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February 15, 2018

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 *2017 Contact Voltage
Test and Facility Inspection Annual Report*

Dear Secretary Burgess:

Consolidated Edison Company of New York, Inc. submits for filing its *2017 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:

2017

**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, 2017 and ending on December 31, 2017.

February 15, 2018

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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 2017.

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/SiteAssets/svUpdate2006.pdf>

- Distribution
 - a. *Underground* – The underground system has approximately 283,000 manholes, service boxes, transformer vaults, and above ground pad mounted structures; approximately 25,300 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 33 kV, 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: 191 auto loops, 13 - 4 kV multi-bank substations, 219 – 4 kV unit substations, approximately 270,000 Con Edison and joint owned poles, and approximately 34,200 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 51,400 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 71 properties that contain the 41 transmission and 62 area substations. In addition, 232 unit substations and multi-banks which include the six customer-owned NYC airport multibanks.

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

On January 5, 2005, the Commission established the Electric Safety Standards that require all utility owned electric facilities to be inspected and contact (stray) voltage testing be performed on a specific frequency. Overhead Distribution facilities, Underground Residential Distribution System, Underground and Overhead Transmission Facilities and Substations have to be inspected and contact (stray) voltage tested once every five years. Underground Distribution Facilities have to be inspected once every eight years as part of the pilot program adopted in Case 16-E-0060³ and contact (stray) voltage tested once a year. The Safety Standards also require annual contact voltage testing for all city and municipality owned streetlights.

The following eight categories of facilities in Con Edison's service area must be inspected and tested for the presence of contact voltage:

- *Underground Distribution* – There are approximately 266,000 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) associated with the underground distribution system. All Underground Distribution facilities are inspected every eight years and are tested for contact voltage annually in either the manual or mobile contact voltage testing program.
- *Underground Residential Distribution (URD) System* – There are approximately 17,000 URD 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), injunction boxes (IJ), P-Boxes (PB), and T-Tap boxes and switchgear associated

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 distribution equipment from five to eight years. This plan will allocate efforts and funds towards decreasing the repair backlog while incorporating a more robust inspection effort which includes infrared scanning and ampere testing in the underground structures and additional targeted mobile contact voltage scans in areas with a history of repeat contact voltage detection.

with the URD system. All URD facilities are inspected and contact voltage tested every five years.

- *Overhead Distribution* – There are approximately 270,000 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.
- *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 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.
- *Substations* – Con Edison’s 103 substations are located within 71 properties which 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 (stray) voltage testing of all underground electric distribution facilities and streetlights by December 31 each year.

In accordance with the contact voltage testing frequencies of the Safety Standards, all underground electric distribution facilities were tested as well as 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 266,000 underground facilities, 135,892 were fielded for manual testing. The remaining facilities were tested under the mobile contact voltage program. Of the 135,892 underground facilities visited during manual testing, 104 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.

Underground Residential Distribution (URD) System

Of the population of approximately 17,000 URD facilities, 1,158 were visited and tested for contact voltage in the year 2017.

Overhead System Contact Voltage Testing

Of the population of approximately 273,000 overhead facilities, 40,042 were visited and tested for contact voltage in the year 2017.

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, 157 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

Of the total population of approximately 2,200 underground transmission facilities, 746 were fielded for manual testing. 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). Furthermore, Con Edison performed one additional underground system scan using mobile contact voltage detection technology 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 2017 Contact Testing Program

The results of the 2017 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 that the Overhead Distribution Facilities, Underground Residential Distribution (URD) Facilities, Underground and Overhead Transmission Facilities and Substations be inspected 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.

For the Underground Distribution Facilities, the pilot program adopted under Case 16-E-0060 extends the inspection to an eight year cycle from 2015 to 2022. The minimum number of inspections to be performed on a yearly basis for this eight-year pilot program is based on an annual percentage of total electric facilities as follows: 10.6% in the first year, 21.9% in the second year, and 33.8% in the third, 45.7% in the fourth year, 57.5% in the fifth year, 69.4% in the sixth year, 81.3% in the seventh year and 100% in the eighth 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 2017 Facility Inspection Program

The results of the 2017 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 third year of the third cycle ending December 31, 2019, Con Edison has cumulatively inspected 69% of its overall population of electric facilities. The percentages of inspections through December 31, 2017 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 the overhead transmission facilities (Table 3) and Unit substations/multi-banks (Table 7) every year. Con Edison inspects its underground transmission system at multiple intervals all in less than 5 years (Table 5).

Table 1
Facility Inspection Program Results

Category	Actual Cumulative Inspected as of 2017
Overhead Distribution	88.8%
Overhead Transmission	100%
Underground Distribution	49.24%
Pad Mount (URD) Distribution	68.52%
Underground Transmission	93.5%
Substation	64.79%
Unit Substations	100%
Company-owned Streetlights	N/A

5-Year Inspection Performance Summary

The following tables provide 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	40,042	88.80%
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	1,220	100%
2018		
2019		

**Table 4
Underground Residential Distribution (URD) Facilities**

Inspection Year	Unique Number of Pad Mount (URD) Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2015	9,593	54.7%
2016	1,257	61.91%
2017	1,158	68.52%
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	746	93.5%
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	15	64.79%
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	232	100%
2018		
2019		

8-Year Underground Inspection Pilot Program Performance Summary

The following table provides the annual completion and the cumulative percentages of the underground distribution eight-year (2015-2022) inspection cycle.

**Table 8
Underground Distribution Facilities**

Inspection Year	Unique Number of Underground Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2015	55,320	20.81%
2016	53,989	41.11%
2017	21,596	49.24%
2018		
2019		
2020		
2021		
2022		

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 2017, and that Con Edison has:

- Tested its publicly accessible electric facilities and street lights in accordance with the Electric Safety Standards Case 04-M-0159 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 Contact Voltage "findings" and report 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 2017, 9,856 voltage findings resulted from contact voltage testing. These findings resulted from 3,068 sources of contact voltage. A total of 9,725, approximately 98.7% of these findings, were detected by the Mobile Contact Voltage Testing Program. There were 131 findings (1.3%) 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. Two findings were recorded 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 9 contains a breakdown of the 2017 causes of contact voltage findings that were Con Edison's responsibility.

Table 9
2017 Sources of Contact Voltage Finding
Con Edison Responsibility

Source of Contact Voltage	Con Edison
UG Service	466
UG Streetlight Service	372
Secondary Burnout	219
UG Service Con Edison Neutral	216
UG Main	160
Crab	112
Sump Pump	96
UG Streetlight Con Edison Neutral	75
UG Main Con Edison Neutral	44
Overhead Service Neutral	28
Abandoned Service	23
Defective Riser/Insulator	22
Overhead Service	20
Abandoned SL Service	13
Overhead Streetlight Service	12
Overhead Streetlight Service Neutral	9
Overhead Secondary	7
Loose UG SL Service Connection at CE Structure	6
Temporary Service	2
Overhead Primary	2
Defective Pigtail/ISO	1
Con Ed S/L Reversed Polarity	0
Damaged/Missing Ground Rod	0
Con Ed non-S/L Reversed Polarity	0
Defective Transformer Equipment / Gap	0
Total	1,905

Table 10 contains a breakdown of the 2017 causes of contact voltage findings that were the responsibility of entities other than Con Edison (“Non Con Edison Responsibility”).

Table 10
2017 Sources of Contact Voltage
Non Con Edison Responsibility

Source of Contact Voltage	Non Con Edison
Defective Pigtail/Internal City Streetlight Wiring/Loose Connection at Lamp Base/Open Ended Control Wiring	697
Defective Customer Equipment	449
Defective Neon Sign	9
Dept. of Transportation (DOT)/City Streetlight Neutral	5
Contractor or Customer Damage	3
Defective Contractor Equipment	0
DOT Temp Service	0
DOT Reverse Polarity	0
Total	1,163

Mitigation through Detection

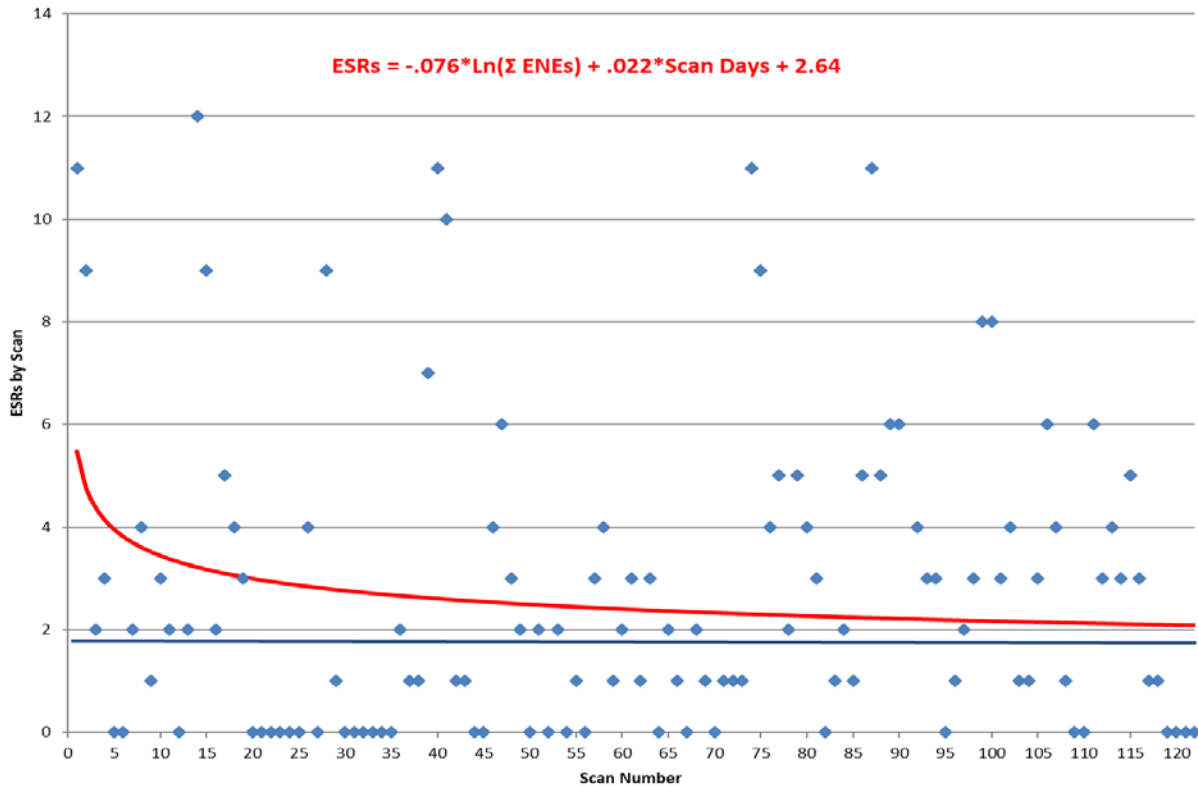
Five factors affect the likelihood that a member of the public or an animal could experience a shock. These factors are the number of energized structures (ENEs), duration of a mobile system scan, voltage levels associated with the ENEs, population density, and the weather. Appendix 3 contains the breakdown of electric shocks (ESRs) reported to Con Edison in 2017.

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 is shown 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 2017 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 2018 and experiences similar weather patterns, the Company can expect ESRs to be approximately 2 per scan. In 2017, there were

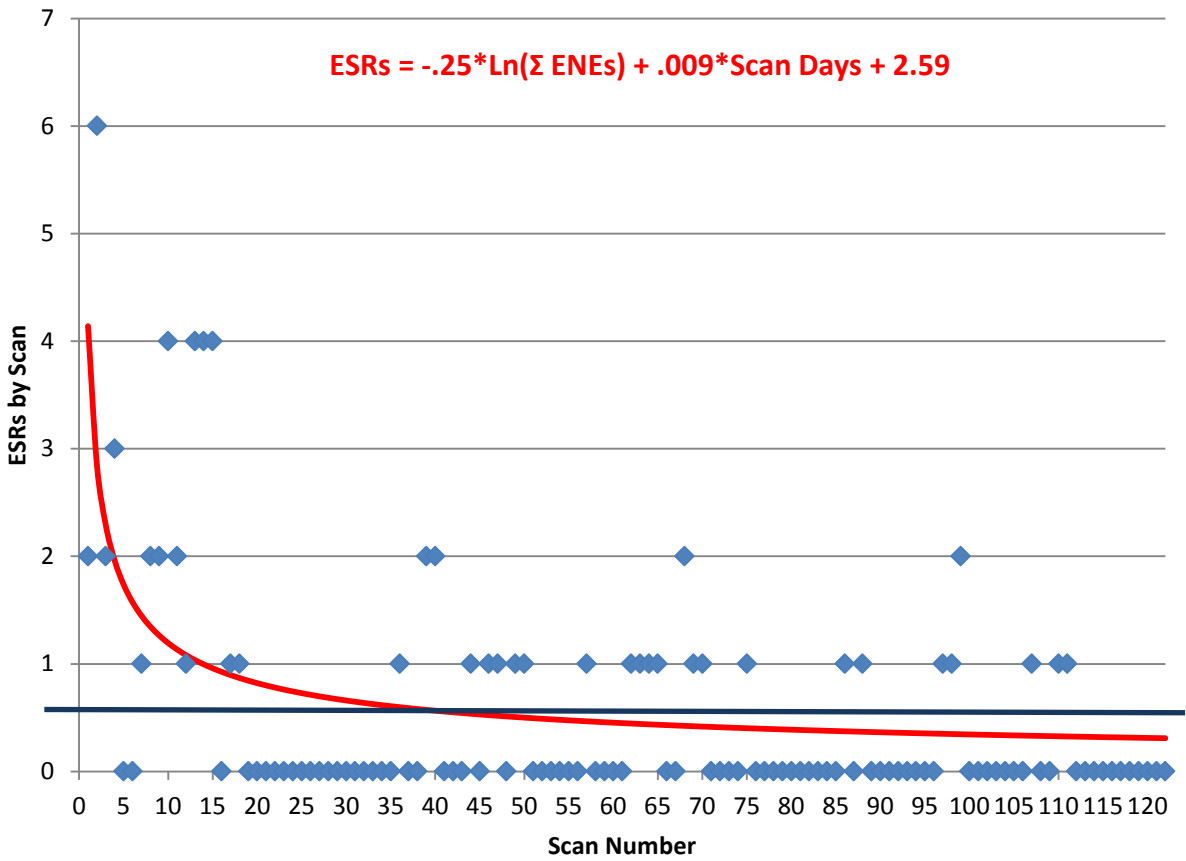
23 shocks associated with the Company’s equipment which is a 23% improvement from last year.

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



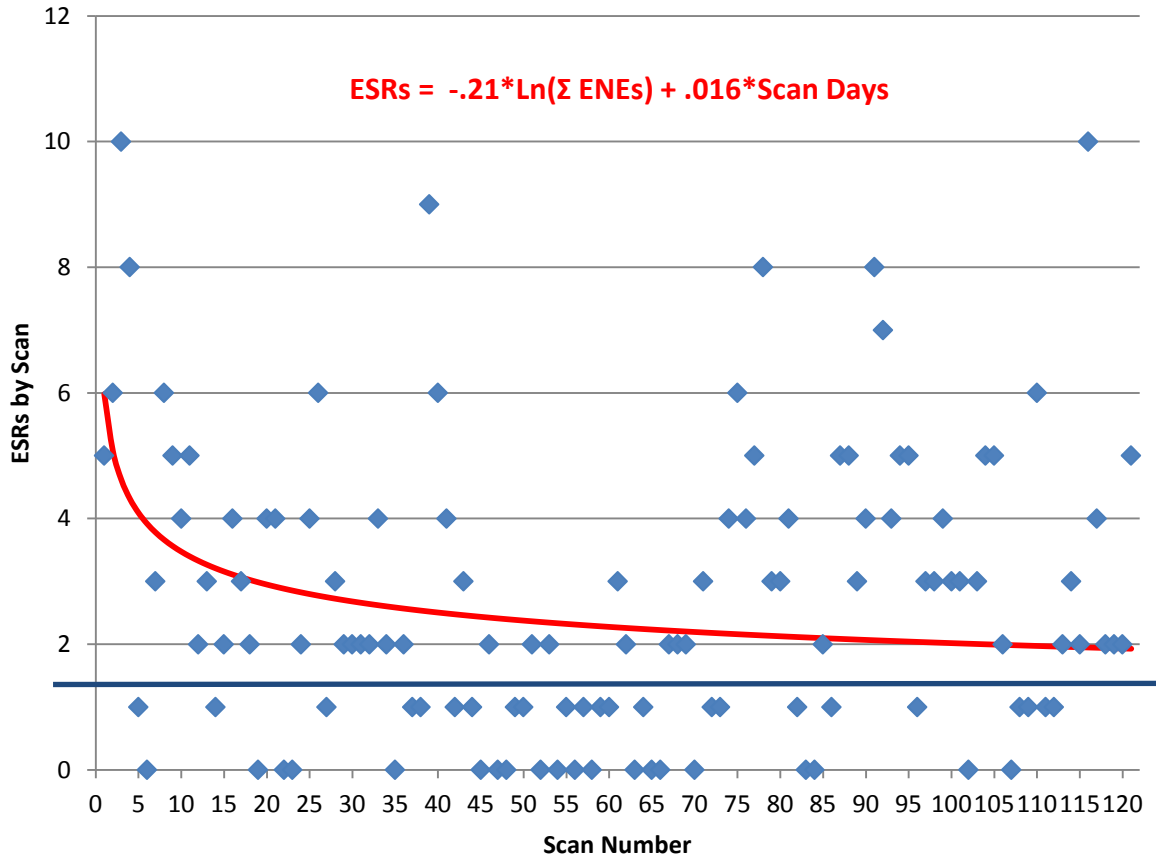
The ESRs due to “Other Utility/Government Agency Responsibility” equipment is shown on Chart 2. The duration of scans is 30 to 35 days per scan. If the Company continues a comparable ENE repair rate and scan duration in 2018, the Company can expect ESRs at this scan duration level to remain at approximately 1 per scan. In 2017, there were 5 shocks associated with “Other Utility/Government Agency Responsibility” equipment which is a 17% 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 is shown 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 2018, 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 2017, the Company responded to 38 validated shock reports on publicly accessible customer equipment, which is a 46% increase from last year.

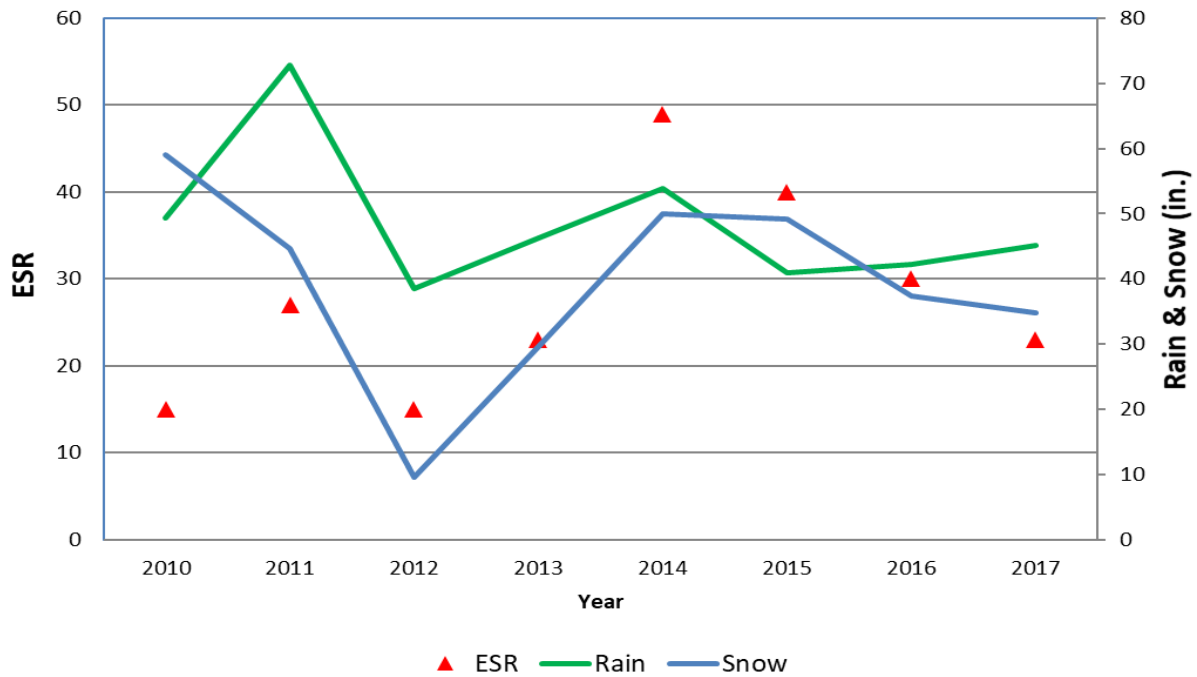
Chart 3
Customer (Public Access) ESRs by Scan vs. Cumulative ENEs and Scan Duration



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).

While there have been four consecutive years of harsh winter conditions, the ESRs that Con Ed was responsible for are showing a downward trend over the same period. Compared to last year, “Utility Responsibility” ESRs improved by 23% (23 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 higher events activity. This program resulted in the discovery and repair of additional ENEs which could have potentially resulted in ESRs.

Chart 4
2010 – 2017 Rainfall, Snow vs. ESR



IX. Analysis of Inspection Results

Table 11 details the number of annual inspections performed for each facility type for the current 2015-2019 cycle.

Table 11
Cycle 3 - Yearly Inspection Breakdown

Facility Inspection Program	2015	2016	2017	2018	2019	5-Year Cumulative Unique Inspections	Percent Completed
Distribution Underground*	55,320	53,989	21,596			130,905	49.24%
Distribution URD	9,593	1,257	1,158			12,008	68.52%
Distribution Overhead	114,594	84,979	40,042			239,615	88.86%
Transmission Underground	707	605	746			2,058	93.55%
Transmission Overhead	1,220	1,220	1,220			1,220	100.00%
Area Substations Fences	16	15	15			46	64.79%
Unit Substations	232	232	232			232	100.00%
Total	181,682	142,297	65,009			386,084	69.35%

* Distribution Underground is on an 8-year inspection cycle

Tables 12 through 15 show the number of deficiencies found in each inspected structure by defect level. For example, Table 12 shows that 2.44% of the total defects found in the overhead were Level I and they were found on 648 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 12
Overhead Distribution
Breakdown of Locations with Deficiencies**

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	648	806	2.44%
2	948	2,121	6.42%
3	13,046	16,608	50.25%
4	13,501	13,518	40.90%
Total:	28,143	33,053	100%

**Table 13
Underground Distribution
Breakdown of Locations with Deficiencies**

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	3552	3,688	4.87%
2	11653	17,818	23.51%
3	3660	4,632	6.11%
4	18612	49,663	65.52%
Total:	37477	75,801	100%

**Table 14
Underground Residential Distribution (URD)
Breakdown of Locations with Deficiencies**

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	481	549	45.33%
2	282	344	28.41%
3	64	64	5.28%
4	150	254	20.97%
Total:	977	1,211	100%

Table 15
Overhead Transmission
Breakdown of Locations with Deficiencies

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	0	0	0.0%
2	0	0	0.0%
3	9	16	21.1%
4	48	60	78.9%
Total:	57	76	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 2017, the Company repaired 53% of the Level I, II, and III defects found: 99% Level I; 81% Level II and 16% Level III. Furthermore, as part of the pilot enhancement plan to the Structure Inspection Program, the Company repaired an additional 20,477 Level II and III deficiencies towards eliminating the backlog of overdue repairs.

Table 16
Deficiencies Repaired in 2017

	Repaired Deficiencies that were Generated before 12/30/2016	Repaired Deficiencies that were Generated in 2017	Total Completed Repairs
Underground Facilities	17,283	23,155	40,438
Overhead Facilities	1,992	1,019	3,011
Pad Mount (URD) Facilities	369	735	1,104
Total	19,644	24,909	44,553

There are no Level I deficiencies pending for the Underground Facilities. There are 35 Level I deficiencies pending to be repaired in the Pad Mount URD facilities. Thirty four are missing or defective grating bolts that are on the schedule to be repaired and one is a leaking transformer pending transformer to be replaced. Additionally, of the 15 Level I Overhead

deficiencies pending, four have been completed and of the remaining 11, two are pending feeder outages to replace a transformer and primary cutouts and the remaining 9 require the replacement of riser pipe on poles which are on the schedule for repairs.

Temporary Repairs

There are 31 overhead Level I temporary repairs over 90 days and they are all due to damaged riser pipes. All these repairs are in the schedule for a riser replacement.

Analysis of Defects Found

Chart 5 shows the number of defects found per inspection by classification level. As can be observed, the generation rate of defects found this year compared to 2016 remains the same (Level I) or has decreased (Level II) by 14%. Level III generation rate has increased by 14%. The increase in the Level III defects is mainly driven by missing grounds and broken tie wires is the overhead and damage secondary cable in the underground.

**Chart 5
Defect Rate by Level**

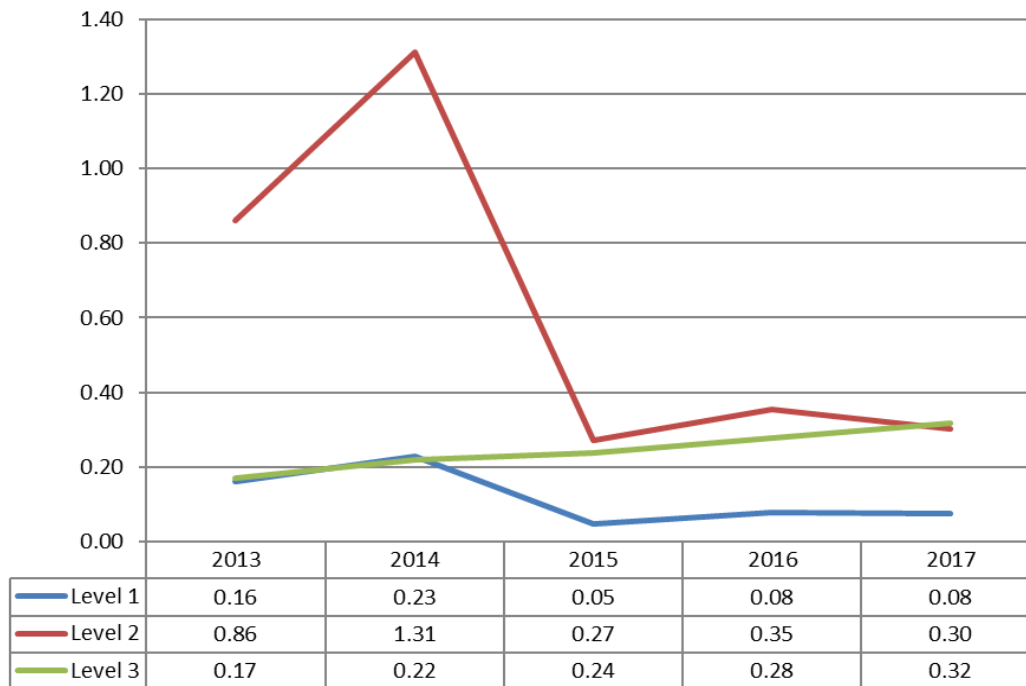
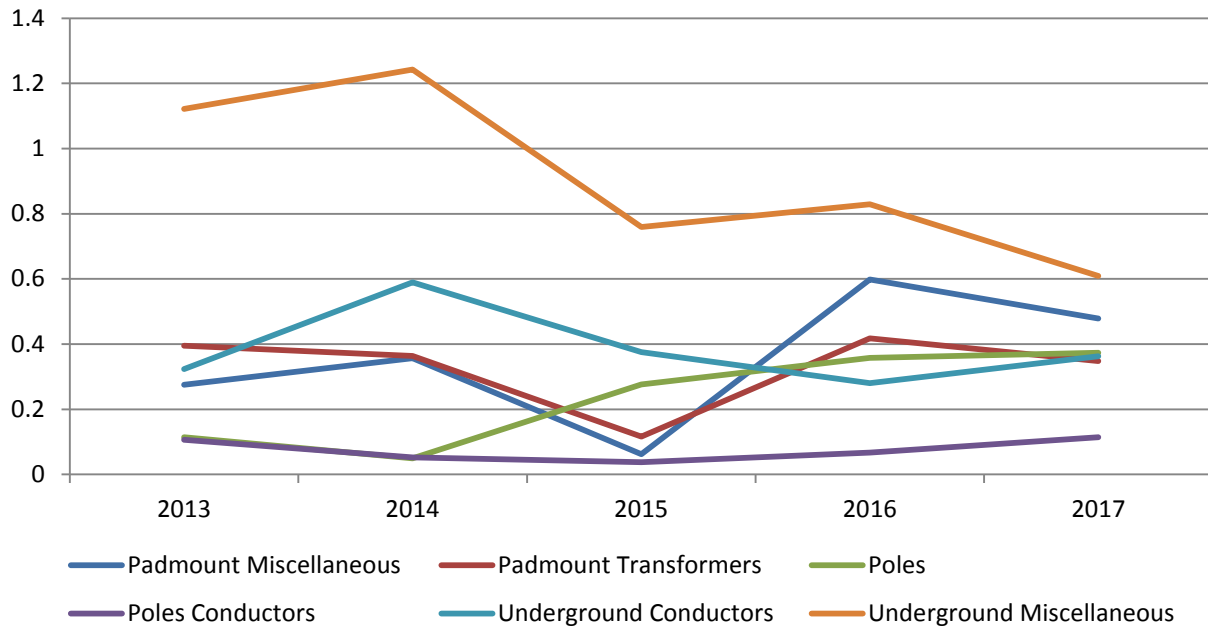


Chart 6 shows the 2017 Defect Rate by Category. The rate of defect increased in three categories: Pole conductors, Poles and Underground Conductors. The main driver in the Pole Conductor category was missing grounds (75% of defects). The main driver in the Poles category is broken tie wires and secondary wire damage which make 76% of the defects in this category. Finally the underground conductors are driven by improper connectors and damaged cable which makes 50% of the defects.

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 $\pm 10\%$ relative precision level and satisfy established industry sample design criteria.

Based on the total inspections performed in 2017, 671 quality assurance checks were required on all tested structures to achieve a 95% confidence rate with a $\pm 10\%$ overall error that the contact voltage tests were conducted in accordance with Company specifications.

The Company's 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 138 quality assurance checks of the underground distribution structures including underground residential distribution (URD), 268 quality assurance checks of overhead distribution structures and 265 quality assurance checks of municipality owned streetlights. Contact voltage was not found during any of these quality assurance reviews. In addition to the 671 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. The Company's specification 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 $\pm 10\%$ relative precision level and satisfy established industry sample design criteria.

Based on the total inspections performed in 2017, 671 quality assurance checks were required to achieve a 95% confidence rate with a $\pm 10\%$ 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 268 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 its public safety programs through analytic and technical innovation, and through strategic academic and industry partnerships. In 2017, the SPEAR department of Distribution Engineering installed Structure Monitors to MTA supply facilities and introduced vented latched covers.

As part of the pilot enhancement plan to Con Edison's Structure Inspection and Repair Program, the Company performed enhanced inspections which included infrared scanning and ampere testing. This enhanced inspection resulted in identifying 150 locations for cable replacement to remove "hot spots" which is an indication of possible future manhole events. In addition, mobile scans targeting high-activity areas were successfully performed and detected more than 1,000 energized objects that are included in Table 2a. More broadly, the goal of targeted scanning is to reduce shocks and there has been a 23% decrease from 2016 to 2017 (30 to 23). Absent these target scans, and accounting for weather variation, linear regression would have predicted over 40 shocks in 2017 based on the more than 476 kTons of salt spread.

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 Quarterly Update	40,000	40,000	100%	1	0.003%	0
		654	1.64%	1	0.153%	0
Underground Distribution Facilities Quarterly Update	135,892	135,892	100%	0	0.000%	104
		18,106	13.32%	0	0.000%	66
Street Lights / Traffic Signals² Quarterly Update	109,000	109,000	100%	95	0.087%	157
		9,222	8.46%	8	0.087%	144
Substation Fences³ Quarterly Update	299	274	91.64%	0	0.000%	0
		0	0.00%	0	0.000%	0
Transmission (69kV and Above) Quarterly Update	1,220	1,220	100%	0	0.000%	0
		0	0.00%	0	0.000%	0
TOTAL	286,411	286,386	99.99%	96	0.034%	261
		27,982	9.77%	9	0.032%	210

1. Contact voltage sources on Con Edison structures and streetlights - found by contractors

2. Con Ed does not own streetlight/traffic signal facilities. These facilities are owned by the City of New York and municipalities located in Westchester County

3. 2017 is the third year of the five-year testing cycle for substation fences.

Appendix 2a: Summary of Energized Objects - Mobile Testing

January 1 st , 2017 - December 31 st , 2017							
	Initial Reading				Reading After Mitigation		
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Distribution Facilities	16	3	2	21	21	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
Pole	16	3	2	21	21	0	0
Riser	0	0	0	0	0	0	0
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Underground Facilities	464	192	21	677	677	0	0
Manhole	0	0	0	0	0	0	0
Other	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
Pedestal	0	0	0	0	0	0	0
Service Box	464	192	21	677	677	0	0
Vault-Cover/Door	0	0	0	0	0	0	0
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Street Lights/Traffic Signals	688	421	343	1,452	1,452	0	0
Metal Street Light Pole	297	261	293	851	851	0	0
Other	10	9	8	27	27	0	0
Pedestrian Crossing Pole	45	36	9	90	90	0	0
Traffic Control Box	0	0	1	1	1	0	0
Traffic Signal Pole	336	115	32	483	483	0	0
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
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
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Transmission	0	0	0	0	0	0	0
Ground	0	0	0	0	0	0	0
Guy	0	0	0	0	0	0	0
Lattice Tower	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Pole	0	0	0	0	0	0	0
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Miscellaneous Facilities	5,339	1,875	361	7,575	7,575	0	0
Bus Shelter	20	7	1	28	28	0	0
Control Box	0	0	0	0	0	0	0
Fire Hydrant	15	20	1	176	176	0	0
Gate/Fence/Awning	1,058	424	76	1,558	1,558	0	0
Other	2,242	756	139	3,137	3,137	0	0
Phone Booth	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
Scaffolding	87	20	28	135	135	0	0
Sidewalk	1,356	526	94	1,976	1,976	0	0
Traffic Sign	352	106	2	480	480	0	0
Water Pipe	69	16	0	85	85	0	0
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Totals	6,507	2,491	727	9,725	9,725	0	0

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

January 1 st , 2017 - December 31 st , 2017							
	Initial Reading				Reading After Mitigation		
	1.0V-4.4V	4.5V-24.9V	>25V	Total	<1.0V	1.0V-4.4V	>4.5V
Distribution Facilities (Total)	0	1	0	1	1	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
Pole	0	1	0	1	1	0	0
Riser	0	0	0	0	0	0	0
Underground Facilities (Total)	0	7	0	7	7	0	0
Manhole	0	3	0	3	3	0	0
Other	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
Pedestal	0	0	0	0	0	0	0
Service Box	0	4	0	4	4	0	0
Vault-Cover/Door	0	0	0	0	0	0	0
Street Lights/Traffic Signals(Total)	15	48	39	102	102	0	0
Metal Street Light Pole	15	47	39	101	101	0	0
Other	0	0	0	0	0	0	0
Pedestrian Crossing Pole	0	0	0	0	0	0	0
Traffic Control Box	0	0	0	0	0	0	0
Traffic Signal Pole	0	1	0	1	1	0	0
Substation Fences (Total)	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
Ground	0	0	0	0	0	0	0
Guy	0	0	0	0	0	0	0
Lattice Tower	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Pole	0	0	0	0	0	0	0
Miscellaneous Facilities (Total)	8	12	1	21	21	0	0
Bus Shelter	0	0	0	0	0	0	0
Control Box	0	0	0	0	0	0	0
Fire Hydrant	0	0	0	0	0	0	0
Gate/Fence/Awning	3	1	1	5	5	0	0
Other	1	7	0	8	8	0	0
Phone Booth	0	1	0	1	1	0	0
Riser	0	0	0	0	0	0	0
Scaffolding	0	0	0	0	0	0	0
Sidewalk	3	2	0	5	5	0	0
Traffic Sign	0	0	0	0	0	0	0
Water Pipe	1	1	0	2	2	0	0
Totals	23	68	40	131	131	0	0

Appendix 3 : Summary of Shock Reports from the Public

	Oct 1 - Dec 31	Yearly Total
I. Total Shocks Received	32	158
Unsubstantiated	18	78
Normally Energized Equipment	2	14
Substantiated Stray Voltage	12	66
Details of Substantiated Stray Voltage		
Persons	8	48
Animals	4	20
II. Injuries Sustained (Total)	0	0
Utility Responsibility		
Persons	0	0
Animals	0	0
Non-Utility Responsibility		
Persons	0	0
Animals	0	0
Unsubstantiated		
Persons	0	0
Animals	0	0
I. Medical Attention Received (Total)	1	10
Utility Responsibility-Person		
Persons	0	2
Animals	0	1
Non-Utility Responsibility		
Persons	0	4
Animals	0	0
Unsubstantiated		
Persons	1	3
Animals	0	0
IV. Voltage Source (Total)	12	66
Utility Responsibility (Total)	0	23
Issue with Primary Joint or Transformer	0	1
Secondary joint(Crab)	0	1
SL Service Line	0	3
Abandoned SL Service Line	0	0
Defective Service Line	0	16
Abandoned Service Line	0	1
OH Secondary	0	0
OH Services	0	0
OH Service Neutral	0	0
OH SL Service	0	0
OH SL Service neutral	0	0
Pole	0	0
Riser	0	0
Other	0	1
Customer Responsibility (Total)	9	38
Customer Equipment/Wiring	8	35
Contractor Damage	1	3
Other Utility/Gov't Agency Responsibility (Total)	3	5
SL Base Connection	1	2
SL internal Wiring or Light Fixture	1	1
Overhead Equipment	0	1
Other-Utility	1	1
V. Voltage Range	12	66
1.0V to 4.4V	2	16
4.5V to 24.9V	4	17
25V and above	6	33
No Reading	0	0

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

Summary of Deficiencies and Repair Activity Resulting from the Inspection Process - Distribution															
Detail of Deficiencies by Facilities	2013			2014			2015			2016			2017		
	I Within 1 week	II Within 1 year	III Within 3 years	I Within 1 week	II Within 1 year	III Within 3 years	I Within 1 week	II Within 1 year	III Within 3 years	I Within 1 week	II Within 1 year	III Within 3 years	I Within 1 week	II Within 1 year	III Within 3 years
Overhead Facilities															
Repairs in Time Frame	13	1,002	1,487	0	6	2	19	43	276	535	10	863	656	160	68
Repairs - Overdue	20	22	112	3	10	7	30	10	0	238	10	0	135	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	34,478	0	0	31,942	0	1,961	16,540
Not Repaired - Overdue	0	84	1,358	0	25	22	0	1,107	0	0	2,830	0	15	0	0
Total	33	1,108	2,957	3	41	31	49	1,160	34,754	773	2,850	32,805	806	2,121	16,608
Underground Facilities															
Repairs in Time Frame	13,122	67,108	3,048	16,208	75,296	5,477	7,738	41,392	2,788	9,623	42,047	2,889	3,661	16,075	3,361
Repairs - Overdue	127	5,302	3,642	227	14,851	2,094	154	826	0	79	411	0	27	31	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	3,145	0	0	3,033	0	1,711	1,271
Not Repaired - Overdue	0	6,043	5,777	0	12,563	9,480	0	3,393	0	0	3,712	0	0	1	0
Total	13,249	78,453	12,467	16,435	102,710	17,051	7,892	45,611	5,933	9,702	46,170	5,922	3,688	17,818	4,632
Pad Mount Facilities															
Repairs in Time Frame	1,755	500	66	1,822	656	81	387	771	112	680	383	45	479	197	24
Repairs - Overdue	176	445	28	192	854	4	170	49	0	68	7	0	35	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	148	0	0	40	1	147	40
Not Repaired - Overdue	0	131	302	4	588	340	3	107	0	1	136	0	34	0	0
Total	1,931	1,076	396	2,018	2,098	425	560	927	260	749	526	85	549	344	64
Streetlight Facilities															
Repairs in Time Frame															
Repairs - Overdue															
Not Repaired - Not Due															
Not Repaired - Overdue															
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Facilities															
Repairs in Time Frame	0	0	9	0	0	1	0	0	16	1	0	29	0	0	7
Repairs - Overdue	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	0	0	0	5	0	0	9
Not Repaired - Overdue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	10	0	0	1	0	0	16	1	0	34	0	0	16

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
2013	I Within 1 week	15,213	14,890	323	0	0
	II Within 1 year	80,637	68,610	5,769	0	6,258
	III Within 3 years	15,830	4,610	3,783	0	7,437
	IV N/A	167,750	12,379	0	155,371	0
2014	I Within 1 week	18,456	18,030	422	0	4
	II Within 1 year	104,849	75,958	15,715	0	13,176
	III Within 3 years	17,508	5,561	2,105	0	9,842
	IV N/A	190,564	12,493	0	178,071	0
2015	I Within 1 week	8,501	8,144	354	0	3
	II Within 1 year	47,698	42,206	885	0	4,607
	III Within 3 years	40,963	3,192	0	37,771	0
	IV N/A	94,176	6,811	0	87,365	0
2016	I Within 1 week	11,225	10,839	385	0	1
	II Within 1 year	49,546	42,440	428	0	6,678
	III Within 3 years	38,846	3,826	0	35,020	0
	IV N/A	112,343	5,469	0	106,874	0
2017	I Within 1 week	5,043	4,796	197	1	49
	II Within 1 year	20,283	16,432	31	3,819	1
	III Within 3 years	21,304	3,453	0	17,851	0
	IV N/A	63,435	4,641	0	58,794	0

Appendix 4 - Summary of Deficiencies and Repair Activity Resulting from the Inspection Process - Level IV Conditions										
	2013		2014		2015		2016		2017	
	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	1,327	883	21	4	27,889	163	32,105	213	13,518	22
Underground Facilities										
Underground Facilities	165,285	10,821	187,997	11,550	65,726	6,230	79,901	5,018	49,663	4,437
Pad Mount Transformers (URD Facilities)										
Pad Mount Transformers	1,138	675	2,546	939	561	418	337	238	254	182
Streetlight Facilities										
Streetlight Facilities										
Transmission Facilities										
Transmission Facilities	0	0	0	0	0	0	0	0	0	0
Overall Level IV Deficiencies										
Level IV Deficiencies Total	167,750	12,379	190,564	12,493	94,176	6,811	112,343	5,469	63,435	4,641

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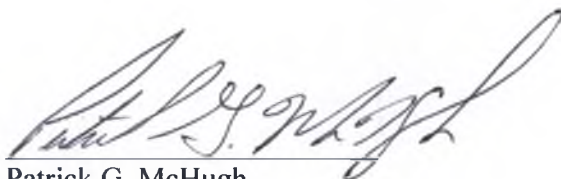


Exhibit 1 – Certification

Certification of Contact Voltage Testing

Patrick G. McHugh, on this 15 day of February 2018, 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, 2017 (“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

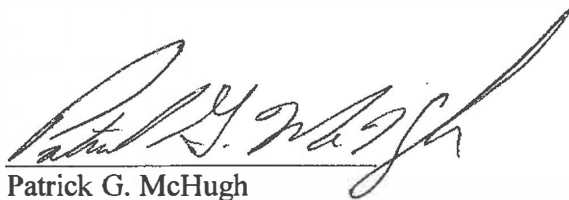
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Certification of Inspections

Patrick G. McHugh, on this 15 day of February 2018, 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, 2017 (“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 54% of its electric facilities through December 31, 2017.



Patrick G. McHugh

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