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

IN REPLY PLEASE
REFER TO OUR FILE

December 28, 2023

Docket No. M-2009-2094773
Utility Code No. 111250

DANIEL A GARCIA
STATE REGULATORY ATTORNEY II
FIRSTENERGY
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GREENSBURG, PA 15601
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Re: Biennial Inspection, Maintenance, Repair and Replacement Plan (2025-2026) of Pennsylvania Electric Company at Docket No. M-2009-2094773

Dear Mr. Garcia:

On September 29, 2023, Pennsylvania Electric Company (Penelec) 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, 2025. In its Plan, Penelec has proposed continuation of previous modifications to its original Plan, and the change to the distribution wood pole treatment program which will be discussed herein. The Commission's Bureau of Technical Utility Services[1] (TUS Staff) in accordance with 52 Pa. Code § 57.198(h) & (j) delegated authority,[2] rejects Met-Ed's Plan for the reasons expressed below. TUS Staff directs Met-Ed to file a revised Plan within 30 days of service of this letter that includes the Distribution Overhead Line Inspections Interval and Distribution Overhead Transformer Inspections Interval consistent with 52 Pa. Code § 57.198(n)(4) and (6). Further, TUS Staff directs Met-Ed to consider re-evaluating and reviewing the effectiveness of the Vegetation Management portion of its Plan and update its Plan accordingly to achieve an improvement in its performance.

On November 2, 2023, TUS Staff sent a data request to Penelec via a Secretarial Letter. TUS Staff's Data Request sought additional information related to Penelec reliability metrics and performance and Penelec's Vegetation Management Program. TUS Staff also asked Penelec to provide a detailed justification for the continuation of previously granted deviations for the

[1] The Bureau of Conservation, Economics and Energy Planning was eliminated, and its functions and staff transferred to the Bureau of Technical Utility Services. *See Implementation of Act 129 of 2008; Organization of Bureaus and Offices*, Final Procedural Order, entered August 11, 2011, at Docket No. M-2008-2071852, at 4.
[2] 52 Pa. Code § 57.198(h) *Review procedures*. Within 90 days of receipt of the plan, the Commission or the Director of the Bureau of Conservation, Economics and Energy Planning (CEEP) will accept or reject the plan in writing. 52 Pa. Code § 57.198(j) *Plan deficiencies*. If the plan is rejected, in whole or in part, by the Commission or the Director of CEEP, the EDC will be notified of the plan's deficiencies and directed to submit one of the following: (i) A revised plan, or pertinent parts of the plan, addressing the identified deficiencies.

inspection intervals for the Plan's Distribution Overhead Line Inspections and Distribution Transformer Inspections. On November 17, 2023, Penelec filed its response.

The Commission's regulations require electric distribution companies (EDCs) to file, every two years by October 1, a plan for the periodic inspection, maintenance, repair, and replacement of facilities that is designed to meet reliability performance benchmarks and standards set forth in 52 Pa. Code § § 57.191-57.197. Penelec, as one of five EDCs in Compliance Group 1, must file their eighth biennial Plan by October 1, 2023. The Plan must cover the two calendar years beginning 15 months after filing and remain in effect for two calendar years thereafter (January 1, 2025, through December 31, 2026).

Plan Revisions

Penelec submitted its original Plan for the period January 1, 2023, through December 31, 2024, on October 1, 2021. The Commission concluded that Penelec's plan generally complied with the requirements in 52 Pa. Code § 57.198 and therefore approved it on December 21, 2021. On April 28, 2023, pursuant to 52 Pa. Code § 57.198(l), Penelec submitted a revised Plan, proposing the addition of a distribution pole life extension process to be applied in certain cases but otherwise consistent with its previously approved Plan with no substantive changes to its inspection cycles. The Commission concluded that Penelec's Plan, as revised, generally complied with the requirements in 52 Pa. Code § 57.198 and approved the revised Plan via a Secretarial Letter dated July 17, 2023.

Penelec's instant Plan (covering 2025 through 2026) includes a distribution wood pole treatment program that is otherwise consistent with its previously approved distribution wood pole treatment program in its approved revised Plan for the years 2023 and 2024.

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 Penelec's 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.

Penelec has proposed continuation of current modifications discussed *infra,* for the following programs, or parts of programs:

- Pole inspections
- Distribution overhead line inspection interval
- Distribution overhead transformer 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 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.*

Penelec's Plan avers that it will maintain inspection and maintenance records either electronically or in hard copy as required by 52 Pa. Code § 57.198(m).

TUS staff finds that Penelec's Plan generally complies with 52 Pa. Code § 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 Penelec's Plan generally complies with 52 Pa. Code § 57.198(n)(1). However, TUS Staff's evaluations of Penelec's performance for vegetation-related customer interruptions indicate a need for Penelec to re-evaluate and improve its vegetation management program and consider vegetation inspection patrols scheduled at a minimum of every four-years for all circuits. As detailed in Penelec's Revised Joint 2022 Annual Reliability Report, filed on October 6, 2023, and Penelec's Joint 3rd Quarter 2023 Reliability Report, filed on November 1, 2023,[3] TUS Staff finds that Penelec's reliability performance does not comply with 52 Pa. Code § 57.194(e) (relating to an EDC achieving the reliability performance benchmarks and minimum performance standards established by the Commission).

[3] *See,* Docket Nos. M-2016-2522508 and M-2023-3039027, respectively.

TUS Staff has performed an evaluation of Penelec's outage causes and notes that as reported in Penelec's Joint 4th Quarter 2004 Reliability Report, filed on February 1, 2005,[4],[5] Penelec customers experienced 1,176 vegetation caused customer outages. That number remained relatively the same for each rolling 12-month quarter thereafter up to the fourth quarter of 2015, with 2,069 vegetation-caused outages. The average annual number of vegetation-caused outages during the period of 2004 through 2015 was 1,733. TUS Staff found that during the rolling 12-month quarter ending March 31, 2016, there were 2,001 vegetation outages. That number began to rise each rolling 12-month quarter thereafter with the number of vegetation-caused outages reported for the rolling 12-month quarter ending December 31, 2022 at 5,015. The average annual number of vegetation-caused outages during the period of 2016 through 2022 was 3,073, which is almost double the annual average during the years 2004 through 2015.

Should Penelec's reliability performance on vegetation-caused outages not improve in subsequent years, TUS Staff expects Penelec to re-evaluate and review the effectiveness of the Vegetation Management portion of its Plan and update its Plan accordingly to achieve an improvement in its performance.

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 tests.
(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 Plan states that Penelec will visually inspect distribution wood poles on a 12-year cycle. The preventative maintenance inspection for wood poles will include a visual inspection as well as hammer-sounding as needed. The inspection consists of the recording of abnormal conditions from the groundline to the top of the pole, including damage (broken or leaning), equipment (crossarms, insulators, conductors, oil leaking), and testing for decayed internal wood. poles showing incipient decay will be bored to further assess the condition of the pole.

Penelec avers that serviceable poles that pass the visual, sound, and bore testing may be treated for life extension. Reinforced poles may also be treated. Three different types of treatments may be used depending on the need determined during inspection. External

[4] *See*, Docket No. L-00030161. All quarterly and annual reliability reports for EDCs may be found at Docket Nos. L-00030161 (1994 through 2015), M-2016-2522508 (2016 through 2022), and M-2023-3039027 (2023 – current).
[5] The reliability performance evaluation that follows in this document is based on the review of the reliability metrics as reported by Penelec to the Commission, and in Penelec's quarterly and annual reliability reports, at the dockets cited in Footnote 4.

treatments are applied as a preservative paste, after decay is scraped off. Internal preventative treatments are for protection against fungal decay and insects and to interrupt degradation. Internal void treatments are used where decay pockets exist. The selected treatment method will be based on the best available information at the time.

Penelec included a previously approved deviation from performing pole load calculations as part of pole inspections as required by 52 Pa. Code § 57.198(n)(2)(vi). TUS Staff finds that Penelec has justified the continuation of the previously approved deviation from is granted the exemption from performing load calculations as part of its pole inspection program in accordance with 52 Pa. Code § 57.198(c).

TUS Staff finds that Penelec's Plan generally complies with 52 Pa. Code § 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.

The Plan states that wood poles and supporting structures with recorded defects that Penelec could reasonably expect to endanger life or property will be repaired or replaced within 30 days. All remaining deficiencies will be evaluated and prioritized on a case-by-case basis.

TUS Staff finds that Penelec's Plan generally complies with 52 Pa. Code § 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.*

The Commission ensures that EDCs are providing reliable service by requiring EDCs to meet certain reliability performance measures. The benchmarks and standards established by the Commission are based on four reliability performance metrics adopted by the Institute of Electrical and Electronic Engineers, Inc. (IEEE): SAIFI, CAIDI, SAIDI, and MAIFI.[6] Our electric reliability regulations may be found at 52 Pa. Code §§ 57.191-198.

[6] SAIFI is the system average interruption frequency index, or frequency of outages; CAIDI is the customer average interruption duration index, or duration of outages; SAIDI is the system average interruption duration index, or average number of minutes the average customer experiences an interruption in the measurement period; and MAIFI is the momentary average interruption frequency index, or occurrences of momentary customer interruptions. There is no benchmark measure for MAIFI.

Concerning Penelec's CAIDI[7], TUS Staff notes that from 1994 through 2016, Penelec's calendar-year CAIDI metric averaged 141 minutes. Penelec's calendar-year CAIDI metric for the years 2004 through 2016 averaged 127 minutes. Penelec's calendar-year CAIDI from 2017 through 2022 has averaged 148 minutes. We note that Penelec's rolling 12-month standard for CAIDI established by the Commission is 141 minutes.

Concerning Penelec's SAIFI, TUS Staff notes that from 1994 through 2016, Penelec's calendar-year SAIFI metric averaged 1.40. Penelec's calendar-year SAIFI metric for the years 2004 through 2016 averaged 1.45 occurrences. Penelec's calendar-year SAIFI from 2017 through 2022 averaged 1.74 occurrences. The 1.74 average annual SAIFI is 0.22 above Penelec's rolling 12-month standard of 1.52 established by the Commission.

Concerning Penelec's SAIDI, TUS Staff notes that from 1994 through 2016, Penelec's calendar-year SAIDI metric averaged 183.22 minutes. Penelec's calendar-year SAIDI metric from 2004 through 2016 averaged 160.66 minutes. Penelec's calendar-year SAIDI from 2017 through 2022 averaged 257.07 minutes. The average annual SAIDI of 257.07 minutes is 44.07 minutes above Penelec's rolling 12-month standard of 213 minutes established by the Commission.

TUS Staff also notes the continual increases in the following interruption metrics submitted by Penelec from 2015 through 2022. The number of customers experiencing a sustained customer interruption[8] each calendar year has increased from 792,673 in 2015 to 1,062,923 in 2022. This represents an increase of 34.09%. Also, the length of time for sustained customer interruptions, customer-minutes-interrupted (CMI), has increased from a CMI of 111,191,315 in 2015 to a CMI of 211,092,054 in 2022. This is an increase of 89.84%. The number of sustained customer interruption events has increased from 11,487 cases in 2015 to 19,542 cases in 2022, representing an increase of 70.12%. To summarize, a customer residing within Penelec service territory during the last 8 years can expect to be interrupted 34% more often and remain interrupted 89.8% longer than in the prior years.

Based on the above reported reliability performance measures, TUS Staff finds that Penelec's reliability performance does not comply with 52 Pa. Code § 57.194(e) (relating to an EDC achieving the reliability performance benchmarks and minimum performance standards established by the Commission).

In its response to the TUS Staff's data request, question 2 (asking Penelec for detailed justification for the continued distribution overhead line inspection cycle deviation), Penelec states that it has assessed the current overhead inspection program in the past and has determined that inspections are proactively identifying system issues that need remediation. Penelec assets that visual inspections are completed from ground level and focus on identifying visible signs of issues, damage, or degradation, but they will not reveal internal problems/equipment damage. Penelec goes on to assert that increasing the periodicity of inspections would not enable Penelec to identify internal problems/equipment damage. Penelec's avers that its current overall SAIFI

[7] *See,* Footnote 5, above.
[8] *See,* 52 Pa. Code § 57.192, Definitions.

trend has been trending upward, however the trends relating to equipment and line failures have been trending downward. Penelec's states its line/equipment overall SAIFI has improved 32% and a 29% improvement for blue-sky days distribution line/equipment when comparing year-to-date October 2023 to the same time period in 2018. Penelec states that it continues to address system degradation due to aging infrastructure through its Long-Term Infrastructure Improvement Plan (LTIIP) strategy.

An EDC's Plan is to be designed to meet the Commission established reliability benchmarks and standards. 52 Pa. Code § 57.198(a). With consideration of Penelec's reliability performance as discussed above, Penelec's Plan, which includes a previously approved deviation for a five (5) year distribution overhead line inspection cycle, rather than the one to two (1-2) year inspection cycle as established in 52 Pa. Code § 57.198(n)(4), does not appear to be designed to meet Penelec's reliability benchmarks and standards. As noted above, Penelec admits that visual inspections are proactively identifying system issues that need remediation. TUS Staff finds that by increasing the inspection cycle to once every one to two years as set forth in 52 Pa. Code § 57.198(n)(4), Penelec should identify system issues and allow for remediation in a more timely manner that should improve CAIDI, SAIFI & SAIDI. As to Penelec's contention that increasing the periodicity of inspections would not enable Penelec to identify internal problems/equipment damage, TUS Staff notes that Penelec avers that its visual inspections, as performed in the past and currently, do not reveal internal problems/equipment damage. Therefore, Penelec's concern on this point is irrelevant as identification of internal problems/equipment damage are not part of Penelec's overhead line inspection process.

TUS Staff notes that as of the end of 2022, vegetation issues are the number two cause of sustained customer interruptions and the number one cause of CMI for Penelec. TUS Staff finds that in addition to proactive identification of issues with overhead circuit equipment, the shorter inspection cycle should allow Penelec to identify vegetation issues, consistent with 52 Pa. Code § 57.198(n)(4)(iii) (relating to identification of conditions that may adversely affect operation of the overhead distribution line) and address them in a timelier manner.

Therefore, TUS Staff finds that Penelec has failed to justify the continuation of the current five-year inspection cycle for distribution overhead line inspections previously permitted by TUS Staff in accordance with 52 Pa. Code § 57.198(c). Accordingly, with respect to overhead lines and equipment to be inspected during patrols, TUS Staff finds that Penelec's Plan does not comply with 52 Pa. Code § 57.198(n)(4). Penelec is directed to file a revised Plan that includes the one to two (1-2) year inspection cycle for distribution overhead lines and equipment, as specified by 52 Pa. Code § 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.

The Plan states that supporting structures with recorded defects that Penelec could reasonably expect to affect the integrity of the circuit shall be repaired or replaced within 30 days. All remaining deficiencies will be evaluated and prioritized on a case-by-case basis.

TUS Staff finds that Penelec's Plan generally complies with 52 Pa. Code § 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.*

Penelec's Plan includes a previously approved deviation for a five (5) year inspection cycle for overhead transformers, consistent with their previous overhead line inspection cycle, instead of the required one to two (1-2) year cycle established in 52 Pa. Code § 57.198(n)(6). Penelec states that it will inspect above-ground pad-mounted transformers on a five (5) year cycle and below-ground transformers on an eight (8) year cycle, consistent with 52 Pa. Code § 57.198(n)(6). In justification for the continued distribution transformer inspection cycle deviation, Penelec repeats that same justifications as it did for the distribution overhead line inspection cycle deviation.

As noted in the Distribution Overhead Line Inspections section above, and in consideration of Penelec's reliability performance as discussed above, TUS Staff finds that Penelec's Plan, which includes a previously approved deviation for a five (5) year inspection cycle for overhead distribution transformers, does not appear to be designed to meet Penelec's reliability benchmarks and standards. As noted above, TUS Staff finds that by increasing the inspection cycle to once every one to two years as set forth in 52 Pa. Code § 57.198(n)(4), Penelec will be able to identify system issues and allow for remediation in a more timely manner that should improve CAIDI, SAIFI & SAIDI.

Therefore, TUS Staff finds that Penelec has failed to justify the continuation of the current five-year visual inspection cycle for overhead distribution transformer inspections previously permitted by TUS Staff in accordance with 52 Pa. Code § 57.198(c). Accordingly, with respect to overhead distribution transformers and equipment to be visually inspected, TUS Staff finds that Penelec's Plan does not comply with 52 Pa. Code § 57.198(n)(6). Penelec is directed to file a revised Plan that includes the one to two (1-2) year visual inspection cycle for distribution transformers and equipment, as specified by 52 Pa. Code § 57.198(n)(6).

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.

The Plan states that Penelec visually inspects distribution line reclosers annually and this practice is the same for all FirstEnergy companies.

TUS Staff finds that Penelec's Plan generally complies with 52 Pa. Code § 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.

Penelec's Plan includes inspections on monthly, quarterly, and biannual intervals. Safety and security inspections are conducted monthly; readings of currents, etc. are performed quarterly; and a more comprehensive inspection of substation equipment are performed biannually. This Plan is consistent with all FirstEnergy companies.

TUS Staff finds that Penelec's Plan generally complies with 52 Pa. Code § 57.198(n)(8).

Conclusion

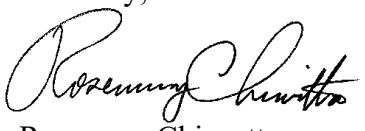
Upon review of Penelec's Plan filed on September 29, 2023, TUS Staff finds that implementation of the submitted Plan would not lead to improved reliability and that Penelec's Plan is not designed to meet Penelec's reliability benchmarks and standards. As noted above, an EDC's Plan is to be designed to meet its reliability benchmarks and standards. 52 Pa. Code § 57.198(a). Specifically, TUS Staff finds that Penelec has failed to justify the continuation of the current five (5) year inspection interval for overhead distribution line inspections, rather than the required one to two (1-2) year inspection cycle.[9] Furthermore, TUS Staff finds that Penelec has failed to justify the continuation of the current five (5) year inspection cycle for overhead distribution transformers, rather than the required one to two (1-2) year cycle.[10] Accordingly, TUS Staff rejects Penelec's Plan.

Pursuant to 52 Pa. Code § 57.198(j)(i), TUS Staff directs Penelec to file a revised Plan within 30 days of the date of this letter that includes the Distribution Overhead Line Inspections Interval and Distribution Overhead Transformer Inspections Interval consistent with 52 Pa. Code § 57.198(n)(4) and (6). Further, as noted in the Vegetation Management section above, Penelec should consider re-evaluating and reviewing the effectiveness of the Vegetation Management portion of its Plan and update its Plan accordingly to achieve an improvement in its performance.

[9] *See,* 52 Pa. Code § 57.198(n)(4).
[10] *See,* 52 Pa. Code § 57.198(n)(6).

If you are dissatisfied with the resolution of this matter, you may, as set forth in 52 Pa. Code §§ 5.44 and 57.198(k), file an appeal of this staff action with the Commission within twenty (20) days after receiving service of this letter. Please direct any questions regarding this filing to Harry R. Bidelspach, Sr., Electrical Reliability Engineer, TUS, at (717) 425-7401, or hbidelspac@pa.gov.

Sincerely,



Rosemary Chiavetta
Secretary

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