



COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
400 NORTH STREET, HARRISBURG, PA 17120

IN REPLY PLEASE
REFER TO OUR FILE

April 28, 2025

Docket No. M-2009-2094773

KIMBERLY A. KLOCK
ASSISTANT GENERAL COUNSEL
PPL ELECTRIC UTILITIES CORPORATION
645 HAMILTON STREET, SUITE 700
ALLENTOWN, PA 18101
KKlock@pplweb.com

**Re: Biennial Inspection, Maintenance, Repair and Replacement Plan (2026-2027)
Docket No. M-2009-2094773**

Dear Ms. Klock:

On October 1, 2024, PPL Electric Utilities Corporation (PPL Electric) filed its Biennial Inspection, Maintenance, Repair and Replacement Plan (Plan), pursuant to 52 Pa. Code § 57.198(a), to be made effective on January 1, 2026. On November 8, 2024, via Secretarial Letter, the Commission's Bureau of Technical Utility Services (TUS Staff) sent PPL Electric a data request seeking more information on condition-based criteria for inspection of overhead lines and associated overhead distribution transformers. On November 22, 2024, PPL Electric responded. On November 26, 2024, via Secretarial Letter, TUS Staff sent PPL Electric a second data request seeking more information on its Proactive Circuit Analysis process. On December 11, 2024, PPL Electric responded. On December 30, 2024, via Secretarial Letter, TUS Staff rejected PPL Electric's Plan and directed PPL Electric to file a revised Plan, pursuant to 52 Pa. Code § 57.198(j). On January 29, 2025, PPL Electric filed a revised Plan. PPL Electric included red-lined and clean copies of its revised Plan (Revised Plan), which contained proposed revisions related to distribution overhead line inspections required by 52 Pa. Code § 57.198(n)(4) and overhead distribution transformer and above-ground pad-mounted transformer inspections required by 52 Pa. Code § 57.198(n)(6).

The Commission's regulations require EDCs to file every two years by October 1, a biennial plan for the periodic inspection, maintenance, repair, and replacement of facilities that are designed to meet reliability performance benchmarks and standards set forth in 52 Pa. Code §§ 57.191-57.197. The Commission's Implementation Order, entered August 13, 2009, identified PPL Electric as one of six (6) EDCs in Compliance Group 2 to initially file their Plan by October 1, 2010, and then every two years thereafter. The Plan must cover the two calendar years beginning 15 months after filing and remain in effect for two calendar years thereafter (January 1, 2026, through December 31, 2027).

PPL Electric has proposed changes to its original plan, which will be discussed herein.

Plan Consistency

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 provisions of the American National Standards Institute, Inc.

TUS Staff finds that PPL Electric's Revised Plan generally complies with 52 Pa. Code § 57.198(b). However, the Plan's overall compliance and achievement of purpose will be discussed *infra*.

Time Frames

52 Pa. Code § 57.198(c) Time frames. 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 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 has proposed modifications, discussed *infra*, for the following programs, or parts of programs:

- Pole loading calculations
- Distribution Overhead Line Inspection Interval
- Recloser Inspection Interval
- Distribution Overhead Transformer Inspection Interval
- Distribution Pad Mounted Transformer Inspection Interval
- Substation Inspection Interval

Record Keeping

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 sub52 Pa. Code § (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.*

TUS Staff Finds that PPL Electric's Revised Plan generally complies with Section 57.198(m).

Vegetation Management

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.

TUS Staff finds that PPL Electric's Revised Plan generally complies with Section 57.198(n)(1).

Pole Inspections

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.*

The Revised Plan states that PPL Electric will visually inspect distribution wood poles on a 12-year cycle. PPL Electric included a previously approved exemption from performing pole load calculations as part of pole inspections. PPL Electric noted that pole failures are a very small impact on reliability and that the failures that occurred were aggravated by weather conditions and vegetation being blown into lines. PPL Electric stipulated that the risk reduction through a load calculation would be insignificant.

TUS staff agrees with PPL Electric's assertion that the risk reduction through a load calculation on every pole inspection would be insignificant. Accordingly, TUS Staff grants PPL Electric's request for an exemption from performing load calculations as part of its pole inspection program. However, TUS Staff directs PPL Electric to conduct subsequent assessments of pole strength prior to attachment of non-company facilities. TUS Staff finds that the Revised Plan is consistent with the previously approved Plan and generally complies with Section 57.198(n)(2).

Pole Inspection Failure

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.

TUS Staff finds that PPL Electric's Revised Plan generally complies with Section 57.198(n)(3).

Distribution Overhead Line Inspections

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.*

PPL Electric states that infrared inspections will be done every two years for multi-phase overhead lines adjacent to roadways. PPL Electric states that 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. PPL avers that this 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. PPL Electric states that condition-based visual inspections are scheduled under various conditions to include CEMI and Worst Performing Circuits (WPCs), if warranted based on Proactive Circuit Analyses, and/or if power quality issues are experienced. Additional patrols are conducted to ensure continued reliability including those in support of distribution construction projects and summer and winter readiness patrols. PPL Electric reports that additional visual inspections will be conducted to ensure that all distribution overhead line assets, including those not otherwise evaluated under the infrared or condition-based approach, are visually inspected within a five-year cycle beginning in 2026. PPL Electric states that visual inspections may be conducted by ground or drone patrol depending on the location and accessibility of the line.

PPL Electric 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 above. PPL Electric states that the resources that would be required to perform more frequent visual cycles than this proposal would reduce the amount of resources that could be applied to other more cost-effective reliability programs described in its Revised Plan. PPL Electric reports that although universal overhead visual inspections are not found to be the most cost-effective means to assess the system, targeted visual inspections by PPL Electric have provided greater reliability benefits.

PPL Electric states that certain portions of its distribution overhead line system may be in areas that are inaccessible or where it is unsafe for ground patrols to walk the line under normal conditions. In these areas, drones may be used by trained and licensed personnel to inspect overhead lines for the safety of inspection personnel. Additional visual inspections will be

conducted to ensure that all distribution overhead line assets are visually inspected within a five-year cycle beginning in 2026, as noted above. PPL avers that a five-year cycle for distribution overhead line inspections provides for a reasonable balance between the availability and allocation of Company resources (such as ground crews, planning and engineering staff) and the increased cost associated with conducting an inspection of all distribution overhead line assets in a shorter timeframe.

Because PPL Electric has demonstrated that the one to two-year inspection cycle is not cost effective given the reliability benefits, and because PPL Electric is ensuring all overhead facilities will be visually inspected at least every five years, PPL Electric's proposed deviation from the one to two-year inspection cycle is approved. The Revised Plan is consistent with the previously approved Plan and generally complies with Section 57.198(n)(4).

Inspection Failure

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.

TUS Staff finds that PPL Electric's revised Plan generally complies with Section 57.198(n)(5).

Distribution Transformer Inspections

52 Pa. Code § 57.198(n)(6) Distribution transformer inspection. 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.*

PPL Electric's Revised Plan includes deviations from performing overhead distribution transformer, above-ground pad-mounted transformer, and below-ground transformer inspections on fixed timeframe inspection intervals.

PPL Electric avers that overhead transformers are inspected as part of overhead visual line inspections, infrared inspections, and pole inspections. PPL Electric reports that all overhead distribution transformers will be inspected within a five-year cycle beginning in 2026 in alignment with the distribution overhead line inspections. PPL Electric provides that pad-mount transformer inspections will be performed within an eight-year cycle beginning in 2026. PPL Electric states that below-ground transformer 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 also be inspected as part of the underground residential development cable testing or replacement programs.

PPL Electric avers that a five-year cycle for distribution overhead transformers and an eight-year cycle for allocation of Company resources (such as ground crews, planning and engineering staff) is more efficient and that the increased costs associated with conducting an inspection of all such transformer assets in a shorter timeframe will not significantly improve reliability. PPL Electric also demonstrates that equipment failures are decreasing due to the many proactive initiatives and programs already in place, including the condition-based line inspection approach, which provides additional support for the reasonableness of the proposed five- and eight-year inspection cycles for distribution overhead transformers and distribution pad-mounted transformers, respectively.

Therefore, PPL Electric is granted exemptions from performing overhead distribution transformer, above-ground pad-mounted transformer, and below-ground transformer inspections on the timeframe proscribed in 52 Pa. Code § 57.198(n)(6). PPL Electric states that 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. However, inspections of distribution overhead transformers will be performed within a five-year cycle beginning in 2026 in conjunction with distribution overhead line inspections, and distribution pad-mounted transformers will be inspected within an eight-year cycle beginning in 2026.

The revised Plan generally complies with Section 57.198(n)(6). However, in order to ensure that PPL Electric is consistently meeting the intent of 52 Pa. Code § 57.198(n)(6), and pursuant to the Commission's authority at 66 Pa.C.S. § 504 (relating to reports by public utilities), beginning with the quarterly reliability report¹ for the first quarter of 2025, PPL Electric is directed to report in its quarterly reliability reports the number of inspections for overhead distribution transformers, above-ground pad-mounted transformers, and substation inspections that were performed in the calendar quarter and the type of inspection performed (e.g., visual, infrared, or drone).

Recloser Inspections

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.

PPL Electric included a previously approved exemption from inspecting three-phase reclosers on a cycle of eight years or less. PPL Electric states that it is engaging in the replacement of oil circuit reclosers (OCRs) with three-phase vacuum circuit reclosers (VCRs) on a condition-based proactive cycle. PPL Electric proposes continuing replacements on a condition-based cycle accounting 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.

¹ Required pursuant to 52 Pa. Code § 57.195(d).

PPL Electric states that when it began the process of replacing OCRs, there were approximately 5,000 multiphase OCRs on-system. Currently, there are 202 remaining, with an average age of 12 years and an expected lifespan of 30 years.

PPL Electric reports that as it has been replacing older oil reclosing three-phased units, reliability has held steady with the number of failed units. In the last 12 months, 13 outages were caused by equipment failure of OCRs and VCRs that were fixed with repairs or replacement, which is consistent with an annual average of 13 in the past two years. PPL Electric states that 70% of the legacy outage-causing equipment has been upgraded to the latest VCR standard aligning with the condition-based replacement strategy in PPL Electric's plan.

For the reasons stated by PPL Electric, TUS Staff grants the request to continue the exemption from performing three-phase recloser inspections on an eight-year inspection cycle or less. TUS Staff finds that the new recloser technology appears to allow continual monitoring of the operational functionality of reclosers and allows three-phase reclosers that have not yet been replaced to be inspected on a 10-year cycle, which corresponds to PPL Electric's 10-year replacement schedule. TUS Staff finds that PPL Electric's revised Plan is consistent with the previously approved Plan and generally complies with Section 57.198(n)(7).

Substation Inspections

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.

PPL Electric included a previously approved exemption to reduce the inspection frequency from every five weeks or less to quarterly. PPL Electric avers the basis for this change request is that it upgraded all substations with equipment that will continually monitor critical equipment parameters more cost effectively than manual monthly readings. PPL Electric believes manual quarterly readings would be sufficient to ensure substation reliability performance.

For the reasons stated by PPL Electric, TUS Staff grants PPL Electric's request to continue the exemption from performing substation inspections on a cycle of five weeks or less. TUS Staff directs PPL Electric to continue to perform quarterly in-person substation inspections. TUS Staff finds that PPL Electric's revised Plan is consistent with the previously approved Plan and complies with Section 57.198(n)(8).

Conclusion

Upon review of PPL Electric's Revised Plan filed on January 29, 2025, it appears the filing generally complies with the requirements of 52 Pa. Code § 57.198 and is accepted. Furthermore, as discussed *supra*, the exemptions requested by PPL Electric are approved. This approval is contingent upon the possibility that subsequent audits, reviews, and inquiries, in any Commission proceeding, may be conducted pursuant to 52 Pa. Code § 57.197(a).

Additionally, as noted above, the Commission hereby directs PPL Electric to report in its quarterly reliability reports the number of inspections for overhead distribution transformers, above-ground pad-mounted transformers, and substation inspections that were performed in the calendar quarter and the type of inspection performed (*e.g.*, visual, infrared, or drone). This reporting shall begin with PPL Electric's first quarterly reliability report in 2026 and in every subsequent quarterly reliability report thereafter.

PPL Electric's Revised Plan must remain in effect for two calendar years, beginning January 1, 2026. PPL Electric may, however, request Commission approval of subsequent revisions to its approved Plan, in accordance with 52 Pa. Code § 57.198(l). Revisions must be submitted to the Commission as an addendum to PPL Electric quarterly reliability report filed pursuant to § 57.195, including prospective and past revisions to its Plan and a justification for the revisions.

If you are dissatisfied with the resolution of this matter, you may, as set forth in 52 Pa. Code § 5.44, file a petition with the Commission within twenty (20) days after the date of this letter. Please direct any questions regarding this filing to John Van Zant, Reliability and Emergency Preparedness Supervisor, Bureau of Technical Utility Services at (717) 773-7380, or jvanvant@pa.gov.

Sincerely,

A handwritten signature in black ink that reads "Matthew L. Homsher". The signature is written in a cursive style with a large initial "M".

Matthew L. Homsher
Secretary

cc: Preston Walker, PPL Electric, pwalker@pplweb.com
Kriss Brown, LAW
John Van Zant, TUS
Dan Searfoorce, TUS
Brent Killian, BIE