

# Pennsylvania Summer Reliability

## PENELEC

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### 1. Keys to Success

#### **A. Reliability Enhancement Programs**

In 2012, Penelec continued its reliability strategy which consisted of completing a main line protection program that was initiated in 2008. This program sought to improve reliability by ensuring that circuits carrying more than 300 customers were equipped with a mid-line recloser and coordinating fuse protection on every mainline tap. Furthermore, full circuit protection coordination reviews that began in 2009 were continued. Penelec engineering will continue this practice in 2013, examining in excess of 100 of the poorest performing circuits from a SAIDI perspective, in addition to the worst performance circuit program. In addition to the main line protection studies, examination of fuse protected single phase spurs will also determine whether any protection deficiencies exist.

Penelec also has a system review process in place whereby substation and circuit feeders are monitored to ensure accurate capacity planning. Results are reviewed to determine potential projects necessary to correct any capacity or voltage issues. Using the results of this review, Penelec can make upgrades to the system by way of capacitors, regulators, transformer tap changes, transformer upgrades, etc. as needed on a case by case basis. Penelec is confident its 2013 plans will continue to have a positive impact on reliability.

#### **B. Preventative Maintenance Programs**

Well-established maintenance programs, such as the Vegetation Management Program, ensure the existing system will continue to operate in a safe and reliable manner. Penelec also employs maintenance programs aimed to specifically address worst performing circuits and identified line segments where reliability issues may exist.

**Capacitor Inspections** - As of June 1, Penelec inspected all line capacitor banks and completed all necessary repairs or replacements to ensure at least 98% availability.

**Substation** - Substation based capacitor banks at the transmission and distribution level were inspected for operability. Any necessary repairs or corrective maintenance was completed before June 1 to ensure a minimum of 98% available reactive support. Oil coolers that are mounted on large power transformers were cleared of debris and washed to ensure peak performance during periods of high loading. Planned equipment outages are held to a minimum in the summer months during times of high temperature and load to maintain system integrity.

**Aerial Patrols** Two aerial patrols are conducted annually in Pennsylvania 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. The first aerial patrol of transmission lines in Penelec was completed in May.

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### C. Capacity Planning

Penelec's electric delivery system is able to serve customers' needs without problems as a result of the ongoing system enhancements and the hard work of employees and contractors. The weather is again expected to be the primary driver of customer demand this summer.

The energy efficiency and conservation programs offered to customers as part of Penelec's compliance with Pennsylvania Act 129 are also reducing overall demand. Residential Programs include Appliance Turn-In, Energy Efficient Products, Energy Efficient HVAC Equipment, Residential New Construction, Home Performance, and Limited Income Energy Efficiency. Non-Residential Programs include Commercial and Industrial ("C&I") Equipment – both Prescriptive and Custom.

Penelec does not foresee significant concerns with system delivery capacity during the upcoming summer based on its performance during last summer's heat wave, ongoing enhancements to reliability and load-bearing upgrades, and customers' adoption of energy efficiency and conservation opportunities.

### 2. 2012 Storm Update and Lessons Learned

In calendar year 2012, Penelec experienced two major events, including the largest and most destructive weather-related occurrence in the Company's history. Penelec employees worked a total of forty-seven days in 2012 (seventeen minor storms on thirty-six unique calendar days and two major events over the course of eleven calendar days) restoring power to Penelec customers following storm events. During any weather event, safety remains the number one priority.

Throughout coordination 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.

After each major storm event in 2012, Penelec leadership conducted post storm review meetings to identify and disseminate lessons learned to be used for improving the emergency response plan. The following were identified as lessons learned during those meetings:

- Penelec is continuing to focus on finding ways to provide increasingly accurate information to the community regarding estimated times of restoration ("ETR") based on the amount of storm damage.
- Penelec is evaluating the potential use of helicopters to patrol transmission and sub-transmission systems during major events.
- Penelec is placing a focus on operational improvements aimed to prioritize road clearing for storm coordination efforts as needed.

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### 3. 2013 Summer Readiness

#### A. Capacity Additions

- **115kV line between Penelec's Osterburg East and Bedford North substations:** In order to strengthen the high voltage transmission network's reliability during contingency situations, this new line was constructed.
- **Reconductoring the 115kV bus at Eclipse substation:** The project at Eclipse substation addressed a thermal concern, which in turn is expected to enhance the overall reliability of the transmission system.
- **115kV Capacitor installations at Harvey Run and Farmers Valley substations:** New capacitors were installed to address voltage concerns in the event of a contingency situation. This allows the transmission system to maintain voltage magnitudes at acceptable levels.

#### B. Transmission Preparedness

Penelec 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 2013. Based on the system conditions modeled, Penelec's transmission system is expected to sufficiently support the forecasted peak summer loading.

In addition, PJM has operational procedures identified to effectively control and mitigate contingency outage conditions on the transmission system. Penelec has operational procedures outlined to implement any PJM required actions and to mitigate contingency conditions on the lower voltage systems (<100kV). During the system assessment, a voltage stability analysis was conducted and produced acceptable Power-Voltage response curves.

#### C. Event Preparedness

**Preparation and Planning** – Planning and preparation work is initiated days before a storm strikes. As part of those efforts Penelec's in-house meteorologists closely monitor weather data and track storms to assess the potential impact on the electrical system and service area.

If it is determined that a storm could potentially disrupt service, Company leadership and operations managers hold conference calls and conduct meetings to evaluate the need for forestry, hazard responders, damage assessors and line crews as well as supplies and equipment. This core management team also evaluates the need for additional crews from other affiliated operating companies, as well as outside utilities and contractors. Depending on the magnitude of the storm, staging areas are organized to prepare for the efficient deployment of crews and equipment.

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**Refresher Training** – All employees with storm response roles (hazard responder, hazard dispatcher, storm analyst, etc.) have received appropriate refresher training in preparation for the summer storm season.

### 4. Storm Response

#### **A. Outage Restoration Strategy**

In the early stages of service restoration, hazard responders go into the field to locate damage to the electric system and identify electric hazards – such as downed and potentially energized wires – and then remain at those locations to protect the public until linemen safely isolate or clear the hazard. Next, forestry crews clear fallen trees and branches as well as other debris so utility workers can repair and re-energize power lines.

Once debris has been cleared from the affected areas, service is initially restored to high-voltage transmission equipment, lines and substations, because they supply power for local distribution systems. After that, crews focus on restoring service on a high-priority basis to hospitals, critical care, life-support facilities, and critical first responders facilities. Focus is then placed on repairs that will bring the greatest number of customers back in service. Next, repairs that restore service to individual customers occur.

#### **B. Communications and Outreach**

External Affairs managers establish communications with emergency management agencies (“EMAs”), local officials and regulators 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. These efforts and face-to-face outreach are closely aligned with our service restoration efforts. The Company also provides safety messages via newspapers, radio, and as online banner ads. Proactive email alerts and phone messages are initiated to key stakeholders, critical care, and well water customer alerting them to the potential for extended power outages. Included in these efforts is a recently established partnership with the Erie EMA, which participated in a Company storm drill conducted on April 29, 2013.

#### **Enhanced Communication Efforts**

Penelec refined its outage website to improve customer communications. The primary improvement is the additional of the “24/7 Power Center” outage maps, which provide up-to-the-minute outage information to customers, the news media, and public officials. This user-friendly outage map provides the ability to search outages by state, county, community, or zip code on a computer or mobile device. Customers can also report a service interruption or view safety tips and other critical information by utilizing links on the map.

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In addition, Penelec administered community focus groups involving key representatives from local townships, communities, and county governments. As a result, a lesson learned from the storm review was the importance of sending daily communications to township management during the major storm planning process. This will allow for the continued implementation of our proactive, comprehensive communications strategy – including social media – for reaching customers and media outlets.

### **New Technologies for Customers**

During major power outages, Penelec uses its Twitter account, @Penelec to provide timely information including the number of customers restored to service, the number of customers remaining without power, updates on restoration efforts, electrical safety reminders, and resources for additional assistance including water and ice distribution locations. In 2013, the Company trained additional social media support staff to assist with storm communications and respond to customer service inquiries during “blue-sky” days. In the future, Penelec expects to expand its social media outreach with the launch a Facebook page. In addition to these improvements, an additional series of new technologies were introduced on other platforms.

Early in 2013, the Company launched a Penelec smartphone app for Apple® iPhone® and Android™ devices and a mobile website that is accessible by using a smartphone to visit the FirstEnergy website ([www.firstenergycorp.com](http://www.firstenergycorp.com)). The app and website provide customers with easy, on-the-go access to information and services regarding their electric accounts.

In March 2013, Penelec introduced two additional technologies that made it easier for its customers to receive information. Customers can now subscribe to receive alert notifications via email or text message which contain information about weather conditions that may impact electrical service or updates on reported outages, among other customer service functions. Customers can also use text messaging to report outages, request updates on restoration efforts, and make inquiries about their accounts.

The 24/7 Power Center outage map enhancements made in May 2013 also implemented a new feature that allows individual customers to view their personal outage status – including the best-available ETR and cause of outage – by logging in to the full website or the new mobile website.