Richard G. Webster, Jr.
Vice President

PECO
Regulatory Policy and Strategy
2301 Market Street
S15
Philadelphia, PA 19103

Telephone 215.841.4000
Fax 215.841.6208
www.peco.com
dick.webster@peco-energy.com

PECO
An Exelon Company

May 2, 2016

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
P. O. Box 3265
Harrisburg, Pennsylvania 17120

Re: PECO 2015 Annual Electric Reliability Report - PUC Docket No. M-2016-2522508

Dear Secretary Chiavetta:

Enclosed is PECO's 2015 Annual Reliability Report for the period ending December 31, 2015, submitted pursuant to the Electric Service Reliability Regulations at 52 Pa. Code Chapter 57.

If you have any questions regarding this matter, please call me at 215-841-5777.

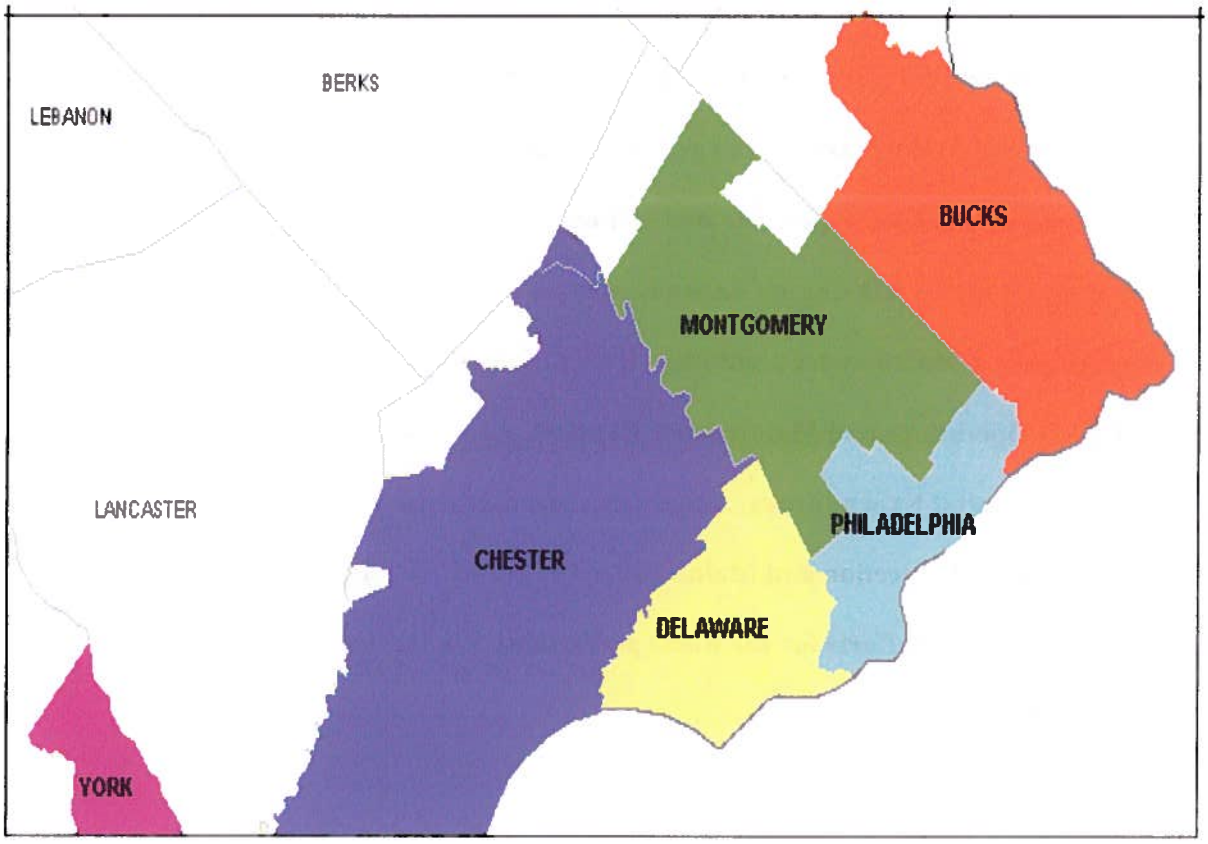
Sincerely,

Enclosure

SAN/mec

PECO
An Exelon Company

2015
Electric Distribution Company
Annual Reliability Report



April 30, 2016

Table of Contents

INTRODUCTION

PECO Energy ("PECO") is submitting this report to the Pennsylvania Public Utility Commission (the "Commission") in accordance with 52 Pa Code 5.423.

PECO is committed to providing safe and reliable electric service to its customers. PECO serves approximately 1.7 million electric customers covering nearly 2,000 square miles in Bucks, Montgomery, Delaware, Chester, York and Philadelphia Counties, including the City of Philadelphia.

SAIFI, CAIDI and SAIDI for 2015 were all better than the Benchmarks and Standards established by the Commission for 12-month averages. 2015 CAIDI of 84 minutes is at its lowest level since quarterly reliability reports to the Commission began in 2003. The three-year average values of SAIFI, CAIDI, and SAIDI for 2013 through 2015 were all at the best levels since Benchmarks were established in 1999, and were all better than the Commission's Benchmarks and Standards for three-year averages.

B1: Section 57.195(b)(1)

"The annual reliability report shall include ... 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."

Current Assessment:

PECO responded to one major storm in 2015, a wind and lightning storm on June 23, 2015 which caused service interruptions to over 350,000 customers, making it the 10th largest storm in PECO history. As directed by the Commission, this major event is excluded from PECO's reliability metrics for 2015.

SAIFI, CAIDI and SAIDI for 2015 were all better than the Benchmarks and Standards established by the Commission for 12-month averages. The three-year average values of SAIFI, CAIDI, and SAIDI for 2013 through 2015 were all at the best levels since Benchmarks were established in 1999, and were all better than the Commission's Benchmarks and Standards for three-year averages.

Programs and Procedures:

PECO Energy continues to stress excellence in fundamentals:
- Safety of our employees and the public
- Emergency response and daily operation
- Thorough preventive and corrective maintenance
- Appropriate capacity and design
- Adequate bulk supply
- Appropriate investment
- Enhanced use of automation and new technologies
- Integration of advanced meter infrastructure (AMI, smart meters) into reliability processes

PECO Energy's program for providing reliable electric service is multifaceted. It starts with a transmission and distribution system that is designed and built to reliable standards. Under a formal, comprehensive, predictive and preventive maintenance program, equipment receives maintenance to ensure its safe, reliable operation. Vegetation in the proximity of the system is pruned and controlled via a funded, well-managed program that protects the electric facilities while respecting the beauty and environmental importance of the vegetation.

The transmission and distribution system is operated around-the-clock, every day, from control centers where trained personnel use modern monitoring and control equipment to ensure that equipment is run within its load rating and other technical constraints.

When interruptions to electric service do occur, calls and instant reports from smart AMI meters are noted in a computer-aided outage management system, which associates calls and meter reports with information about the distribution system configuration to construct probable trouble groupings. These outage reports quickly appear on the screens for the operations center personnel. First response personnel are on the system at all times to make trouble locations safe and quickly restore service. The current outage management system,

which was installed in 2001, has kept pace with technology through upgrades made available by the manufacturer.

PECO continues to install and upgrade the latest proven and cost-effective technology in support of reliability and safe, efficient operations. Recent examples include computers in the vehicles of field workers, smart electronic meters with communications and diagnostic capabilities, electronically-controlled switching and communication equipment to automatically reroute power around problem areas, a new geographic information system (GIS), and a state-of-the-art central distribution system management computer system.

Should a storm or other emergency arise, an appropriate emergency response team is assembled via group pager and cell-phone notification. The trained team performs per the specifications of a thorough, documented, tested emergency response procedure, quickly escalating the magnitude of the response when required, and communicating with the public and government agencies. If necessary, pre-established agreements with local contractors and neighboring utilities are exercised to augment PECO Energy's workforce. In 2012, PECO augmented its existing mutual assistance agreement with the Mid Atlantic Mutual Assistance Group by joining the Southeastern Electric Exchange, increasing its ability to respond to major storms. After each significant emergency event, the groups involved evaluate the response. Strengths and weaknesses are identified, action plans are constructed, and individuals are tasked with bringing about the necessary changes to facilities, the organization, the procedures, and the understanding of the procedures by the work force. Management tracks each action item and demands timely completion to ensure continuous improvement.

Seasonal emergency response drills are carefully planned and carried out, followed by critiques and improvements to ensure that the entire organization can function properly when called upon for actual emergencies.

Management sets clearly-defined, challenging reliability goals, communicates them to the work force, demands meaningful action plans, monitors progress, holds the organization accountable for results, and attaches incentive compensation for employees to the achievement of the goals. Full-time engineering professionals monitor and analyze reliability trends and changes, and institute capital upgrades and improvements to maintenance, design, construction and/or operations to ensure that customers continue to enjoy reliable electric service.

B2: Section 57.195(b)(2)

"The annual reliability report shall include… 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."

PECO had one major event in 2015, as described below.

On June 23, 2015 a severe thunderstorm with heavy winds entered the PECO territory. Significant damage was caused to the electric distribution system and interrupted service to 352,763 customers. The interruptions began on June 23, 2015, at 16:21 when a cold front swept across the region bringing strong thunderstorms. Maximum wind gusts of up to 72 mph were measured at Philadelphia International airport. PECO employees were joined by more than 1,500 outside workers including utilities from Ohio, Kentucky, West Virginia and New York who worked to restored all customers with the last outage being restored by June 29th at 21:36. A request for exclusion was submitted and approved by the commission on November 5, 2015

B3: Section 57.195(b)(3)

"The report shall include... 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 customer affected, and the minutes of interruption. If MAIFI values are provided, the number of customer momentary interruptions shall also be reported. "

	SAIFI	CAIDI	SAIDI	MAIFI
2015	0.72	84	61	0.42
2014	0.86	96	82	0.44
2013	0.69	91	63	0.40
2012	0.77	97	75	0.53

	SAIFI	CAIDI	SAIDI	MAIFI
2013 – 2015 Average	0.76	90	69	0.45
Benchmark	1.23	112	138	N/A
3-Year Average Standard	1.35	123	167	N/A

The three-year average values of SAIFI, CAIDI, and SAIDI for 2013 through 2015 were all at the best levels since Benchmarks were established in 1999,.

	2015	2014	2013	2012
Number of customers served *	1,703,911	1,718,220	1,706,148	1,695,103
Sustained customer minutes	103,264,966	141,648,235	108,211,457	126,662,273
Number of customers affected	1,231,426	1,481,044	1,182,901	1,305,603
Number of customer momentary interruptions	717,214	763,746	678,522	904,946

**Customer Count reflects a reduction due to the removal of inactive customer accounts*

At the end of 2015, PECO updated its geographic information system (GIS) to pass only premises with active accounts to the outage management system (OMS). As a result, the value of Customers Served went down with the removal of inactive premises from OMS. Since average customer counts must appear in quarterly and annual reports, PECO's average number of customers served will decline each quarter until the end of 2016, when no more inactive accounts are included in averages.

B4: Section 57.195(b)(4)

"The report shall include... a breakdown and analysis of outage causes during the year being reported on, including the number and percentage of service outages, the number of customers interrupted 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."

Cause	Service Outages	% of Service Outages	Customer Interruptions	% of Customer Interruptions	Customer Minutes
Animal	941	9.30%	28,816	2.30%	1,867,693
Contact/Dig-In	119	1.20%	28,878	2.30%	1,654,771
Equipment Failure	4,667	46.10%	569,736	46.20%	50,133,756
Lightning	336	3.30%	49,055	4.00%	7,076,557
Other	1,070	10.60%	141,794	11.50%	6,797,926
T&S	9	0.10%	29,036	2.40%	1,359,626
Unknown	324	3.20%	30,493	2.50%	1,822,967
Vegetation-Broken/Uprooted	1,514	15.00%	223,540	18.10%	19,994,008
Vegetation-Ingrowth	732	7.20%	56,459	4.60%	6,587,162
Vehicles	406	4.00%	74,074	6.00%	5,985,698

The largest contributors to customer interruptions were equipment failure and tree-related interruptions. The leading groups within the equipment failure category were aerial equipment and underground equipment. Most customer interruptions caused by trees came from broken branches and tree trunks or uprooted trees (18.1% of all outages), as opposed to ingrowth (4.6%) of all outages). PECO has continued to supplement its regularly scheduled vegetation management cycle with mid-cycle and 34 kV pruning programs and a hazard tree removal program.

B5: Section 57.195(b)(5)

"The reports shall include… a list of the major 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."

See Appendix A

B6: Section 57.195(b)(6)

"The report shall include... 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."

General Statement on Maintenance Programs Work Prioritization and Scheduling

PECO Energy develops its annual T&D maintenance plan to conform to company established maintenance cycles and based on current program priority determined by safety, risk and reliability evaluations. Resources may be reallocated during the maintenance period depending on impact of key performance areas. There is an adherence to schedule grace period equivalent to 25% of the maintenance cycle length to allow for scheduling and bundling of work.

PECO Energy's Distribution Inspection and Maintenance Plan vs. Actual Work for 2015

Maintenance Program	Planned Tasks	Completed Tasks
Recloser Inspections (Number of reclosers inspected)	152	423
Circuit Patrol & Thermography (Number of circuits inspected)	943	1,932
Pole Inspections (Number of poles inspected)	32,099	39.344
Padmount Transformer Inspections (Number of maintenance tasks performed (e.g. visual inspection, functional testing)	8,667	8.996
Below Ground Transformers (Number of maintenance tasks performed (e.g. visual inspection, functional testing)	1,601	3,224
Substation Inspections (Number of maintenance tasks performed (e.g. visual inspection, predictive/diagnostic maintenance, preventive maintenance) for a variety of substation components)	1,320	1,390
Unit Substations (Number of maintenance tasks performed (e.g. calibration, trip testing)	3,090	3,180

Vegetation Management Preventive Maintenance Program

Maintenance Program	Miles Planned	Miles Completed
Distribution Lift & Manual Trimming	2,297	2,634
Transmission Trim & Removal	197	239

B7: Section 57.195(b)(7)

"The report shall include…a comparison of budgeted versus actual Transmission and Distribution operation and maintenance expenses for the year being reported on in total and detailed by the electric distribution company's own functional account code or FERC account code as available. Explanations of any variances 10% or greater shall be included."

Operation and Maintenance Expenses

Functional Account Code	Budget	Actual	Variance
New Business Connections	$1.0 million	$2.0 million	($1.0) million
Capacity Expansion	$3.8 million	$4.6 million	($0.8) million
System Performance	$48.5 million	$42.8 million	$5.7 million
Facility Relocation	$1.8 million	$0.9 million	$0.9 million
Maintenance	$172.8 million	$180.3 million	($7.5) million
Category Totals	$227.9 million	$230.6 million	($2.7) million
Budgeted T&D O&M Expenses		$227.9 million	
Actual T&D O&M Expenses		$230.6 million	
Variance		($2.7) million	
Percent Variance		(1.2%)	

"Explanations of any variances 10% or greater shall be included"

- **New Business Connections** – Over budget due to increased residential development and commercial projects.
- **Capacity Expansion** – Over budget due to revised estimates for substation work.
- **System Performance** – Under budget due to back office labor that shifted to various maintenance projects.
- **Facility Relocation** – Under budget due to reduced scope of work on various relocation projects.

B8: Section 57.195(b)(8)

"The report shall include… a comparison of budgeted versus actual Transmission and Distribution capital expenditures for the year being reported on in total and detailed by the electric distribution company's own functional account code or FERC account code as available. Explanations of any variances 10% or greater shall be included."

Capital Expenses

Functional Account Code	Budget	Actual	Variance
New Business Connections	$38.9 million	$51.3 million	($12.4) million
Capacity Expansion	$104.0 million	$85.8 million	$18.2 million
System Performance	$103.2 million	$96.4 million	$6.8 million
Facility Relocation	$13.7 million	$8.5 million	$5.2 million
Maintenance	$85.7 million	$105.3 million	($19.6) million
Category Totals	$345.5 million	$347.3 million	($1.8) million
Budgeted Capital Expenses		$345.5 million	
Actual Capital Expenses		$347.3 million	
Variance		($1.8) million	
Percent Variance		(0.5%)	

"Explanations of any variances 10% or greater shall be included"

- **New Business Connections** – Over budget due to increased residential development and commercial projects.
- **Capacity Expansion** – Under budget due to reallocation of funds to support increased scope of various maintenance programs.
- **Facility Relocation** – Under budget due to reduced scope of work on various relocation projects.
- **Maintenance** – Over budget due to increase in scope on various system health programs.

B9: Section 57.195(b)(9)

"The report shall include... quantified Transmission and Distribution inspection and maintenance goals/objectives for the current calendar year detailed by system area (i.e., transmission, substation, and distribution)."

PECO Energy's 2016 Transmission and Distribution Inspection and Maintenance Plan
Per 52 Pa Code Chapter 57.198, PECO's Biennial Inspection, Maintenance, Repair and Replacement plan filed September 29, 2014.

Maintenance Program	Units (Planned) Annual
Recloser Inspections (Number of reclosers inspected)	199
Circuit Patrol & Thermography (Number of circuits patrolled)	966
Pole Inspections (Number of poles visually inspected)	32,763
Padmount Transformers (Number of transformers visually inspected)	9,733
Below Ground Transformers (Number of transformers visually inspected)	1,737
Substations (Number of substations inspections performed.(e.g. visual inspection, reading of currents, voltages, temperature etc) for a variety of substation components)	1,320
Unit Substations (Number of unit substations inspections performed .(e.g. visual inspection, reading of currents, voltages, temperature etc) for a variety of substation components)	3,070

Vegetation Management Preventive Maintenance Program

Maintenance Program	Miles Planned
Distribution Lift & Manual Trimming	2,708
Transmission Trim & Removal	160

B10: Section 57.195(b)(10)

"The report shall include... budgeted transmission and distribution operation and maintenance expenses for the current year in total and detailed by the electric distribution company's own functional account code or FERC account code as available".

Functional Account Code	2016 O&M Budget
New Business Connections	$1.1 million
Capacity Expansion	$0.8 million
System Performance	$51.2 million
Facility Relocation	$1.5 million
Maintenance	$188.6 million
Category Totals	$243.2 million

B11: Section 57.195(b)(11)

"The report shall include… budgeted transmission and distribution capital expenditures for the current year in total and detailed by the electric distribution company's own functional account code or FERC account code as available"

Functional Account Code	2016 Capital Budget
New Business Connections	$56.1 million
Capacity Expansion	$105.8 million
System Performance	$136.7 million
Facility Relocation	$14.0 million
Maintenance	$99.4 million
Category Totals	$412.0 million

B12: Section 57.195(b)(12)

"The report shall include… significant changes, if any, to the Transmission and Distribution inspection and maintenance programs previously submitted to the Commission."

Approved Changes to PECO Energy's T&D Maintenance Programs

APPENDIX A

The following circuits were on our worst performing 5% of circuits list for a year or more:
As of the date of this report, analysis of these circuits continues. Information on remedial efforts taken and planned in addition to the details provided on the following pages will be included in future quarterly reliability reports.

- AIRY_004
- BRYAN_002
- CLAY_343
- DALEVILLE_342
- FLINT_147
- LENAPE_351
- LINE_3308NT
- LLANERCH_161
- MAIN_000
- MIDDLETOWN_349
- NEWTOWN_SQUAR_146
- PLYMOUTH_164
- RADNOR_131
- TUNA_143
- WAYNE_146

Below are the efforts taken to date and planned for these circuits:

AIRY_004
Montgomery County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Performed regularly schedule tree clearance
Completed reliability corrective workorders
Installed aerial cable
Planned:
Remedial efforts completed

BRYAN_002
York County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Replaced fuses
Replaced cable
Completed reliability corrective workorders
Planned:
Upgrade cable insulation

CLAY_343
Chester County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Planned:
Inspect recloser operation
Complete reliability corrective workorders

DALEVILLE_342
Chester County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Replaced switch
Planned:
Complete reliability corrective workorders
Inspect / Test breaker
Install additional transformer
Inspect / Test recloser operation

FLINT_147
Delaware County
Completed:
Inspected circuit and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Install additional lightning protection
Upgraded cable
Planned:
Complete reliability corrective workorders
Install capacitor bank
Inspect circuit breaker operation

LENAPE_351
Chester County
Completed:
Inspected circuit and with thermographic camera
Completed reliability corrective workorders
Planned:
Complete reliability corrective workorders
Replace cable
Upgrade recloser

LINE_3308NT
Chester County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Upgraded controller
Upgraded transformer
Upgraded lightning protection
Planned:
Complete reliability corrective workorders
Upgrade wires

LLANERCH_161
Delaware County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Replaced cable
Planned:
Complete reliability corrective workorders

MAIN_000
Philadelphia County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Planned:
Transfer portion of load to supply circuit
Complete reliability corrective workorders

MIDDLETOWN_349
Delaware County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Upgraded fuses
Test / Inspect recloser operation
Planned:
Complete reliability corrective workorders

NEWTOWN_SQUARE_146
Delaware County
Completed:
Completed reliability corrective workorders
Inspected circuit visually and with thermographic camera
Inspect / Test recloser operation
Inspected selected areas of circuit for vegetation issues and corrected as needed
Planned:
Complete reliability corrective workorders

PLYMOUTH_164
Montgomery County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Upgraded fuse
Upgraded wires
Installed additional animal protection
Planned:
Complete reliability corrective workorders

RADNOR_131
Delaware County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Installed additional wildlife protection
Replaced recloser
Planned:
Complete reliability corrective workorders

TUNA_143
Philadelphia County
Completed:
Completed reliability corrective workorders
Installed vacuum fault interrupter
Planned:
Complete reliability corrective workorders

WAYNE_146
Delaware County
Completed:
Inspected circuit visually and with thermographic camera
Inspected selected areas of circuit for vegetation issues and corrected as needed
Completed reliability corrective workorders
Replaced recloser
Upgraded wires
Replaced cable
Planned:
Complete reliability corrective workorders

APPENDIX B

New Business

This work category includes all the facility work required to add a new customer or to increase the load to an existing customer. The facility work will include the facilities required to directly connect the customer to the system and the upgrade/replacement of any existing facility to serve the requested additional load.

Capacity Expansion

This work category includes only capacity work generated by the system design engineer to prevent system failure and to assure the delivery of voltage as specified in the tariff. The addition of new substations and substation enlargements for future load growth will also be included in this project.

System Performance

This work category includes projects designed to upgrade, modify or improve the performance of the distribution system. Also included in this category are indirect costs in support of all categories and one-time accounting adjustment items.

Facility Relocation

This work category includes all requests for relocation of PECO facilities including municipal as well as customer related relocation requests.

Maintenance

This work category includes work performed to repair and restore equipment to its normal state of operation, along with planned preventive maintenance work such as visual and thermographic inspections and tree trimming around transmission and distribution lines.

Storm Funds

Incremental costs (primarily; overtime, contractors, mutual assistance, and meals) incurred while responding to major storms (storms that meet customer outage and duration criteria).