

Pennsylvania Summer Reliability

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A. Reliability Enhancement Programs

Pennsylvania Electric Company (“Penelec” or the “Company”) remains committed to providing safe and reliable electric service to its customers and employs various programs to strengthen the durability and flexibility of its electric system. Methods to improve the efficiency, adequacy and reliability of its distribution system are a continual focus. Penelec utilizes core programs to support cost-effective and reliable service. These programs include, but are not limited to:

- Vegetation Management
 - Routine cycle tree trimming removes selected incompatible trees within the clearing zone corridor, removes certain defective limbs that are overhanging primary conductors, controls selected incompatible brush, and targets identified off right-of-way priority trees for removal.¹
 - A dedicated program has been completed in response to damage caused by the Emerald Ash Borer, to proactively remove Ash Trees off right-of-way.
 - Post-storm circuit patrols may be performed to target the areas with high tree-related outages. Circuit patrols identify trees damaged in a storm that may eventually lead to a future outage. Once identified, the tree is removed. In addition, damaged equipment identified as part of the circuit patrol is repaired or replaced.
- Customers Experiencing Multiple Interruptions (“CEMI”)
 - The CEMI program provides for distribution line equipment projects focused on reducing the number of outages per customer and the number of customers affected by frequent outages. Penelec completed 61 CEMI units in 2022, multiple CEMIs were in the same Work Request
- Load Forecasting and Distribution Planning
 - The load forecasting application is used to estimate future substation and circuit loading based upon historical load data and the planning criteria guidelines are then used to provide a consistent approach for planning the safe, reliable, orderly, and economic expansion of the distribution system.
- Fuse Protection and Coordination
 - To reduce the scope of outages, fuse protection and coordination recommendations on the 34.5 kV system will be constructed and implemented based on full circuit coordination studies.
- Circuit Improvement
 - To benefit customers by providing faster restoration times in the event of an outage. Circuit Improvement Projects can consist of adding protective devices, creating loops and ties, splitting large circuits, reconductoring and relocating sections of line to more accessible locations.
- Line Rehabilitation

¹ Trees located off the right-of-way that are either dead, diseased, declining, structurally compromised, severely leaning or significantly encroaching onto the right-of-way.

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- To strengthen its electrical system, Penelec performs targeted circuit rehabilitation in zones one and two,² focusing on circuits having a high rate of equipment and line failure and animal-caused outages. Equipment that may be replaced includes crossarms, capacitors, insulators, lightning arresters and connectors. Penelec completed the rehabilitation on 25 circuits in 2022.
- SCADA Devices
 - Additional supervisory control and data acquisition (“SCADA”) devices are being installed where circuit conditions and system performance warrant. Remote SCADA controlled devices allow for remote operation to restore service to customers when an outage occurs. Remote switching eliminates the need to dispatch crews to manually operate the switches. The result is fewer customers affected and reduced outage durations. Penelec installed SCADA devices on 10 circuits in 2022. Penelec is also preparing for the implementation of distribution automation in Erie.
- Circuit Protection and Sectionalization
 - Circuit protection and sectionalization is aimed at identifying and correcting or improving coordination between protective devices and isolating smaller segments of the circuit with the goals of ensuring safety and security to the public and employees; maximizing service reliability to customers by reducing the number of customers impacted and the frequency and duration of outages; and minimizing damage to distribution equipment due to overcurrent events. Penelec replaced or installed 378 devices in 2022 on circuits which were selected based on overall performance as well as protection needs.
- Long-Term Infrastructure Improvement Plans (“LTIIIP”)
 - Penelec first began to execute its LTIIIP programs in 2016. These plans include expenditures and programs designed to accelerate repair, improvement or replacement of aging infrastructure in order to adequately maintain and improve the efficiency, safety, adequacy and reliability of the distribution system. On January 16, 2020, Penelec’s LTIIIP II, for the period beginning January 1, 2020 and ending December 31, 2024 (“LTIIIP II”) was approved and implementation of that plan is currently underway. Note that some of the initiatives described above are included in the Company’s LTIIIP II.

B. Preventative Maintenance Programs

In accordance with 52 Pa. Code § 57.198, every two years Penelec files a Biennial Inspection, Maintenance, Repair and Replacement Plan³ for approval by the Commission. This Biennial Plan is designed to reduce the risk of outages on the Company’s system and form the basis for the Company’s inspection and maintenance objectives. The Biennial Plan includes programs

² Zone one is defined as the portion of the circuit from the substation breaker to the first protective device. Zone two is defined as the three-phase conductor and devices after the first protective device.

³ On January 15, 2020, Penelec’s Biennial Inspection, Maintenance, Repair and Replacement Plan for the period January 1, 2021 through December 31, 2022 was approved by the Commission at Docket No. M-2009-2094773.

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to conduct vegetation management, pole inspections, distribution overhead line inspections, distribution transformer inspections, recloser inspections and substation inspections.

These well-established maintenance programs ensure the existing system will continue to operate in a safe and reliable manner and serve to identify any potential system issues so they can be proactively addressed.

C. Capacity Planning

Due to ongoing system enhancements and the hard work of employees and contractors, Penelec is able to reliably serve its customers. The primary driver of customer demand this summer is again expected to be warm temperatures across the region.

Penelec does not foresee significant concerns with system delivery capacity during the upcoming summer based on its performance during last summer's peak. Ongoing facility enhancements designed to improve reliability, load-bearing upgrades, and customers' adoption of energy efficiency and conservation opportunities are being viewed as additional opportunities to ensure the reliability and capacity availability of the system.

D. 2022/2023 Storm Update and Lessons Learned

In calendar year 2022, Penelec had a total of nine reportable⁴ storm events, and no major events.

During restoration efforts, working safely and efficiently is the main objective. Regional conference calls are held for preparation and logistics planning. Effective planning allows for the precise deployment of crews, supplies, and equipment. Employees are also staggered around the clock to maximize productivity.

After each significant storm event, Penelec leadership conducts post-storm review meetings to identify and disseminate lessons learned which are used to improve the emergency response plan.

From storm review action items identified as a result of 2022 and early 2023 restoration events, Penelec has:

- Continued to publish Incident Action Plans shortly after the Company is predicted to be affected by a weather event.
- Continued to stagger shifts to maximize productivity and safety of restoration crews.
- Continued effort to maintain communications and Incident Command System (ICS) roles and responsibilities through organizational changes.

⁴ "Reportable" is defined as an event where filed reports are necessary to the Pennsylvania Public Utility Commission.

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Also, Penelec implemented a new outage management system in third quarter of 2022. Benefits of the new system include enhanced system monitoring allowing distribution system operators to respond more quickly to outages; remote configuration to enable the safe isolation of equipment, preventing outages, and allowing for safer and more efficient restoration; and advanced monitoring and control capabilities improving situational awareness and increasing efficiency.

Penelec continues to work and strive to safely restore all customers in a timely and efficient manner.

E. 2023 Summer Readiness

Capacitor Inspections – By May 17, 2023 Penelec will have inspected all line capacitor banks and completed all necessary repairs or replacements to ensure at least 98% availability.

Substation – By June 1, 2023 Penelec will have inspected all substation capacitor banks and completed necessary repairs or replacements to ensure minimum 98% available reactive support. In addition, a review of spare equipment will be completed. Spare equipment includes voltage regulators and substation cooling items such as transformer fans.

By June 1, 2023, Penelec will have cleaned and inspected all transformer cooling systems. Cleaning removes the accumulation of Cottonwood seedlings that are released each May and June. In addition, fans and pumps are inspected and their functionality verified during the cleaning process.

Capacity Additions:

- **Tyrone North (PJM RTEP s1776.1-3)** - Construct a four breaker 115 kV ring bus, replace the Tyrone North #2 115-46 kV 46/60/75 MVA transformer, and install a 46 kV 1200 A bypass switch between Tipton and the Warrior Ridge 46 kV Lines. Project is in service.
- **Quemahoning 230 kV Homer City –Quemahoning- Hooverville 230 kV line (PJM RTEP s1772.1-3)** - Install SF6 interrupters on 230 kV network switches. Customer Interconnection: Eliminate ground switch and install 230 kV breaker on high side of 230/115 kV transformer (on Homer City –Quemahoning- Hooverville 230 kV line). Homer City 230 kV Substation - Adjust relay settings (on Homer City – Quemahoning- Hooverville 230 kV line). Project is in service.
- **Lewistown #2 230/115 kV Transformer (PJM RTEP s1822.1-2)** - Replace the Lewistown #2 230/115-46 kV transformer and associated equipment with 230-46 kV 60/80/100 MVA transformer. Replace overdutied Lewistown 46 kV breakers due to transformer replacement - (Riverside (1LK), Viscose Hill (2LK), Mt Union, #2 Transformer and Bus Section breakers). The Projected in service date is May 12, 2023.

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- **Rosebud Mining - Twin Rock 46 kV Line (PJM RTEP s1918.1-2)** - Replace the existing conductor and disconnect switches. Replace the existing conductor on the approximately 1-mile section of the Rosebud Mining - Twin Rock 46 kV Line. Replace disconnect switches at Twin Rock substation to exceed loadability of new Rosebud Mining - Twin Rock 46 kV conductor. Project is in service.
- **Erie South 230/115 kV transformer No.6 (PJM RTEP s1934.1-2)** - Replace transformer No.6 with a 230/115 kV 180/240/300 MVA transformer. Replace the Erie South 230 kV circuit switcher with a circuit breaker. Project is in service.
- **Ridgway 115 kV Substation (PJM RTEP s2047)** - – Replace line relaying and substation conductor on the Penn Tech – Ridgway 115 kV Line. Project is In Service.
- **Hooversville #3 230/115 kV transformer (PJM RTEP s2304)** - Replace the transformer and associated equipment with a 180/240/300 MVA transformer. Project is in service.**Greenwood – Tipton 46 kV line (PJM RTEP s2536.1-3)** – Customer Interconnection; Tap the Greenwood – Tipton 46 kV line (Gardner Denver Tap – Gardner Denver 46 kV line segment) and construct one span of 46 kV line. Install two 1200 A SCADA controlled disconnect switches and add SCADA to one existing switch. Replace in-line switches. Project is in service.
- **East Towanda 230/115 kV transformer No.4 (PJM RTEP s1881)** - Replace transformer No.4 with a 230/115 kV 180/240/300 MVA transformer. Replace substation conductor. The Projected in service date is June 1, 2023.
- **Morgan Street 115 kV Substation (PJM RTEP s2313)** – Replace line trap, line relaying, substation conductor, breaker and bus disconnect switches, and circuit breaker. Geneva 115 kV Substation – Replace line trap, line relaying, breaker and bus disconnect switches, and circuit breakers. The Projected in service date is June 15, 2023
- **Eldorado-Westfall 46kV Line (PJM RTEP n6981 - n6983)** – Upgrades terminal equipment on the Eldorado-Westfall 46kV Line for the AD2-133 Eagle Valley generation interconnection. The Projected in service date is July 31, 2023.
- **Blairsville East – Social Hall 138 kV Line (PJM RTEP s2314.2)** –Upgrades protection and limiting terminal equipment at Blairsville East and Social Hall Substations. This project is in service.
- **Keystone Substation (PJM RTEP n6107)** –Revise relay settings on South Bend 500 kV Terminal. Project in service date is June 2, 2023.

Transmission Preparedness – An annual transmission readiness review is coordinated by FirstEnergy Corp. (“FirstEnergy”)’s Transmission Operations Services department with Penelec for the purposes of ensuring the capability and reliability of the system for the summer. The detailed review did not reveal any significant issues for the summer of 2023. Based on the system conditions modeled, the Penelec transmission system is expected to sufficiently support the forecasted peak summer loading.

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Two aerial patrols are conducted via helicopter annually by FirstEnergy's Transmission Maintenance section to inspect transmission facilities. The purpose of routine patrols is to ensure the integrity of in-service transmission lines to maintain safe and reliable service. Both of these aerial patrols will be completed by year end.

Emergency Exercise – As part of the FirstEnergy Utilities ("FEU") Emergency Preparedness program, Penelec completed an emergency exercise on May 24, 2023. The exercise facilitated the testing and validation of key emergency response roles, systems, and processes. The primary objective of the exercise was to ensure a complete understanding of the restoration process by all participants through exposure to a variety of real-world scenarios and decision-making challenges that could be experienced during actual restoration events.

Event Preparedness – The Company's' in-house meteorologists use highly sophisticated, proprietary data and forecasting models specifically designed to provide actionable intelligence. When predicted weather meets specific criteria, planning and preparation work is immediately initiated, often days before forecasted impact.

As part of the preparation efforts, Penelec's executive leadership and operations managers implement the emergency restoration process. Based on available data, resource needs are evaluated, and requests are submitted to the FEU Emergency Operations Center. These requests can include but are not limited to line resources (both internal to FirstEnergy and external), hazard responders, damage assessors, public protectors, vegetation crews, and equipment and material needs. Depending on the predicted magnitude of the event, pre-identified staging areas can be quickly activated to prepare for the efficient deployment of crews and equipment.

Refresher Training – All employees with emergency response roles receive appropriate refresher training at specified intervals to ensure they are immediately deployable when an event impacts the system. Expectations for employees to complete appropriate training and verify all equipment and personal protective equipment are available and in proper working order are communicated each year during emergency exercises and verified by Penelec management.

Staffing – Penelec is appropriately staffed for the 2023 summer storm season. Penelec performs an annual staffing analysis that accounts for attrition, including retirements, to determine the proper staffing levels of craft workers. To ensure Penelec continues to have a steady pipeline of high-quality talent in our line and substation workforce, the company is ending the Power Systems Institute ("PSI") program in 2024 and transitioning to an apprenticeship program. PSI is a unique, two-year program that combines classroom learning with hands-on training. Penelec is planning to hire 20-line worker graduates and 4 substation electrician graduates in 2023. The objective of the PSI program and future apprenticeship program is to proactively hire a diverse group of individuals that will fulfill the line work and

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substation electrician staffing needs for Penelec. The following colleges have partnered with Penelec to support these line worker and substation electrician development:

- Pennsylvania Highlands Community College (for Line and Substation students)
- Edinboro University (for Line students)

For larger scale events, Penelec is able to supplement its own resources by accessing FirstEnergy's portfolio of operating companies that includes the additional three companies located within Pennsylvania, as well as an additional six operating companies in other jurisdictions. The consistency in standards and work practices employed across all ten of these operating companies enables streamlined resource sharing in a way that promotes both safety and efficiency.

FirstEnergy, for itself and its affiliated operating companies, including Penelec, is a member of the following Regional Mutual Assistance Groups ("RMAGs") and can call upon them to request additional resources when needed:

- Great Lakes Mutual Assistance Group
- North Atlantic Mutual Assistance Group
- Southeastern Electrical Exchange

A National Response Event can be activated by Edison Electric Institute member utilities when multiple RMAGs cannot adequately support the resource requirements of the requesting utilities. In addition to working with RMAG organizations, FirstEnergy works with non-RMAG utility companies and contractors to secure resources and maintains an extensive nationwide list of contractor partners.

F. Storm Response

Outage Restoration Strategy – Depending on the predicted severity of an impending weather event, Penelec typically begins preparing for potential outages before severe weather hits. Based on the projected impact to Penelec's system, plans are activated so that properly scaled preparations can be made.

Information obtained through various tools and resources is critical to determine the type, number and location of resources needed to assure prompt restoration of service. Line personnel, damage assessors and hazard responders are integral resources in providing initial and ongoing assessments of the damage in the field. Line personnel are equipped with mobile data terminals ("MDTs") in their vehicles and will enter damage information directly into the MDT. This information is immediately available for viewing in the Outage Management System ("OMS"). The OMS is the central collection point for all relevant information concerning damage reports, assessment, and configuration of the electric distribution system. During emergencies that meet triggering criteria, the circuit quarantine process is used for rapid

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assessment and repair of heavily damaged circuits. Additionally, there are two apps that employees can use on mobile devices to automatically enter damage information into the Company's OMS.

In response to power outages and other systems emergencies, Penelec maintains a copy of its Emergency Plan for Service Restoration which provides the guidelines for all common processes and procedures for conducting emergency preparedness, response, and service restoration. Further, Penelec is in the process of incorporating Incident Command System principles into its emergency response organization to adhere to the principles and high-level structure of the National Incident Management System as appropriate in an electric utility environment.

Communications and Outreach – The company's Communications & Branding team closely follows updates from Company meteorologists to track impending weather events. When the probability of a storm that can cause numerous power outages is high, the company begins sharing proactive messages on social media through Penelec's Facebook and Twitter accounts. Posts may provide the following information:

- The company's weather monitoring efforts
- Preparation efforts for restoration crews
- Customer tips for preparing for the storm
- How to report an outage
- Storm safety tips
- How to manage through power outages

When a significant storm with widespread impact is expected, Communications representatives issue news releases to the media that encourage customers to prepare for the likely storm events and provide information on who to call if they lose power. Proactive email alerts to customers may also be used to share similar messages. Phone messages are initiated to key stakeholders alerting them of the potential for extended power outages.

External Affairs consultants establish communications with emergency management agencies, local officials, county commissioners, and legislators and their offices in advance of and throughout a storm to keep them apprised of preparation and planning efforts.

Throughout the duration of power restoration, regular external updates are provided as appropriate through additional news releases, media advisories, customer emails, social media posts and outreach to the appropriate local, state and regulatory officials to share service restoration efforts. News releases and social media updates include information such as additional safety reminders; ETRs; updates on restoration efforts; explanations of the restoration process; and, when available, water and ice locations, and links to other resources such as shelters.

The Company may also provide safety messages via newspapers, radio, and online banner ads during a prolonged restoration event.

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Penelec customers can stay abreast of restoration progress through a variety of means. A customer can access the Storm Restoration Process page of the Company’s website to learn about the damage assessment and repair prioritization processes as well as the importance of customer calls and outage reporting during the restoration process. Customers can access the 24/7 Power Center outage map that provides county-by-county information. Through this site, users can obtain the number of customers served and the number of customers out of power at the county level as well as estimated time of restoration (“ETR”) information. In addition, when available, the 24/7 Power Center outage map shows the status of crews restoring service, informing customers when crews have been dispatched, when they are working on a repair and when additional crews or equipment are needed to complete restoration work.

Penelec’s website has been optimized for mobile devices to allow customers to report outages and connect to the 24/7 Power Center outage map. Customers who are logged in on the website can view personalized outage status for an outage they have reported. The website also allows customers to register for outage-related alerts via text messages and/or email as well as sign up for two-way text messaging, an interactive option for customers to report outages and obtain outage updates.

In addition, interactive voice response (“IVR”) messaging is used to communicate restoration information to customers. Messaging is also relayed to customers who have called Penelec regarding their individual outage. Live agent customer service representatives are available and have the same information at their disposal.

The Company also has plans in place to provide free water and ice to customers without service. Once locations have been determined, this information is communicated to customers via social media and the website. Where necessary, a press release or media advisory may be used to share water and ice locations as well.

Outage Restoration and Storm Response Best Practices – Penelec continues to review each storm event, and many of the practices adopted as mentioned above stemmed from sharing best practices with other utilities, a practice that continues today.

G. Supply Chain Issues

Procurement concerns for equipment/materials –

As with most utilities across the country, we continue to experience supply chain challenges. Lead times have increased across numerous material categories, with some as much as tripling from previous lead times. With limited exceptions, lead times remain elevated.

Some of our key suppliers have struggled with labor shortages, raw material availability and transportation challenges. These issues have continued to impact our material availability. We work closely with our operations team to forecast demand and mitigate supply risks.

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In response to the challenges, we have expanded our supply base, where we can, and worked to purchase additional inventory. We have also worked to place advanced orders to mitigate lead time constraints. When needed, we work closely with our Engineering and Standards teams to identify alternatives to material at risk to support construction.