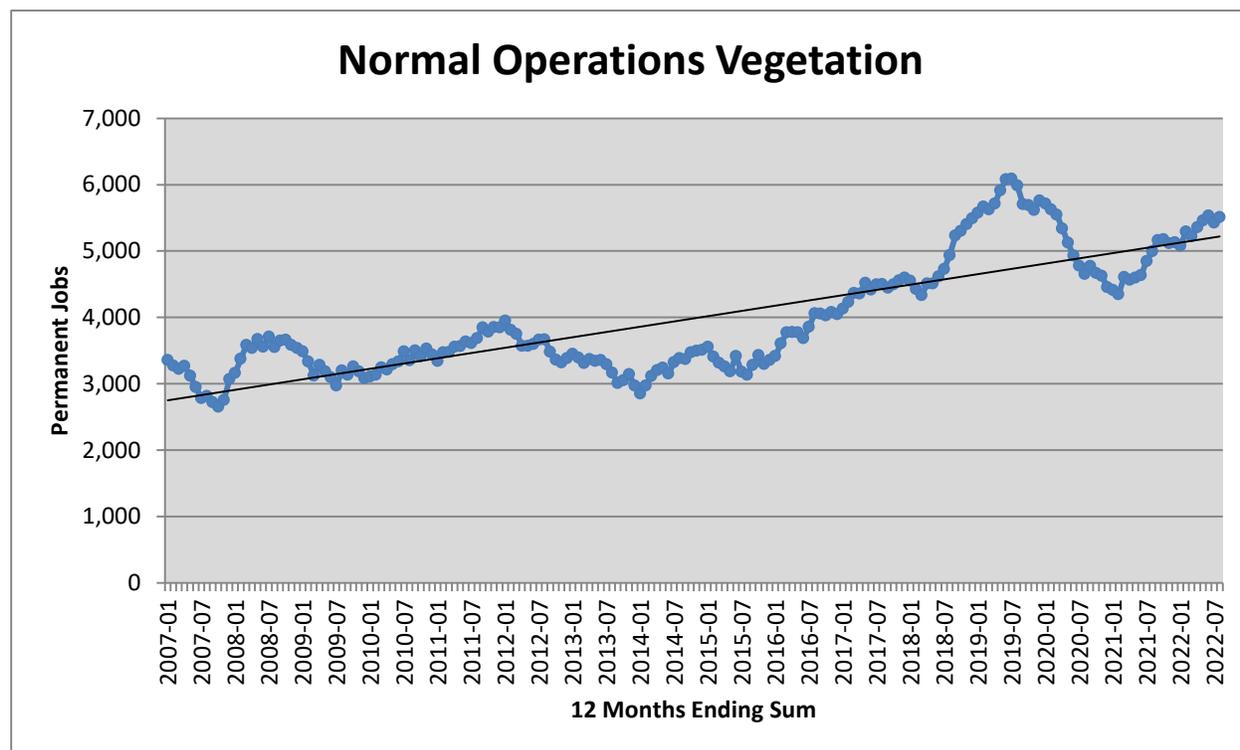
PPL Electric's process is forward-looking and proactive. It consists of the following:

- Analyze and identify the drivers of historical trends of causes of service outages and other power service problems.
- Forecast future reliability metrics System Average Interruption Duration Index ("SAIDI"), System Average Interruption Frequency Index ("SAIFI"), and Customer Average Interruption Duration Index ("CAIDI") given existing mitigation programs' effect on the identified drivers.
- Identify new programs, policies, and activities to enhance or accelerate existing mitigation programs to avoid forecasted gaps between future reliability and benchmark targets.
- Identify, evaluate, and implement new technologies that enhance the Company's condition monitoring strategy.
- Evaluate and adjust existing programs, policies, and activities to produce the desired future results.
- Perform targeted data analytics against the Company's aging infrastructure utilizing real-time, or near real-time, operational data to further improve reliability performance.
- Incorporate the resulting portfolio of existing and new programs, policies, and activities in PPL Electric's five-year business and I&M plans.

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PPL Electric Reliability Analysis

Identification and understanding of trends create the opportunity to plan programs to mitigate undesirable trends. Most of the year-to-year variation in service interruptions is explained by differences in storm experience. Therefore, PPL Electric generally removes all declared storm-caused service outages (though not all weather related outages) for internal analysis to identify other causal trends affecting reliability. Each data point in the following charts represents a 12-month ending value to eliminate the effect of seasonal variation.

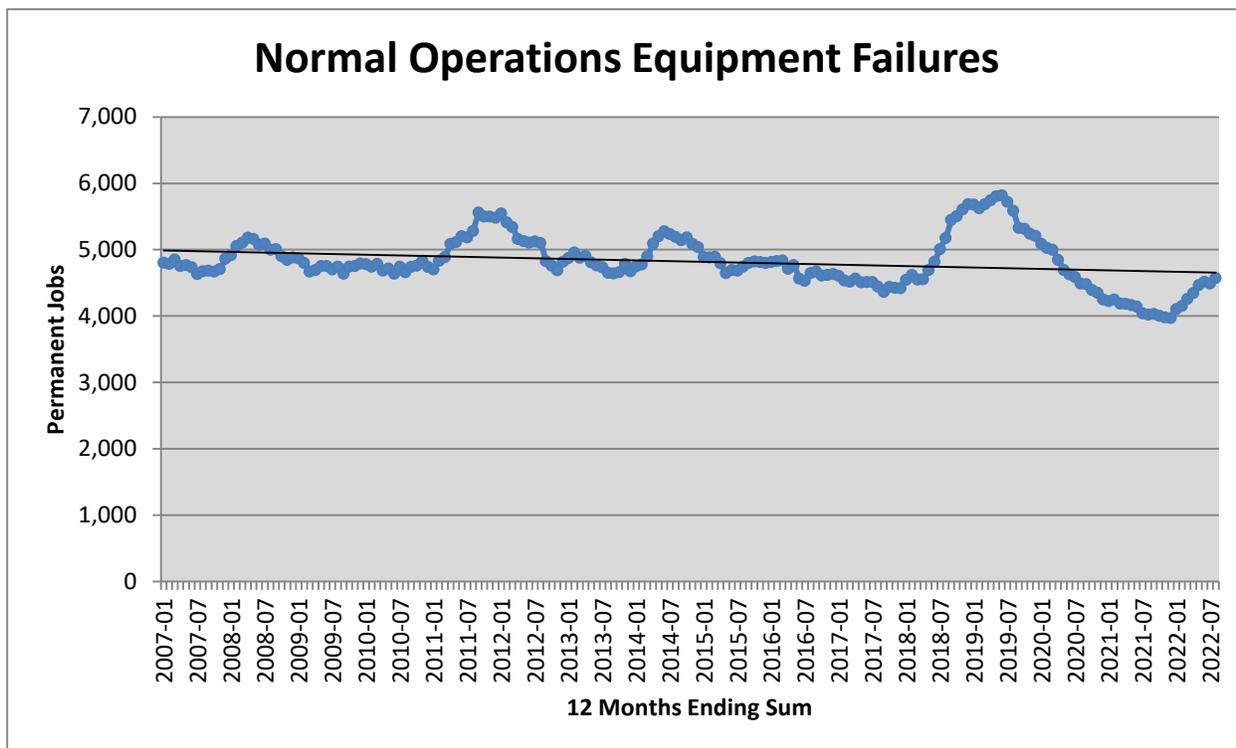


Vegetation Related Service Interruption Cases

PPL Electric is committed to continuing an aggressive Vegetation Management program to address the threat of tree related outages. It is worth noting that even when excluding major and PUC reportable storm events, approximately 70% of vegetation related outages occur during adverse weather conditions. The more frequent and intense storms in recent years resulted in higher-than-normal occurrences of vegetation outages, including healthy trees toppling into overhead conductor.

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A significant risk to PPL Electric’s ability to meet reliability benchmarks is the large portion of distribution facilities, which were installed in the 1960’s and 1970’s, that are now beyond or nearing the end of their design lifetime. The resultant effect on non-storm-related equipment failure is illustrated by the chart below.



Equipment Failure Service Interruption Cases

The number of no-light cases due to equipment failures is trending slightly downward due to investments over the past five to ten years. The need to remediate equipment that is at or near end-of-life remains to maintain or improve this favorable trajectory. Components contributing the most significantly to distribution equipment failures include poles/arms/attachments, overhead and underground conductors, switches, and substation equipment.

Initiatives contributing to the reversal of the failed equipment trend include equipment replacements identified through Proactive Circuit Analysis of 25% of circuits annually, aggressive worst performing circuit remediation, implementation of PPL Electric’s Asset Optimization Strategy, enhanced pole inspection and treatment, distribution automation, and infrared inspections.

Although these programs have successfully leveled equipment failure growth rates in the short-term, PPL Electric faces a long-term challenge regarding aging infrastructure. PPL Electric is committed to mitigating the aging infrastructure challenge through effective use of proactive

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replacement programs and data-driven failure probability models. Scheduled replacement of that infrastructure is necessary to avoid accelerating failure rates due to end-of-life fatigue.

Reliability is the largest contributor to overall customer satisfaction. Satisfaction levels vary depending upon the amount of information provided to the customer regarding their outage. Providing customers with accurate information about their outage is increasingly important. Customers are more understanding of storm and weather-related service outage impacts than they are of other outage causes, such as utility equipment failures.

If it is more cost-effective to offset an increase in equipment failure cases with a program to reduce vegetation-related cases, the customer is better served by this cost-effective choice. Similarly, if a program that reduces the average number of customers affected by each service outage is more cost-effective than a program to reduce the gross number of service outages, the more cost-effective program should be chosen. The management challenge is to maintain reliability within acceptable parameters in the most cost-effective manner, while keeping customer satisfaction levels high.

52. Pa. Code § 57.198(b) Plan Consistency *The plan must be consistent with the National Electrical Safety Code, Codes and Practices of the Institute of Electrical and Electronic Engineers, Federal Energy Regulatory Commission Regulations and the provisions of the American National Standards Institute, Inc.*

PPL Electric's I&M Plan is consistent with the National Electric Safety Code ("NESC"), Codes and Practices of the Institute of Electrical and Electronic Engineers ("IEEE"), Federal Energy Regulatory Commission Regulations ("FERC") and the provisions of the American National Standards Institute, Inc. ("ANSI").

52. Pa. Code § 57.198(c) Requested Deviations *The plan must comply with the inspection and maintenance standards in subsection (n). A justification for the inspection and maintenance time frames selected shall be provided, even if the time frame falls within the intervals prescribed in subsection (n). However, an EDC may propose a plan that, for a given standard, uses intervals outside the Commission standard, provided that the deviation can be justified by the EDC's unique circumstances or a cost/benefit analysis to support an alternative approach that will still support the level of reliability required by law.*

PPL Electric is again requesting acceptance of the following deviations from the intervals in the Commission standard as were included in the six previous I&M reports (2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, and 2022-2023):

- Section 57.198(n)(2). Pole Inspections. (vi) A load calculation.
- Section 57.198(n)(4). Distribution overhead line inspections.
- Section 57.198(n)(6). Distribution transformer inspections.

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PPL Electric is again requesting acceptance of the following deviations from the intervals in the Commission standard as were included in the four previous I&M reports (2016-2017, 2018-2019, 2020-2021, 2022-2023):

- Section 57.198(n)(7). Recloser inspections.

PPL Electric is again requesting acceptance of the following deviation from the intervals in the Commission standard as were included in the three previous I&M reports (2018-2019, 2020-2021, 2022-2023):

- Section 57.198(n)(8). Substation inspections.

52. Pa. Code § 57.198(m) Recordkeeping *An EDC shall maintain records of its inspection and maintenance activities sufficient to demonstrate compliance with its distribution facilities inspection, maintenance, repair and replacement programs as required by subsection (n). The records shall be made available to the Commission upon request within 30 days. Examples of sufficient records include: (1) Date-stamped records signed by EDC staff who performed the tasks related to inspection. (2) Maintenance, repair and replacement receipts from independent contractors showing when and what type of inspection, maintenance, repair or replacement work was done.*

Inspection and maintenance activities performed by PPL Electric employees are tracked by electronic work requests in the Company's work management platform which date-stamps transactions and captures an electronic signature of the employee certifying completion.

Inspection and maintenance activities performed by PPL Electric contractors are documented with itemized records, which identify when and what type of work was performed, before invoices for the work are paid.

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52. Pa. Code § 57.198(n)(1). Vegetation Management *The Statewide minimum inspection and treatment cycle for vegetation management is between 4-8 years for distribution facilities. An EDC shall submit a condition-based plan for vegetation management for its distribution system facilities explaining its treatment cycle.*

Program Description

PPL Electric employs a condition-based five to eight-year inspection and maintenance cycle for its distribution circuits where trimming, hazard tree removals, and brush control are performed. All Transmission lines have two complementary condition-based maintenance programs performed on four-year cycles. One focuses on herbicide application to manage vegetation on the floor of the corridor and the other focuses on trimming along the edge of the corridor. Inspections for and removals of hazard trees occur on both cycles. Each program is offset by two years, so each line receives a physical inspection and maintenance every two years. Additionally, an aerial Light Detection and Ranging (“LiDAR”) inspection is performed annually to verify clearances of vegetation from Transmission facilities. Based on conditions, the cycle schedule may be modified but not beyond established regulations.

- Purpose

To safeguard the reliability of its electric distribution system, PPL Electric has developed a comprehensive program to manage vegetation around power lines. Keeping trees and other vegetation away from high-voltage lines is important. Tree contacts can result in short-circuits and subsequent service outages.

Taller species of trees that are permitted to grow under power lines eventually will contact the wires, causing service interruptions and unsafe conditions. It is necessary for PPL Electric to trim or remove these trees to continue safe and reliable electric service.

- Process

Distribution

Multi-phase lines will be pruned to the full extent of the established tree line, not to exceed 25’ from centerline and ground to sky pruning will be utilized.

Single-phase lines will be pruned to the full extent of the established tree line, not to exceed 15’ from centerline and to a distance of 15’ above the line. All dead or structurally weak limbs that could fall or blow into the conductor are removed regardless of their distance above the conductor.

Exceptions: Trees on the opposite side of any thoroughfare, where normal line construction exists (not alley arms), should be considered for proper lateral pruning using the centerline of the thoroughfare as a guideline. Fast growing tree species may need more aggressive pruning.

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Another enhancement is hazard tree removal. “Hazard trees” are those trees outside the right of way that may be leaning, diseased, or otherwise pose a threat of falling on a distribution line. PPL Electric bears all costs of removing hazard trees and conducts the removal either based on right of way agreements or with property owner permission.

Transmission

PPL Electric operates thousands of miles of high-voltage transmission lines. The Company’s vegetation management program is designed to promote the safe and reliable operation of the electric grid, while considering the concerns of property owners and our obligations to electric customers. Low-growing grasses and other compatible species are permitted within the wire zone. In the remainder of the right-of-way, certain compatible trees and shrubs are allowed if they do not pose a reliability risk.

52. Pa. Code § 57.198 (n)(2). Pole Inspections *Distribution poles shall be inspected at least as often as every 10-12 years except for the new southern yellow pine creosoted utility poles which shall be initially inspected within 25 years, then within 12 years annually after the initial inspection. Pole inspections must include:*

- (i) Drill tests at and below ground level.*
- (ii) A shell test.*
- (iii) Visual inspection for holes or evidence of insect infestation.*
- (iv) Visual inspection for evidence of unauthorized backfilling or excavation near the pole.*
- (v) Visual inspection for signs of lightning strikes.*
- (vi) A load calculation.*

Program Description

- Cycle

Every PPL Electric-owned pole will be inspected within the 2020-2031 time period (12 years).

- Purpose

Distribution poles are inspected to identify and measure the extent of decay and defects that may adversely affect safety or service reliability.

- Process

PPL Electric conducts an inspection process that includes the tests and visual inspections referenced in Section 57.198(n)(2) of the PUC’s regulations. Poles are drilled to test for interior and exterior (shell) decay, and are visually inspected for insect infestation, lightning strikes, backfilling and excavation. Pole conditions, including pole top conditions and crossarm defects are also inspected. Poles younger than 25 years are

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visually inspected upon first inspection and subjected to a full inspection upon subsequent inspections.

Based upon the inspection and testing results, the pole is treated with a preservative, reinforced (by truss or fiber wrap) or replaced.

- Justification for waiver

PPL Electric's pole inspection program generally complies with the intervals set forth in 52 Pa. Code § 57.198(n)(2), complies with NESC rules, and is consistent with industry practices.

PPL Electric proposes a continuance of the deviation from the requirement for a load calculation to be performed for each pole inspected. The design of PPL Electric's lines is based on its Distribution Engineering Instructions, which are based upon NESC heavy loading conditions. These instructions provide adequate safety factors such that the allowable percentage of strength reduction does not compromise the ability of the pole to support the load. PPL Electric requires entities attaching facilities to its poles to perform their own load calculations before making the attachment. Load calculations are performed on every pole where new attachments are requested by third parties.

PPL Electric does not track service outages caused by pole equipment failure as a discrete category. Poles are contained within a category that includes poles arms, brackets, guys, push braces, pole top extensions and any other mounting hardware. In 2021, equipment failures requiring replacement in this category amounted to 96 (1.8% of total cases), of which only a small fraction are poles. Excluding pole fires, only 4 cases suggest broken PPL Electric-owned poles. (Four poles represent 0.0005% of PPL Electric's 890,000 wood distribution pole inventory.) Most of the limited number of pole failures are aggravated by weather conditions, such as trees being blown into lines, so the potential risk reduction through a load calculation is insignificant.

52. Pa. Code § 57.198 (n)(3). Pole inspection failure *If a pole fails the groundline inspection and shows dangerous conditions that are an immediate risk to public or employee safety or conditions affecting the integrity of the circuit, the pole shall be replaced within 30 days of the date of inspection.*

Corrective Maintenance

- Critical poles, those that pose an immediate safety concern or have a condition affecting the integrity of the circuit, are reinforced or replaced as soon as possible, and not later than 30 days after notification. Pole strength is provided for each rejected pole to assist in reinforce versus replace decisions and schedule prioritization. The method of reinforcement is determined by the circumstances and/or location of the pole.

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52. Pa. Code § 57.198 (n)(4). Distribution overhead line inspections *Distribution lines shall be inspected by ground patrol a minimum of once every 1-2 years. A visual inspection must include checking for:*

- (i) *Broken insulators.*
- (ii) *Conditions that may adversely affect operation of the overhead transformer.*
- (iii) *Other conditions that may adversely affect operation of the overhead distribution line.*

Program Description

- Cycle

Infrared inspection: Multi-phase overhead lines adjacent to roadways every two years.

Visual inspection: Condition based – selected line segments. Inspections are scheduled under various conditions to include CEMI and WPC circuits, if warranted based on Proactive Circuit Analyses, and/or if power quality issues are experienced. Additional patrols conducted to ensure continued reliability include those in support of distribution construction projects as well as summer and winter readiness patrols.

Pole inspection: Every 12 years.

- Purpose

The objective of an overhead line inspection is to identify and correct equipment defects that may lead to a future service interruption or pose a safety hazard. Defects are identified by inspection, prioritized and scheduled for repair.

- Process

Infrared: Multi-phase distribution lines adjacent to roadways are scanned from vehicles. A roof-mounted infrared camera is employed to capture a thermal image of components carrying electrical current. Heat emission measurements are compared to reference temperatures. Probability of failure is estimated based upon the magnitude of temperature difference from reference. The method detects problems in current carrying components such as transformers, connections, splices, hot line clamps, disconnects, switches, lightning arresters, terminators, etc., whether or not there are visible defects. A detailed report of findings is prepared, and at-risk items are prioritized and mitigated by repair or replacement.

Visual: An analysis of actual service interruptions is conducted on selected circuits (e.g., poor performing circuits as measured by PPL Electric's WPC process, circuits with higher CEMI customers, and circuits undergoing proactive circuit analysis.) If an analysis indicates a pattern of equipment failure exists, a visual line inspection is scheduled. In addition to looking for visible defects in current-carrying components,

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visual inspection looks for mechanical defects in anchors, guys, crossarms, insulators, offset brackets, grounding systems, and poles.

Pole Inspection: As an integral part of the 12-year pole inspection process, the wood poles are observed, with at-risk conditions of all pole attachments, specifically crossarms, braces, conductors, transformers, fuse cutouts, lightning arresters, reclosers, regulators, capacitors, switches, wildlife protection, vegetation encroachment, guys, anchors, ground wires, and rods noted and reported.

- Justification for waiver

PPL Electric hereby proposes a continued deviation from the one- to two-year inspection cycle on the basis of an effectiveness evaluation and cost benefit analysis in favor of the program described herein. Resources that would be applied to shorter visual cycles than this proposal would reduce the resources applied to other more cost-effective reliability programs described in this plan.

PPL Electric conducted a trial of infrared inspections of multi-phase lines in 2006. The trial inspections cost \$122,500 and identified repairs costing \$100,000, saving an estimated 1,460,000-2,600,000 Customer Minutes Interrupted (“CMI”), at a cost of \$0.09 to \$0.15 per CMI saved. PPL Electric restructured the infrared service contract gaining further efficiencies in 2014. The cost benefit as calculated by the 2018 program effectiveness review suggested that the two programs, at a yearly cost of \$327,000, save an estimated 719,000 CMI, at a cost of \$0.45 per CMI saved.

PPL Electric employs a \$2.00 per CMI saved cost threshold¹ as a principal criterion for evaluating new projects for inclusion in the portfolio of reliability programs. Costs below that threshold are generally considered to be prudent investments, while those above typically provide less benefit for the cost. The cost threshold assists in applying finite resources to programs producing better results, thus enabling the most effective portfolio of programs. Because infrared costs per CMI saved are well below the threshold, PPL Electric instituted a two-year infrared cycle for accessible multi-phase lines.

PPL Electric also conducted an overhead line visual inspection cost benefit study in 2010. The study calculated a reliability benefit as a probability that inspections and the associated repairs will reduce equipment failure service interruptions. The overall probability is the product of (a) the probability that an equipment failure service outage is

¹ Cost threshold recommended by Richard E. Brown, Sr. Vice President and co-founder of Quanta Technology, a firm specializing in technical and management consulting for utilities. Dr. Brown has provided consulting services to most major utilities in the U.S. Dr. Brown has published more than 90 technical papers related to asset management and is the author of Electric Power Distribution Reliability, CRC Press, 2009.

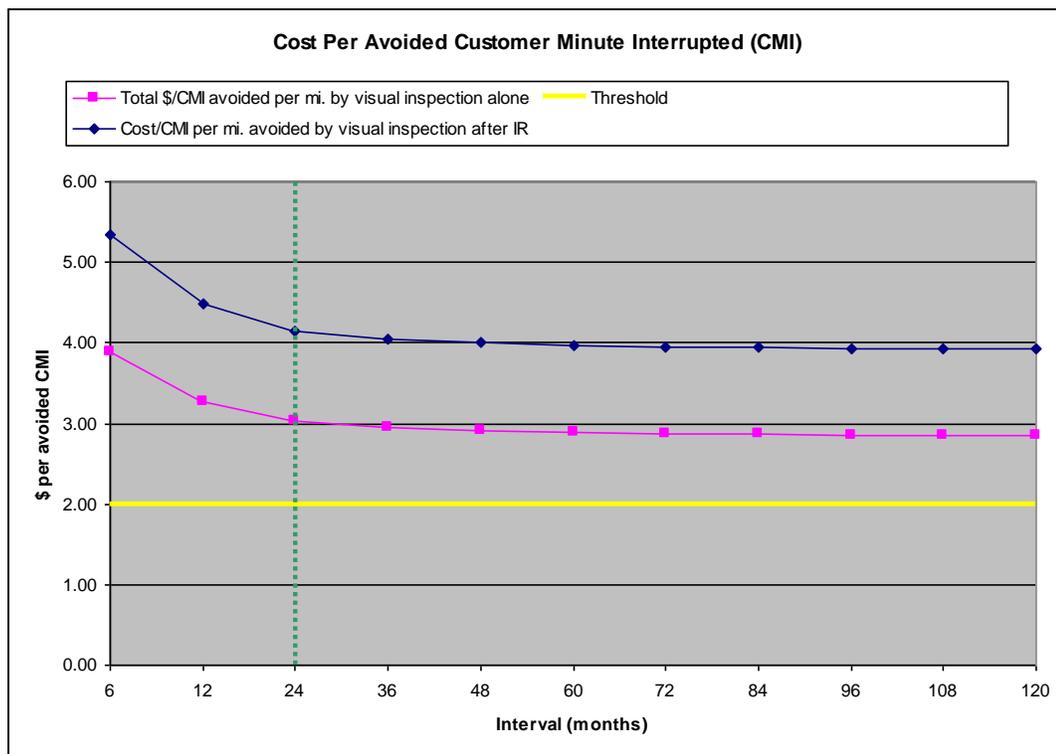
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preceded by a visible condition, (b) the probability that the visible condition exists at the time of inspection, (c) the probability that an existing condition is detected, and (d) the probability that the condition is repaired before a service interruption occurs. For seven of the 13 overhead distribution component codes, actual inspection data established little likelihood of visible conditions preceding failure. For the remaining six component codes, subject matter experts were surveyed. The resulting probability estimates were applied to actual service outage data to estimate avoided CMI per mile. The inspection and repair cost per mile divided by CMI avoided per mile yielded an estimate of cost per CMI avoided. The graph below shows these costs per CMI for various inspection intervals.

The study also estimated avoided CMI/mile for visual inspections that follow infrared inspections because there is significant overlap between the two methods: infrared identifies both visible and hidden defects in current carrying components, while visual inspection detects only visible defects in electrical and mechanical components. The second graph below shows these costs per CMI for various inspection intervals.

As the graphs below depict, given PPL Electric's reliability parameters, there is no interval for visual overhead inspections that meets the established cost threshold, particularly when performed in conjunction with infrared inspections. Visual inspections alone at two-year intervals are 50% above the threshold; two-year visuals done in conjunction with infrared are 100% above the threshold.

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Overhead Line Inspection Cost per Avoided CMI

Although universal overhead visual inspections are not cost-effective, targeted visual inspections have more value. For the period 2019 to 2021, 33% of the circuits were responsible for 80% of equipment failure CMI.

Consequently, PPL Electric employs the condition-based visual inspection approach described above, combined with Expanded Operational Review field checks and overhead inspections in conjunction with pole inspections.

52. Pa. Code § 57.198 (n)(5). Inspection failure *If critical maintenance problems are found that affect the integrity of the circuits, they shall be repaired or replaced no later than 30 days from discovery.*

Corrective Maintenance Description

- Infrared

Priorities for corrective maintenance are determined by the magnitude of the variance from normal operating temperature.

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Distribution Overhead Infrared Inspections Corrective Maintenance		
	Variance from Normal Operating Temp.	Maximum Days Allowed After Report Receipt for Service
3-Phase Backbone	+20-60° C	2 weeks
	> +60° C	Immediate
Multiphase	+20° C	8 weeks
	> +100° C	Immediate
Secondaries and Single-Phase	+30° C	16 weeks
	> +100° C	Immediate

- Visual

The urgency for repairs is determined and an appropriate order of priority is assigned as described in the table below.

Distribution Overhead Visual Inspections Corrective Maintenance	
Definition	I&M Standard
Emergency; Defects which: (1) Threaten the safety of the public or employees; or (2) Will cause a service interruption at any moment Scheduling Priority: 1	Corrective Action taken Immediately
Priority; Defects with a high probability of causing a service interruption if not corrected promptly. Scheduling Priority: 2	Corrective Action must be taken within 30 days.

52. Pa. Code § 57.198 (n)(6). Distribution transformer inspections *Overhead distribution transformers shall be visually inspected as part of the distribution line inspection every 1-2 years. Above-ground pad-mounted transformers shall be inspected at least as often as every 5 years and below-ground transformers shall be inspected at least as often as every 8 years. An inspection must include checking for:*

- (i) Rust, dents or other evidence of contact.
- (ii) Leaking oil.
- (iii) Installation of fences or shrubbery that could adversely affect access to and operation of the transformer.
- (iv) Unauthorized excavation or changes in grade near the transformer.

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Program Description

- Cycle

Overhead: Overhead transformers are inspected as part of overhead visual line inspections, infrared inspections, and pole inspections. Additionally, load profiles are analyzed to identify and remedy overhead transformer locations that have consistent load demands exceeding design parameters.

Pad-mount and below-ground: Inspections are scheduled when indicated by circuit performance and are confirmed by an analysis of actual service interruptions that identifies underground failures addressable by visual inspection.

Pad-mount and below-ground transformers may be inspected as part of the underground residential development cable testing or replacement programs.

- Purpose

The objective of a transformer inspection is to identify and correct hardware or equipment defects that may lead to a future service interruption or pose a safety hazard. Defects are identified by inspection, prioritized and scheduled for repair.

- Process

Overhead and underground transformers are visually inspected for damage (rust, dents, cracks, locking devices, broken bushings, etc.), integrity of connections, and leaks. In addition, pad-mounts and below-ground transformers have cables and elbows inspected for deterioration, foundations and covers inspected and animals, nests, cobwebs, and vegetation removed.

- Justification for waiver

PPL Electric hereby proposes a continued deviation from the fixed inspection cycle for transformers in favor of the condition-based inspection program described herein.

The overhead line inspection cost benefit study described previously estimated that about 20,000 CMI annually could be saved via visual overhead transformer inspections. In 2016, the estimated cost to inspect those transformers every two years was \$1.3 million or \$65 per CMI avoided, well above the threshold employed by PPL Electric of \$2.00 per CMI saved for identifying prudent reliability investments.

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Similarly pad-mount transformers only contribute 500,000 CMI on average to overall system reliability. An inspection and maintenance program for transformer condition would cost millions in expense for little improved reliability over other underground reliability improvement programs.

Resources that would be applied to shorter cycles than this proposal would reduce the resources applied to other more cost-effective reliability programs described in this plan.

52. Pa. Code § 57.198 (n)(7). Recloser inspections *Three-phase reclosers shall be inspected on a cycle of 8 years or less. Single-phase reclosers shall be inspected as part of the EDC's individual distribution line inspection plan.*

Program Description

- Cycle

Three-phase vacuum circuit reclosers (“VCRs”) are subjected to infrared inspection on the same two-year cycle as oil circuit reclosers (“OCRs”).

Three-phase OCR: Infrared inspection on a two-year cycle.

Single-phase OCRs: Inspected as part of PPL Electric’s distribution line inspection program.

- Purpose

The purpose of the recloser inspection program is to ensure the reliable operation of reclosers by replacing deteriorated equipment with new installations.

- Process

Three-phase oil and vacuum reclosers are included in the two-year infrared line inspection program.

- Justification for waiver

PPL Electric hereby proposes a continued deviation for reclosers in favor of the program described herein.

A recloser’s function is to isolate faults while minimizing the number of customers affected by permanent service outages. Visual inspection of an OCR provides relatively little useful information about the unit’s capability to perform its function compared to testing. Testing in place would require almost all of the same steps that are involved in

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replacement. Bench testing is preferable to testing in place and refurbishment requires the unit's removal from service.

PPL Electric is engaging in the replacement of OCRs with VCRs on a condition-based proactive cycle. Previously, the Company planned to replace all OCRs with VCRs by 2024. However, PPL Electric proposes to change the planned end date of the replacements to account for the age and condition of the OCRs, so that available funds are used in the most optimal fashion for the continued reliable delivery of electric service.

When PPL Electric began the process of replacing OCRs, there were approximately 5,000 multiphase OCRs on system. Now, in late 2022, there are 335 remaining, with an average age of 10 years and an expected lifespan of 30 years. The Company believes it would be imprudent to replace these remaining OCRs with VCRs before the condition of such OCRs warrants such replacement.

As PPL Electric has been replacing older oil reclosing three phased units, reliability has improved from the decreasing number of failed units. In 2021, only 2 outages were caused by equipment failure of OCR and VCRs that were fixed with repairs or replacement compared to an average of 11.4 in the five years before the conditional replacement of oil reclosing three phase units.

52. Pa. Code § 57.198 (n)(8). Substation inspections *Substation equipment, structures and hardware shall be inspected on a cycle of 5 weeks or less.*

Program Description

- Cycle

Visual	Infrared
Quarterly	Annual

- Purpose

Periodic substation inspections verify the integrity of station physical security, record and correct any security breaches, visual inspection of essential station equipment, identify any leaks and initiate any necessary corrective actions.

- Process

Inspection of substation equipment, yard and perimeter and recording abnormal conditions of the equipment. Infrared inspections of substation equipment performed on annual basis.

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- Justification for waiver

In 2017, PPL Electric was granted a deviation from the five-week inspection cycle for substations in favor of the quarterly program described herein.

PPL Electric employs SCADA at every substation, which provides real-time telemetry of potential issues. The relay packages provide advanced health information about the breakers and signal when maintenance is required, negating the need for visual inspections of these assets. PPL Electric implemented an upgrade to the data historian software that allows the Company to be automatically alerted when substation abnormalities are detected, and automatically calculate remaining life on smart assets when operations occur.

Over the last four years, none of the repairs scheduled due to the quarterly inspections have been critical repairs due to imminent failure risk. Any repairs have been minor in nature.

Resources that would be applied to shorter cycles than this proposal would reduce the resources applied to other more cost-effective reliability programs described in this plan.

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Appendix A: Transmission Programs and Procedures

Program	Activity
Helicopter Inspections – Routine	Aerial linemen perform annual routine transmission line patrols from a helicopter. They identify damaged or deteriorated equipment. Engineers review the findings and develop plans for repair or replacement.
Helicopter Inspections – Comprehensive	Aerial linemen perform an overhead comprehensive inspection of transmission line facilities on a four-year or eight-year cycle. Detailed condition reports with close-up digital photos are prepared for each specific component problem found along the transmission line and right-of-way. Engineers review the findings and schedule corrective maintenance as needed.
Helicopter Inspections – Emergency	Aerial linemen perform patrols of transmission lines that operate abnormally. This inspection focuses on identifying damage that may have been caused by lightning, inclement weather, equipment failure or vandalism. Because of the nature of this work, corrective actions generally are expedited.
Field Inspections – Emergency	Line personnel perform emergency foot patrols to inspect transmission lines that operated abnormally. This inspection focuses on identifying damage that may have been caused by lightning, inclement weather, equipment failure or vandalism. Due to the nature of this damage, corrective actions are generally expedited.
Steel Structure Inspection/Repair	Personnel inspect steel structures at the ground line for corrosion, mechanical damage and foundation degradation. Structural components are coated, and repairs are made based on the findings of the inspections as necessary.
Equipment Maintenance	During helicopter and foot patrols, equipment and facilities are identified that require repairs. Based on need and criticality, repairs are either scheduled or completed as soon as possible.
Planned Replacement Programs	Lightning arresters and avian guards are installed on targeted 69kV and 138kV facilities based on a data-driven risk analysis to improve reliability of worst performing circuits.
Line Switches – Maintenance & Inspection	Line personnel inspect, maintain, and perform operational tests on 138kV and 69kV transmission line switches to assure proper operation.
Line Switch Upgrades	Transmission line switches are being programmatically upgraded to include motor operators to allow for remote sectionalizing that substantially improves switching times during outages.

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Program	Activity
Circuit Analysis	Engineers analyze circuit loading and performance to identify areas needing increased line capacity or improved line reliability. Circuits are also reviewed based on operational performance and ranked yearly in a WPC list, with appropriate circuits identified for targeted reliability improvements.

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Appendix B: Substation Programs and Procedures

Program	Activity
Load Survey	Automatic monitoring devices such as Supervisory Control and Data Acquisition (SCADA) provide continuous, real-time loading information. Engineers review equipment loading and identify facilities and transfer capabilities approaching capacity limits. A portion of the load may be supplied from a different source, the existing facilities may be upgraded, new lines and equipment may be added, or a new substation may be built to address capacity deficiencies.
Substation Inspection/Repair	Electricians inspect substations for security and equipment reliability on a time based maintenance cycle. They attempt to identify and correct potential equipment problems before a failure or interruption of service occurs.
Equipment Service	Electricians perform operational tests on power transformers, load tap changers (“LTCs”), voltage regulators, circuit breakers, circuit switchers, vacuum switches, air break switches and transformer protective switches on a time based maintenance cycle to assure that equipment is operating within established parameters. Equipment serviced includes batteries, battery chargers, protective relays, HV fuses and high-speed automatic grounding switches. Depending on the type of equipment, “service” can include actions other than operational testing.
Inspection & Overhaul	Electricians inspect and overhaul circuit breakers, wave traps, ground switches, stick-operated disconnects, gang-operated disconnects and motor-operated disconnects on a time based maintenance cycle to assure proper operation.
Insulation Testing	Technicians perform power factor testing on power transformers, potential transformers, lightning arresters, current transformers, select circuit breakers and power cables on a time-based maintenance cycle. Testing also includes other instrument transformers (capacitance coupled voltage transformer, coupling capacitors, potential devices, etc.). They also perform high-potential testing on 12kV oil, air and vacuum circuit breakers to assure proper operation.

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Program	Activity
Condition Monitoring of Station Equipment	Technicians perform dissolved gas-in-oil, dielectric, oxygen, and oil acidity tests for oil in power transformers and impedance and capacity tests on station batteries to assure equipment is within normal parameters. Periodically, AC power factor tests, hi-potential tests, contact resistance tests and motion tests are performed on circuit breakers. Oil dielectric testing is conducted for oil circuit breakers.
Thermographic Inspections	Technicians perform thermography surveys of substation facilities to identify components operating at elevated temperature. Based on the findings, engineers develop plans to repair or replace the component(s) prior to failure.
Minor Improvements	Maintenance activities may identify conditions where additions or upgrades are needed to assure reliability. Engineers evaluate the need and develop action plans and schedules to complete the work.
DC Station Service Improvements	Repairmen identify deteriorated station batteries, battery chargers and battery components. Engineers schedule repair or replacement as necessary.
Capacitor Bank Protection	Engineers monitor the need for synchronous closing schemes on vacuum switches on 69kv capacitor banks. They plan and schedule installations as needed.
Area/Regional Supply	Engineers develop specific projects aimed at improving capacity shortfalls or replacing deteriorated or substandard station equipment.
SCADA Replacement	Engineers identify deteriorating substation SCADA equipment and develop plans to repair or replace it.

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Appendix C: Distribution Programs and Procedures

Program	Activity
Load Survey – of equipment that is not continuously monitored	Line personnel measure the loading of facilities during peak periods. Engineers use this data for system studies.
Load Survey – by automatic monitoring devices	Automatic monitoring devices such as SCADA provide continuous, real-time loading information. Operators use this data to assure that loads do not exceed design limits. Engineers use this data for system studies.
Circuit Analysis	Engineers analyze circuit voltage profiles to balance loads and to identify areas requiring voltage support to maintain required voltage at the customer’s facility.
Transformer Replacements	Engineers analyze customer usage data to identify overloaded transformers. Transformers that are heavily loaded are replaced with higher capacity units or portions of the load are transferred to other nearby transformers.
Wood Pole – Inspection, Maintenance, Reinforcement, Replacement	Wood poles are examined for deterioration and the degree of decay is measured. Based on the results, the pole may be treated with preservative to extend its life, treated and reinforced for extended life or replaced.
Overhead Line Inspection	Line inspection personnel examine overhead facilities to identify damaged, deteriorated or substandard equipment. Equipment examines include but is not limited to capacitors, regulators, switches, and reclosers. Line personnel repair or replace defective equipment likely to cause safety or reliability issues.
Circuit Performance Review	Engineers use PPL Electric’s WPC score to ascertain the need for additional circuit reviews or inspections. The improved index looks at a circuit’s overall impact to system SAIFI and circuit SAIDI. Actual service interruption history is analyzed to identify causal or geographic patterns.
LTN Maintenance	Electricians inspect, service, maintain and overhaul LTN vaults, manholes, cables, transformers, low-voltage network protectors and primary transformer disconnect switches. Based on results, defective equipment is either repaired or replaced.

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Program	Activity
Vulnerable Facilities Review	A program aimed at identifying the locations of facilities that have been damaged by public contact more than once. Technicians evaluate those installations and, if relocation is deemed appropriate, schedule work to move the facilities.
Underground Service Cable	Engineers resolve customer service problems that are due to deteriorated underground service conductors.
Capacitor and Voltage Regulator Installation	Engineers perform voltage profiles to determine the need, location and size of any new voltage support equipment required to maintain adequate service voltage levels at customer facilities and provide needed reactive support for system stability. Line personnel install the required equipment.
Upgrade System Facilities	Engineers determine the need for additional capacity and design new and upgraded facilities to assure system reinforcements are constructed by the time they are needed.

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Appendix D: Vegetation Applications

Program	Activity
Tree Pruning	Tree pruning is scheduled based on field conditions observed and/or a system prioritization process. All pruning is done in accordance with <u>American National Standard for Tree Care Operations-Tree, Shrub and Other Woody Plant Maintenance – Standard Practices (ANSI A300)</u> .
Hazard Tree Removal	Trees located outside the right-of-way that represent a threat to line performance/ safety are removed when it is feasible to do so.
Herbicide Application	Tall-growing, undesirable vegetation growing within the right-of-way corridors is selectively treated with herbicides. Low-growing vegetation that does not represent a hazard to the safe, reliable operation of PPL Electric’s facilities is preserved wherever practicable.
Reclearing	Tall-growing, undesirable vegetation growing within the right-of-way corridors is selectively removed in those situations where herbicides cannot be utilized. Low-growing vegetation that does not represent a hazard to the safe, reliable operation of PPL Electric’s facilities is preserved wherever practicable.

PPL ELECTRIC
EXHIBIT 5



**SPECIFICATION FOR DISTRIBUTION
VEGETATION MANAGEMENT**

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**PPL ELECTRIC UTILITIES
SPECIFICATION FOR DISTRIBUTION
VEGETATION MANAGEMENT**

URS-3001-2019

EFFECTIVE April 1, 2019

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1.0 PURPOSE/SCOPE

This document outlines the methods and procedures for Vegetation Management (VM) activities associated with the establishment and maintenance of PPL Electric Utilities Corporation (PPL EU) distribution circuits operating at or below 23 kilovolts.

2.0 RESPONSIBILITY

All Contractors performing vegetation management activities shall have a thorough knowledge of PPL EU specifications. A copy of this and other appropriate specifications (provided by the Contractor) must be on the work site at all times. The Contractor shall make reasonable accommodations for non-English speaking employees.

The Contractor Shall:

- Take the necessary safety precautions to prevent injury to human life or damage to property and shall carry on its operations with a minimum of interference to traffic or inconvenience to the public.
- Schedule a PPL EU Vegetation Contractor Orientation prior to the start of work.
- Create an account in PPL EU cSafety and follow up on all assigned action items.
- Actively participate in PPL EU Contractor Safety Meetings and share lessons learned.
- Send a representative to participate in PPL EU Business Partner EHS (Environmental, Health and Safety) Meetings.
- In the event of an on the job injury or Contractor caused electrical interruption follow the procedures outlined in the most recent version of the following documents:

“Vegetation Management Contractor Reporting Requirements for
Safety Incidents or Property Damage”

or

“Vegetation Management Contractor Reporting Requirements for
Electrical System Events”

- Follow all applicable rules and regulations of federal, state, and local agencies.
- Adhere to the requirements of the PPL Electric Utilities Herbicide Application Policy.
- Complete all work as specified by this document and individual work plans.
- Notify PPL EU of any work schedule changes which may be required.
- Make changes to work schedules only with PPL EU authorization.
- Be familiar with the latest version of PPL EU Work Unit Definitions for unit cost projects.



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- Provide all supervision, labor and equipment necessary for the execution of the work. All personnel must be adequately trained in safety and vegetation management techniques including species identification. PPL EU Authorized Representatives reserve the right to reject any personnel or equipment that does not meet PPL EU standards.
- Keep all roads open to traffic, as per the most recent revision of The Pennsylvania Department of Transportation Publication 213 (Temporary Traffic Control Guidelines).
- Complete rework at the Contractors expense.
- Be familiar with all designated wetlands within any job site and keep mechanical equipment outside any such designated wetlands unless specifically approved by a PPL EU Environmental Professional. Upon approval by the PPL EU Environmental Professional, vehicles may only be taken into wetlands by using existing roads or through the use of temporary matting.
- Obtain prior consent from a PPL EU Environmental Professional before traversing any access roads which have been restored by PPL EU or any PPL EU Contractors.
- Re-grade and seed any deep cuts, ruts, stump holes, mounded areas, or general soil disturbance caused by the vegetation management operations when, in the opinion of the PPL EU Authorized Representative, they could cause future ground erosion, interfere with line access or have otherwise caused property damage.
- Without intentional delay, restore and stabilize (e.g. rake out, seed, and mulch) any earth disturbance created during vegetation management activities. If the earth disturbance results in an agency inspection or formal complaint, the PPL EU Environmental professional shall be notified by phone within 4 hours of the event.
- Clean up all debris and rubbish resulting from work as the work progresses, leaving the area in a condition satisfactory to the PPL EU Authorized Representative.
- Be financially responsible for all repairs to PPL facilities resulting from damage caused by the Contractor, their agent, or employees.
- Resolve all customer damage complaints related to work performed by the Contractor's employees.
- Report all spills immediately to the PPL Regional Forester. The Contractor shall consult with PPL Environmental Representatives and shall be responsible for spill remediation.
- Take adequate care to assure that gates are not left open. If existing fences or gates are in a state of disrepair prior to the start of work, the property owner shall be so notified. In all cases the Contractor shall close and lock all gates behind them.
- Submit weekly distribution crew locations to the PPL EU Distribution Control Center.
- Submit daily crew locations to the Regional PPL EU Authorized Representatives.
- Ensure that computers, tablets, and smart phones provided by the Contractor meet the most current hardware requirements for use with PPL's current work management software.



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2.1 Certifications and Licenses

All General Foreman, Supervisors and Work Planners shall be ISA Certified Arborists and hold a current PA Department of Agriculture Commercial Pesticide Applicator license with Category 10 (Right of Way and Weeds). Prior to start of work and on an annual basis the Contractor will post verification of ISA Certification and PA Pesticide Applicator Certification for all applicable employees on the EU Vegetation Management Contractor Portal. Exceptions to this policy must be approved in writing by the PPL EU Manager of Vegetation Management.

3.0 APPLICABILITY

The provisions outlined in this specification and additional referenced documents within shall be the primary methods and procedures implemented by all Contractors performing vegetation management activities directly or indirectly for PPL Electric Utilities. Changes to PPL EU Vegetation Management specifications may be made from time to time in order to stay current with business objectives and regulatory environments. Changes to PPL EU Vegetation Management specifications shall be made at the sole discretion of PPL EU. Any deviation from PPL EU Vegetation Management methods and procedures must be approved in writing by a PPL EU Authorized Representative or the PPL EU Manager of Vegetation Management.

4.0 ABBREVIATIONS AND DEFINITIONS

ANSI	American National Standards Institute
DBH	Diameter at Breast Height
DEP	Department of Environmental Protection
E&S	Erosion and Sedimentation
EU	Electric Utilities
GF	General Foreman (Contractor Representative)
ISA	International Society of Arboriculture
kV	kilovolt = 1000 volts
NPDES	National Pollutant Discharge Elimination System
OGC	Office of General Counsel
OSHA	Occupational Safety and Health Administration
PA	The Commonwealth of Pennsylvania
PPL EU	PPL Electric Utilities Corporation
RMC	Records Management Coordinator
ROW	Right-of-way
DCC	Distribution Control Center
VM	Vegetation Management



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The term “**Contractor**” refers to a business, employee, or agent thereof executing vegetation management activities under contract for PPL EU in accordance with this specification and all other applicable PPL EU policies and procedures. Contractor also refers to 3rd party work planners.

The term “**PPL EU Authorized Representative**” refers to an individual is who given authority by the PPL EU Manager of Vegetation Management to make decisions and perform quality assurance inspections on behalf of PPL EU.

Tree – A plant with a woody stem equal to or greater than 6” DBH (4.5’ from ground level on the uphill side). A tree that forks at or above breast height shall be counted as one tree. If a tree forks below breast height each stem shall be counted as a separate tree.

Brush – A plant with a woody stem less than 6” DBH.

5.0 WORK SCHEDULE

Annual scopes of work shall be scheduled in an order mutually agreed upon by the Contractor and the PPL EU Authorized Representative. Poor performing circuits shall be prioritized and regulatory time of year restrictions shall be observed. The Contractor shall submit a weekly progress report, by region and circuit to PPL EU Vegetation Management. Hourly work shall be assigned by and executed to the satisfaction of the PPL EU Authorized Representative.

5.1 Working Hours

The Contractor shall provide coverage within their assigned region(s) for no less than 8 hours per day Monday through Friday up to 40 hours per week excluding PPL holidays. Make up time on Saturdays must be pre-approved by the PPL Regional Forester. Work may not be scheduled on Sundays, PPL Holidays, or a Saturday that falls the day after a PPL holiday or before a PPL holiday that falls on a Monday. PPL will not pay overtime rates for schedule changes unless specifically requested by and approved by PPL EU Regional Forester or the PPL EU Manager of Vegetation Management.

5.2 Emergency Call Outs

The Contractor shall be responsible for responding to after-hours emergency call outs and storm work as directed by PPL EU. The requested tree crew(s) shall arrive at the requested work location no later than 1.5 hours after initial call. The Contractor shall provide a weekly on-call roster identifying the Contractor’s on-call personnel who will coordinate tree crew call outs.



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A storm/emergency lift crew should consist of a minimum of three persons, one of whom must be a climber. Crew foreman should be a working foreman. They should be capable of satisfactorily supervising all work performed by their crew. In addition to supervision, the crew foreman will be expected to perform the skills required of any member of their crew.

5.3 Equipment and Tools

All trucks, chippers, saws, and other equipment shall be maintained so that the quality and quantity of the work to be performed is not impaired. PPL reserves the right to request equipment exhibiting excessive mechanical problems be replaced. All trucks shall be equipped with a complement of tools such that all work scheduled can be performed in an efficient, professional, and productive manner. Routine equipment maintenance by the Contractor during normal working hours shall not be billable time to PPL. All Contractor vehicles, including supervisor vehicles shall be appropriately marked to establish the association to the Contractor. Privately owned vehicles belonging Contractor employees are not be permitted on a job site.

6.0 PROPERTY OWNER NOTIFICATION AND REFUSALS

6.1 General Notification Requirements

- Contractor personnel directly involved in contacting customers are required to have identification, complete with photograph associating them with their employer and/or must possess a PPL EU Contractor Employee badge issued by PPL EU¹. Identification shall be prominently displayed while engaged in customer contact activities.
- The Contractor may begin operations only after notification to proceed is received from PPL EU.
- Property owner approval is required for tree removals and herbicide applications.
- The preferred method of notification is face to face contact. If the property owner is not home a PPL provided door hanger and brochure shall be left for properties where the only work is maintenance trimming and no additional follow up would be required.
- Pre-planners are responsible for setting appropriate expectations with PPL customers. The Contractor responsible for notifying customers shall be responsible for all complaints and claims resulting from inadequate notification.

¹ Refer to Contractor Badging Process in the latest version of PPL EU Vegetation Contractor Orientation document.



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6.2 Customer Notification for Unit Cost Projects²

Customer notification for planned work shall be executed by a third party vendor contracted by PPL EU. The line clearance Contractor shall be responsible for notifying customers of any added work units after obtaining approval of the added unit by a PPL EU Authorized Representative. The line clearance Contractor must communicate all work plan changes to the landowner including the use of off-road vehicles and special equipment.

6.3 Customer Notification for Cost per Mile, Lump Sum, and Capital Projects

The Contractor shall be responsible for notifying all property owners and other stakeholders of their intent to perform vegetation management activities unless such notification has been completed and provided in writing to the Contractor by PPL EU.

6.4 Property Owner Refusal Process

The following process shall be followed when a customer/property owner refuses to allow work to proceed. **In all cases, the Contractor may not negotiate any work that is below PPL EU specifications.**

A. Refusals Originating During the Planning Phase

Before line clearance activities begin, if a property owner refuses access, trimming, or hazard tree removals, the work planner shall notify the responsible PPL EU Authorized Representative and record the unit as a refusal. For non-unit based projects the work planner shall prepare a written Line Clearance Refusal Form. After receiving proper notification from the work planner, the PPL EU Authorized Representative shall contact the customer and attempt to resolve the refusal before work begins. If the refusal relates to work procedures, the line clearance Contractor General Foreman (GF) or Supervisor will be responsible for explaining to the customer how the work will be completed.

B. Refusals Originating During the Work Execution Phase

The Contractor General Foreman (GF) or Supervisor shall make every effort to successfully resolve the refusal before turning it over to PPL EU. For unit price projects, if the refusal relates to why the work is required, the line clearance Contractor shall immediately notify the third party work planner. The work planner shall be responsible for explaining why the work is required.

² Refer to the latest version of PPL EU Work Unit Definitions.



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6.5 Permits

The Contractor shall maintain copies of all current and applicable permits obtained by PPL EU and/or the Contractor at all job sites.

Work may not begin within state highway limits without the correct county specific permit obtained by PPL EU from the Pennsylvania Department of Transportation.

All planned vegetation management activities on state and federal lands³ shall be identified by the Contractor before starting work planning for the upcoming trim year. For each work location, easement language shall be reviewed by the Contractor to identify restrictions. If the land is under license agreement, the Contractor planning the work will prepare all appropriate notification materials including draft permit applications for PPL EU review. The PPL EU Authorized Representative shall submit the final application to the federal/state agency. Vegetation management activities may not commence until PPL WU receives confirmation from the applicable agency that all notification and permit requirements have been satisfied. Any Contractor who begins work on state or federal land without the express permission of the PPL EU Authorized Representative will be responsible for paying all applicable fines as well as being subject to possible contract termination.

Prior to start of work the line clearance Contractor shall be responsible for obtaining all other permits and licenses, at the sole cost of the Contractor, as required to perform the contracted work. The Contractor is also responsible for notifying municipal foresters and/or shade tree commissions before starting work.

7.0 LINE CLEARANCE REQUIREMENTS

All trees requiring pruning shall be pruned so that PPL rights-of-way are maintained either to the limits of the defined right-of-way agreement, the previously established clearance or the desired maximum clearance, whichever is greater. Emphasis shall be placed on controlling all incompatible vegetation within this area. Trees that require pruning adjacent to PPL's multi-phase electric facilities shall be maintained so that overhanging vegetation is removed from above the conductor.

³ State and Federal lands include but are not limited to lands owned or managed by the Pennsylvania Game Commission, Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Fish & Boat Commission, The National Park Service, The Appalachian Trail Conservancy, and US Fish & Wildlife.



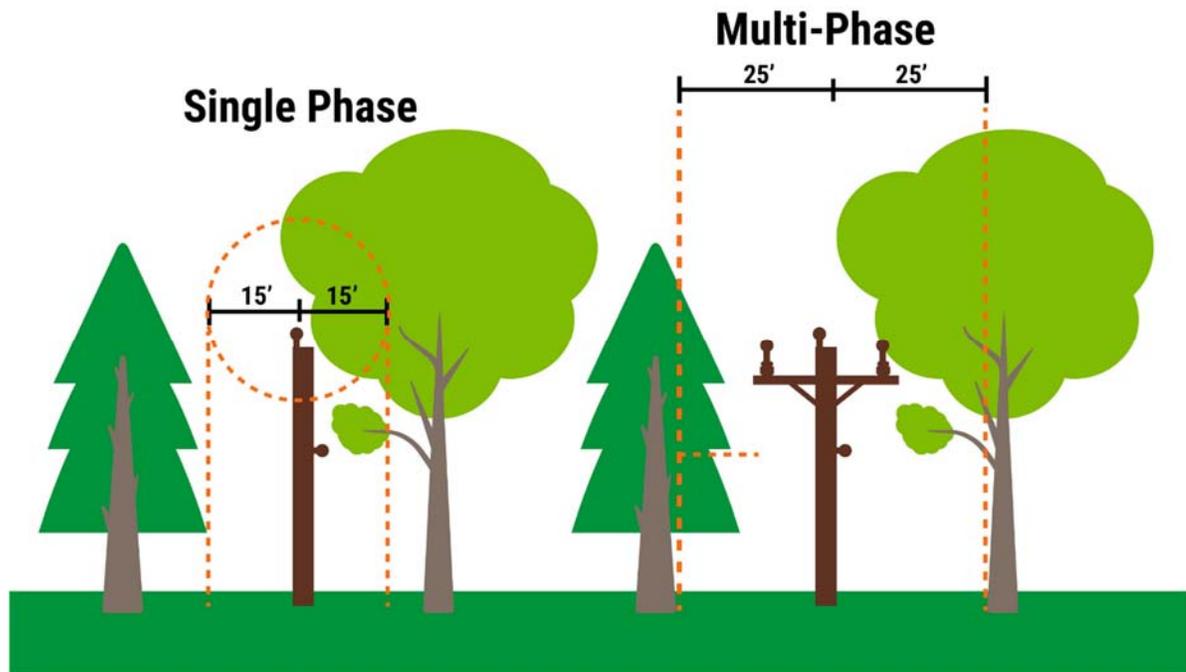
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Listed below are the desired maximum clearances on the PPL system:

Multi-Phase shall be pruned to the full extent of the established tree line, not to exceed 25' from centerline and shall be ground to sky pruning.

Single Phase shall be pruned to the full extent of the established tree line, not to exceed 15' from centerline, to a distance of 15' above the line.



7.1 General

- All trees will be pruned by the guidelines detailed in the most current revision of the American National Standard for Tree Care Operations (ANSI A300). All pruning cuts should be made back to lateral branches at least one-third the diameter of the limb being removed or to the branch collar of the parent stem. Every effort shall be made during the pruning process, to prevent damage to surrounding property and/or the tree itself.
- A minimum number of cuts shall be utilized to achieve required clearances. Cuts should be restricted to large diameter branches made well within the crown or along the main stem. Shaping through the removal of small diameter branches in the outer crown shall be avoided.



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- Tree gaffs or hooks are not permitted in any maintained yard tree to be pruned. Tree gaffs or hooks are permitted in forested non-maintained areas, unless objected to by the property owner and in any tree to be removed.
- Small compatible shrubs and other desirable low-growing vegetation shall be preserved to the greatest extent practical.
- Non-compatible brush shall be treated with herbicide. If property owner refuses herbicide, non-compatible brush shall be cut to the ground. Non-compatible brush may not be trimmed.
- All vegetation (including vines) within a five-foot radius of a pole or structure shall be eliminated in accordance with the PPL EU Vegetation Management Herbicide Application Policy.
- All dead or structurally weak limbs which could fall or blow into the conductor shall be removed regardless of their distance above the conductor.
- When performing work on an assigned circuit, the Contractor must clear for all distribution facilities on the same structure.
- Distribution facilities within transmission corridors maintained by PPL EU shall be maintained during the next transmission trim cycle.
- All vehicles, used to access off road rights of way on Pennsylvania State Game Lands should be power washed prior to access to reduce the spread of invasive species. Contractors will be responsible to maintain documentation of the power washing.

Conifer Pruning - To preserve the health and integrity of conifers stripping of all limbs from ground to sky pruning should be avoided. If no laterals exist to achieve desired clearance, pruning to the main stem of tree may be required. Some species such as White Pines may require more aggressive pruning.

7.2 Pruning Methods

Directional Pruning is the preferred pruning technique. In order to achieve necessary tree-to-conductor clearances, entire branches and/or laterals growing towards the conductor(s) are removed. All cuts shall be made back to lateral branches that grow away from the conductor(s). When required to preserve vertical clearance above the conductors, side branches should be pruned back to laterals growing away from the conductors.

Crown Reduction may be utilized when a tree is located under the conductors and directional pruning is not feasible. In this situation, apical branches are pruned back to reduce crown height and achieve necessary tree-to-conductor clearance. Branches containing sprouts from old topping cuts should be removed.

Side pruning is utilized on trees growing next to conductors. When the parent stem of a tree is at the edge of the clearing zone, limbs protruding into the clearing zone should be removed at the branch bark collar on the main stem.



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Mechanical pruning will be acceptable on rural cross country lines as noted in ANSI A300.

7.3 Secondaries, Service Wires, and Streetlights

As part of regular maintenance the Contractor shall only clear secondaries directly below overhead primary wires. Line clearance for pole to pole secondaries is not required as a part of regular maintenance. The Contractor shall report to PPL any observed damage to secondaries and service wires and all customer requests or inquiries regarding line clearance for secondaries.

Line clearance for service wires from pole to house is the customer's responsibility. Customers may call PPL to request a disconnect/reconnect. Make it clear to the customer that they are responsible for hiring their own tree service to be on site when the outage is scheduled.

Clearance for street light illumination and line clearance for streetlight wires may only be performed with prior approval from a PPL EU Authorized Representative.

8.0 ENHANCED VEGETATION MANAGEMENT SPECIFICATION

Under the direction of a PPL EU Authorized Representative, Enhanced Vegetation Management clearances may be implemented when it is necessary to establish or re-establish an extended clearing zone.

Single Phase shall be pruned to the full extent of the established tree line, not to exceed 15' from centerline and shall be ground to sky pruning.

Brush below the conductors shall be treated or removed in accordance with the PPL EU Herbicide Application Policy. The Contractor shall not trim brush without direct approval of a PPL EU Authorized Representative.

Trees on the opposite side of any thoroughfare, where standard line construction exists (not alley arms) shall be pruned to the centerline of the road. Fast growing trees (ex. Silver maples, Willows and Chinese Elms) may require additional clearance.

8.1 New Construction

When initially clearing for new distribution, all vegetation shall be cleared from the limits of the right-of-way with the exception of grasses or non-woody plants. This is necessary to both



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establish the extent of the right-of-way and to accommodate the construction activities that will occur within the right-of-way.

Initial clearing of a new distribution right-of-way must adhere to these requirements:

- A. All cut stumps and brush stubble shall be treated with an appropriate herbicide treatment whenever easement rights or property owner permission allow. All debris shall be handled in accordance with this document or as specified by a PPL EU Authorized Representative.
- B. The edge of the right-of-way shall be trimmed "Ground to Sky". Ground to sky means that all branches overhanging into the easement area shall be removed. All required tree pruning shall conform to the latest approved edition of ANSI A-300.
- C. Hazard trees outside the easement area shall be brought to the attention of the responsible PPL EU Authorized Representative. Property owner permission will be required before a hazard tree is removed.

9.0 HAZARD TREES

Hazard trees are a subset of danger trees as defined in ANSI standards (ANSI 300 Part 7). Accordingly, **a danger tree** is any tree that can strike the conductor. **A hazard tree is** a danger tree which is structurally unsound and therefore presents an increased risk to safety and reliability. A PPL EU Authorized Representative will work with vegetation management Contractors to approve the removal of hazard trees during line clearing/maintenance operations. The Contractor shall investigate all trees along the edge of the right-of-way (including the opposite side of the road for lines adjacent to a road) for hazard trees.

All stumps shall be cut as low to the ground as possible and a stump treatment if applicable shall be applied.

Hazard Trees are defined as trees having one or more of the following characteristics:

1. Decay, cankers, and or hollows present in the main trunk of the tree.
2. Animal and or mechanical damage present in the main trunk of the tree showing visible signs of decay to the extent that it affects its structural integrity.
3. Disease and or insect damage that has affected the tree to such an extent that the trees survival to the next maintenance cycle is in doubt.
4. Root systems exposed to such an extent that the integrity of the tree is reduced.
5. Leaning and or over-crowned trees that cannot be pruned without removing their tops.
6. Splits and or cracks that are to such an extent that the splitting is affecting the integrity of the tree. Trees with Horizontal cracks should be made a high priority for removal.



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7. Dead or dying trees that can strike the conductor or pass within the minimum conductor clearances shall be removed.
8. Species known to be weak wooded and or poorly rooted and therefore prone to an increased risk of failure.
9. All co-dominant stems should be considered for removal.
10. A “trapped” or cycle buster tree which due to the species characteristics cannot be effectively trimmed to achieve clearance within the given maintenance cycle.

10.0 WETLAND VEGETATION MANAGEMENT

Wetlands are defined in Section 404 of the Federal Clean Water Act and PA DEP’s Chapter 105 regulations as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions including swamps, marshes, bogs, and similar areas.

Note: Wetlands may have standing water, have plants that are adapted to wet conditions, and/or contain hydric soils. Not all wetlands have visible water or classic wetland plants (i.e. cat tails). The Contractor shall use a combination of the National Wetlands Inventory and actual field observations to make final wetlands determination.

- “Drop and lop” shall be the preferred method for the disposal of woody debris in wetlands. The intention of drop and lop is to minimize impacts to the wetland by leaving woody debris where it falls.
- Special care will be made to ensure that felled trees, logs, slash, brush, and chips do not impede any running water or seasonally dry waterways or drainage culverts. Slash will be compacted in such a manner that it will not be carried away by high water.
- Mechanical Equipment shall not be used in wetlands unless specifically approved by a PPL EU Environmental Professional. Upon approval by the PPL EU Environmental Professional, vehicles may only be taken into wetlands by using existing roads or through the use of temporary matting.

11.0 DISPOSITION OF CLEARED VEGETATION

All disposal operations shall closely follow clearing operations to keep work confined to one area and to prevent unsightly and unsafe conditions. The method of disposal shall be at the discretion of the Contractor; however, the work must be done to the satisfaction of the property owner. Wood may not be cut into firewood lengths without prior authorization from a PPL EU Authorized Representative.

11.1 Chipping



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All slash shall be fed through a mechanical chipper immediately after cutting and hauled away. With property owner permission, chips may be randomly scattered on the right-of-way, except in the following areas: fields, along city streets, park areas, within wetlands, and on the banks of streams or ponds. Brush piles may not be left overnight without direct property owner permission.

11.2 Drop and Lop

In non-maintained areas vegetation shall be cut so that it falls toward the edge of the right-of-way. The floor of the right-of-way shall be kept clear of any debris within 5-10 feet from the centerline of the electric line. All roads and paths shall be kept clear of all debris. All debris must be lopped/mulched (diced or cut up with a chain saw) and scattered to a height not to exceed 18 inches above the level of the ground.

12.0 HERBICIDE APPLICATIONS

All Herbicide Applications shall be performed in accordance with the latest version of "PPL EU Vegetation Management Herbicide Application Policy"

13.0 COMPLIANCE AND EXCEPTIONS

In addition to the exceptions specifically authorized herein, the PPL EU Manager of Vegetation Management, or his or her designee, may from time to time grant an exception to PPL EU's documented vegetation maintenance strategies, procedures, processes or specifications related to this document for good cause, including, but not limited to, such factors as safety conditions, weather, ice, flooding, emergencies, disasters, labor disputes, or legal limitations. Any such exceptions shall be in writing.

14.0 RECORD RETENTION

- 14.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 14.2 This document shall be reviewed annually by the Manager of Vegetation Management in Electric Utilities.
- 14.3 The review shall be facilitated by the Records Management Coordinator (RMC).



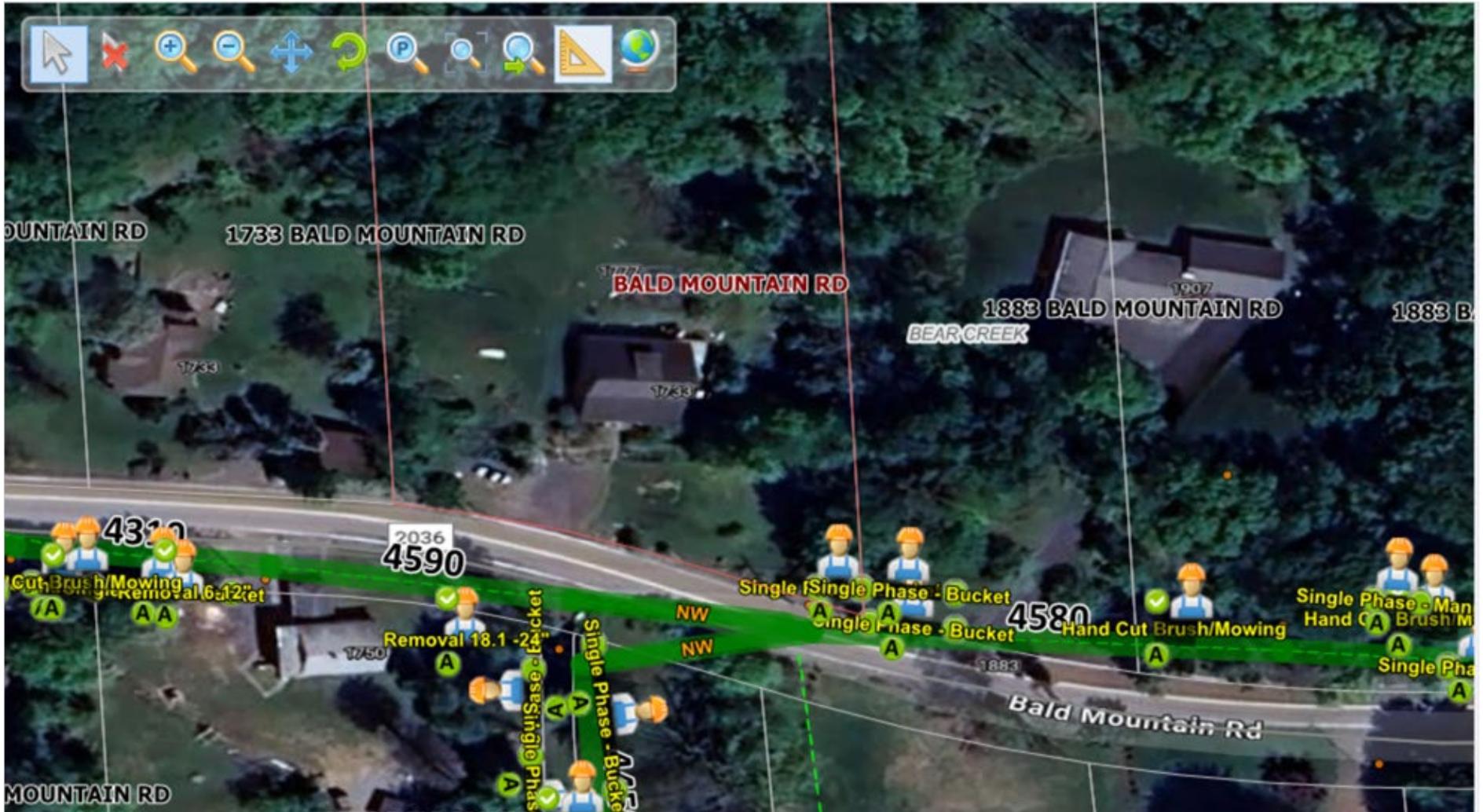
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15.0 REVISION HISTORY

REV 1 - 4/1/2019	Updates to formatting and clarification of Line Clearance Requirements
Prepared by:	
	Stephen Dahl Regional Forester
Prepared by:	
	Patrick Eisenhauer Regional Forester
Reviewed by:	
	Nicholas D'Amico Regional Forester
Reviewed by:	
	Justin Mease Regional Forester
Reviewed by:	
	Michael Trotta Regional Forester
Approved by:	
	Ryan J. Yanek Manager – Vegetation Management
Original – 1/1/2019	Issued w/Original Contract
Prepared by:	
	Stephen Dahl Regional Forester
Approved by:	
	Aaron Dom Manager – Vegetation Management

**PPL ELECTRIC
EXHIBIT 6**



**PPL ELECTRIC
EXHIBIT 7**

Work Completed for the Bear Creek Circuit

	Work Order	Trees	Length (ft)	Acres
- Region : Central		206	35205.60296	19.1176
- Program Type : Cycle Maintenance - Trim		206	35205.60296	19.1176
- Circuit : BEAR CREEK 69/12 KV 79-02 LINE		206	35205.60296	19.1176
- Unit : Ash > 36.1"		1		
- Unit : Ash 12.1-18"		7		
- Unit : Ash 6-12"		11		
- Unit : Hand Cut Brush/Mowing				11.6055
- Unit : Herbicide - Aquatic				0.34275
- Unit : Herbicide - Non Aquatic				7.16939
- Unit : Multi-Phase - Bucket			2415.083433	
- Unit : Multi-Phase - Manual			3023.081053	
- Unit : Removal 12.1-18"		50		
- Unit : Removal 18.1 -24"		12		
- Unit : Removal 24.1 - 30"		5		
- Unit : Removal 30.1-36"		1		
- Unit : Removal 6-12"		99		
- Unit : Single Phase - Bucket			20328.0499	
- Unit : Single Phase - Manual			9439.388578	
- Unit : Vine Pole/Structure		20		