

PPL Electric Utilities Summer Readiness Overview June 2013

1. Keys to Success

A. Reliability Enhancement Programs

PPL Electric has several key initiatives to enhance reliability. These programs focus on targeted circuit improvements, smart grid technology deployment, an equipment replacement program and more robust vegetation management practices.

PPL Electric Utilities recently revised its Circuit Performance Index (CPI) to more effectively identify circuits that have the most impact on system-level reliability. We revised our process to increase the focus on quicker remediation and to increase multi-department input into solutions. The new process is targeted for summer implementation.

Utilizing the CPI, the following circuit design guidelines are used wherever practical:

- Limit the length of the distribution line,
- Limit customer count to fewer than 1,300 customers per circuit,
- Ensure the circuit has three-phase tie lines, and
- Use line automation to enable restoration of at least 50 percent of customers by system operator-controlled switching or automated switching.

As part of an initiative to help reduce SAIFI (System Average Interruption Frequency Index, or average outage frequency), our company systematically reviewed the entire distribution system to find opportunities to apply additional fusing to protect the 3-phase backbone from outages occurring on single-phase lines. Our engineers found approximately 1,000 locations for fusing that have been engineered and will be placed on the distribution system by the end of August.

Smart grid reclosers and air breaks also are being placed in service in the Northeast region as part of an ongoing, long-term commitment to distribution automation. Approximately 15 percent of planned devices were installed through May 31, 2013. This \$10 million investment in distribution automation will benefit 70,000 customers in this region. Additional circuits will be targeted over the next several years across our service territory. Our long-term infrastructure improvement plan calls for expanding distribution automation over the next five years to improve reliability for more than half of our customers. The PPL Smart Grid pilot program in Dauphin and Cumberland counties achieved a 35 percent reduction in SAIDI vs. non-automated circuits in the same geographic area, validating our long term commitment to distribution automation and the utilization of advanced technology.

PPL Electric Utilities is executing its Long Term Infrastructure Improvement Plan (LTIIIP), approved by the Commission in 2012, which outlines our accelerated plans to improve reliability and address aging infrastructure with increased replacement of distribution equipment. As the Company's infrastructure continues to age, we are focusing efforts to minimize customer interruptions due to potential equipment failures. Our strategy is focused on limiting the impact of outages due to system components through additional system protection, reductions in customer exposure and automation technology.

The Company's efforts to proactively replace aging infrastructure and improve business processes include:

- curing of underground primary cables,
- proactive replacement of aged getaway cables, and
- proactive replacement of aged and known problematic substation transformers and circuit breakers.

B. Preventive Maintenance Programs

PPL Electric Utilities is currently executing its Biennial Inspection & Maintenance Plan approved by the Commission in 2011. Our system consists of more than 40,000 miles of overhead transmission and distribution power lines, nearly 450 substations, and almost 1 million poles. Our commitments include:

- Circuit patrols with infrared inspections every two years for two- and three-phase overhead lines adjacent to roads,
- Monthly visual inspections and annual infrared inspections of substations,
- Pole inspections every 10 years,
- Recloser inspections every eight years,
- Low Tension Network vault inspections twice each year,

Based on prior storm experience, we have increased the funding and scope of our vegetation management efforts along multi-phase distribution lines and on 69-kilovolt transmission lines. Our practices are now more aligned with best in class vegetation management practices for avoiding vegetation caused outages.

We continue regular tree-trimming cycles for all aerial distribution lines. Lines are typically trimmed every four years in the southern half of our service territory, and every five years in the more rural northern half. Lines are trimmed more frequently based on need. We also refined our prioritization tool to more effectively rank the order of circuits trimmed throughout the year to maximize the impact of trimming program.

In addition, 'ground to sky' trimming and clearing is performed on multi-phase distribution lines wherever possible.

C. Capacity Planning

PPL Electric Utilities regularly reviews reliability performance on a system wide, regional, local and circuit basis to identify needed improvements due to load or performance. Engineers in our distribution planning group work to strike a balance between service reliability and cost of service.

Last year, demand for electricity peaked at 6,968 megawatts on the PPL Electric system. This peak occurred on the afternoon of Wednesday, July 18, 2012. This fell short of the summer 2011 peak of 7,527 mw and the all-time summer peak of 7,554 mw recorded in July 2006. The all-time winter peak of 7,577 megawatts was recorded in February 2007. Forecasted load for this summer is not projected to exceed the all-time peak.

The energy efficiency and conservation programs we offer customers as part of Act 129 are reducing overall demand and consumption. PPL Electric achieved Act 129's three percent energy reduction target by May 31, 2013. Phase two of Act 129 started June 1, and we are actively promoting programs and incentives. The second phase runs through May 31, 2016.

We do not foresee concerns with our system's delivery capacity during the upcoming summer based on its performance during prior summer heat waves, our ongoing investments in reliability, load-bearing upgrades and customer adoption of energy efficiency and conservation opportunities.

2. 2012 Storms and Lessons Learned

PPL Electric Utilities experienced an above average number of PUC-reportable storms during 2012.

However, there was a reduction in major events from 2011. We experienced three major events during 2011 (Hurricane Irene, Tropical Storm Lee and October snowstorm) and one (Superstorm Sandy) during 2012. Sandy is the worst storm on company record with more than 523,000 customers affected.

We are taking the following steps to improve our Emergency Response Plan based on lessons learned from the 2012 storms and benchmark studies with other utilities and industry organizations. Initiatives for 2013 involve improvements to all aspects of our plan, primarily operational processes aimed at improving work flow and productivity, mutual assistance, manpower tracking and customer and public communications, particularly around estimated restoration times and use of online and social media.

Highlights include:

- **Development of a restoration playbook.** The playbooks documents best practice strategies for storm restoration. It provides our emergency response organization with a tool to assist in the development of staffing and restoration strategies to gain efficiency and performance improvement in our restoration process. It also features processes that can be scaled up for exceptionally large events similar to those experienced in the past two years.
- **Callout Process Improvement.** A new automated callout system will increase the efficiency of our callout process and provide for quicker response of necessary personnel.

- **Damage assessment and wire guard process.** Current processes are under review with improvements planned based on industry best practices and lessons learned.
- **Outage Management System upgrade.** We are working with a vendor to upgrade the company's outage management system for greater data capacity, improved efficiency, and enhanced operations.
- **Enhancements to the PPL Alerts messaging for customers.** These enhancements will improve communications with customers and provide more timely and accurate updates. In addition to the PPL Alerts improvements, the company is working to increase effectiveness of data from meters with communications capability. This will increase our ability to check the meter status and provide timely assessment of outage information.
- **Development of staging site plans.** We are identifying and mapping out staging sites across all six of our operating regions. These plans will detail the site layout, the numbers of trucks and personnel that can be deployed to that site, as well as additional logistical requirements for site activation.
- **Development and assignment of storm roles for all of our employees.** This includes the development of storm role documents, providing training as required and developing drills to maintain proficiency.
- **Development of a centralized housing and feeding organization.** During major events, it may be necessary to house and feed thousands of external workers, similar to the recovery effort following Sandy last year. Improvements to this process will reduce idle time and increase field productivity for mutual assistance workers.
- **Deployment of PPL Electric Utilities representatives to county emergency management agencies during major events.** We are improving this process to enable us to more closely work with county officials in our service area to prioritize vital and critical facility restorations.
- **Increased proactive outreach.** We have established processes to proactively contact customers with critical facilities, public officials and the general public with messages prior to major storms and ongoing educational efforts around our storm restoration processes.
- **Better coordination with neighboring utilities.** This will ensure collaboration on trouble affecting customers served by neighboring utilities and better information to emergency management agencies.

3. 2013 Summer Readiness

A/B. Capacity Additions and Transmission Preparedness

PPL Electric Utilities plans more than \$510 million in capital improvements this year to maintain and improve reliability and meet increased demand on its transmission and distribution systems – continuing a trend of increased investment in system reliability. Additionally, substantial capital is being deployed for new large transmission expansion projects such as the 500kV Susquehanna – Roseland line and the Northeast/Pocono Reliability Project.

Our crews and contractors are hard at work building new substations and transmission lines, upgrading existing facilities, replacing older transmission lines and poles, improving distribution circuits and upgrading technology for better, more efficient operation. These improvements will strengthen the system to effectively handle summer peak loads and improve overall reliability.

More than 42 load-based and reliability projects on the transmission and distribution systems were completed through June 2013, strengthening our network in time for peak summer demand. Additional system modernization work is underway, as well as dozens of system improvements that will be completed through the remainder of the year.

Examples of key projects include:

- Rebuilding and reconductoring several older transmission lines under the company's vintage conductor replacement program
- Completion of a long-planned 69-kv transmission upgrade serving Lehigh and Bucks counties
- Improved lightning protection on targeted transmission facilities
- Helicopter patrols for transmission line inspections (comprehensive and routine)
- Expansion and upgrades to bulk power substations (circuit breakers, transformers, capacitor bank replacements)
- Construction of new transmission substations and lines to relieve load on existing facilities and improve operational flexibility.
- Modify transmission substations to improve reliability.
- Right-of-way line clearance along 1,650 miles of 115-, 138-, 230-, and 500-kv transmission lines according to "Wire Zone/Border Zone" standards
- First-year of a three-year plan to complete ROW clearance along 2,250 miles of 69-kv transmission facilities based on WzBz standards.
- Expanded right-of-way and clearance on targeted transmission lines where reliability improved is needed.
- Replacement of circuit breakers and transformers at distribution substations.
- Installation of SCADA remote monitoring and control equipment at certain substations
- Construction of three new distribution substations
- Construction of new distribution lines to relieve load and improve operational flexibility.
- Rebuilding existing distribution lines with upgraded conductors to better handle load in certain growing areas and improve reliability.

C. Event Preparedness

We are committed to the effectiveness of our emergency preparedness and have taken significant steps toward continuous improvement based on recent experiences. The company is working on 45 storm response process improvements identified in the past year with operational initiatives geared toward reducing outage duration.

As discussed above, we implemented a plan that ensured all employees have an assigned storm role and expanded the emergency response organization with additional roles to help improve storm response. Key positions, such as damage assessment and resource leads, were created to ensure these areas have the appropriate level of oversight. To ensure these processes are repeatable, storm role-related documents and drills were developed to enhance storm response effectiveness.

Each of the six operating regions conduct monthly drills to ensure storm room personnel are ready to respond based on established procedures and checklists. To ensure a repeatable, consistent process across all operating regions, we created a regional command center best practice team. This team works with drill coordinators to ensure consistency across regions and continually looks at lessons learned to develop enhancements.

A new manpower tracking database was developed to address some of the challenges experienced during Superstorm Sandy. The database is used to track housing and feeding assignments for both internal and foreign crews and work assignment details.

In support of the Transmission Control Center, a new significant operating response team (SORT) was created. This is an on-call organization that is activated to support timely investigation, repair and restoration of significant transmission & substation events that impact system operations and reliability.

In addition, senior managers from across the company meet bi-monthly to review progress on storm response improvement initiatives. These meetings ensure proper focus among executives and management on the best practices and lessons learned from recent major events.

4. Storm Response

A. Outage Restoration Strategy

Our outage restoration strategy has not changed. First priority is given to public health and safety facilities, such as hospitals and 911 call centers. After those facilities are restored, focus is then on restoring trouble cases that will bring the most customers back on line as quickly and safely as possible.

While the strategy has not changed, several enhancements to the storm plan are under development. We created a process that will enable a field representative to take control of a predefined area and self-direct repair crews to customer outages. This enhancement will enable us to increase the productivity of line resources and limit outage duration. In addition to increasing productivity, this process will also increase our ability to provide customers with timely and more accurate estimated restoration times (ERTs).

B. Communication and Outreach

Recognizing the need for improved public communications, we have taken numerous steps to provide accurate, timely and frequent status updates and other information to all stakeholders.

We are continuing to refine processes to work more closely with the county emergency management agencies to assess priorities and establish a communication path between PPL Electric Utilities and affected communities. This communication path will occur through the use of Knowledge Center, PEMA'S internet-based incident management system.

We have established processes to develop and disseminate information in a consistent and timely manner to various audiences, including periodic daily conference calls with public officials, proactive media outreach, direct contact with customers using PPL Alerts, automated telephone messages and broadcast e-mails, the utility's mobile-ready web site, and social media. Additional employees have been trained and designated for social media monitoring and customer engagement online, recognizing the sharp increase in customer participation that occurs during storms and the favorable customer feedback following Sandy last year.

Summary

For us, summer readiness means we must be up to the task to respond effectively to summer storms as well as provide reliable electricity every day for 1.4 million customers.

We appreciate the opportunity to outline our programs, projects and activities in preparation for the peak demand and storms of the summer season.

Executing our seasonal maintenance program, along with strategic investments and system improvements, enables us to deliver the safe, reliable power our customers expect.

Based on our planning, execution of our work plans, and storm response improvement initiatives, PPL Electric Utilities believes it is operationally ready for summer to meet our customer needs and expectations.