

Pike County Light & Power Company
Summer Reliability Review

June 1, 2012

System Overview

Pike County Light & Power Company (“Pike” or the “Company”) is an electric distribution company (“EDC”) which has approximately 4,500 delivery customers. The Company is a subsidiary of Orange and Rockland Utilities, Inc. (“O&R”). Pike’s service territory is fed primarily from two 34.5kv feeders that originate from New York substations in the O&R service territory; Line 5-10 from the Cuddebackville Substation and Line 7 from the Port Jervis Substation. The eastern portion of the Pike service territory is fed by two 13.2kv feeders from the Matamoras Substation that has ties to distribution circuitry from O&R’s Port Jervis Substation, in New York, as well. The Matamoras Substation is fed from both Line 7 and Line 5-10, which reinforce each other through an automatic transfer scheme at the substation. The western portion of the Pike service territory is fed radially from Line 7 and has numerous step transformers which serve load at 2.4kv and 13.2kv. The Line 7 main line currently has three reclosers to reduce exposure and number of customers affected under contingency conditions. The area has experienced a 2% to 3% demand growth annually over the past seven years.

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 a three-year cycle based tree clearance program, the removal of danger trees, and hot spot trimming as necessary. Trimming took place in 2009 and again in the first quarter of 2012. This program increases the clearance between vegetation, specifically trees, and the distribution system primary conductors. This program is particularly important in the summer months when thunderstorm activities tend to blow vegetation into the conductor zones. Since the cycle was just completed this year the system should be in excellent condition for the 2012 summer activity. Routine circuit patrols will also identify any significant or pressing conditions, such as danger trees, that must be addressed immediately or in the near term. The Company does this regularly after significant storms or major events have affected the electric delivery system.

- **Infrared Inspection Program**

The three phase mainline circuitry is inspected annually using thermal infrared cameras. This program identifies “hot” spots which indicate heating of distribution system components and potential failure points. 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 currently scheduled to commence in the month of June as system conditions permit.

- **Power Quality**

Pike utilizes eleven automatically switched and fixed capacitor banks to maintain system voltage throughout the summer period. These units are inspected and functionally tested annually prior to the summer peak loading periods. These inspections have taken place for the 2012 period. In addition, Pike has five line voltage regulators that assist in the maintenance of proper distribution voltage levels throughout peak and off-peak load cycles. These units are also tested annually to verify readiness for summer peak loading when the devices are needed most. Inspections completed in spring 2012 identified problems that will result in the replacement of two devices on Line 7. These replacements have been scheduled for completion in the first week in June.

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

There are currently three reclosers in service on Line 7 which sectionalize the circuit to minimize the number of customers affected during fault conditions. These units are tested annually and every attempt is made to have the inspections performed prior to the summer period when system activity increases due to summer storms and other conditions. The units were tested during the spring of 2012 and all units are in good working condition for the summer period.

- **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 maintenance as outlined has been performed on the Matamoras as well as the Port Jervis and Cuddebackville substations. These stations that serve the Pike service territory are in good condition and are ready for the summer period.

- **Distribution Overhead Line Inspections**

The overhead lines of the Pike system are patrolled monthly to identify any anomalies that have the potential to affect system performance. These patrols, which are conducted by Electric Operations Supervisors, seek to identify abnormal tree conditions, missing or defective animal protection, missing or defective lightning protection and damage to conductors and equipment. Items identified are prioritized and repaired accordingly. These inspections will continue through the summer on a monthly basis and after major system events.

Capacity Planning, Additions and Electric Delivery System Projects

The peak load of the Pike system was recorded at 18.96 MVA in 2011. The area has experienced a two to three percent annual increase in electric demand over the past seven years. Orange and Rockland has prepared a 30-year plan for the Pike County area to address the expected and predicted load growth, and maintain reliability, while minimizing the financial impact on customers. The Pike electric delivery system has sufficient capacity for the 2012 summer peak period.

Three electric delivery system projects are being considered for the Pike service territory in the upcoming five-year horizon. 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. Also during this timeframe, a parallel path will be constructed for approximately 2.3 miles of the 8-mile radial Line 7. 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. Finally, a fourth recloser will be installed on Line 7 in 2012. This recloser will provide increased sectionalizing capability for the radial portion of the circuit to minimize the exposure and customers affected in the event of a fault at the end of the circuit.

Beyond the five-year horizon, the Company has continuing plans to upgrade sections of Line 7 in stages to improve capacity and reliability, which will defer the need for the Milford Substation for many years until its construction is necessary.

The Company's Port Jervis Substation is scheduled for upgrade in 2018. The 20 MVA single bank station will be replaced with a station consisting of two 69-13.2kV, 35 MVA banks, two 69-34.5kV banks and additional circuits. This station upgrade will substantially improve the source

reliability, primary and contingency capacity for the electric delivery system serving the Pike service territory.

2011 Storms and Lessons Learned

Two major storms affected the Pike service territory in 2011. The first, occurring on August 28, 2011, was Hurricane Irene. This storm interrupted electric service to 4,366 Pike customers or 97% of the Pike customer base. The second event was an early season snow storm occurring on October 29, 2011 affecting 406 customers or 9% of the customer base. The primary cause of these interruptions was tree contact with overhead electric conductors.

In response to these major storms the Company initiated a comprehensive review of its storm management process. A core team of fifteen subject matter experts were selected to participate in the process. Three sub-committees were developed to address key priority action areas as follows:

- Enhance the ability to process customer calls and inquiries;
- Provide more accurate and consistent projected restoration times; and,
- Review each of the 32 functional areas addressed in our storm plan.

The Company has committed to several enhancements, including improvements to its Call Center capabilities, enhancing the development and communication of projected restoration times and a revised blueprint to execute the response and recovery plan more efficiently. The work of the team resulted in many tangible improvements including:

- Increased maximum customer call flow from 6k per hour to 35k per hour;
- Signed contracts for third party resources to assist in storm restoration;
- A better procedure for calculating and disseminating Estimated Restoration Times;
- Increased storm role training;
- More frequent emergency response drills; and,
- Various improvements to the Outage Management System.

Storm Response

The Company continually monitors weather forecasts throughout the summer months using several weather prediction services. Staffing of both field and Control Center personnel are increased as weather predictions dictate. In addition, damage assessment, site safety, supplemental and support functions are polled to ensure adequate staffing is mobilized when

thresholds are met. Public Affairs 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 customers as quickly as possible, and manage repairs throughout the event. The following represents the general sequence for the restoration of the electric delivery system:

- Transmission facilities and area substations;
- Distribution circuit lockouts;
- Sensitive customers, i.e., these customers include hospitals, water supply and sewage treatment facilities, nursing homes, police and fire stations, telephone company facilities, radio and TV stations, public transportation and life sustaining equipment customers;
- All other affected customers.