

May 28, 2014

Mr. Daniel Searfoorce  
Pennsylvania Public Utility Commission  
P.O. Box 3265  
Pittsburgh, Pa., 17105-3265

RE: Summer Reliability Outlook

Dear Mr. Searfoorce,

In your email dated May 2, 2014 you had requested information related to each of the Electric Distribution Company's 2014 summer readiness and reliability efforts. Duquesne welcomes the opportunity to share information about its 2013 electric system reliability efforts and performance as well as Duquesne's 2014 summer readiness efforts, as discussed in the attached document.

If you would like additional information on any of the items discussed, please do not hesitate to contact me.

Sincerely,



Timothy F. Kuruce  
Vice President, Operations

Attachment

cc: via Email with Attachment  
David Washko (Pennsylvania Public Utility Commission)  
Vern Edwards (Duquesne Light Company)



The Pennsylvania Public Utility Commission's  
2014 Summer Reliability Outlook

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2013/2014 Storm Response  
and  
2014 Summer Readiness

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Duquesne Light Company (Duquesne Light or Company) provides safe and reliable electric service to more than 588,000 customers in southwestern Pennsylvania, including the City of Pittsburgh. The Company uses more than 45,000 miles of overhead lines, 212,000 utility poles and 103,000 transformers to bring that electric service to our customers' homes and businesses.

Although Duquesne Light customers experience electric service reliability that is among the best in Pennsylvania, severe weather and other emergency events occur, and service interruptions are unavoidable. When those interruptions occur, Duquesne Light relies on its comprehensive service restoration program to restore service safely and timely. Some of the more significant preparedness initiatives to ensure this high level of service reliability are detailed below.

## **A. Reliability Enhancement Programs**

### a. Enhanced Vegetation Management

Duquesne Light's Vegetation Management Department has rolled out a Rights-of-Way Vegetation Management Maintenance Program with the goal of reducing tree and branch failures through proactive pruning and removal to increase clearance distances to Duquesne Light's facilities.

### b. Storm Hardening

Duquesne Light believes that the Rights-of-Way Vegetation Management Maintenance Program will help to shorten or eliminate the duration of outages by addressing targeted tree failure conditions that typically result in physical damage to our facilities.

### c. Fuses/Reclosers

Duquesne Light's (163) 23kV distribution circuits utilize 1,040 automatic 3-phase sectionalizers and reclosers that divide each circuit into distinct load blocks of 250-600 customers each. These devices automatically isolate a downstream fault on the main feeder without causing outages to upstream customers. This minimizes the number of customers that are affected by each outage. In addition, normally open tie devices are utilized between circuit load blocks that provide an alternate feed to the customers in each load block.

Circuit laterals fed from the main feeder are generally protected by single-phase fuses that coordinate with the 3-phase feeder devices to protect the main feeder and limit outages to a very small number of customers.

Duquesne Light also now has 23 circuits that utilize all pulse-reclosing fault protection & coordination which tests a circuit for a fault condition without applying fault current. This reduces the damage that can occur on a circuit during a fault sequence compared to traditional fault reclosing and makes circuit repair and restoration faster. In 2013, 10 circuits were upgraded to all pulse-reclosing operation

and in the first five months of 2014, 13 additional circuits have been fitted with this new technology.

Duquesne Light's 265 smaller 4kV circuits also utilize single-phase reclosers and fuses to limit outages to a relatively small number of customers.

d. Smart Grid

All of the 23kV sectionalizers and reclosers used on Duquesne Light's 23kV distribution system are continuously monitored over a wireless network to its centralized Distribution Operations Center (DOC). Circuit problems are immediately alarmed at the DOC where operators quickly take action to relieve overloads or to isolate faults and reroute power to customers on non-faulted load blocks. Generally, when an outage occurs, DOC operators have the actual fault isolated from the rest of the circuit and all downstream customers are restored within five minutes. This automation and remote monitoring also helps operators pinpoint the actual faulted load block so field crews can be directed to the failure location more quickly in order to begin repairs.

e. Automatic Splice Connections

Duquesne Light tightened the criteria used for splice inspections to consider any temperature change greater than 5 degrees Celsius on a splice to require immediate corrective action (within 30 days). In addition, continued emphasis will be placed on proper installation procedures in our apprenticeship training programs and as a rotational topic during group safety meetings for all line workers. Duquesne Light will continue to use the manufacturer's installation materials and technical resources for our training programs and also continue to utilize video demonstrations of proper installations during training.

## **B. Preventative Maintenance Programs**

a. Capacitor Inspections

- i. All line capacitors are inspected both visually and with the use of infrared technology as part of our overhead line inspections every five years.
- ii. 23kV capacitors are equipped with communication devices that report on the status and condition of devices to theDOC. Because the 23kV capacitors have this feature, Duquesne Light uses the automated self-reporting provided by each device to determine if issues exist on a real time basis.

b. Vegetation Management

Duquesne Light professionally manages a comprehensive vegetation program utilizing industry best management practices to provide safe and reliable distribution service. This extensive program is specifically defined for the management of vegetation on Duquesne Light's rights-of-way (ROW) for the dependable operation of its distribution (4kV, 23kV, and 23TkV) system and includes:

- i. Select tree pruning and removal within the ROW.

- ii. Hazard tree assessment and the removal of defective, dead, or diseased trees within or along the ROW.
- iii. The selective mechanical and/or chemical control of incompatible tall-growing brush within the ROW. Specific methods for line clearance are chosen based on the type of work involved while achieving it in a professional, economical, and environmentally sound manner.

c. Substations Inspections

Duquesne Light inspects each distribution substation twelve times annually. The purpose of the substation inspection is to identify any emerging issues within the substation so that they can be corrected in a timely manner.

d. Aerial Patrols

- i. Detailed visual inspection are performed on specified transmission structures (500 structures scheduled annually). These inspections occur at low speeds (15 to 20 mph) with the helicopter hovering at each structure. A Contractor Lineman stands on the skids of the helicopter (strapped to the helicopter) using binoculars to identify hardware problems.
- ii. Annual transmission vegetation patrols focus primarily on vegetation, but additionally report any conditions found on equipment or encroachments. These patrols concentrate on vegetation management issues and include personnel from Duquesne Light's Vegetation Management Department in the helicopter in addition to a contracted observer. These inspections normally occur at 25 to 35 mph and at a slightly higher elevation than the transmission structure inspections.

e. Infrared Inspections

Duquesne Light identifies approximately one fifth of its distribution circuits each year for inspection. A two person crew typically drives each circuit (walking the ROW portions) and records the information generated from an infrared camera. Upon returning to the office, any visual observations, the infrared pictures, and digital photos are noted and downloaded. A work order is created in our Work and Asset Management (WAM) software to track and address any deficiency or repairs needed. Each deficiency is assigned a priority based on the condition and type of equipment identified. A report, including the pictures, a description of each deficiency item, and the work order are then sent to the T&D field personnel to schedule repairs.

### **C. Capacity Planning**

Duquesne Light annually performs an individual company assessment of the Duquesne Light area bulk electric system for the upcoming summer period. The summer seasonal assessment of local facilities ensures that the system can supply projected customer demands and projected Firm Transmission Services in accordance with Duquesne Light's local reliability standards. The complete analysis addresses Duquesne Light's

transmission performance for the 2014 summer forecasted peak load. Included in this assessment are firm transmission upgrades.

Duquesne Light also participates in the PJM Interconnection, LLC (PJM) Operations Assessment Task Force (OATF) summer study and the ReliabilityFirst Corporation (RFC) summer seasonal assessment. The OATF and RFC studies have been completed and Duquesne Light's internal analysis will conclude by June 1, 2014. Based on the OATF and RFC results and the preliminary Duquesne Light results of the system conditions modeled in the assessment of the 2014 summer period, the Duquesne Light bulk electric system is expected to sufficiently support the projected peak load under normal operating conditions.

The Distribution Planning Group continues to review loading of distribution circuits and stations and then prepares an engineering scope of work and Business Case documents in an effort to address situations, such as load growth, that may impact reliability. In the past year, Duquesne Light has added a new 23kV Distribution circuit at the Montour Substation.

#### **D. 2013/2014 Storm Update and Lessons Learned**

As in years past, Duquesne Light continues its process to hold internal storm review meetings following all major outage events. These meetings bring representatives from each of the areas involved in the restoration effort together to openly discuss the successes and improvement opportunities of the most recent emergency service restoration effort. Following these storm review meetings, any identified service restoration process improvements are then implemented, as needed, to continually improve response time and restoration effectiveness.

#### **E. 2014 Summer Readiness**

##### **a. Capacity Additions**

Auto Fault-Clearing functionality has been added to five 23kV looped sub-transmission circuits that provide power either to 4kV distribution substations or directly to 23kV distribution customers. The Auto Fault-Clearing functionality enables these circuits to automatically isolate a fault on one side of the loop and keep the customers in power from the other side, avoiding what historically has resulted in lengthy outages for customers during storms. Also, training was provided to the Duquesne Light Service Centers to explain to line crews how the Auto Fault-Clearing operates.

In the past year, Duquesne Light has completed several capacity addition projects as listed below.

- i. Installation of new distribution circuit, Montour D-23671.
- ii. Extension of circuit D-23708 from North to relieve Keating circuit 4222 4kV.
- iii. Extension of circuit D-23708 from North to relieve West View circuit 4210 4kV.

- iv. Reconfigured the Arsenal - 48<sup>th</sup> Street #2 circuit to improve operating performance to better serve 3 hospitals.
- v. Rodi & Hoover Steet in PennHills Borough - 4kV to 23kV coversion.
- vi. Wilwood & Hardies Road in Hampton Township - 4kV to 23kV conversion.

Duquesne Light's Transmission Planning group, along with PJM, continues to evaluate Duquesne Light's transmission system to identify system enhancement projects. Recent transmission upgrade projects include the addition of 138kV and 345kV circuits in and around the City of Pittsburgh.

b. Transmission Preparedness

Duquesne Light participated in PJM's Summer Emergency Procedures Drill which is conducted to assess the readiness of sytem operations personnel during emergency conditions. The objectives of the drills are to ensure that the following occurs:

- i. PJM personnel and member companies understand emergency procedures.
- ii. Communication facilities are adequate between PJM and member companies.
- iii. PJM and member company personnel demonstrated effectiveness of corporate/governmental affairs communications.
- iv. PJM (as a Regional Transmission Operator (RTO), Local Control Centers (LCCs), and Marketing Operations Centers (MOCs) provided adequate information to governmental agencies.

c. Event Preparedness

Duquesne Light utilizes a comprehensively written Storm Plan, which is updated at least annually. The purpose of the Storm Plan is to provide guidelines and procedures for managing response to large scale service interruption events that result from any cause. The Storm Plan continues to include an expanded Social Media Plan as well as the roles and responsibilities to support the processes implemented this year related to the communication of restoration efforts provided to local municipalities and elected government officials.

Each year, Duquesne Light performs a test of the Alternate Operations Center (AOC). The annual test includes two parts, a full functional test of the AOC systems and technology, and a test of the emergency staffing plan for all critical facilities, which would be implemented upon the loss of its Supervisory Control And Data Acquisition (SCADA) system.

Duquesne Light also maintains a subscription to AccuWeather, a premier weather forecasting service that provides customized forecasts twice a day, severe weather alerts, and 24/7 availability to an AccuWeather forecaster.

d. Training

Duquesne Light conducts Storm Preparedness Training each year for employees serving roles on the Storm Restoration Team. Duquesne Light's most recent Storm Drill was conducted on Tuesday, May 13, 2014. During this exercise, simulated outage scenarios were presented to the Storm Restoration Team before, during, and after the event. The team discussed what actions they would take in each of these scenarios. This year's drill included various agencies in addition to Duquesne Light including Allegheny County EMA, Pittsburgh EMA, Pittsburgh Water & Sewer Authority, PA American Water, West View Water, University of Pittsburgh Medical Center (UPMC), and Homeland Security.

**F. Storm Response**

a. Outage Restoration Strategy

When the extent of storm damage to the electrical system is severe and widespread throughout the Duquesne Light service area, restoration activities must be prioritized. In all situations, the safety of the public, as well as those working to restore service, is always the overriding and highest priority. Duquesne Light follows these restoration priorities, which are generally universal throughout the electrical utility industry.

i. Public Safety Hazards

Our first priority is to quickly address public safety hazards, such as wires that are down across major highways, burning wires, or equipment or building fires. While downed power lines are being handled, company personnel continue to assess the total damage to the electrical system's infrastructure and begin restoring service.

ii. Public Health and Safety Facilities (Critical Customers)

Repair work that restores power to essential facilities that provide emergency services is a high priority. This includes hospitals, police, fire and emergency facilities, water and sanitary authorities, nursing homes and assisted living facilities, etc.

iii. Major Circuits

Duquesne Light continues rebuilding its system by next focusing on major circuits as it strives to restore power to the greatest number of customers as quickly as possible.

iv. Small Neighborhoods/Individual Homes

Once major circuits have been repaired, restoration efforts focus on smaller neighborhoods and groups of customers served by a single transformer. Finally, service to individual homes and businesses are restored as crews

repair "service drops," which are the wires that bring electricity from the nearest pole to an individual building.

b. Communication and Outreach

During major outages and storms, Duquesne Light utilizes a variety of methods to keep customers informed of outages and restoration efforts. These communication methods include regular updates to local media outlets, postings on the company's Twitter, Facebook, and corporate web page, text messages to customers, and updates to the local Emergency Management Agencies.

Over the past year, Duquesne Light has increased its social media efforts. Facebook and Twitter had been primarily used for storm updates. Now Duquesne Light uses these channels of communication for electrical safety messages, preparedness messages in advance of storms as well as to discuss Duquesne Light's community involvement. The company plans to continue expansion of its use of social media efforts.

Duquesne Light also provides an outage map which is utilized as part of the company's Power Restoration Update Center (PRUC) website. The PRUC is activated when the company experiences a severe storm event.

Duquesne Light has established a process for communicating storm damage and restoration status information to elected officials. Duquesne Light's Storm Manager and Communications Officer will decide when to activate the Governmental Liaison role, which would then trigger Conference Calls facilitated by a 3rd party. Duquesne Light will conduct two calls; one to include federal and state elected officials, as well as state regulators; the second call will include all local elected leaders.

c. Restoration Material Staging and Delivery Efficiency Best Practices

Duquesne Light equips service vehicles with spare transformers during summer months to enable quick replacement of overloaded transformers. Additional materials such as poles, wire, crossarms, insulators, etc. are stored at Duquesne Light's five service centers. For storms that cause wide spread damage across the system, these service centers work well for staging materials. If an area has extensive damage then a material staging area will be established in the field.

d. Mutual Aid Crew Assignment and Staging Efficiency Best Practices

Duquesne Light maintains memberships in the North Atlantic Mutual Assistance (NAMA) and Great Lakes (GLMA) Mutual Assistance groups. When Mutual Assistance crews are brought in to help with restoration, they are housed in hotels as close as possible to the impacted areas. When the damage is wide spread across Duquesne Light's system, materials are delivered each day to the hotels. If an area has extensive damage then a material staging area will be established in the field.

e. Any Other Relevant Activity

Duquesne Light continues to provide Company representative staffing at County EMS 911 Centers, when requested, for utility representation during major events.

Additionally, Duquesne Light representatives have joined the newly formed Critical Infrastructure Interdependency Working Group whose purpose is to facilitate discussions allowing for a coordinated response among electric, telephone, waterwastewater, and natural gas systems by coming to an understanding of their critical interdependencies, and how to coordinate restoration of services where more than one party is affected in a given geographic area during major service outage events, such as hurricanes, tropical storms, major flooding, ice storms, heavy snows, cybersecurity incidents and other similar occurrences.