David P. Warner
Associate Counsel
Consolidated Edison Company of New York, Inc.
4 Irving Place, Room 1815-S, New York, NY 10003
(212) 460-4286 FAX: (212) 677-5850
Email: warnerd@coned.com

February 15, 2017

Via Electronic Filing
Hon. Kathleen H. Burgess
Secretary to the Commission
New York State Public Service Commission
Empire State Plaza, Agency Building 3
Albany, NY 12223-1350

Re: Case 04-M-0159, Proceeding on the Motion of the Commission to Examine the Safety of Electric Transmission and Distribution Systems

Consolidated Edison Company of New York, Inc.'s *2016 Contact Voltage Test and Facility Inspection Annual Report*

Dear Secretary Burgess:

Consolidated Edison Company of New York, Inc. submits for filing its *2016 Contact Voltage Test and Facility Inspection Annual Report* ("Report"). The Report is submitted pursuant to the requirements of the Public Service Commission's Electric Safety Standards issued in the referenced proceeding.

Thank you for your assistance.

Sincerely,

Att:

2016

CONTACT VOLTAGE TEST &

FACILITY INSPECTION

ANNUAL REPORT

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

Report on the results of contact voltage tests & facility inspections for the period beginning January 1, 2016 and ending on December 31, 2016.

February 15, 2017

Table of Contents

I. Background

The New York State Public Service Commission's ("PSC" or "Commission") Electric Safety Standards ("Safety Standards")[1] in Case 04-M-0159, require utilities to conduct an annual system-wide contact (stray) voltage detection program for underground assets and municipality owned streetlights and a five-year equipment inspection program to mitigate contact (stray) voltage risks to the public and promote reliability.

The term "stray voltage" is historically associated with neutral-to-earth voltage (NEV) encountered by farm livestock at contact points. Stray voltage is a normally occurring phenomenon that can be found at low levels between two contact points any location where electricity is grounded.[2] In recent years, the term "contact voltage" has been used to describe voltage resulting from abnormal power system conditions associated with low voltage secondary system faults.

This report describes Consolidated Edison Company of New York, Inc.'s ("Con Edison" or "the Company") contact voltage detection program and equipment inspection program conducted in 2016.

II. Company Overview

Con Edison is an investor-owned utility that provides electric service to approximately 3.4 million customers in a service area of approximately 604 square miles within New York State encompassing New York City, except the Rockaway Peninsula, and most of Westchester County. The Company operates an electric transmission and distribution ("T&D") system that provides a high level of reliability in a very dense urban environment.

[1] The Commission's *Order Granting in Part Petition to Modify Electric Safety Standards,*Appendix A, issued January 13, 2015 in Case 04-M-0159, provides the current version of the Safety Standards. The Safety Standards were originally issued on January 5, 2005, with subsequent revisions issued on July 21, 2005, December 15, 2008, March 22, 2013 and January 13, 2015.

[2] Electrical systems — both farm systems and utility distribution systems — are grounded to the earth to ensure safety and reliability. Inevitably, some current flows through the earth at each point where the electrical system is grounded and a small voltage develops. This voltage is called neutral-to-earth voltage (NEV). When NEV is found at animal contact points, it is frequently called stray voltage. Stray voltage is this small voltage that is measured between two points that livestock can simultaneously touch. If these points are simultaneously contacted by an animal, a current will flow through the animal. See, http://psc.wi.gov/utilityInfo/electric/documents/strayVoltage/svUpdate2006.pdf

- Distribution

  a. *Underground* – The underground system has approximately 278,000 manholes, service boxes, transformer vaults, and above ground pad mounted structures; approximately 25,400 miles of underground duct; and approximately 95,700 miles of underground cable including primary, secondary and service cables. Underground network cables operating at primary voltages of 33kV, 27 kV and 13.8 kV supply underground transformers that step the primary voltages down to 120/208 distribution voltages that are used by customers.

  b. *Overhead* – The overhead system includes: 175 auto loops, 13 - 4 kV multi-bank substations, 219 – 4 kV unit substations, approximately 273,000 Con Edison owned poles, and approximately 34,000 miles of overhead wires including primary, secondary, and services. Cables operating at primary voltages of 33 kV, 27 kV, 13.8 kV, and 4 kV supply approximately 50,800 overhead transformers that step the primary voltages down to 120/208/240 distribution voltages that are used by customers.

  c. *Streetlights* – Con Edison does not own, install, or maintain streetlights and traffic signals within its service territory. The New York City Department of Transportation (NYCDOT) and the local Westchester municipalities primarily own the streetlights and traffic signals in New York City and Westchester County. There are approximately 185,000 metal pole street lights and metal pole traffic signals within Con Edison's service territory.

- Transmission

  a. *Underground* – The underground transmission system delivers power at 69 kV, 138 kV, and 345 kV to various switching substations and area substations. The underground system has approximately 2,200 underground transmission facilities and approximately 810 circuit miles of cable. Of the 810 circuit miles, Con Edison owns approximately 727 miles.

  b. *Overhead* - The overhead transmission system consists of 138 kV and 345 kV high voltage cable supported on approximately 1,220 towers and poles on rights-of-way located for the most part, north of New York City and terminating in Westchester County where the underground transmission system begins.

- Substations and Unit Substations

  There are 41 transmission substations, 62 area substations, 232 unit substations and multi-banks which includes the six customer owned NYC airport multibanks.

III. Inspection and Contact Voltage Testing Frequency for Company and Municipally Owned Facilities

The Safety Standards require that all electric facilities be inspected at least once every five years.[3]

The Safety Standards require annual contact voltage testing for all streetlights and for all underground electric facilities that are publicly accessible, including, but not limited to, manholes, service boxes and transformer vaults.

The Safety Standards require contact voltage testing at least once every five years for overhead distribution facilities, underground residential distribution facilities, overhead and underground transmission facilities, and substation fences.
This testing may be conducted concurrently with the five-year facility inspection by the Safety Standards.[4]

The following seven categories of facilities in Con Edison's service area must be inspected every five years and tested for the presence of contact voltage annually or every five years:

- *Underground Distribution* – There are approximately 278,000 underground facilities in Con Edison's Distribution systems. A subsurface structure is defined as any manhole (MH), service box (SB), transformer vaults (V,VS), transformer manholes (TM), customer boxes (CB), injunction boxes (IJ), P-Boxes (PB), and T-Tap boxes and switchgears specifically associated with Underground Residential Distribution systems ("URD"). All Underground Distribution facilities are inspected every five years and are tested for contact voltage annually in either the manual and mobile contact voltage testing program, except for URD facilities, which are tested every five years. The contact voltage testing criteria include all subsurface structures at grade level, including above ground, pad-mounted structures.

- *Street Lights and Traffic Signals* – There are approximately 185,000 metal pole street lights and/or traffic signals within Con Edison's service territory. Streetlights and traffic signals are included in the annual contact voltage testing program. Con Edison does not own any metal pole streetlights, and therefore, these structures are not included in the

[3] The Commission's *Order Approving Electric and Gas Rate Plans* issued January 25, 2017 in Case 16-E-0060, et al, authorizes the Company to implement a pilot program to increase the inspection cycle for underground equipment (excluding underground residential distribution (URD) equipment) from five to eight years. The Company will report based on the eight year cycle beginning with its 2017 Report in this proceeding.
[4] The Public Service Commission's "Order Granting Petition In Part And Modifying Electric Safety Standards," issued March 22, 2013 in Case 04-M-0159 ("March 22, 2013 Order"), modified the Safety Standards to change the contact voltage test frequency from one year to five years for overhead distribution facilities, underground residential distribution facilities, overhead and underground transmission facilities, and substation fences.

facility inspection program. Area and street lighting that is privately owned is not included in the contact voltage testing program, as per the Safety Standards. The contact voltage testing criteria include all municipally owned metal pole streetlights, traffic signals, and pedestrian crosswalk signals located on publicly accessible thoroughfares and areas that have streetlights directly supplied by the Company. All contact voltage testing of street lights is performed at night while the fixtures are energized.

- *Overhead Distribution* – There are approximately 273,000 distribution pole structures that support electric facilities in Con Edison's overhead distribution system. Distribution overhead facilities are inspected and tested for contact voltage every five years. The contact voltage testing criteria include all utility-owned or joint use wooden poles with utility electrical facilities located on public thoroughfares or customer property, including backyards or alleys. Contact voltage tests are performed on all wooden poles with metallic attachments, such as, ground wires, ground rods, anchor guy wires, riser pipes, or any electrical equipment within reach of the general public.

- *Substations* – Con Edison's 103 substations are inspected and tested for contact voltage every five years. The contact voltage testing criteria consist of perimeter fencing and other electrically conductive materials where such materials are accessible to the general public. These materials include but are not limited to fences, doors, roll-up gates, metallic delivery boxes, dielectric fluid delivery ports and Siamese connections.

- *Unit Substations* – Con Edison's 232 - 4kV multi-bank and unit stations are required to be inspected and tested for contact voltage every five years. The contact voltage testing criteria consist of perimeter fencing and other electrically conductive materials where such materials are accessible to the general public. These materials include but are not limited to fences, doors, roll-up gates, metallic delivery boxes, and Siamese connections.

- *Overhead Transmission* – Con Edison's overhead transmission system includes 1,220 individual poles or towers. These transmission structures support circuit voltages of 69 kilovolts and greater. Structures that support circuits of lower voltage in addition to the transmission voltage levels are included in this category. Con Edison's overhead transmission structures are inspected and tested for contact voltage every five years. The contact voltage testing criteria include all structures, guys, and down leads attached to these structures.

- *Underground Transmission* – Con Edison's underground transmission system includes approximately 2,200 facilities. These transmission facilities support circuit voltages of 69 kilovolts and greater. Con Edison's underground transmission facilities are inspected and tested for contact voltage every five years or sooner.

IV. Contact Voltage Testing Program

The Safety Standards require that Con Edison complete annual contact voltage testing by December 31 each year.

In accordance with the contact voltage testing frequencies of the Safety Standards, all facilities requiring annual contact voltage testing were tested. In addition, Con Edison tested for contact voltage on all municipally owned metallic streetlights and traffic signals located on thoroughfares or areas that are publicly accessible and directly supplied with electricity by the Company.

In addition, and in compliance with the Safety Standards, Con Edison:

- Immediately safeguarded and /or mitigated all voltage findings greater than or equal to 1.0 volt. The Company uses its best efforts to effectuate a permanent repair within 45 days to all Company-owned equipment determined to have caused a voltage finding and remaining necessary to provide our customers with safe and reliable service. The aforesaid permanent repairs not effectuated within 45 days are periodically monitored and tracked to completion. In instances where the contact voltage finding was determined to be caused by equipment that is not owned by Con Edison, the Company, after making the area safe, notified a responsible person associated with the premises of the unsafe condition and the need for the owner to arrange for a permanent repair.

- Tested all publicly accessible structures, streetlights, sidewalks and metal objects within a 30 foot radius of an energized structure, or contact voltage finding greater than or equal to 1.0 volt.

- Responded to, investigated and mitigated positive findings of shock incidents reported by the public.

Training

Con Edison manages its contact voltage testing program and uses both Company field personnel and contractor forces to conduct the testing of utility owned electric facilities and municipal streetlights.

Training for the contact voltage testing program consists of an eight-hour class at our training facility for contractor forces and on-the-job training, performed by Supervisors for Company field forces. The training is based on Company specifications on how to properly test an electric facility for contact voltage. Topics covered in the training are:

The PSC Safety Standards
Scope of the contact voltage testing program
Performing the test and completing the testing form
Data entry process
Status of contact voltage testing to annual goal
Abnormal systems conditions to be reported
Performance mechanism

Underground Distribution Contact Voltage Testing

Of the total population of approximately 278,000 underground facilities, 135,876 were fielded for manual testing. The remaining facilities were tested under the mobile contact voltage program. Of the 135,876 underground facilities visited during manual testing, 3,424 did not require contact voltage testing due to inaccessibility, structures retired, or customer owned structures.
Inaccessible underground facilities include:

a. *Locked Gate/Fence* – Structures behind locked gates and fences that are not accessible to the public, i.e., facilities located in fenced areas owned by other utilities, such as, Water Companies.

b. *Company Property* – Structures located on Company property, such as substations, are accessible only to Company personnel and authorized contractors.

c. *Construction* – A structure located within a construction site. These structures are accessible only to construction personnel.

d. *Buried* – A structure below grade that requires excavation to access the structure.

e. *Vaults* – Structures located inside buildings. These structures are accessible only to Company and building maintenance personnel.

f. *Highway* – Structures located on highways and on exit and entrance highway ramps. The performance of contact voltage testing would constitute an unacceptable risk to the employee.

Overhead System Contact Voltage Testing

Of the population of approximately 273,000 overhead facilities, 84,979 were visited and tested for contact voltage in the year 2016.

Streetlight and Traffic Signal Contact Voltage Testing

Of the total population of approximately 185,000 streetlight and traffic signal facilities, which the Company directly supplies electric service and which are located on public thoroughfare, approximately 109,000 facilities were required to be tested manually. The remaining facilities were tested under the mobile contact voltage program. Of the facilities visited, 451 did not require contact voltage testing because these structures were not publicly accessible or were retired.

Inaccessible streetlights and traffic signals include:

a. *Construction* – A structure located within a construction site. These structures are only accessible to construction personnel.

b. *Restricted Access* – Structures located within areas with active public improvement efforts or the World Trade Center.

c. *Highway* – Structures located on highways or access roads to highways

Underground Transmission Contact Voltage Testing

Pursuant to the Safety Standards, in 2016 Con Edison tested for contact voltage 450 of the population of approximately 2,200 underground transmission facilities while these facilities were being inspected. Those facilities that are not publicly accessible do not require contact voltage testing. Inaccessible transmission facilities include:

a. *Construction* – A structure located within a construction site. These structures are only accessible to construction personnel.

b. *Con Edison Property* – Structures located on or adjacent to Con Edison properties which are secured from the public via fencing or other barriers and are inaccessible to the public.

c. *Bridges* – Structures located on bridges, such as bridge joints

d. *Buried* – A structure below grade that requires excavation to access the structure

Overhead Transmission Contact Voltage Testing

Con Edison visited and tested all of the 1,220 overhead transmission facilities on the Company's overhead transmission system. This testing was conducted during scheduled inspections for the structures.

Mobile Contact Voltage Testing

In accordance with the PSC's "Order Establishing Rates for Electric Service," issued March 25, 2008 in Case 08-E-0539, Con Edison performed 12 underground system scans in underground distribution areas of New York City using mobile contact voltage detection technology. In accordance with the PSC's "Order Adopting Changes to Electric Safety Standards," issued December 15, 2008 in Case 04-M-0159, the 12 underground system scans must be performed within each rate year (April 1st to March 31st). In addition, Con Edison performed one underground system scan using mobile contact voltage detection technology annually in New Rochelle, Yonkers, and White Plains, as ordered in Case 10-E-0271. Con Edison also performed an underground system scan in Mount Vernon.

Results of the 2016 Contact Testing Program

The results of the 2016 Contact Testing Program are provided in the following appendixes to this report:

- Appendix 1 titled, "Summary of MANUAL Contact Voltage Testing"
- Appendix 2a titled, "Summary of Energized Objects - Mobile Testing"
- Appendix 2b titled, "Summary of Energized Objects - Manual Testing + Other"
- Appendix 3 titled, "Summary of Shock Reports from the Public."

V. Facility Inspection Program

The Commission's Safety Standards require all utilities to inspect all electric facilities at least once every five years. The first five-year cycle covered the period of 2005 through 2009. The second cycle is the period of 2010 through 2014. The third cycle covers the period 2015 through 2019. The Safety Standards also require that utilities inspect a minimum number of electric facilities each year of the five-year cycle based on an annual percentage of total electric facilities as follows: 17 percent in the first year, 18 percent in the second year, and 19 percent in the third, fourth and fifth years except that by the end of every fifth year, the utility

must ensure that it has inspected 100 percent of its facilities. A utility may inspect its facilities pursuant to a compressed schedule and complete its inspection cycle prior to the end of the five-year period so long as the cumulative number of inspections at the end of any year is at least the minimum number required by the annual target formula – 17 percent in first year, 35 percent by end of second year, 54 percent by end of third year, 73 percent by end of fourth year, and 100 percent by end of fifth year. In addition, the Safety Standards require that defective equipment found during an inspection be repaired. In accordance with the Safety Standards, Con Edison uses the following severity levels to establish priority for repairs and scheduling:

- *Level I* – Repair as soon as possible but not longer than one week. A Level I deficiency is an actual or imminent safety hazard to the public or poses a serious and immediate threat to the delivery of power. Critical safety hazards present at the time of the inspection shall be guarded until the hazard is mitigated.

- *Level II* – Repair within one year. A Level II deficiency is likely to fail prior to the next inspection cycle and represent a threat to safety and / or reliability should a failure occur prior to repair.

- *Level III* – Repair within three years. A Level III deficiency does not present immediate safety or operational concerns and would likely have minimum impact on the safe and reliable delivery of power if it does fail prior to repair.

- *Level IV* – Condition found but repairs not needed at this time. Level IV is used to track atypical conditions that do not require repair within a five-year timeframe. This level is used for future monitoring purposes and planning proactive maintenance activities.

In accordance with the Safety Standards, when a temporary repair is located during inspection or performed by the Company, best efforts are put forth to make a permanent repair of the facility within 90 days.

Training

Con Edison manages its inspection program and uses both company field personnel and contractor forces to conduct the inspection of utility owned electric facilities.

Training of the contractor force utilized to perform inspections on our overhead and underground systems consists of classes at our learning facility as well as on-the-job training performed by Contractor Oversight Supervisors who have attended a train-the-trainer session with a Con Edison Subject Matter Expert (SME). For Company field forces, the training is based on Company specifications on how to properly inspect an electric facility which is

acquired through their promotional classes, as well as on-the-job training performed by their supervisor.

In addition to the above, the System & Program Engineering, Analysis and Reporting (SPEAR) department of Distribution Engineering conducted train-the-trainer sessions in each of the major workout locations since the inception of the program. The participants included the managers, planners, and supervisors of the crews that would be performing the inspections. The SPEAR Team has also conducted various training seminars at all of the major work-out locations which included the following topics:

> The PSC Safety Standards
> Scope of the inspection
> Completing the inspection form
> Data entry process
> Status of inspections to annual goal
> Repairs pending
> Accounting of the inspection
> Performance mechanism

In addition to the train-the-trainer sessions, an E-Learning Training Module was developed. This training module can be accessed from any computer on the Con Edison Network. This class is also part of the curriculum in career advancement for new mechanics.

Results of the 2016 Facility Inspection Program

The results of the 2016 Facility Testing Program and associated facility repairs are provided in Appendix 4, titled “Summary of Deficiencies and Repair Activity Resulting from the Inspection Process.”

VI. Annual Performance Targets

Con Edison performed the required contact voltage testing and facilities inspections in accordance with the requirements of the Commission's Safety Standards.

This being the second year of the third cycle ending December 31, 2019, Con Edison has cumulatively inspected 57.75% of its overall population of electric facilities. The percentages of inspections through December 31, 2016 by structure category are summarized in Table 1. Con Edison does not own streetlight facilities. These facilities are owned by the City of New York and by the municipalities in Westchester.

Con Edison inspects its underground transmission system at multiple intervals all in less than 5 years. The data in Table 5 captures all inspections performed during 2016. The total number of underground facilities to be inspected is approximately 2,200.

Con Edison inspects the overhead transmission facilities (Table 3) and Unit Substations and multi-banks (Table 7) every year.

Table 1
Facility Inspection Program Results

Category	Actual Cumulative Inspected as of 2016
Overhead Distribution	73.10%
Overhead Transmission	100%
Underground / URD Distribution	43.22%
Underground Transmission	59.6%
Substation	43.66%
Unit Substations	100%
Company-owned Streetlights	N/A

5-Year Inspection Performance Summary

The following tables provides the annual completion and the cumulative percentages of inspections by structure category over the current five-year (2015-2019) inspection cycle.

Table 2
Overhead Distribution Facilities

Inspection Year	Unique Number of Overhead Distribution Structures Inspected	% of Overall Facilities Inspected (Cumulative)
2015	114,594	41.97%
2016	84,979	73.10%
2017		
2018		
2019		

Table 3
Overhead Transmission Facilities

Inspection Year	Unique Number of Overhead Transmission Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2015	1,220	100%
2016	1,220	100%
2017		
2018		
2019		

Table 4
Underground Distribution and URD Facilities

Inspection Year	Unique Number of Underground / URD Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2015	64,913	23.35%
2016	55,246	43.22%
2017		
2018		
2019		

Table 5
Underground Transmission Facilities

Inspection Year	Unique Number of Underground Transmission Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2015	707	32.14%
2016	605	59.6%.
2017		
2018		
2019		

Table 6
Substation Facilities

Inspection Year	Unique Number of Substation Sites	% of Overall Facilities Inspected (Cumulative)
2015	16	22.54%
2016	15	43.66%
2017		
2018		
2019		

Table 7
Unit Substation Facilities

Inspection Year	Unique Number of Unit Substation Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2015	232	100%
2016	232	100%
2017		
2018		
2019		

VII. Certifications

Pursuant to Section 7 of the Safety Standards, attached as Exhibit 1 of this report are the certifications of Con Edison's officer with direct responsibility for overseeing contact voltage testing and facility inspections that Con Edison has, to the best of the officer's knowledge, exercised due diligence in carrying out a plan, including quality assurance, that is designed to meet the contact voltage testing and inspection requirements in 2016, and that Con Edison has:

- Tested its publicly accessible electric facilities and street lights in accordance with the Electric Safety Standards Case 04-M0159 effective January 13, 2015.

- Inspected the requisite number of electric facilities.

VIII. Analysis of Causes of Findings and Contact Voltage

All New York State utilities prepare an inventory of all "findings" and report on the number of these findings each year. Section 1(f) of the Safety Standards defines a "finding" as "any confirmed voltage reading on an electric facility or streetlight greater than or equal to 1 volt measured using a volt meter and 500 ohm shunt resistor." Section 1(c) defines Stray Voltage (referred to herein as Contact Voltage) as "voltage conditions on electric facilities that should not ordinarily exist. These conditions may be due to one or more factors, including, but not limited to, damaged cables, deteriorated, frayed, or missing insulation, improper maintenance, or improper installation."

Although not all findings are due to contact voltage, NYS Utilities are required to report on all findings, regardless of whether the voltage is normal to the operating system. In 2016, 9,233 voltage findings resulted from stray or contact voltage testing. These findings resulted from 3,438 sources of contact voltage. A total of 8,961, approximately 97% of these findings, were detected by the Mobile Contact Voltage Testing Program. There were 272 findings (3%) identified by manual contact voltage testing.

In accordance with the Safety Standards requirements, when a finding is discovered on an electric facility or streetlight during contact voltage testing, the Company must manually test all publicly accessible structures, streetlights, and sidewalks, within a minimum 30-foot radius of the energized object. An additional 6 findings were found as a result of the 30-foot radius testing during manual contact voltage testing.

Contact voltage findings resulted from a variety of conditions including deterioration of conductors and insulation, damaged neutrals and connections, and defective customer equipment. Table 8 contains a breakdown of the 2016 causes of contact voltage findings that were Con Edison's responsibility:

Table 8
2016 Sources of Contact Voltage Finding
Con Edison Responsibility

Source of Contact Voltage	Con Ed
UG Service	402
UG Streetlight Service	460
UG Streetlight Con Edison Neutral	33
UG Main	314
Secondary Burnout	215
UG Service Con Edison Neutral	191
Crab	68
UG Main Con Edison Neutral	178
Abandoned Service	26
Sump Pump	60
Abandoned SL Service	25
Overhead Streetlight Service Neutral	1
Loose UG SL Service Connection at CE Structure	0
Overhead Service	11
Overhead Service Neutral	20
Overhead Streetlight Service	9
Con Ed S/L Reversed Polarity	0
Damaged/Missing Ground Rod	3
Defective Riser/Insulator	6
Con Ed non-S/L Reversed Polarity	0
Temporary Service	2
Overhead Secondary	6
Overhead Primary	0
Defective Pigtail/ISO	6
Defective Transformer Equipment / Gap	0
Total	**2,036**

Table 9 contains a breakdown of the 2016 causes of contact voltage findings that were the responsibility of entities other than Con Edison ("Non Con Edison Responsibility"):

Table 9
2016 Sources of Contact Voltage
Non Con Edison Responsibility

Source of Contact Voltage	Non Con Edison
Defective Customer Equipment	489
Defective Contractor Equipment	0
Defective Pigtail/Internal City Streetlight Wiring/Loose Connection at Lamp Base/Open Ended Control Wiring	771
Dept. of Transportation (DOT)/City Streetlight Neutral	126
Defective Neon Sign	6
DOT Temp Service	3
DOT Reverse Polarity	3
Contractor or Customer Damage	4
Total	**1,402**

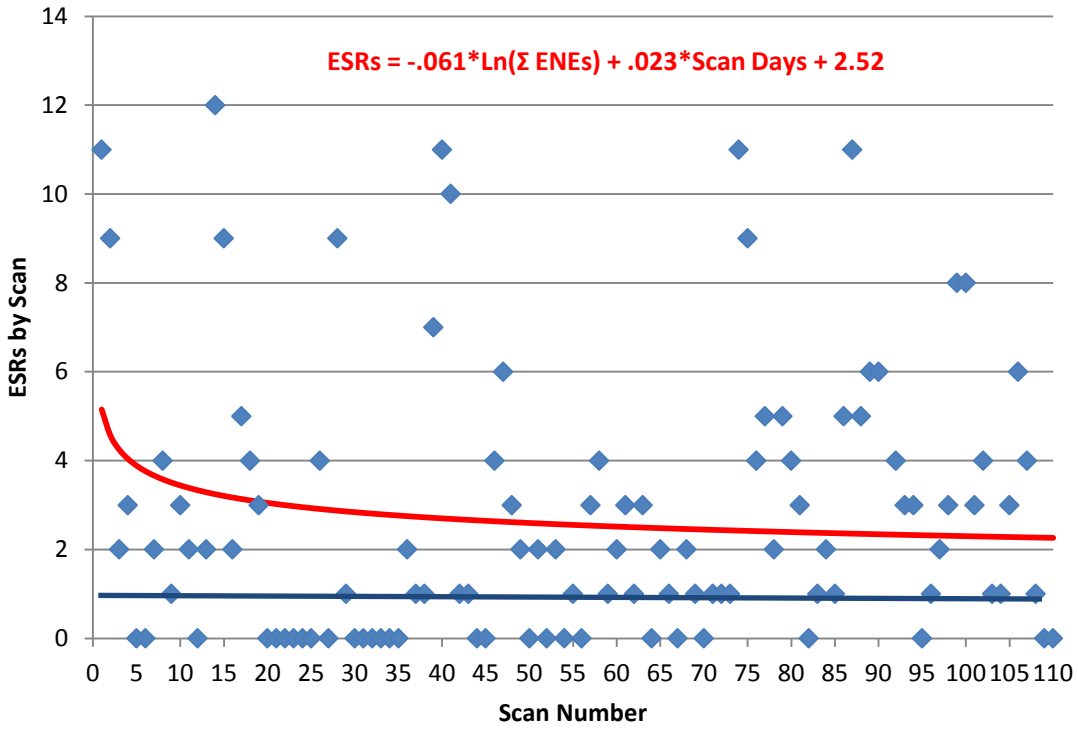
Mitigation through Detection

Five factors affect the likelihood that a member of the public or an animal could experience a shock. These factors are the number of energized structures (ENEs), duration of a mobile system scan, voltage levels associated with the ENEs, population density, and the weather. A table containing the breakdown of Electric Shock Reports (ESRs) reported to Con Edison during 2016 can be found in Appendix 3.

Since the likelihood of an ESR will increase or decrease in proportion to the total number of energized structures, the detection and repair of identified sources of contact voltage is the principal mitigation effort for reducing ESRs. Each completed repair effectively represents a mitigation of possible ESRs. As these repairs accumulate over time, the potential ESRs decrease accordingly.

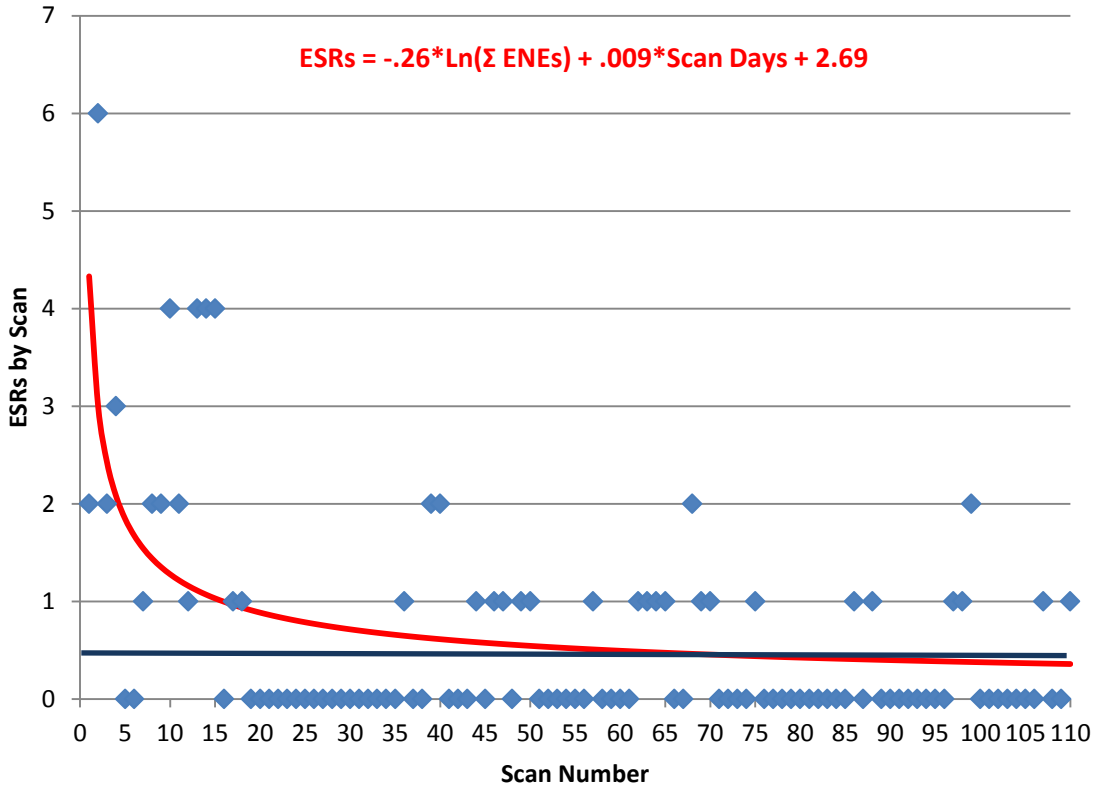
The ESRs associated with Con Edison's equipment appear in Chart 1. As mentioned above, weather also plays a role in ESR generation. This weather variable is accounted for in the underlying models and in both the 2016 and long term predictions. The duration between scans ranges from approximately 30 to 35 days per scan. If Con Edison continues with a comparable ENE repair rate and scan interval in 2017 and experiences similar weather patterns, the Company can expect ESRs to be approximately 2 per scan. In 2016, there were 30 shocks associated with the Company's equipment which is a 25% improvement from last year.

Chart 1
Con Edison ESR by Scan vs. Cumulative ENEs and Scan Duration



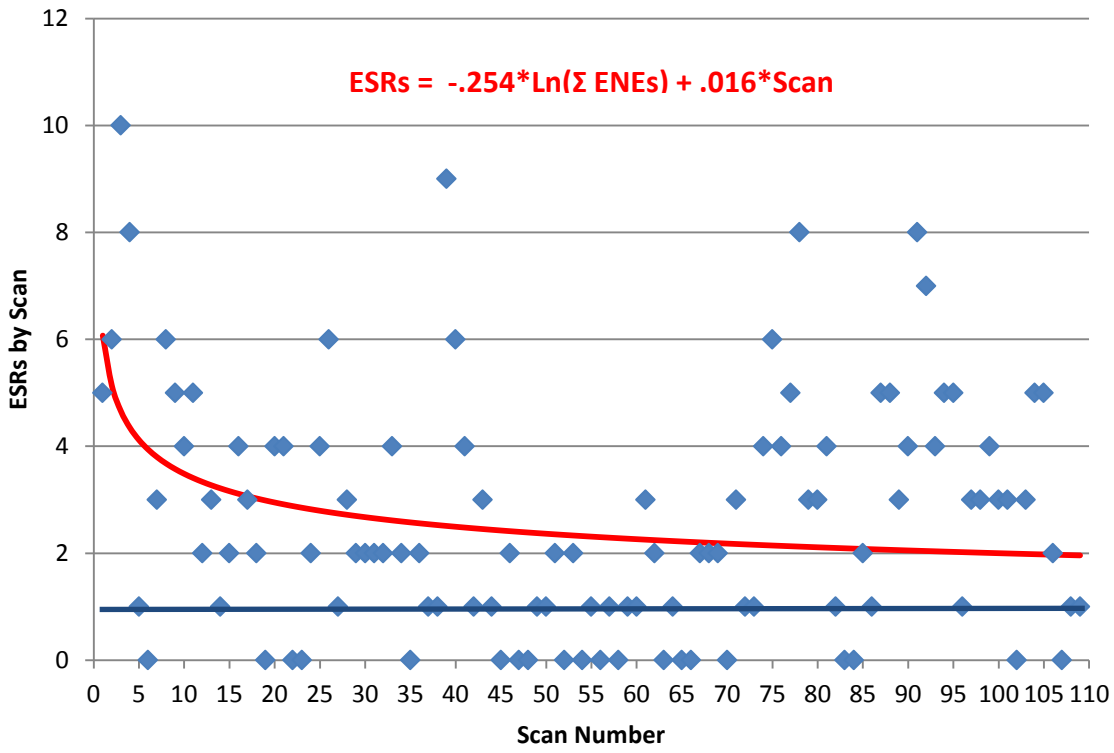
The ESRs due to "Other Utility/Government Agency Responsibility" equipment appear on Chart 2. The duration of scans is 30 to 35 days per scan. If the Company continues a comparable ENE repair rate and scan duration in 2017, the Company can expect ESRs at this scan duration level to remain at approximately 1 per scan. In 2016, there were 6 shocks associated with "Other Utility/Government Agency Responsibility" equipment which is a 62% improvement from last year.

Chart 2
Other Utility/Government Agency Responsibility ESRs by Scan vs. Cumulative ENEs and Scan Duration



The ESRs associated with Customer's equipment appear on Chart 3. The duration of scans is 30 to 35 days per scan. If the Company continues a comparable ENE repair rate and scan duration in 2017, the Company can expect ESRs to remain at 2 per scan, with no significant reduction anticipated below that level in the near future. The actual performance indicates that these shock events are less sensitive to our mitigation efforts. However, in 2016, the Company responded to 26 validated shock reports on publicly accessible customer equipment, which is a 26% reduction from last year.

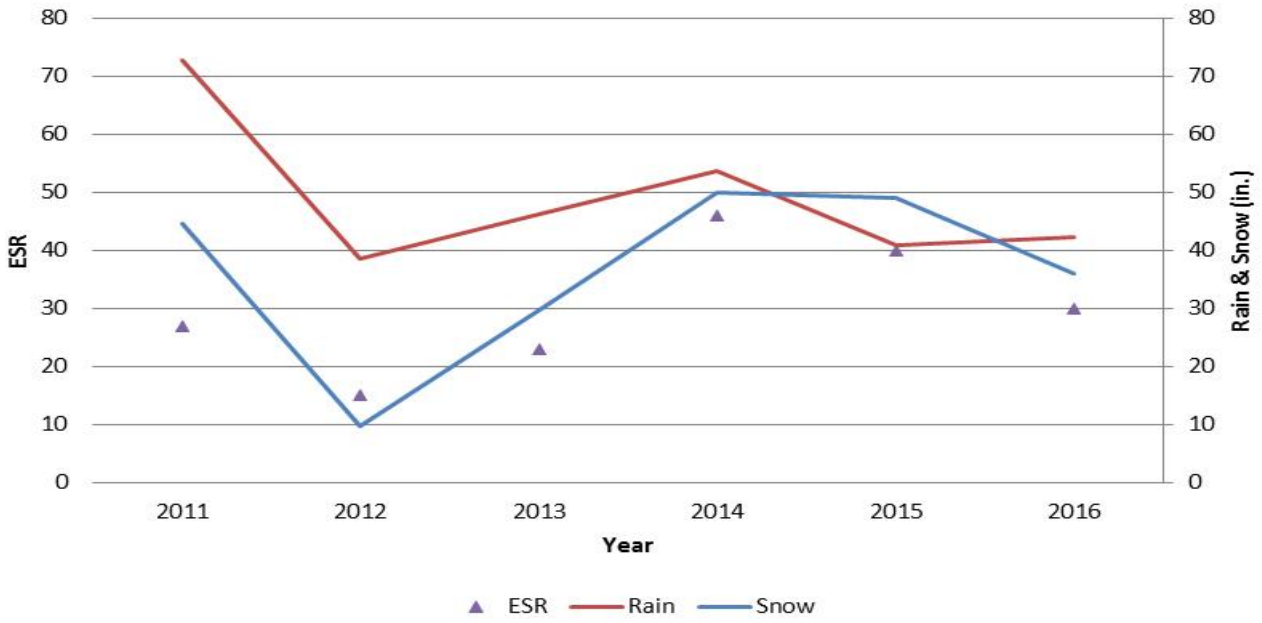
Chart 3
Customer (Public Access) ESRs by Scan vs. Cumulative ENEs and Scan Duration



Weather continues to have a direct impact on the electrical system. As has been discussed in prior annual reports, the Company continues to observe a strong correlation between weather and shocks (Chart 4). In 2016, the months of January and February accounted for 89% of the snowfall this winter season, second highest in the last five years. The snow precipitation for these two months was 85% higher than the historical average. Approximately 255,300 tons of salt were distributed in these two months, making this the fourth highest salt distribution period in the last five years.

While there have been three consecutive years of harsh winter conditions, the ESRs are showing a downward trend over the same period. Compared to last year, total ESRs improved by 32% (91 vs. 62) and "Utility Responsibility " ESRs decreased by 25% (40 vs. 30). Part of the reduction is attributed to the "Targeted Mobile" pilot program under which additional mobile scans were performed in areas that historically have had high activity of events. This program resulted in the discovery and repair of additional ENEs which could have potentially resulted in ESRs.

Chart 4
2010 – 2016 Rainfall, Snow vs. ESR



IX. Analysis of Inspection Results

Table 10 details the number of annual inspections performed for each facility type for the current 2015-2019 cycle.

Table 10
Cycle 3 - Yearly Inspection Breakdown

Facility Inspection Program	2015	2016	2017	2018	2019	5-Year Cumulative Unique Inspections	Percent Completed
Distribution Underground/URD	64,913	55,246				120,159	43.22%
Distribution Overhead	114,594	84,979				199,573	73.31%
Transmission Underground	707	605				1,312	59.63%
Transmission Overhead	1,220	1,220				1,220	100%
Substations	16	15				31	43.66%
Unit Substations	232	232				232	100%
Total	**181,682**	**142,297**				**322,527**	**57.75%**

Tables 11 through 13 show the number of deficiencies found in each inspected structure by defect level. For example, Table 11 shows that 1.1% of the total defects found in the overhead were Level I and they were found on 627 overhead structures. Because a structure can have more than one defect, the same structure may be counted multiple times and within different defect levels. Hence, the total number of structures in each of the tables is not the unique number of structures inspected. In addition, the table does not show the structures that had no defects.

Table 11
Overhead Distribution
Breakdown of Locations with Deficiencies

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	627	759	1.10%
2	2,638	2,895	4.21%
3	26,783	33,141	48.14%
4	27,139	32,041	46.55%
Total:	**57,187**	**68,836**	**100%**

Table 12
Overhead Transmission
Breakdown of Locations with Deficiencies

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	1	1	1.0%
2	0	0	0.0%
3	34	34	33.7%
4	64	66	65.3%
Total:	**99**	**101**	**100%**

Table 13
Underground Distribution and URD
Breakdown of Locations with Deficiencies

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	10,156	10,435	6.96%
2	28,980	46,616	32.45%
3	6,146	6,001	4.18%
4	31,327	80,614	56.11%
Total:	**76,609**	**143,666**	**100%**

Streetlights

Con Edison does not own streetlight facilities. Streetlight facilities within the Company's service area are owned by the City of New York and municipalities located in Westchester County.

Repair of Deficiencies

During 2016, the Company repaired 28.56% of the Level I, II, III and IV defects found: 99.15% Level I; 85.01% Level II; 7.26% Level III and 4.00% level IV. As of February 7, 2017 there are a total of 30 open Level 1 pending repairs from the 2016 Underground, Overhead, and URD programs.

From the Underground and URD programs there are 19 Level I deficiencies open. The majority (63%) of defects are URD grating repairs that are currently scheduled to be repaired.

There are 11 Level I deficiencies open from 2016 inspection cycle in the Overhead program. The majority are associated with transformers that are scheduled to be replaced.

Temporary Repairs

Our inspection database identifies temporary repairs that have remained in place more than 90 days as detailed in the table below:

Table 14
Temporary Repairs over 90 Days

	Level I	Level II	Level III
Underground Distribution	2	254	244
Overhead Distribution	32	3	70
URD	4	6	0
Total	**38**	**263**	**314**

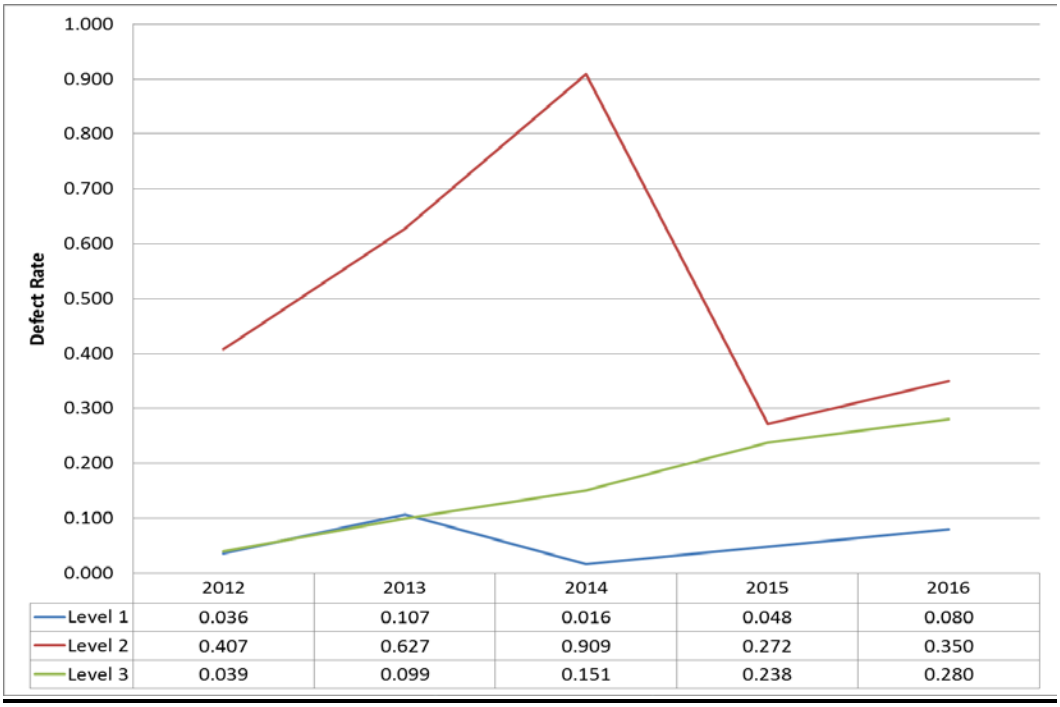
Of the 38 Level I deficinecies temporarily repaired, 84% are a new defect identified this year. The new defect is an unprotected riser with non-exposed conductors in the overhead. The engineering design for the permanent repairs has been approved and the Company is procuring the materails needed for the repair. This work is planned for completion in 2017. The remaining deficiencies are URD repairs.

When possible, temporary repairs are also made to Level II and Level III defects prior to leaving the structure. These temporary repairs will be completed within the cycle of the condition level according to the timelines established by the Safety Standards.

Analysis of Defects Found

Chart 5 shows the number of defects found per inspection by classification level. There has been a slight increase across all levels from 2015 to 2016. Part of the contribution to this increase is the introduction of a new category of defect in the OH inspection program like the 'unprotected riser exposed conductor' or the 'grounds on the guy wire' defect. There has also been an increase in 'manhole cover damaged' as well as 'sump pump not grounded' and 'unpacked ducts'. More specifically, the drivers by category are provided in Chart 6.

Chart 5
Defect Rate by Level



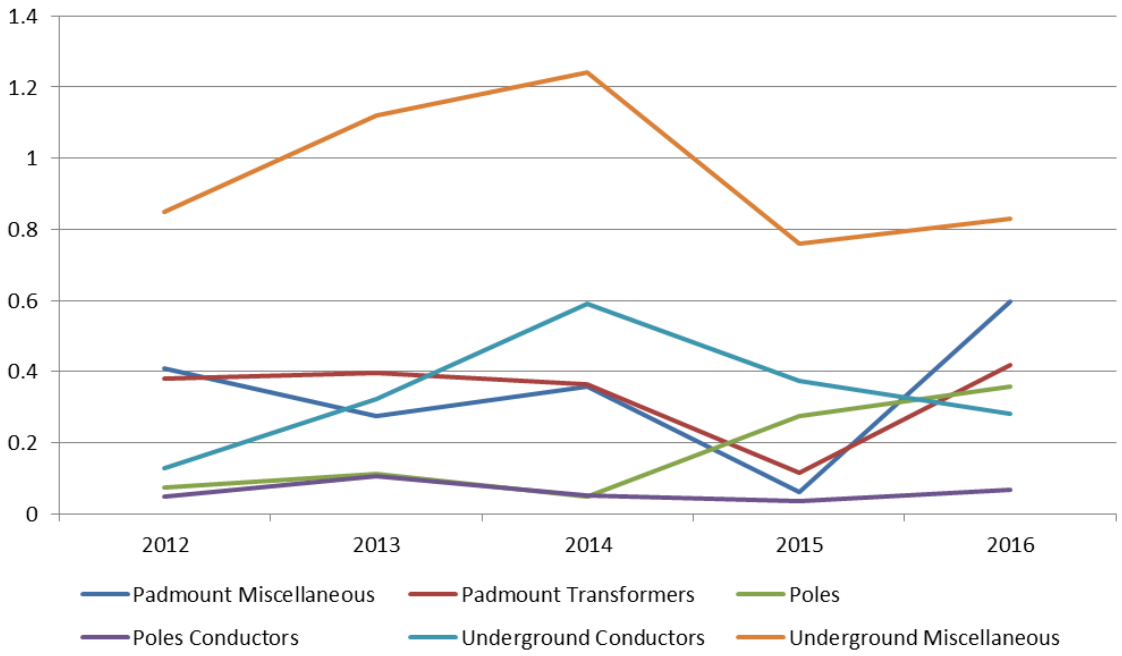
	2012	2013	2014	2015	2016
Level 1	0.036	0.107	0.016	0.048	0.080
Level 2	0.407	0.627	0.909	0.272	0.350
Level 3	0.039	0.099	0.151	0.238	0.280

Chart 6 shows the 2016 Defect Rate by Category. Historically, the distribution of "URD Padmount" annual inspections include both below-grade and above-grade equipment, with the below-grade inspections contributing to the majority of the defects. Last year, the focus was to complete all the above grade padmount equipment inspections, hence the generation rate of defects in 2015 was low. This year, the focus was on all below grade equipment, leading to a higher generation rate of defects.

Underground Miscellaneous defects showed a slight upward trend due to improperly sealed cable endcaps, unsealed ducts, cover damage, and cable or crab in contact with frame or cover.

The main driver of the increase in Overhead Pole defects is due to unprotected risers which is a new defect identified this year and a combination of defective cross arms and equipment.

Chart 6
Defect Rate by Category



*Note: Padmount includes all URD assets (Padmounts, silos, splice boxes, etc)

X. Quality Assurance

The Safety Standards require electric companies to develop a quality assurance program to "ensure timely and proper compliance with these safety standards." Con Edison has developed a comprehensive quality assurance program to address the contact voltage testing and facility inspections requirements. The quality assurance program includes:

- Contact voltage testing of underground distribution structures including Underground Residential Distribution (URD), overhead distribution structures and municipality owned streetlights
- Contact voltage testing of transmission and substation facilities
- Facility inspections of underground distribution, URD, and overhead distribution structures

- Facility inspections of transmission facilities and substation facilities

This section addresses Con Edison's quality assurance program for the above-referenced contact voltage testing and facility inspections.

Quality Assurance Measures Instituted: Contact Voltage Testing of Underground Distribution Structures, Overhead Distribution Structures, and Municipality Owned Streetlights.

Con Edison developed a quality assurance plan to review whether contact voltage testing was performed as specified. The reliability and error design parameters used were:

> *95% reliability within a ±10% relative precision level and satisfy established industry sample design criteria.*

Based on the total inspections performed in 2016, 690 quality assurance checks were required on all tested structures to achieve a 95% confidence rate with a ±10% overall error that the contact voltage tests were conducted in accordance with Company specifications.

Specification EO-10315 (Quality Assurance of the Contact (Stray) Voltage and Periodic Distribution Structure Safety Inspection Programs) calls for quality assurance checks to be performed on the contractor contact voltage testing. The quality assurance checks are randomly selected from a database of all contact voltage tests and include a field test for contact voltage. Con Edison performed 163 quality assurance checks of the underground distribution structures including underground residential distribution (URD), 259 quality assurance checks of overhead distribution structures and 268 quality assurance checks of municipality owned streetlights. Contact voltage was not found during any of these quality assurance reviews. In addition to the 690 quality assurance checks discussed above, Con Edison also conducted Random Quality Assurance reviews of "work in progress."

Quality Assurance Measures Instituted: Contact Voltage Testing of Transmission and Substation Facilities.

In accordance with CE-ES-1043, a planner in Transmission Line Maintenance who has knowledge and expertise in overhead transmission, but who did not perform or directly supervise the contact voltage testing, conducted quality assurance inspections at locations on various transmission lines for overhead transmission facilities. Contact voltage was not found during any of these quality assurance reviews.

Con Edison performed several types of quality assurance on the underground transmission contact voltage-testing program. Contractors, who also performed testing on underground distribution structures, performed the contact voltage testing of underground transmission

facilities. Following this contact voltage testing, Con Edison Construction Management personnel performed audits at several locations. Contact voltage was not found during any of these quality assurance reviews.

Con Edison's Asset Management Engineering group performed quality assurance for the substation contact voltage-testing program. The quality assurance consisted of a documents search, records review, as well as physical contact voltage testing. Contact voltage was not found during any of these quality assurance reviews.

Quality Assurance performed a quality review on a randomly selected sample of unit substations. Contact voltage was not found during any of these quality assurance reviews.

These QA checks confirmed the accuracy of the results from the Contact voltage-testing program.

Quality Assurance Measures Instituted: Inspections of Underground Distribution Structures and Overhead Distribution Structures.

A Central Quality Assurance group (QA) was established to oversee work done on the underground electrical system. QA observes specification compliance of the underground inspection program. EO-10315 (Quality Assurance of the Contact Voltage and Periodic Distribution Structure Safety Inspection Programs) establishes standards for the QA program in order to ensure that the underground structure inspections are performed in accordance with the Safety Standards and Con Edison's specifications. The reliability and error design parameters used were:

> *95% reliability within a ±10% relative precision level and satisfy established industry sample design criteria.*

Based on the total inspections performed in 2016, 800 quality assurance checks were required to achieve a 95% confidence rate with a ±10% overall error that the inspections were conducted in accordance with Company specifications.

Con Edison employees from the centralized quality assurance department conduct the quality assurance for each of the Company's operating regions. These employees are experienced cable splicers, linemen and mechanics that have been trained in facility inspection and the quality assurance specifications.

The quality assurance personnel performed a complete re-inspection of 400 underground and 400 overhead facilities. The results of the inspections of the randomly selected facilities are compared with the results of the previous inspected of those facilities. Deficiencies identified during quality assurance reviews are communicated to field crews, supervisors,

planners, and managers who have been required to reinforce inspection procedures with field crews.

Quality Assurance Measures Instituted: Transmission and Substation Facility Inspections.

Company specifications CE-TS-6830 (Low and Medium Feeder Pressure Periodic Inspection Procedure) and CE-TS-6045 (Inspection and Preventive Maintenance and Contact Voltage Testing of Pipe Type Cable Systems) require that quality assurance inspections of randomly selected transmission manholes be performed. These randomly selected manholes are re-inspected or re-tested by trained and knowledgeable employees who did not perform or directly supervise this work.

Substation Operations' quality assurance program consists of periodic document reviews and field observations to ensure that 100% of the required contact voltage tests and a minimum of 20% of the Safety and Reliability Inspections of Substation facilities will be completed by December 31 of each year and that the testing and inspections are properly conducted.

Quality assurance was performed by members of the Asset Management Engineering group and consisted of a documents search, records review, and physical critical visual inspection. Critical visual inspection quality assurance was also performed. In addition, all inspection and follow-up work order documentation was reviewed. Work orders are entered into the Company's work management system and processed by appropriate personnel. These work orders are tracked closely until all repairs are completed. All personnel are trained on proper reporting and referral of repairs identified during facility inspections. The quality assurance inspections yielded results indicating that the original inspections were performed in accordance with the applicable specifications.

XI. Other Pertinent Information

Con Edison continues to develop tools, techniques, and management applications to improve public safety, troubleshooting, and program efficacy. In 2016, the SPEAR team progressed thermal imaging of secondary assets into the safety inspection program.

Mobile scans targeting high-activity areas were also successfully performed detecting more than 1,000 energized objects and are included in the results listed in Table 2a.

Appendices

Appendix 1 : Summary of MANUAL Contact Voltage Testing

	Total System Units Requiring Testing	Units Completed	Percent Completed	Units with Voltage Found[1] (>= 1.0v)	Percent of Units Tested with Voltage (>= 1.0v)	Units Classified as Inaccessible
Overhead Distribution Facilities	80,000	80,000	100.00%	4	0.005%	0
Quarterly Update		23,111	28.89%	0	0.000%	0
Underground Distribution Facilities	135,876	135,876	100.00%	1	0.001%	0
Quarterly Update		14,210	10.46%	0	0.000%	0
Street Lights / Traffic Signals [2]	109,000	109,000	100.00%	169	0.149%	0
Quarterly Update		4,172	3.83%	0	0.000%	0
Substation Fences [3]	297	263	88.55%	0	0.000%	0
Quarterly Update		6	2.02%	0	0.000%	0
Transmission (69kV and Above)	1,220	1,220	100.00%	0	0.000%	0
Quarterly Update		0	0%	0	0.000%	0
TOTAL	326,393	326,359	99.99%	174	0.052%	0
Quarterly Update		41,499	12.71%	0	0.000%	0

1. **Contact voltage sources on Con Edison structures and streetlights - found by contractors.**
2. **Con Edison does not own streetlight/traffic signal facilities.**
3. **2016 is the second year of the five-year testing cycle for Substation Fences.**

Appendix 2a : Summary of Energized Objects - Mobile Testing

	2016 Year Jan 1, 2016 - Dec 31, 2016						
	Initial Readings				Readings After Mitigation		
	1.0V - 4.4V	4.5V - 24.9V	> 25V	Total	< 1.0V	1.0V - 4.4V	> 4.5V
Distribution Facilities	**26**	**10**	**1**	**37**	**37**	**0**	**0**
Pole	26	10	1	37	37	0	0
Ground	0	0	0	0	0	0	0
Guy	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Underground Facilities	**536**	**167**	**15**	**718**	**718**	**0**	**0**
Service Box	536	167	15	718	718	0	0
Manhole	0	0	0	0	0	0	0
Padmount Switchgear	0	0	0	0	0	0	0
Padmount Transformer	0	0	0	0	0	0	0
Vault - Cover / Door	0	0	0	0	0	0	0
Pedestal	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Street Lights / Traffic Signals	**921**	**419**	**337**	**1,677**	**1,677**	**0**	**0**
Metal Street Light Pole	394	261	265	920	920	0	0
Traffic Signal Pole	479	136	52	667	667	0	0
Traffic Control Box	1	0	0	1	1	0	0
Pedestrian Crossing Pole	37	16	12	65	65	0	0
Other	10	6	8	24	24	0	0
Substation Fences	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Fence	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Transmission (Total)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Lattice Tower	0	0	0	0	0	0	0
Pole	0	0	0	0	0	0	0
Ground	0	0	0	0	0	0	0
Guy	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Miscellaneous Facilities	**4,627**	**1,608**	**294**	**6,529**	**6,529**	**0**	**0**
Sidewalk	1,145	400	65	1,610	1,610	0	0
Gate/Fence/Awning	1,090	446	67	1,603	1,603	0	0
Traffic Sign	325	91	10	426	426	0	0
Scaffolding	74	25	20	119	119	0	0
Bus Shelter	13	17	1	31	31	0	0
Fire Hydrant	161	15	2	178	178	0	0
Phone Booth	0	0	0	0	0	0	0
Control Box	0	0	0	0	0	0	0
Water Pipe	59	23	0	82	82	0	0
Riser	0	0	0	0	0	0	0
Other	1,760	591	129	2,480	2,480	0	0
Totals	**6,110**	**2,204**	**647**	**8,961**	**8,961**	**0**	**0**

Appendix 2b : Summary of Energized Objects - Manual Testing + Other

	2016 Year Jan 1, 2016 - Dec 31, 2016						
	Initial Readings				Readings After Mitigation		
	1.0V - 4.4V	4.5V - 24.9V	> 25V	Total	< 1.0V	1.0V - 4.4V	> 4.5V
Distribution Facilities	**0**	**0**	**1**	**1**	**1**	**0**	**0**
Pole	0	0	0	0	0	0	0
Ground	0	0	0	0	0	0	0
Guy	0	0	1	1	1	0	0
Riser	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Underground Facilities	**4**	**8**	**0**	**12**	**12**	**0**	**0**
Service Box	3	4	0	7	7	0	0
Manhole	1	2	0	3	3	0	0
Padmount Switchgear	0	0	0	0	0	0	0
Padmount Transformer	0	0	0	0	0	0	0
Vault - Cover / Door	0	2	0	2	2	0	0
Pedestal	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Street Lights / Traffic Signals	**84**	**87**	**58**	**229**	**229**	**0**	**0**
Metal Street Light Pole	84	87	58	229	229	0	0
Traffic Signal Pole	0	0	0	0	0	0	0
Traffic Control Box	0	0	0	0	0	0	0
Pedestrian Crossing Pole	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Substation Fences	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Fence	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Transmission (Total)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Lattice Tower	0	0	0	0	0	0	0
Pole	0	0	0	0	0	0	0
Ground	0	0	0	0	0	0	0
Guy	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Miscellaneous Facilities	**20**	**8**	**2**	**30**	**30**	**0**	**0**
Sidewalk	7	1	0	8	8	0	0
Gate/Fence/Awning	6	2	0	8	8	0	0
Traffic Sign	2	0	0	2	2	0	0
Scaffolding	1	0	0	1	1	0	0
Bus Shelter	0	0	0	0	0	0	0
Fire Hydrant	0	0	0	0	0	0	0
Phone Booth	1	0	0	1	1	0	0
Control Box	0	0	0	0	0	0	0
Water Pipe	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
Other	3	5	2	10	10	0	0
Totals	**108**	**103**	**61**	**272**	**272**	**0**	**0**

Appendix 3 : Summary of Shock Reports from the Public

2016		Oct 1- Dec 31	Yearly Total
I. Total shock calls received:		**29**	**148**
Unsubstantiated		26	80
Normally Energized Equipment		0	6
Stray Voltage		**3**	62
	Person	3	49
	Animal	0	13
II. Injuries Sustained		**0**	**0**
Utility Responsibility :		0	0
	Person	0	0
	Animal	0	0
Non-Utility Responsibility :		0	0
	Person	0	0
	Animal	0	0
Unsubstantiated :		0	0
	Person	0	0
	Animal	0	0
III. Medical Attention Received		**0**	**2**
Utility Responsibility :		**0**	**0**
	Person	0	0
	Animal	**0**	**0**
Non-Utility Responsibility :		**0**	**2**
	Person	0	1
	Animal	0	1
Unsubstantiated :		**0**	**0**
	Person	0	0
	Animal	0	0
IV. Voltage Source:		**3**	**62**
Utility Responsibility :		**0**	**30**
Issue with primary, joint, or transformer		0	0
Secondary joint (Crab)		0	5
SL service Line		0	5
Abandoned SL service line		0	0
Defective service line		0	16
Abandoned service line		0	0
OH Secondary		0	0
OH Service		0	2
OH Service neutral		0	2
OH SL Service		0	0
OH SL Service neutral		0	0
Pole		0	0
Riser		0	0
Other		0	0
Customer Responsibility :		**2**	**26**
Contractor damage		0	3
Customer equipment/wiring		2	23
Other Utility/Gov't Agency Responsibility :		**1**	**6**
SL Base Connection		1	3
SL Internal wiring or light fixture		0	3
Overhead equipment		0	0
V. Voltage Range:		**3**	**62**
1.0V to 4.4V		1	10
4.5V to 24.9V		2	15
25V and above		0	37
No Reading		0	0

Appendix 4 : Summary of Deficiencies and Repair Activity Resulting from the Inspection Process - Distribution

Detail of Deficiencies by Facilities	2012			2013			2014			2015			2016		
Priority Level	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Repair Expected	Within 1 week	Within 1 year	Within 3 years	Within 1 week	Within 1 year	Within 3 years	Within 1 week	Within 1 year	Within 3 years	Within 1 week	Within 1 year	Within 3 years	Within 1 week	Within 1 year	Within 3 years
Overhead Facilities															
Repaired in Time Frame	13	328	2,163	13	1,002	1,487	0	6	2	19	43	124	535	10	96
Repaired - Overdue	18	44	501	20	14	2	3	6	0	30	0	0	213	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	28	0	0	34,628	1	2,885	33,045
Not Repaired - Overdue	0	238	6,337	0	93	1,467	0	29	0	0	1,118	0	10	0	0
Total Overhead Facilities	**31**	**610**	**9,001**	**33**	**1,109**	**2,956**	**3**	**41**	**30**	**49**	**1,161**	**34,752**	**759**	**2,895**	**33,141**
Underground Facilities															
Repaired in Time Frame	3,471	38,224	1,899	13,122	67,108	3,048	16,208	75,296	4,920	7,738	41,392	2,604	9,623	41,736	2,707
Repaired - Overdue	74	566	602	119	2,886	890	226	8,471	0	148	88	0	64	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	12,126	0	0	3,330	0	4,353	3,210
Not Repaired - Overdue	0	1,098	1,336	0	8,379	8,520	1	18,950	0	0	4,121	0	3	2	0
Total Underground Facilities	**3,545**	**39,888**	**3,837**	**13,241**	**78,373**	**12,458**	**16,435**	**102,717**	**17,046**	**7,886**	**45,601**	**5,934**	**9,690**	**46,091**	**5,917**
Pad Mount Facilities															
Repaired in Time Frame	752	543	77	1,755	500	66	1,822	656	64	387	771	105	680	346	38
Repaired - Overdue	8	148	40	125	415	7	163	738	0	135	21	0	49	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	359	0	0	154	0	179	46
Not Repaired - Overdue	7	127	53	26	156	319	20	703	0	30	133	0	16	0	0
Total Pad Mount Facilities	**767**	**818**	**170**	**1,906**	**1,071**	**392**	**2,005**	**2,097**	**423**	**552**	**925**	**259**	**745**	**525**	**84**
Streetlight Facilities															
Repaired in Time Frame															
Repaired - Overdue															
Not Repaired - Not Due															
Not Repaired - Overdue															
Total Streetlight Facilities	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Transmission Facilities															
Repaired in Time Frame	0	0	9	0	0	9	0	0	1	0	0	6	1	0	15
Repaired - Overdue	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0
Not Repaired - Not Due	0	0	0	0	0	1	0	0	0	0	0	10	0	0	19
Not Repaired - Overdue	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Transmission Facilities	**0**	**0**	**38**	**0**	**0**	**10**	**0**	**0**	**1**	**0**	**0**	**16**	**1**	**0**	**34**

Appendix 4 : Summary of Deficiencies and Repair Activity Resulting from the Inspection Process

Year	Priority Level / Repair Expected		Deficiencies Found (Total)	Repaired In Time Frame	Repaired - Overdue	Not Repaired - Not Due	Not Repaired - Overdue
2012	I	Within 1 week	4,343	4,236	100	0	7
	II	Within 1 year	41,316	39,095	758	0	1,463
	III	Within 3 years	13,046	4,148	1,171	0	7,727
	IV	N/A	105,778	6,126	NA	99,652	NA
2013	I	Within 1 week	15,180	14,890	264	0	26
	II	Within 1 year	80,553	68,610	3,315	0	8,628
	III	Within 3 years	15,816	4,610	899	1	10,306
	IV	N/A	167,937	7,741	NA	160,196	NA
2014	I	Within 1 week	18,443	18,030	392	0	21
	II	Within 1 year	104,855	75,958	9,215	0	19,682
	III	Within 3 years	17,500	4,987	0	12,513	0
	IV	N/A	190,917	8,330	NA	182,587	NA
2015	I	Within 1 week	8,487	8,144	313	0	30
	II	Within 1 year	47,687	42,206	109	0	5,372
	III	Within 3 years	40,961	2,839	0	38,122	0
	IV	N/A	94,556	6,304	NA	88,252	NA
2016	I	Within 1 week	11,195	10,839	326	1	29
	II	Within 1 year	49,511	42,092	0	7,417	2
	III	Within 3 years	39,176	2,856	0	36,320	0
	IV	N/A	112,721	4,850	NA	107,871	NA

Appendix 4 : Summary of Deficiencies and Repair Activity Resulting from the Inspection Process – Level V

	2012		2013		2014		2015		2016	
	Number of Conditions Found	Number of Conditions Repaired	Number of Conditions Found	Number of Conditions Repaired	Number of Conditions Found	Number of Conditions Repaired	Number of Conditions Found	Number of Conditions Repaired	Number of Conditions Found	Number of Conditions Repaired
Overhead Facilities										
Overhead Facilities Total	1,886	341	1,320	843	21	2	27,830	60	32,041	45
Underground Facilities										
Underground Facilities Total	102,315	4,686	165,396	6,180	188,344	7,535	66,109	5,794	80,284	4,565
Pad Mount Transformers										
Pad Mount Transformers Total	1,361	933	1,133	645	2,537	792	555	405	330	234
Streetlight Facilities										
Streetlight Facilities Total										
Transmisssion Facilities										
Transmission Facilities Total	216	166	88	73	15	1	62	45	66	6
Overall Level IV Deficiencies										
Level IV Deficiencies Total	105,778	6,126	167,937	7,741	190,917	8,330	94,556	6,304	112,721	4,850

Exhibit 1

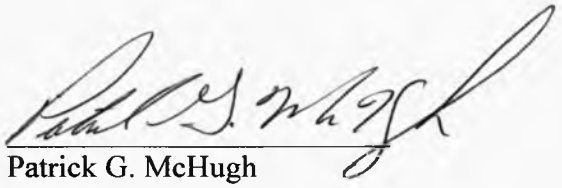
Certification of Contact Voltage Testing

Patrick G. McHugh, on this 15th day of February 2017, certifies as follows:

1. I am Vice President of Consolidated Edison Company of New York, Inc. ("Con Edison" or "the Company").

2. I am responsible for overseeing Con Edison's contact voltage testing program, and in that capacity I have monitored the Company's contact voltage testing program during the twelve months ended December 31, 2016 ("the twelve month period"). During the twelve-month period, Con Edison instituted and diligently carried out a program designed to meet the contact voltage testing requirements of the Public Service Commission's Safety Standards, issued in Case 04-M-0159, Proceeding Instituting Safety Standards.

3. To the best of my knowledge, information, and belief, during the twelve month period, Con Edison identified and tested for contact voltage (i) all publicly accessible electric facilities owned by the Company, and (ii) all publicly accessible streetlights and traffic signals located in public thoroughfares in the Company's service territory and directly supplied by the Company as identified through a good faith effort by the Company, except for such facilities that are identified in the Company's Annual Report, submitted herewith.



Patrick G. McHugh

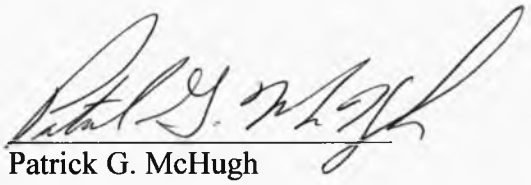
Certification of Inspections

Patrick G. McHugh, on this 15th day of February 2017, certifies as follows:

1. I am Vice President of Consolidated Edison Company of New York, Inc. ("Con Edison" or "the Company").

2. I am responsible for overseeing Con Edison's electric facility inspection program, and in that capacity I have monitored the Company's inspection program during the twelve months ended December 31, 2016 ("the twelve-month period"). During the twelve-month period, Con Edison instituted and diligently carried out a program designed to meet the inspection requirements established by the Public Service Commission's Safety Standards, issued in Case 04-M-0159, Proceeding Instituting Safety Standards.

3. To the best of my knowledge, information, and belief, Con Edison has visually inspected the requisite number of electric facilities during the twelve-month period, including the requirement to have conducted a visual inspection of at least 35% of its electric facilities through December 31, 2016.



Patrick G. McHugh