



411 Seventh Avenue, 16<sup>th</sup> Floor  
Pittsburgh, PA 15219

**Tishekia E. Williams**  
Senior Counsel, Regulatory

Telephone: 412-393-1541  
twilliams@duqlight.com

April 30, 2015

**RECEIVED**

APR 30 2015

PA PUBLIC UTILITY COMMISSION  
SECRETARY'S BUREAU

Ms. Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, Pennsylvania 17105-3265

Re: Duquesne Light Company  
Annual Electric Reliability Report – 2014

L-00030161

Dear Secretary Chiavetta:

Please find enclosed for filing the 2014 Annual Electric Reliability Report of Duquesne Light Company.

If you have any questions regarding the information contained in this filing, please contact Ribeka Garrity at 412-393-6099 or [rgarrity@duqlight.com](mailto:rgarrity@duqlight.com).

Sincerely,

Tishekia E. Williams  
Senior Counsel, Regulatory

Enclosures

cc: Bureau of Technical Utility Services (Non-confidential Version)  
Office of Consumer Advocate (Non-confidential Version)  
Office of Small Business Advocate (Non-confidential Version)



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APR 30 2015

PA PUBLIC UTILITY COMMISSION  
SECRETARY'S BUREAU

***2014 Annual Electric Reliability Report  
to the  
Pennsylvania Public Utility Commission***

***Duquesne Light Company  
411 Seventh Avenue  
Pittsburgh, PA 15219***

*April 30, 2015*

**DUQUESNE LIGHT COMPANY  
ANNUAL ELECTRIC RELIABILITY REPORT**

**Filed April 30, 2015**

**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.**

Ken J. Kallis – Manager, Asset Management  
(412) 393-8613, [kkallis@duqlight.com](mailto:kkallis@duqlight.com)

Tishekia E. Williams – Senior Counsel, Regulatory  
(412) 393-1541, [twilliams@duqlight.com](mailto:twilliams@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 Group 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 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:

- An Infrared Inspection Program 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 to shorten the *duration 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.

**(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.**

No major events occurred during 2014.

- (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
2012	79	0.67	117	*
2013	75	0.62	121	*
2014	63	0.62	102	*
3 Year Average	72	0.64	113	*
Benchmark	126	1.17	108	*

\* Sufficient information to calculate MAIFI is unavailable.

Formulas Used in Calculating the Indices

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

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

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

Data used in calculating the indices

2014

Total KVA Interrupted for the Period	4,435,147 KVA
Total KVA-Minutes Interrupted	450,494,020 KVA Minutes
System Connected Load as of 12/31/14:	7,186,118 KVA

2013

Total KVA Interrupted for the Period (Excluding July 10, 2013 Major Event)	4,432,987 KVA
Total KVA-Minutes Interrupted (Excluding July 10, 2013 Major Event)	536,328,687 KVA-Minutes
System Connected Load as of 12/31/13:	7,195,761 KVA
July 10, 2013 Major Event	724,661 KVA (10% of System Load)
	178,805,024 KVA-Minutes

**2012**

Total KVA Interrupted for the Period  
Total KVA-Minutes Interrupted  
System Connected Load as of 12/31/12:

4,790,378 KVA  
560,098,427 KVA-Minutes  
7,120,660 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, 2014 through December 31, 2014 – No PUC Major Event Exclusions

CAUSE	NO. OF OUTAGES	OUTAGE PERCENTAGE	KVA TOTAL	KVA PERCENTAGE	KVA-MINUTE TOTAL	KVA-MINUTE PERCENTAGE
Storms	346	13%	592,285	13%	70,746,519	16%
Trees (Contact)	25	1%	22,278	1%	1,419,432	1%
Trees (Falling)	687	26%	1,053,171	24%	150,158,090	33%
Equipment Failures	793	30%	1,507,481	34%	138,776,432	31%
Overloads	119	4%	140,858	3%	8,249,599	2%
Vehicles	137	5%	291,497	7%	33,364,456	7%
Other	551	21%	827,577	18%	47,779,492	10%
<b>TOTALS</b>	<b>2,658</b>	<b>100%</b>	<b>4,435,147</b>	<b>100%</b>	<b>450,494,020</b>	<b>100%</b>

**(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 7 circuits that have been on the worst performing 5% of circuits list for four consecutive quarters. All of these circuits have received remedial action which is expected to improve their reliability in 2015. The Company will continue to monitor these circuits closely during 2015 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 and have not seen a repeat outage for one or more quarters. Duquesne uses a very sophisticated automated protection system on its 23kV circuits which utilize numerous 3-phase IntelliRupters, 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 5 minutes. Only a small portion of the customers on a worst performing circuit generally experience reliability issues.

Rank	Circuit	Name	Service Center	Remedial Actions Planned or Taken
1	23681	Woodville	Preble	<p>Five device outages in 2014 on EA259 and ER198:</p> <ul style="list-style-type: none"> <li>• One outage occurred during the fourth quarter due to a tree falling on the conductor during a storm.</li> <li>• Four outages occurred during the first and second quarters and were caused by tree fall-ins.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• Vegetation Management re-inspected the area of the circuit that had outages and corrected the problems found during the third quarter of 2014.</li> <li>• Pulse-reclosing was implemented on part of this circuit which will improve fault protection and overall circuit coordination. This will help to reduce circuit damage during faults that occur in the future and decrease restoration time for customers.</li> </ul>
2	4237	West End	Preble	<p>Four breaker outages in 2014:</p> <ul style="list-style-type: none"> <li>• One outage occurred in fourth quarter due to a tree being uprooted during wet conditions.</li> <li>• Two outages occurred in the first and second quarters due to tree fall-ins.</li> <li>• One outage occurred in the second quarter due to a storm.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• Vegetation Management inspected the entire circuit as part of its 2014 schedule maintenance program in June 2014 and corrected all potential problems found.</li> </ul>

Rank	Circuit	Name	Service Center	Remedial Actions Planned or Taken
3	4155	Long	Penn Hills	<p>Four breaker / "loss of supply" outages in 2014:</p> <ul style="list-style-type: none"> <li>• One outage occurred during the fourth quarter due to a tree fall-in during a storm.</li> <li>• One outage occurred during the fourth quarter due to a motor vehicle accident.</li> <li>• One outage occurred in second quarter due to a storm.</li> <li>• One outage occurred in first quarter and was tree related.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• Two IntelliRupters were installed on the sub-transmission circuit feeding through Long Substation one on each side of the substation. The installation was successfully completed during the first quarter of 2014 well before storm season.</li> <li>• Reliability has improved significantly on the two Long 4kV circuits (4154 &amp; 4155) since Auto Fault-Clearing functionality was added to the two new IntelliRupters in the second quarter. (Circuit 4154's reliability has already improved sufficiently to be off this list.)</li> </ul>
4	23716	Pine Creek	Edison	<p>Three breaker outages in 2014:</p> <ul style="list-style-type: none"> <li>• One outage occurred in third quarter when operators tied over a portion of another Pine Creek circuit that had a pole failure which caused the breaker to lock out.</li> <li>• Two outages occurred in the first and second quarters and were tree-related.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• The Company converted this circuit and two other Pine Creek circuits to all pulse-reclosing operation in the fourth quarter of 2014. The conversion will help to reduce circuit damage during faults that occur in the future, minimize the number of customers affected and decrease restoration time for those customers that are affected.</li> </ul>
5	22869	Midland-Cook Ferry	Raccoon	<p>Three device outages in 2014 on WR875:</p> <ul style="list-style-type: none"> <li>• One outage occurred in the second quarter due a storm that blew a large tree across all three phases of the feeder.</li> <li>• One outage occurred in the first quarter due to a downstream tie device that failed causing a primary fault.</li> <li>• One outage occurred during the first quarter due to a dead pine tree that fell across all three phases of the feeder.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• Auto-fault clearing functionality was added to the sub-transmission portion of this circuit early in the second quarter of 2014 when four new IntelliRupters were installed. Overall reliability on this circuit has improved since then and WR875 had no lockouts during the third and fourth quarters of 2014.</li> </ul>

Rank	Circuit	Name	Service Center	Remedial Actions Planned or Taken
6	23640	Midland	Raccoon	<p>Three device outages in 2014 on WR595:</p> <ul style="list-style-type: none"> <li>• One lockout occurred in the fourth quarter due to an equipment failure.</li> <li>• Two outages occurred in the second quarter due to tree fall-ins.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• Vegetation Management inspected the area of the circuit that has had recent outages and found no underlying problems that needed to be addressed. The Company converted this circuit to all pulse-reclosing operation at the end of 2013. Reliability indices for this circuit are improving.</li> </ul>
7	23950	Wilkinsburg	Penn Hills	<p>Two outages occurred in 2014 - one breaker outage and one Loss-of-Supply outage occurred in 2014:</p> <ul style="list-style-type: none"> <li>• The breaker outage occurred in the second quarter during a storm when lightning burnt down B-Phase primary.</li> <li>• The Loss-of-Supply outage occurred in the second quarter when the sub-transmission network feeding Wilkinsburg substation experienced an outage during a storm that hit <i>the area especially hard</i>.</li> </ul> <p>Remedial Actions:</p> <ul style="list-style-type: none"> <li>• Scheduled reliability improvement work was completed for Long, Eastwood and Sandy Creek substations in 2014. This has also improved reliability at Wilkinsburg because <i>these substations are all interconnected through the sub-transmission network that feeds Wilkinsburg substation reducing risks of loss of supply.</i></li> </ul>

**(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.**

**2014 Transmission and Distribution Goals and Objectives**

Program Project	Unit of Measurement	Target for Year 2014	YTD Actuals Year 2014	Percent Complete
<b>Communications Goals</b>				
Communication Battery Maintenance	Batteries	96	100	104%
<b>Overhead Distribution Goals</b>				
Recloser Inspections	Circuits	133	135	102%
Pole Inspections	Poles	17,690	17,866	101%
OH Line Inspections	Circuits	133	135	102%
OH Transformer Inspections	Circuits	133	135	102%
Padmount & Below Grade Inspection	Circuits	83	83	100%
<b>Overhead Transmission Goals</b>				
Helicopter Inspections	Number of Structures	500	570	114%
Ground Inspections	Number of Structures	350	364	104%
<b>Substations Goals</b>				
Circuit Breaker Maintenance	Breakers	715	753	105%
Station Transformer Maintenance	Transformers	67	70	104%
Station Battery Maintenance	Batteries	980	964	98%
Station Relay Maintenance	Relays	710	747	105%
Station Inspections	Sites	2,100	2,077	99%
<b>Underground Distribution Goals</b>				
Manhole Inspections	Manholes	700	738	105%
Major Network Inspection (Prot Relay)	Network Protectors	92	96	104%
Minor Network Visual Inspection (Transformer/Protector/Vault)	Network Transformers	573	586	102%
<b>Underground Transmission Goals</b>				
Pressurization and Cathodic Protection Plant Inspection	Work Packages	52	52	100%
<b>Vegetation Management Goals</b>				
Overhead Line Clearance	Circuit Overhead Miles	1,300	1,381	106%

**2014 Maintenance Goals and Objectives -Year-End Variances**

The Company is providing the following information regarding the two negative variances.

Duquesne Light set the 2014 goal for PUC Required Distribution Substation Inspections to 2,100 inspections; (175 stations x 12 = 2,100). Since providing these goals, the Company has removed two substations from service making them no longer available to inspect; reducing the number of

distribution substations to the current number of 173 stations; 2,077 inspections have been completed in 2014.

The variance in Station Battery Maintenance program is due to the elimination of substations as well as a timing difference with respect to how the company inspects batteries under NERC requirements.

**(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, 2014  
Favorable / (Unfavorable)**

	Customer Care	External Affairs	Human Resources	Operations/ Operation Services	Technology	General Corporate*	Total
Total Actual	46,348,279	10,277,978	13,478,196	60,529,305	32,723,393	46,551,202	209,908,353
Total Budget	53,162,362	10,926,101	12,481,801	65,755,975	37,718,570	44,644,418	224,689,227
Variance	6,814,083	648,123	(996,395)	5,226,670	4,995,177	(1,906,784)	14,780,874

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

The O&M underspend for the twelve months ended December 31, 2014 is attributable to open positions primarily within the customer care, operations and technology functions.

**(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, 2014  
Favorable / (Unfavorable)**

	Customer Care	External Affairs	Human Resources	Operations/ Operations Services	Technology	General Corporate*	Total
Total Actual	2,575,425	11,345	10,676,775	111,141,093	60,570,098	37,541,416	222,516,152
Total Budget	4,082,130	0	11,978,638	154,563,074	49,482,172	29,065,872	249,171,886
Variance	1,506,705	(11,345)	1,301,863	43,421,981	(11,087,926)	(8,475,544)	26,655,734

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

The capital underspend for the twelve months ended December 31, 2014 is attributable to lower storm restoration spending than budgeted and the timing of various projects. Significant material delays for a major capital project are the single largest driver to the capital underspends in Operations/Operation Services.

**(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).**

2015 Transmission and Distribution Goals and Objectives			Target for Year 2015
Program Project	Unit of Measurement		
<b>Communications Goals</b>			
Communication Battery Maintenance	Batteries		96
<b>Overhead Distribution Goals</b>			
Recloser Inspections	Circuits		130
Pole Inspections	Poles		17,945
OH Line Inspections	Circuits		130
OH Transformer Inspections	Circuits		130
Padmount & Below Grade Inspections	Circuits		81
<b>Overhead Transmission Goals</b>			
Helicopter Inspections	Number of Structures		500
Ground Inspections	Number of Structures		350
<b>Substations Goals</b>			
Circuit Breaker Maintenance	Breakers		725
Station Transformer Maintenance	Transformers		67
Station Battery Maintenance	Batteries		968
Station Relay Maintenance	Relays		615
Station Inspections	Sites		2,067
<b>Underground Distribution Goals</b>			
Manhole Inspections	Manholes		700
Major Network Inspection (Prot Relay)	Network Protectors		92
Minor Network Visual Inspection (Transformer/Protector/Vault)	Network Transformers		573
<b>Underground Transmission Goals</b>			
Pressurization and Cathodic Protection Plant Inspection	Work Packages		52
<b>Vegetation Management Goals</b>			
Overhead Line Clearance	Circuit Overhead Miles		1,300

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

**2015**

**BUDGET**

**Favorable / (Unfavorable)**

	Customer Care	External Affairs	Human Resources	Operations / Operation Services	Technology	General Corporate *	Total
Total Budget	52,014,624	3,985,017	14,854,453	67,978,519	47,486,898	48,528,722	234,848,233

\* Includes Finance, 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.**

**2015**

**BUDGET**

**Favorable / (Unfavorable)**

	Customer Care	External Affairs	Human Resources	Operations / Operation Services	Technology	General Corporate *	Total
Total Budget	3,540,919	0	12,994,568	168,147,376	71,199,827	30,461,273	286,343,963

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

The Duquesne Light 2015 Transmission and Distribution Capital (b)(11) Budgets and Expenditures consist of the following work elements:

- Restoration of Service costs includes expenses to restore service to customers during storm-related events, and restoration from outages caused by system and component equipment failures.
- Customer Commitment costs include expenses to satisfy residential, commercial, industrial and governmental initiated work requests.
- System Maintenance costs include expenses for programmed preventive and corrective maintenance work.
- System Improvement costs include expenses incurred to provide load relief in growth areas identified through system assessment, as well as continued targeted replacement of systems and components based on maintenance findings and trended useful life.
- Utility costs required to enhance and maintain systems and processes necessary in support of the utility operations including metering systems, technology development to satisfy hardware and system application needs, transmission and distribution planning, all revenue cycle processes and all Operations support and Administrative and General expenses.

**(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.

As shown below, Duquesne Light will be proposing to adjust its goals to coincide with current inventory of Circuits, Poles and Distribution Substations.

<b>Overhead Distribution Goals</b>		2014-2015 I&M Plan Goals	2015 Goals
Recloser Inspections	Circuits	133	130
Pole Inspections	Poles	17,689	17,945
OH Line Inspections	Circuits	133	130
OH Transformer Inspections	Circuits	133	130
Padmount & Below Grade Inspections	Circuits	83	81
<b>Substations Goals</b>			
Station Inspections	Sites	175x12= 2,100	172x12= 2,067