**Lindsay A. Baxter**
Manager, State Regulatory Strategy
lbaxter@duqlight.com
(412) 393-6224

April 29, 2019

**VIA E-FILE**

Ms. Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
2nd Floor, Room-N201
400 North Street
Harrisburg, PA 17120

**Re: Duquesne Light Company 2018 Annual Electric Reliability Report**
**Docket No. M-2016-2522508**

Dear Secretary Chiavetta:

Please find enclosed for filing Duquesne Light Company's 2018 Annual Electric Reliability Report.

Upon receipt, if you have any questions regarding the information contained in this filing, please contact me or Audrey Waldock at 412-393-6334 or awaldock@duqlight.com.

Sincerely,

Lindsay A. Baxter

Enclosure
Cc (w/ enc.):
Bureau of Technical Utility Services (dsearfoorc@pa.gov, dawashko@pa.gov, jvanzant@pa.gov)
Office of Consumer Advocate (TMcCloskey@paoca.org)
Office of Small Business Advocate (jorevan@pa.gov, swebb@pa.gov)


# 2018 Annual Electric Reliability Report

# to the

# Pennsylvania Public Utility Commission

Duquesne Light Company
411 Seventh Avenue
Pittsburgh, PA 15219

April 29, 2019

# DUQUESNE LIGHT COMPANY
## ANNUAL ELECTRIC RELIABILITY REPORT

**Filed April 29, 2019**

**52 Pa Code §57.195 Reporting Requirements**

**(a)(2) The name, title, telephone number and e-mail address of the persons who have knowledge of the matters, and can respond to inquiries.**

Matthew G. Bucek – General Manager, Asset Management
(412) 393-8878, mbucek@duqlight.com

Jason Keller – General Manager, Operations Center
(412) 393-2897, jkeller@duqlight.com

**(b)(1) An overall current assessment of the state of the system reliability in the electric distribution company's service territory including a discussion of the electric distribution company's current programs and procedures for providing reliable electric service.**

Duquesne Light Company's ("Duquesne Light" or "the Company") service territory covers approximately 817 square miles, with a well-developed distribution system throughout. Electric service reliability remains very consistent across the service territory. The combination of an effective outage restoration process and significant distribution automation allows the Company to quickly restore power to large numbers of customers in outage situations.

Achieving outstanding performance in system reliability continues to be one of Duquesne Light's most important long-term objectives. The Asset Management and System Planning Groups performs ongoing analysis of reliability indices, root cause analysis of outages, and tracking and monitoring of other performance measures. This is a long-term process designed to optimize reliability and to identify improvement opportunities. This includes making recommendations for capital projects such as circuit rehabilitation, new substations, and distribution circuits. It also includes implementation of new advanced protection and coordination schemes on the distribution system that better localize customer outages and reduce momentary operations.

Duquesne Light continues its Emergent Work Process, which is used to identify problems, set priorities, and resolve reliability issues as quickly as possible. Each day, field personnel perform field inspections and any abnormalities are logged into a database. This database is reviewed regularly by the Emergent Work Team and any high priority problems are identified and a course of action is determined. Analysis at the device level is used to identify small areas where customers have experienced multiple outages. System level and even circuit level indices may mask these isolated problems. This is the short-term process for real-time analysis and reliability improvement.

Scheduled preventative and predictive maintenance activities continue to reduce the potential for future service interruptions. Corrective maintenance is prioritized with the objective to reduce backlog in the most cost-efficient manner.

Several capital budget projects target distribution reliability improvements, including pole replacement, substation rehabilitation, circuit load relief and voltage improvement, URD

rehabilitation, circuit rearrangement, and installation of additional automated remotely controlled pole top devices.

Specific programs, procedures, and ongoing maintenance activities that support Duquesne Light's commitment to service reliability include:

- A Distribution Overhead Line Inspection Program, which includes infrared inspections, that systemically identifies circuit problems for remedial action in advance of failure.

- A Rights-of-Way Vegetation Management Maintenance Program with the goal of reducing tree and branch failures through proactive pruning and removal to manage proper clearances. Duquesne Light believes that this program will help reduce the frequency of outages by addressing targeted tree failure conditions that typically result in physical damage to our facilities.

- An all pulse-reclosing protection technology has been implemented on some 23kV circuits. This technology eliminates traditional "hard reclosing," thereby making it easier and faster to conduct repairs and restore circuits to normal operation, enabling customers to be restored more quickly. This technology also reduces stress and damage on the entire circuit since the breaker is no longer required to trip, also contributing to the reduction in momentary outages to customers.

- Line maintenance work of various types is regularly performed in order to maintain distribution plant. This work includes replacement of cross arms, arrestors, insulators, and other equipment on the overhead system as well as inspections and remedial work on the underground system.

- Storm Preparedness Training is conducted each year and Storm Review Meetings are held following major events. These meetings focus on the successes and failures of the most recent emergency service restoration effort. Service restoration process improvements are made as needed to improve response time and effectiveness during the next restoration effort.

On April 20, 2017, the Commission adopted the Recommended Decision[1] approving the Company's amended LTIIP/DSIC and the Company has begun its accelerated infrastructure program.

[1] Petition of Duquesne Light Company for Approval of Its Long-Term Infrastructure Improvement Plan for period January 1, 2017 through December 31, 2022, Docket No. P-2016-2540046

**(b)(2) A description of each major event that occurred during the year being reported on, including the time and duration of the event, the number of customers affected, the cause of the event and any modified procedures adopted in order to avoid or minimize the impact of similar events in the future.**

Duquesne Light had one major event that occurred on Thursday, November 15, 2018.

Duquesne Light's major outage event was caused by a snow and ice storm in Allegheny and Beaver counties that began on Thursday, November 15, 2018 at 0809 hours and ended on Monday, November 19, 2018 at 1238 hours. The storm affected 63,344 of the 598,295 total customers in our service territory.

A combination of freezing rain, snow, sleet, and ice buildup downed trees on our power lines and caused extensive damage to our poles and equipment throughout Duquesne Light's service territory in Allegheny and Beaver counties.

This snow and ice storm caused more damage to Duquesne Light's equipment than any storm since 2010. The damage was significant because the snowstorm occurred early in the season, when many leaves were still on trees. The leaves accumulated additional heavy snow and ice, making tree limbs and branches more likely to fall than if there were no leaves on the trees.

Please see Duquesne Light's Electric Utility Report of Outage dated Monday, December 3, 2018 and Duquesne Light's Request for Exclusion of Major Outage for Reliability Reporting Purposes dated Friday, December 14, 2018 for more information regarding this outage event.

**(b)(3) A table showing the actual values of each of the reliability indices (SAIFI, CAIDI, SAIDI, and if available, MAIFI) for the electric distribution company's service territory for each of the preceding 3 calendar years. The report shall include the data used in calculating the indices, namely the average number of customers served, the number of sustained customer minutes interruptions, the number of customers affected, and the minutes of interruption. If MAIFI values are provided, the number of customer momentary interruptions shall also be reported.**

**RELIABILITY BENCHMARKS AND STANDARDS**
**Duquesne Light Company**
**System Performance Measures with Major Events Excluded**

| | SAIDI | SAIFI | CAIDI | MAIFI |
|---|---|---|---|---|
| **2016** | 69 | 0.69 | 100 | * |
| **2017** | 112 | 0.98 | 115 | * |
| **2018** | 89 | 0.84 | 106 | * |
| **3 Year Average** | 90 | 0.84 | 107 | * |
| **Benchmark** | 126 | 1.17 | 108 | * |

***** Sufficient information to calculate MAIFI is unavailable.

Formulas Used in Calculating the Indices

$$\text{SAIFI} = \frac{\text{(Total KVA interrupted) - (KVA impact of major events)}}{\text{System Connected KVA}}$$

$$\text{SAIDI} = \frac{\text{(Total KVA-minutes interrupted) - (KVA-minute impact of major events)}}{\text{System Connected KVA}}$$

$$\text{CAIDI} = \text{SAIDI/SAIFI}$$

**Data used in calculating the indices**

**2018**

| | | |
|---|---|---|
| Total KVA Interrupted for the Period (excluding 11/15/18 Major Event) | 6,086,512 | KVA |
| Total KVA-Minutes Interrupted (excluding 11/15/18 Major Event) | 646,765,080 | KVA Minutes |
| System Connected Load as of 12/31/18: | 7,259,129 | KVA |
| November 15, 2018 Major Event: | 760,135 | KVA |
| | (10.5% of System Load) | |
| | 316,283,090 | KVA-Minutes |

**2017**

| | | |
|---|---|---|
| Total KVA Interrupted for the Period | 7,092,245 | KVA |
| Total KVA-Minutes Interrupted | 812,501,426 | KVA Minutes |
| System Connected Load as of 12/31/17: | 7,259,129 | KVA |

**2016**

| | | |
|---|---|---|
| Total KVA Interrupted for the Period | 4,979,083 | KVA |
| Total KVA-Minutes Interrupted | 497,296,442 | KVA Minutes |
| System Connected Load as of 12/31/16: | 7,210,354 | KVA |

**(b)(4) A breakdown and analysis of outage causes during the year being reported on, including the number and percentage of service outages and customer interruption minutes categorized by outage cause such as equipment failure, animal contact, tree related, and so forth. Proposed solutions to identified service problems shall be reported.**

**January 1, 2018 through December 31, 2018 – One PUC Major Event Exclusion**

| CAUSE | NO. OF OUTAGES | OUTAGE PERCENTAGE | KVA TOTAL | KVA PERCENTAGE | KVA-MINUTE TOTAL | KVA-MINUTE PERCENTAGE |
|---|---|---|---|---|---|---|
| Storms | 453 | 13% | 861,164 | 14% | 127,193,918 | 20% |
| Trees (Contact) | 21 | 1% | 23,951 | 1% | 947,120 | 1% |
| Trees (Falling) | 1,025 | 30% | 1,652,155 | 27% | 212,802,618 | 33% |
| Equipment Failures | 858 | 25% | 1,780,558 | 29% | 175,924,355 | 27% |
| Overloads | 155 | 5% | 197,307 | 3% | 11,105,701 | 2% |
| Vehicles | 144 | 4% | 432,098 | 7% | 42,872,852 | 7% |
| Other | 734 | 22% | 1,139,279 | 19% | 75,918,516 | 10% |
| TOTALS | 3,390 | 100% | 6,086,512 | 100% | 646,765,080 | 100% |

**(b)(5) A list of remedial efforts taken to date and planned for circuits that have been on the worst performing 5% of circuits list for a year or more.**

Duquesne Light has five circuits that have been on the worst performing 5% of circuits list for four consecutive quarters. The majority of these circuits have received remedial actions or are scheduled for maintenance activities in 2019 that are expected to improve their reliability. The Company will continue to monitor these circuits closely during 2019 to verify that the remedial actions taken have been successful and that reliability has improved. Many of the circuits have already shown improvement as indicated in the following detailed descriptions.

Duquesne uses a sophisticated automated protection system on its 23kV circuits, which utilizes numerous 3-phase sectionalizers and reclosers on the main feeders and as ties to adjacent circuits. This automation technology with remote control generally allows circuit problems to be isolated and rerouted in less than five minutes. Generally, only a small portion of the customers on a worst performing circuit experience reliability issues.

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 1<br><br>Midland-Cooks Ferry 22869<br><br>Breaker | 8 Total Outages:<br><br>Fourth Quarter Outages:<br>• Two outages were caused by tree fall-in during a storm.<br><br>Previous Outages:<br>• One outage was caused by burned conductor.<br>• One outage was caused by wires wrapped together, causing short circuit.<br>• One outage was caused by lightning during a storm.<br>• The cause of two outages were unknown.<br>• One outage was caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q4 2017.<br>• This circuit was reviewed by Protection Engineering to identify any potential device coordination issues. Further work to resolve device coordination issues scheduled for Q1 2019. |
| 2<br><br>Pine Creek 23710<br><br>Breaker | 6 Total Outages:<br><br>Fourth Quarter Outages:<br>• Two outages were caused by high winds causing wires to wrap together.<br><br>Previous Outages:<br>• The cause of three outages were unknown, two during a storm.<br>• One outage was caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q3 2018 |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 3<br><br>Traverse Run<br>23770<br><br>Fuse Link<br>80E | 6 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in, during a storm.<br>• The cause of one outage was unknown.<br>• One outage was caused by equipment failures.<br><br>Previous Outages:<br>• The cause of one outage was unknown.<br>• One outage was caused by equipment failure.<br>• One outage was caused by contact with company equipment by vehicle. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Routine vegetation management last performed 2016; proposed for 2020. |
| 4<br><br>North<br>23706<br><br>Sectionalizer<br>WR416 | 6 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in.<br><br>Previous Outages:<br>• One outage was caused by tree fall-in, during a storm.<br>• Four outages were caused by equipment failure. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q3 2018. |
| 5<br><br>Pine Creek<br>23714<br><br>Sectionalizer<br>609WA | 5 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by wires wrapping together during a storm.<br><br>Previous Outages:<br>• One outage was caused by equipment failure.<br>• Three outages were caused by tree fall-in during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q4 2018.<br>• This circuit was reviewed by Protection Engineering to identify any potential device coordination issues. The devices were coordinating properly and no further action is necessary. |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 6<br><br>Midland<br>23640<br><br>Recloser<br>100 | 5 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in.<br>• The cause of one outage was unknown.<br>Previous Outages:<br>• Three outages were caused by tree fall-in, one during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q4 2018. |
| 7<br><br>North<br>23705<br><br>Fuse Link<br>100K | 5 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in during a storm.<br><br>Previous Outages:<br>• Two outages were caused by tree fall-in one during a storm.<br>• The cause of two outages were unknown. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management performed Q1 2017 and proposed for 2021. |
| 8<br><br>North<br>23701<br><br>Fuse Link<br>65K | 5 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in, during a storm.<br>• Two outages were caused by high winds causing wires wrapped together.<br><br>Previous Outages:<br>• One outage was caused by tree fall-in during a storm.<br>• One outage was caused by lightning. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management performed 2016 and proposed for 2021. |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 9<br><br>Pine Creek<br>23712<br><br>Recloser<br>WR610 | 5 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by wires wrapping together causing a short circuit.<br><br>Previous Outages:<br>• Four outages were caused by tree fall-in, one during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q4 2018.<br>• This circuit was reviewed by Protection Engineering to identify any potential device coordination issues. The devices were coordinating properly and no further action is necessary. |
| 10<br><br>Wildwood<br>23869<br><br>Fuse Link<br>40K | 4 Total Outages:<br><br>Fourth Quarter Outages:<br>• Two outages were caused by tree fall-in during a storm.<br><br>Previous Outages:<br>• Two outages were caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management performed 2016 and proposed for 2020. |
| 11<br><br>Fairview<br>4845<br><br>Fuse Link<br>65K | 4 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by phases coming untied during a storm.<br>• One outage was caused by tree fall-in during a storm.<br><br>Previous Outages:<br>• The cause of one outage was unknown.<br>• One outage was caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management completed Q4 2018. |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 12<br><br>Mt. Nebo<br>23870<br><br>Fuse Link<br>65K | 4 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in during a storm.<br>• One outage was caused by icing during a storm.<br><br>Previous Outages:<br>• Two outages were caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management performed Q4 2017 and proposed for 2021. |
| 13<br><br>Woodville<br>23680<br><br>Fuse Link<br>80E | 4 Total Outages:<br><br>Fourth Quarter Outages:<br>• Two outages were caused by tree fall-in, one during a storm.<br>• The cause of one outage was unknown.<br><br>Previous Outages:<br>• One outage was caused by contact with company equipment by animal. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Routine vegetation management last performed 2016, proposed for 2020. |
| 14<br><br>Raccoon<br>23620<br><br>Breaker | 4 Total Outages:<br><br>Fourth Quarter Outages:<br>• No outages.<br><br>Previous Outages:<br>• One outage was caused by tower collapse during a storm.<br>• Three outages were caused by tree fall-in, two during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management scheduled for 2019. |
| 15<br><br>Chess<br>23688<br><br>Recloser<br>ER863 | 4 Total Outages:<br><br>Fourth Quarter Outages:<br>• No outages.<br><br>Previous Outages:<br>• Four outages were caused by tree fall-in, one during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management was completed Q4 2018. |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 16<br><br>Universal 23733<br><br>Recloser 100 | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in.<br><br>Previous Outages:<br>• The cause of one outage was unknown, during a storm.<br>• One outage was caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management was completed Q2 2018. |
| 17<br><br>Pine Creek 23711<br><br>Fuse Link 40K | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused tree fall-in during a storm.<br><br>Previous Outages:<br>• Two outages were caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management was performed 2015 and proposed for 2020. |
| 18<br><br>Wolfe Run 23646<br><br>Recloser R100 | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by icing during a storm.<br>Previous Outages:<br>• One outage was caused by wires wrapping together to create a short.<br>• One outage was caused by contact with company equipment by vehicle. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues. |
| 19<br><br>Montour 23670<br><br>Fuse Link 40K | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in during a storm.<br><br>Previous Outages:<br>• The cause of one outage was unknown.<br>• One outage was caused by tree fall-in during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management was completed Q1 2018. |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 20<br><br>Wildwood 23868<br><br>Breaker | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in, during a storm.<br><br>Previous Outages:<br>• Two outages were caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management was completed 2016 and proposed for 2020. |
| 21<br><br>Wolfe Run 23645<br><br>Fuse Link 80E | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• The cause of one outage was unknown.<br><br>Previous Outages:<br>• One outage was caused by equipment failure.<br>• One outage was caused by contact with company equipment by animal. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues. |
| 22<br><br>Arsenal 23841<br><br>Fuse Link 100K | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• No outages.<br><br>Previous Outages:<br>• One outage was caused by equipment failure.<br>• The cause of one outage was unknown, during a storm.<br>• One outage was caused by wires wrapping together to create a short. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues. |
| 23<br><br>Pine Creek 23716<br><br>Recloser 100 | 3 Total Outages:<br><br>Fourth Quarter Outages:<br>• No outages.<br><br>Previous Outages:<br>• The cause of three outages were unknown. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues. |

| Rank, Circuit Name, Device | Outages | Remedial Actions Planned or Taken |
|---|---|---|
| 24<br><br>Pine Creek<br>23713<br><br>Fuse Link<br>40K | 2 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by contact with company equipment by animal.<br><br>Previous Outages:<br>• One outage was caused by equipment failure. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues. |
| 25<br><br>Montour<br>23675<br><br>Recloser<br>ER253 | 2 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by tree fall-in during a storm.<br><br>Previous Outages:<br>• One outage was caused by tree fall-in. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Vegetation management was completed 2015 and proposed for 2020. |
| 26<br><br>Woodville<br>23683<br><br>Breaker | 2 Total Outages:<br><br>Fourth Quarter Outages:<br>• One outage was caused by equipment failure.<br><br>Previous Outages:<br>• The cause of one outage was unknown. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues.<br>• Routine vegetation management last performed 2016, proposed for 2021. |
| 27<br><br>Arsenal<br>23842<br><br>Breaker | 2 Total Outages:<br><br>Fourth Quarter Outages:<br>• No outages.<br><br>Previous Outages:<br>• The cause of one outage was unknown.<br>• One outage was caused by equipment failure during a storm. | • Permanent repairs were made following each outage as necessary.<br>• The Company will continue to monitor this circuit for reliability issues. |

**(b)(6) A comparison of established transmission and distribution inspection and maintenance goals/objectives versus actual results achieved during the year being reported on. Explanations of any variances shall be included.**

**2018 Transmission and Distribution Goals and Objectives**

| **Program** Project | **Unit of Measurement** | **Target for 2018** | **YTD Actuals for 2018** | **Percent Complete** |
|---|---|---|---|---|
| **Communications Goals** | | | | |
| Communication Battery Maintenance[2] | Batteries | 124 | 143 | 115% |
| **Overhead Distribution Goals** | | | | |
| Recloser Inspections | Circuits | 130 | 130 | 100% |
| Pole Inspections | Poles | 17945 | 18762 | 105% |
| OH Line Inspections | Circuits | 130 | 130 | 100% |
| OH Transformer Inspections | Circuits | 130 | 130 | 100% |
| Padmount & Below Grade Insp | Circuits | 80 | 81 | 101% |
| **Overhead Transmission Goals** | | | | |
| Helicopter Inspections[3] | Number of Structures | 533 | 755 | 142% |
| Ground Inspections | Number of Structures | 383 | 383 | 100% |
| **Substations Goals** | | | | |
| Circuit Breaker Maintenance[4] | Breakers | 610 | 561 | 92% |
| Station Transformer Maintenance[5] | Transformers | 52 | 86 | 165% |
| Station Battery Maintenance[6] | Batteries | 988 | 942 | 95% |
| Station Relay Maintenance | Relays | 1391 | 1535 | 110% |
| Station Inspections | Sites | 2012 | 2012 | 100% |
| **Underground Distribution Goals** | | | | |
| Manhole Inspections | Manholes | 700 | 729 | 104% |
| Major Network Insp (Prot Relay) | Ntwk Protectors | 92 | 104 | 113% |
| Minor Network Visual Inspection (Transformer/Protector/Vault) | Ntwk Transformers | 576 | 583 | 101% |
| **Underground Transmission Goals** | | | | |
| Pressurization and Cathodic Protection Plant Inspection | Work Orders | 372 | 384 | 103% |
| **Vegetation Management Goals** | | | | |
| Overhead Line Clearance | Circuit Overhead Miles | 1300 | 1321 | 102% |

[2] Additional inspections were performed to ensure reliability.
[3] Inspections are selected on a circuit basis; the selected circuits accounted for a higher overall structure count in 2018 than projected.
[4] Certain maintenance activities were intentionally deferred due to upcoming breaker replacements on Long Term Infrastructure Improvement Plant (LTIIP).
[5] Opportunistic work to replace desiccant and condition based work on load tap changers increased the total maintenance in 2018.
[6] Goal based on four inspections annually per battery; regulation requires three inspections annually. Compliance obligation achieved for all batteries.

**(b)(7) A comparison of budgeted versus actual transmission and distribution operation and maintenance expenses for the year being reported on. Explanations of any variances shall be included.**

Budget Variance Recap – O&M Expenses
For the Twelve Months Ending December 31, 2018
Favorable/(Unfavorable)

| | Total Actual | Total Budget | Variance |
|---|---|---|---|
| **Customer Service** | 67,662,866 | 62,040,152 | (5,622,714) |
| **Human Resources** | 14,505,988 | 16,680,823 | 2,174,835 |
| **Operations/Operation Services** | 63,577,951 | 63,683,038 | 105,087 |
| **Technology** | 51,471,591 | 51,498,196 | 26,605 |
| **General Corporate*** | 47,459,657 | 48,863,899 | 1,404,242 |
| **Total** | 244,678,051 | 242,766,108 | (1,911,943) |

* Includes Finance, Office of General Counsel, and Senior Management Costs

The O&M expense overspend for the twelve months ended December 31, 2018 is attributable to higher than budgeted enrollment in the CAP Program (Customer Service) partially offset by favorable medical claims activity below industry trends (Human Resources), and the receipt of transmission enhancement charges from PJM resulting from the FERC settlement approved in May 2018 (General Corporate).

**(b)(8) A comparison of budgeted versus actual transmission and distribution capital expenditures for the year being reported on. Explanations of any variances shall be included.**

Budget Variance Recap – Capital
For the Twelve Months Ending December 31, 2018
Favorable/(Unfavorable)

| | Total Actual | Total Budget | Variance |
|---|---|---|---|
| **Customer Service** | 10,973,026 | 10,750,602 | (222,424) |
| **Human Resources** | 10,775,046 | 12,856,790 | 2,081,744 |
| **Operations/Operation Services** | 227,073,661 | 230,131,752 | 3,058,091 |
| **Technology** | 74,939,596 | 58,977,693 | (15,961,903) |
| **General Corporate*** | 34,410,585 | 31,144,378 | (3,266,207) |
| **Total** | 358,171,913 | 343,861,215 | (14,310,698) |

* Includes Finance, Office of General Counsel, and Senior Management Costs

The capital spend overspend for the twelve months ended December 31, 2018 is attributable to and higher than budgeted expenses associated with large system implementations (Information Technology) and materials spend (General Corporate) partially offset by the delay of projects as a result of shifted work scope and engineering design (Operations) and favorable medical claims activity below industry trends (Human Resources).

**(b)(9) Quantified transmission and distribution inspection and maintenance goals/objectives for the current calendar year detailed by system area (i.e., transmission, substation, and distribution).**

**2019 Transmission and Distribution Goals and Objectives**

| **Program**<br>Project | **Unit of Measurement** | **Target for Year 2019** |
|---|---|---|
| **Communications Goals** | | |
| Communication Battery Maintenance | Batteries | 117 |
| **Overhead Distribution Goals** | | |
| Recloser Inspections | Circuits | 130 |
| Pole Inspections | Poles | 17945 |
| OH Line Inspections | Circuits | 130 |
| OH Transformer Inspections | Circuits | 130 |
| Padmount & Below Grade Insp | Circuits | 81 |
| **Overhead Transmission Goals** | | |
| Helicopter Inspections | Number of Structures | 576 |
| Ground Inspections | Number of Structures | 370 |
| **Substations Goals** | | |
| Circuit Breaker Maintenance | Breakers | 408 |
| Station Transformer Maintenance | Transformers | 44 |
| Station Battery Maintenance | Batteries | 906 |
| Station Relay Maintenance | Relays | 865 |
| Station Inspections | Sites | 1942 |
| **Underground Distribution Goals** | | |
| Manhole Inspections | Manholes | 700 |
| Major Network Insp (Prot Relay) | Network Protectors | 94 |
| Minor Network Visual Inspection (Transformer/Protector/Vault) | Network Transformers | 572 |
| **Underground Transmission Goals** | | |
| Pressurization and Cathodic Protection Plant Inspection | Work Orders | 372 |
| **Vegetation Management Goals** | | |
| Overhead Line Clearance | Circuit Overhead Miles | 1300 |

**(b)(10) Budgeted transmission and distribution operation and maintenance expenses for the current year in total and detailed by FERC account.**

| | **Total Budget** |
|---|---|
| Customer Service | 61,399,832 |
| Human Resources | 15,540,131 |
| Operations/ Operation Services | 68,405,459 |
| Technology | 61,672,441 |
| General Corporate* | 36,073,901 |
| **Total** | 243,091,764 |

*Includes Finance, Supply Chain, Office of General Counsel, and Senior Management Costs

**(b)(11) Budgeted transmission and distribution capital expenditures for the current year in total and detailed by FERC account.**

| | **Total Budget** |
|---|---|
| Customer Service | 9,375,101 |
| Human Resources | 12,198,506 |
| Operations/ Operation Services | 264,679,039 |
| Technology | 66,480,721 |
| General Corporate* | 31,233,951 |
| **Total** | 383,967,318 |

*Includes Finance, Supply Chain, Office of General Counsel, and Senior Management Costs

**(b)(12) Significant changes, if any, to the transmission and distribution inspection and maintenance programs previously submitted to the Commission.**

Duquesne Light has not made any significant changes to its transmission and distribution inspection and maintenance programs.