



Orange & Rockland

**Pike County Light & Power Company
2015 Summer Readiness Overview**

June 1, 2015

System Overview

Pike County Light & Power Company (“PCL&P” or the “Company”) is an electric distribution company (“EDC”) which has approximately 4,500 delivery customers. The Company is a wholly-owned subsidiary of Orange and Rockland Utilities, Inc. (“O&R”). PCL&P’s service territory is fed via two 34.5 kV feeders that originate from New York substations in the O&R service territory, i.e., Line 10 from the Cuddebackville Substation and Line 7 from the Port Jervis Substation. The eastern portion of the Pike service territory is fed by two 13.2 kV feeders from the Matamoras Substation that has ties to distribution circuitry from O&R’s Port Jervis Substation, as well. The Matamoras Substation is fed from Line 10, with a backup feed from Line 7. The two feeders also reinforce each other through an automatic transfer scheme at the substation.

The western portion of the PCL&P service territory is fed radially at 34.5 kV from Line 7, with several step transformers serving load at either 2.4 kV or 13.2 kV. The main line segment of Line 7 currently has four reclosers installed on it. These reclosers are spaced to optimize system performance and service reliability, and to reduce exposure and number of customers affected under contingency conditions.

Reliability Enhancement/Preventative Maintenance Programs

The Company utilizes several proactive and prescriptive maintenance programs to support electric distribution system reliability.

- **Vegetation Management**

The Company’s vegetation management program consists of: (1) a five-year scheduled preventive vegetation management cycle; (2) a hazard tree removal program; and (3) a hot spot trimming program that is applied as necessary. Scheduled preventive vegetation management work took place in 2015 and will be performed again in 2019. This program increases the clearance between vegetation, specifically trees, and the distribution system primary conductors. Routine circuit patrols are performed that identify any significant or pressing conditions, such as danger trees, that must be addressed immediately or in the near term. The Company performs circuit patrols regularly after significant storms or major events have affected the electric delivery system. In addition, the Company supports a strong outreach program that results in customers and municipalities notifying it of conditions requiring action.

- **Infrared Inspection Program**

The Company inspects all three phase mainline circuitry annually using thermal infrared cameras. This program identifies “hot” spots which indicate overheating of distribution system components, the result of which could be a potential failure if not addressed. Anomalies are prioritized and repairs initiated based on the thermal measurements of the detected anomalies. The inspection is performed when system loads are high enough to generate the thermal

anomalies and is typically scheduled to commence in the summer months and as system conditions permit.

- **Power Quality**

Pike uses a combination of eleven fixed and automatically switched capacitor banks to maintain system voltage throughout the year. In addition, PCL&P has five distribution voltage regulators to help maintain nominal system voltage level throughout peak and off-peak load cycles. These units are all tested annually to verify readiness for summer peak loading when the devices are needed most. The Company completed functional tests for all capacitor banks and regulators during the spring of 2015. All capacitor banks and voltage regulators are in good condition and ready for the summer period.

- **Mid-Point Recloser/Sectionalizing Program**

There are currently four reclosers in service on Line 7 which sectionalize the circuit to minimize the number of customers affected during fault conditions. The fourth recloser was installed in fall of 2014 to provide additional line protection and system reliability. These units are functionally tested once every three years. The Company also completes a visual inspection and download of each unit annually. These tests verify availability when system activity increases due to summer storms.

- **Substation Maintenance**

All substation maintenance is performed in accordance with the “Substation Maintenance and Inspection Program” that is detailed and included in the Pike County Light & Power Annual Electric Reliability Report. The Company has performed maintenance as outlined on the Matamoras as well as the Port Jervis and Cuddebackville substations. These stations that serve the PCL&P service territory are in good condition and are ready for the summer period.

- **Distribution Overhead Line Inspections**

The Company inspects the overhead lines of the PCL&P distribution system every two-years. These inspections identify abnormal conditions and verify satisfactory transformer conditions. Our distribution pole inspection program is on a ten-year cycle and verifies pole strength and other attributes that could impact reliability.

Capacity Planning, Additions and Electric Delivery System Projects

PCL&P’s 2014 peak system load was 18.0 MVA as recorded on July 18 at 17:00. Although this appears to be a drop in demand since the historical peak of 18.96 MVA recorded on July 22, 2011, the two loads

were at different temperature variables (“TV”). The 2011 peak occurred at a TV of 86.5° while the TV for 2014 was only 83.7°. The design TV is 85°. In addition, PCL&P has made power factor improvements and the addition of solar units have impacted total system loading. Overall, this area has experienced a 1.71% annual increase in electric demand over the past two years. Orange and Rockland has prepared a 30-year plan for the Pike County area to address the predicted load growth while maintaining system reliability and minimizing the financial impact to its customers. PCL&P’s electric delivery system has sufficient capacity for the 2015 summer peak period.

Three electric delivery system improvement projects are being considered for the PCL&P service territory in the next five years. These projects will provide for a parallel path for Line 7 immediately exiting the Matamoras Substation, allowing for better reliability to downstream customers. The five-year plan calls for a one half mile section of conductor behind the Matamoras substation to be upgraded and re-routed, which will improve backup for the head end portion of radial Line 7 and reduce the exposure of the line by 1.5 miles. In 2013, the Company commenced a mainline parallel path to Line 7 along Old Milford Road from Roberts Lane to approximately Pocono Drive, in order to improve reliability. In 2015, this mainline will continue along Old Milford Road to about Whetfield Drive, and then back to Route 6 (US 209) in 2017. From 2018 to 2020, an underground along US Route 209 will connect the ROW behind the Matamoras Station to the Old Milford Road mainline, and provide a backup for the radial Line 7 to Milford. The parallel path will provide switchable backup for an area of this circuit where the majority of the interruptions have historically occurred, and the upgraded conductor will improve capacity and reliability for the foreseeable future.

Beyond the five-year horizon, the Company has continuing plans to rebuild sections of Line 7 in stages to improve capacity and reliability, which will defer the need for the Milford Substation for over 30 years. .

The Company’s Port Jervis Substation is scheduled for upgrade in 2020. The 20 MVA single bank station will be replaced with a station consisting of two 69/13.2 kV, 50 MVA banks. However, with only enough room to install one additional transformer (single 69/34.5 kV bank), reliability for Pike County would not significantly improve with this project alone as it would remain on a radial bank feed with limited backup. Consequently, a second station (Deerpark Substation) is scheduled for construction in 2017. The station will consist of two 69/34.5 kV, 50 MVA transformers that will provide primary and backup service for Pike County, and will improve source, reliability and capacity (primary and contingency) to Pike County without requiring significant improvements to be made at the Port Jervis Substation.

Personnel/Training

PCL&P is a wholly owned subsidiary of Orange and Rockland Utilities, Inc. (“Orange and Rockland” or “O&R”). Orange and Rockland, PCP&L, and Orange and Rockland’s New Jersey subsidiary, Rockland Electric Company (“RECO”) operate a single fully integrated electric system. Neither PCP&L nor RECO has any operating employees. Orange and Rockland provides the personnel required to operate and maintain the electric distribution facilities in Pike’s and RECO’s service territories. While there is a satellite facility located within the PCP&L service territory, the PCP&L service territory is also served

from crew locations in Rockland and Orange Counties in New York, and Bergen and Passaic Counties in New Jersey. Thus, the following table summarizes the number of Electric Operations personnel that are available to operate and maintain the PCL&P electric delivery system.

Department	Union	Management	Total
Electric Operations – OH Line	101	23	124
Electric Operations – EHV	10	1	11
Electric Operations – UG Line	39	4	43
Substation Operations – Substation	26	4	30
Substation Operations – Relay	12	2	14
Troubleshooter	14		14
Total	202	34	236

PCL&P regularly supplements its Electric Operations workforce with tree trimming contractor crews as well as overhead and underground contractors. These contractor crews are also available for any adverse system conditions or major events that would warrant their use in the PCL&P service territory.

- *Electric Operating Personnel – Training Program Summary*

The training programs described herein are Orange and Rockland’s training programs. These program benefits transfer directly to the support of PCL&P, as the PCL&P system is served and maintained as described in the section above.

- *Electric Operations Training Programs*

The skills development and training program utilizes competency-based hands on training that transfers the learning responsibility from the instructor to the student. Students read material, practice under the guidance of journeymen linemen, are tested and must demonstrate proficiency. Progression testing is fundamental to the success of the program as competency in each skill or task is essential to advance to the next learning step. All the instructors are fully qualified high voltage linemen and the training complies with all OSHA regulations, especially as it pertains to “Qualified Worker” and employee safety.

The program encompasses 13 weeks of guided instruction over a 42 month period. The remainder of the time is spent in the field learning and refining practical skills. To keep current in environmental health and safety practices, employees’ skills are refreshed at predetermined intervals, usually annually. Line skills are also updated continually as new work procedures or equipment is introduced to the system.

- *Substation Operations Training Programs*

The Substation Operations training program presently in place was revised and implemented in 2010. It established an extensive three-year training program, including progression testing, for a new applicant to the Electrician classification. A new applicant must pass an entry level test and physical requirements to be considered for the program. Upon entering the program there is a 90-day qualifying period which includes basic skills and safety training, with validated testing and minimum passing grade requirements. An applicant that is accepted and elects to remain after the 90-day qualifying period then enters a more extensive training program, which combines safety, classroom and on the job training with progression testing, over a three-year period, to become a fully qualified 1st class Electrician.

A minimum of eight hours of refresher training for job skills is also provided annually. Each employee receives this refresher training, which is in addition to the required annual environmental health and safety training. This refresher training usually focuses on the operation and maintenance of new equipment, and in keeping abreast of new technologies.

2014 Storm Update and Lessons Learned

There were three storms that affected PCL&P’s service territory during 2014 that were accepted by the PAPUC for exclusion from the statistics as outlined in the table on the next page.

Date	Cause	Time	Duration (minutes)	Customers Affected	Cust. Min of Interruption
7/2/2014	Lightning Storm	3:08 PM	684	2,526	538,061
8/21/2014	Lightning Storm	6:56 PM	1,447	4,297	3,117,857
11/26/2014	Snow Storm	1:07 PM	3,322	4,497	1,012,263
TOTALS				11,320	4,668,181

The Company has modified its operational procedures so as to decrease response time to large outages by calling a supervisor and multiple construction crews at the same time that the Company’s troubleshooter crew is called out to respond. PCL&P also has expanded its customer outreach efforts. Company executives met with local residents, community leaders and business owners to review system performance and outline short-term corrective action initiatives and potential long-term system improvement plans. Also, in an effort to enhance the reliability of its electric distribution system, PCL&P developed and submitted to the PAPUC a Reliability Action Plan (“RAP”) on October 3, 2014.

While operational changes and the RAP were not enacted solely as a result of lessons learned from these three events, the Company's response and performance during the events certainly played a role in the decision to move forward with these initiatives.

Storm Response

The Company continually monitors weather conditions and forecasts throughout the year, especially during the summer months when there is a greater likelihood for thunderstorms to occur. In addition to two full-time staff meteorologists, the Company uses several paid weather forecasting services and real-time feedback from field personnel to help guide the decisions necessary to staff for potential events. Storm staffing of both Company and contractor personnel are set using the Company Storm Classification Matrix as a guide, which outlines minimum staffing levels based on a combination of expected weather conditions and anticipated customer outages. When activated, the Community Response Team, in conjunction with the Priority Restoration Group, will continually update emergency and municipal officials prior to and during system emergencies.

Public and employee safety are paramount in setting restoration priorities and coordinating restoration efforts. It is the Company's focus to make conditions safe, restore utility service to the communities as quickly as possible, and manage repairs throughout the event. The following represents the general sequence for the restoration of the electric delivery system:

- Safety concerns including, but not limited to:
 - Wires down in heavy pedestrian areas or state or emergency service road closures; and
 - Municipally reported wires down or road closures;
- Critical facilities, including hospitals, police and fire stations, water supply and sewage;
- All other wires down and road closures and all distribution circuit lockouts; and
- All other affected customers prioritized by highest customer count.

Summary

PCL&P continually strives to improve its outage response and external communications to better serve its customers. The various proactive programs, ongoing initiatives, and capacity planning mentioned in this report are part of the Company's efforts to systematically improve system reliability for the 4,500 delivery customers in its service area. PCL&P is ready for the 2015 summer season.