

Pennsylvania Summer Reliability

MET-ED

A. Reliability Enhancement Programs

Metropolitan Edison Company (“Met-Ed” or “Company”) is committed to providing safe and reliable electric service to its customers. The Company employs various programs to maintain system reliability. For example, to reduce the likelihood of distribution line and equipment caused outages, the Company follows inspection and maintenance (“I&M”) programs that set forth schedules for regular inspection of distribution facilities.¹ In addition to I&M, the Company employs other routine programs to ensure the reliability of its distribution systems. For example, Met-Ed may perform sectionalization of the system to reduce outages, evaluate devices that experience multiple interruptions, and perform enhanced tree trimming in conjunction with the normal cycle-based tree trimming.

In addition to the items described above, Met-Ed has put into place additional plans, through various filings, to further support and improve its reliability performance. These filings include a Reliability Plan,² Worst Performing Circuit (“WPC”) Plan,³ and the Long Term Infrastructure Improvement Plan (“LTIIIP”).⁴ Components of these plans, in combination with the Company’s routine reliability programs, are described in the sections below.

Trees continue to be one of the leading causes of outages in Met-Ed’s service territory. Therefore, in addition to the routine vegetation management work that Met-Ed performs, the Company continues with its aggressive tree trimming program across its service territory which led to the trimming of over 156,000 trees and removed over 3,100 off right-of-way priority trees that were identified as dead, dying, diseased, and leaning or significantly encroaching the right-of-way in 2015. The trees identified by this program were determined to be a potential cause of a future outage and were removed to prevent an interruption of electrical service to Met-Ed’s customers. This tree trimming program will continue in 2016 to reduce the number of tree-caused outages.

In the event that an outage does occur, Met-Ed has installed protective devices, such as fuses and reclosers, across its entire system. These devices may prevent circuit lockouts by limiting the area of an outage to smaller sections of the circuit. Met-Ed added sixty-five fuses and twelve reclosers to the system in 2015.

Additionally, Met-Ed continued its efforts to add remote controlled sectionalizing devices that allow for prompt restoration during outages. Supervisory control and data acquisition (“SCADA”) provides communication with circuit breakers and line switches, which provides the ability to remotely operate the breakers or switches to reduce restoration time. In 2015,

¹ Pursuant to 52 Pa. Code § 57.198, every two years an electric distribution company shall file, and receive approval from the Commission of, a biennial plan for the periodic inspection, maintenance, repair and replacement of its facilities. On December 30, 2013, Paul Diskin, Director, Technical Utility Services, issued a letter approving the Company’s biennial inspection, maintenance, repair, and replacement plan effective January 1, 2015 through December 31, 2016.

² On March 30, 2015, the Commission issued an order directing Metropolitan Edison Company to prepare and file a revised implementation plan relating to specific topics addressed in the report issued by the Commission’s Bureau of Audits on February 12, 2015. *Implementation Plan for the Focused Management Audit of Metropolitan Edison Company*, Docket No. D-2013-2365991.

³ See Footnote 2.

⁴ On October 19, 2015, pursuant to Section 1352 of the Pennsylvania Public Utility Code, 52 Pa. Code §§ 121.1 et seq. and the Commission’s final order in Implementation of Act 11 of 2012, Metropolitan Edison Company filed a petition for approval of their LTIIIP at Docket No. P-2015-2508942. On February 11, 2016 the Commission approved the plan.

Pennsylvania Summer Reliability

MET-ED

ten SCADA devices were installed with plans to install an additional seventy SCADA devices in 2016 on eleven worst performing circuits. These devices reduce the time it takes to restore customers during an outage. Met-Ed also installed 544 fault indicators in 2015 that are designed to help linemen quickly locate the source of an outage.

Met-Ed has also been proactively replacing porcelain cutouts with polymer cutouts. Crews have focused their efforts on zone one⁵ of the Company's circuits, as this represents the greatest opportunity to enhance the Company's system. In 2015, Met-Ed replaced 533 porcelain cutouts on ten circuits and will target an additional six circuits in 2016.

B. Preventative Maintenance Programs

In accordance with 52 Pa. Code § 57.198, every two years, Met-Ed files a Biennial Inspection, Maintenance, Repair and Replacement Plan (as described in Footnote 1) 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 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 that they can be proactively addressed.

C. Capacity Planning

As a result of ongoing system enhancements and the hard work of employees and contractors, Met-Ed is able to reliably serve its customers. The primary driver of customer demand this summer is again expected to be weather related.

Met-Ed 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. 2015/2016 Storm Update and Lessons Learned

In calendar year 2015, Met-Ed did not experience any major events.

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

⁵ Zone one is defined as the portion of the circuit from the substation breaker to the first protective device

Pennsylvania Summer Reliability

MET-ED

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

E. 2016 Summer Readiness

Capacitor Inspections – As of June 1, 2016, Met-Ed will have inspected all line capacitor banks and completed all necessary repairs or replacements to ensure at least 98% availability.

Mobile Substations – Met-Ed completed a review of the status of its mobile substations and other spare equipment. This included inspections of the mobile trailer, transformer and breaker. Spare equipment includes voltage regulators and substation cooling items such as transformer fans.

Substation – As of June 1, 2016 Met-Ed will have inspected all substation capacitor banks and completed necessary repairs or replacements to ensure minimum 98% available reactive support. .

Capacity Additions:

- **Fredericksburg Substation Transformer Upgrade** – This project upgrades the Fredericksburg transformer from 14MVA to 22MVA to serve new customer load and is expected to be completed by June 30, 2016.
- **14 MVA 69-13.2kV Substation** – Met-Ed will install a new substation in Boyertown to serve the Huffs Church area between Bally and Topton, which is expected to be completed by June 30, 2016.
- **Walker Substation – New 34.5kV Circuit** – This project will add a new 34.5kV circuit to relieve loading on Birchwood substation and is expected to be completed by December 31, 2016.

Transmission Preparedness – Met-Ed conducts an annual transmission readiness review with transmission operations to discuss the capability and reliability of the system for the summer. The Company's detailed review did not reveal any significant issues for the summer of 2016. Based on the system conditions modeled, the Met-Ed transmission system is expected to sufficiently support the forecasted peak summer loading. During the system assessment a review of the voltage stability analysis was conducted and produced acceptable power-voltage response curves.

Two aerial maintenance patrols are conducted annually in Met-Ed to inspect transmission facilities. The purpose of the routine patrols is to ensure the integrity of in-service transmission lines to maintain safe and reliable service. The first aerial patrol in Met-Ed was completed in March 2016 and the second will be completed by year end.

Additionally, PJM Interconnection LLC ("PJM") has operational procedures identified to effectively control and mitigate contingency outage conditions on the transmission system.

Pennsylvania Summer Reliability

MET-ED

Met-Ed has operational procedures outlined to implement any PJM required actions and to mitigate contingency conditions on the lower voltage systems (<100kV).

Emergency Exercises – As part of the FirstEnergy Utilities (“FEU”) Emergency Preparedness program, Met-Ed completed emergency exercises on March 31, 2016 for the western region and April 7, 2016 for the eastern region. The structure of the exercise facilitated the testing and validation of key emergency response roles, systems and processes. The primary objective of each 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 – FirstEnergy’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, many times days before any impact.

As part of the preparation efforts, Met-Ed’s executive leadership and operations managers engage the emergency restoration process. Based on available data and collaboration within Met-Ed, resource needs are evaluated and requests are submitted as needed to the FEU Emergency Operations Center for fulfillment. 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, equipment needs, and material requirements. Depending on the predicted magnitude of the event, staging areas are pre-identified and 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 in order to be 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 Met-Ed management.

Staffing – For the summer of 2016, Met-Ed is fully staffed for the storm season. In addition, Met-Ed conducts a staffing analysis annually which accounts for attrition, including retirements, to determine the proper staffing levels of craft workers. From the result of this analysis, Met-Ed enrolls students in the Power Systems Institute (“PSI”), which is a unique, two-year program that combines classroom learning with hands-on training, which was reinstated with the 2015 fall enrollment. The objective of the PSI program is to proactively hire a diverse group that will fulfill the line worker and substation electrician staffing needs of Met-Ed. The following colleges have partnered with Met-Ed to support these line worker and substation electrician development:

- Pennsylvania Highlands Community College for Substation students
- Reading Area Community College for Line and Substation students.

Pennsylvania Summer Reliability

MET-ED

For larger-scale events, Met-Ed 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 Met-Ed, 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 ("GLMA")
- North Atlantic Mutual Assistance Group ("NAMAG")
- Southeastern Electrical Exchange ("SEE")

A National Response Event ("NRE") can be activated by EEI member utilities when multiple RMAGs cannot adequately support the resource requirements of the requesting utilities

F. Storm Response

Outage Restoration Strategy – Met-Ed begins preparing for potential outages long before severe weather hits. When severe weather is forecasted, Met-Ed plans are activated days before to ensure an adequate number of crews are prepared to tackle the damage. Part of this preparation includes running a model that estimates the impact of an impending weather threat and outputs information such as the expected number of customers impacted. This output, along with historical storm experience, is used to estimate the impact of the weather event so that properly scaled preparations can be made.

Information obtained through the use of 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 input 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 assessment 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 the past, this process relied on paper maps, hand written notes and phone calls between field responders and dispatch offices

In response to power outages and other systems emergencies, FirstEnergy maintains a copy of its Emergency Plan for Service Restoration ("E-Plan") which provides the guidelines for all of the common processes and procedures for conducting emergency preparedness, response and service restoration. Further, Met-Ed is in the process of incorporating the Incident Command System ("ICS") principles in its emergency response organization to

Pennsylvania Summer Reliability

MET-ED

adhere to the principles and high level structure to the National Incident Management System (“NIMS”) as appropriate in an electric utility environment.

Communications and Outreach – External Affairs managers establish communications with emergency management agencies, local officials, county commissioners, legislators and their offices in advance of and throughout a storm to keep them apprised of preparation and planning efforts. Communications representatives also contact the media to enlist their help in encouraging customers to prepare for the likely storm events and provide information on who to call if they lose power. Proactive email alerts and phone messages are initiated to key stakeholders alerting them to the potential for extended power outages. These efforts and face-to-face outreach are closely aligned with the Company’s service restoration efforts. The Company also provides safety messages via newspapers, radio, and online banner ads.

Met-Ed uses social media, mobile applications, websites and IVR messaging to communicate outage and restoration information customers Twitter and Facebook are used to communicate outage and restoration information to customers. During the restoration period, Met-Ed uses social media to share additional safety reminders; estimated time of restoration; updates on restoration efforts, including work progress, explanations of the restoration process and information about the arrival of additional crews; water and ice locations, and links to other resources such as shelters.

The Company’s mobile website and mobile app offers customers the ability to report outages and connect to an outage map that is optimized for mobile devices. From the mobile site, customers can view personalized outage status for an outage they have reported to Met-Ed. The mobile website and app, as well as the full Met-Ed website, also allow customers to register for outbound billing, payment and outage-related alerts via text messages and/or email, and these platforms also provide instructions to use two-way text messaging, an interactive option for customers to report outages and obtain outage updates.

Customers can access the Storm Restoration Process page of the website, for a description of the damage assessment process, information describing why customer calls and outage reporting are critical to the restoration process, as well as repair prioritization 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 information.

Customers are now able to view the status of crews restoring service on the Company’s 24/7 Power Center outage map. This informs 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.

Pennsylvania Summer Reliability

MET-ED

Three stages of messaging are provided to customers during large scale events via its IVR messaging:

- Pre-ETR messaging during, and immediately following the event; and ETR messaging.
- The messaging is also relayed to customers who call regarding their individual outage and is also posted online on the 24/7 Power Center outage maps.
- In addition, Live Agent Customer Service Representatives have the same information at their disposal to clearly communicate to customers at these three stages.

For extended power outages, Communications issues regular news releases and media advisories over both traditional media channels and social media to update customers on the status of power restoration efforts, as well as provide realistic ETRs so customers can plan accordingly. Communications proactively issues safety messaging ranging from avoiding downed wires to properly hooking up and operating generators. 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 the IVR, press releases, social media and the website.

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