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2022

**CONTACT VOLTAGE TEST &  
FACILITY INSPECTION  
ANNUAL REPORT**

**CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.**

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Report on the results of contact voltage tests & facility inspections for the period beginning

January 1, 2022, and ending on December 31, 2022.

February 15, 2023

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## I. Background

The New York State Public Service Commission’s (“PSC” or “Commission”) Electric Safety Standards (“Safety Standards”)<sup>1</sup> in Case 04-M-0159, require utilities to conduct an annual system-wide contact (stray) voltage detection program for underground assets and municipally 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 voltages that exist at animal accessible locations encountered by farm livestock<sup>2</sup>. More recently, stray voltage has been described as the presence of voltage from unintentionally energized objects in publicly accessible areas. This definition does not draw a distinction between publicly accessible voltage exposure that is the result of normal electric system operation (“stray voltage”) versus publicly accessible voltage exposure that are the result of an existing electrical fault (“contact voltage”).<sup>3</sup>

When performing voltage detection between two conductive surfaces, it is important to understand that an elevated voltage could be stray voltage, contact voltage or both. The detection methodology should account for impedance levels in the electrical circuit, as perceptible exposure is proportional to the levels of current flow through the person or animal than solely the voltage level at the time a shock occurs.

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 2022.

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<sup>1</sup> 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, January 13, 2015, and January 28, 2021.

<sup>2</sup> 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 the 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>

<sup>3</sup> Difference between stray and contact voltage — Under normal operating conditions, with a code compliant electrical system, publicly accessible voltages are usually imperceptible to both people and their animals. Special circumstances (e.g., confined livestock) or special exposure conditions (e.g., barefoot in an outdoor shower) can however result in perceptible exposures even when the electrical systems, utility and customer, are operating as intended. As defined by the Institute of Electrical and Electronics Engineers, this type of accessible voltage is termed “stray voltage”. Publicly accessible voltages that are the result of an existing fault condition (i.e., a short-circuit or an unintended open circuit), are referred to by the IEEE as “contact voltage”. See <https://standards.ieee.org/standard/1695-2016.html>

## II. Company Overview

Con Edison is an investor-owned utility that provides electric service to approximately 3.5 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.

- Distribution
  - a. *Underground* – The underground system has approximately 286,200 manholes, service boxes, transformer vaults, and above ground pad mounted structures; approximately 25,500 miles of underground duct; and approximately 97,200 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: 200 auto loops, 11 - 4 kV multi-bank substations, 217 – 4 kV unit substations, approximately 270,000 Con Edison owned or jointly owned poles, and approximately 34,900 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 52,000 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 local Westchester municipalities primarily own the streetlights and traffic signals in New York City and Westchester County. There are approximately 185,000 metal pole streetlights 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 1,286 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

Con Edison operates 41 transmission and 62 area substations located on 71 properties. In addition, the Company operates 228-unit substations and multi-banks which include the four customer-owned NYC airport multi-banks.

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

On January 5, 2005, the Commission established Electric Safety Standards that require the inspection of all utility-owned electric facilities and testing for contact (stray) voltage. Overhead Distribution facilities, Underground Residential Distribution System facilities, Underground and Overhead Transmission facilities and Substation fences must be inspected and tested for contact (stray) voltage once every five years. Under the program authorized by the Commission,<sup>4</sup> Con Edison must inspect Underground Distribution Facilities using an asset base approach by which high priority facilities will be inspected every five years, medium priority facilities will be inspected every eight years, and low priority structures will be inspected every ten years. Furthermore, contact (stray) voltage testing will be performed annually. The Safety Standards also requires annual contact voltage testing for all city and municipally 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* – Con Edison has approximately 268,500 underground facilities in its distribution systems. A subsurface structure is defined as any manhole (MH), service box (SB), transformer vaults (V, VS), transformer manholes (TM)

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<sup>4</sup> The Commission's January 28, 2022 *Order Granting in Part and Subject to Modifications Petition to Enhance Electric Safety Standards* issued January 28, 2022 in Case 04-M-0159, et al, authorizes the Company to implement an asset-based inspection program for underground facilities. Under the asset-based program, high priority facilities will be inspected every five years, medium priority facilities will be inspected every eight years, and low priority structures will be inspected ten years. Con Edison must complete a minimum of the sum total of 85 percent of the number of facilities for each risk profile in the inspection cycle each year, and complete 100 percent of each risk profile by the final year of the inspection cycle applicable to each risk profile. Any Facilities that are still pending from the eight-year pilot program will be prioritized such that high and medium risk structures will be inspected by 2022 and low priority structures to be inspected by 2024. The Company's performance for the high, medium, and low priority profiles is included in Table 8.

associated with the underground distribution system. All Underground Distribution facilities are inspected each cycle and are tested for contact voltage annually in either the manual or mobile contact voltage testing programs.

- *Underground Residential Distribution (URD) System* – Con Edison has approximately 17,700 URD facilities in its distribution systems. A subsurface structure is defined as any manhole (MH), service box (SB), transformer vaults (V, VS), transformer manholes (TM), junction boxes (IJ), P-Boxes (PB), and T-Tap boxes and switchgear associated with the URD system. All URD facilities are inspected and tested for contact voltage every five years.
- *Overhead Distribution* – Con Edison has approximately 270,000 distribution pole structures that support electric facilities in the 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.
- *Streetlights and Traffic Signals* – There are approximately 185,000 metal pole streetlights and/or traffic signals within Con Edison’s service territory. Streetlights and traffic signals are included in the Company’s 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. Privately owned area and street lighting 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 streetlights 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 228 - 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 fire department connections.

- *Overhead Transmission* – Con Edison’s overhead transmission system includes 1,286 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 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 of 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 any Company-owned equipment that caused a voltage finding and is still needed to provide safe and reliable service to our customers. Permanent repairs not completed 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 conducted by 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 approximately 268,500 underground facilities, 139,011 were fielded for manual testing. The remaining facilities were tested under the mobile contact voltage program. Of the 139,011 underground facilities visited during manual testing, the Company could not test for contact voltage on 171 structure(s) that were inaccessible, retired structures, 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, that 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***

Contact voltage testing for the URD system is conducted concurrently with the safety inspection program. Of approximately 17,700 URD facilities, 953 facilities were visited and tested for contact voltage in 2022.

### ***Overhead System Contact Voltage Testing***

Contact voltage testing for the Overhead system is conducted concurrently with the safety inspection program. Of approximately 270,000 overhead facilities, 36,446 facilities were visited and tested for contact voltage in 2022.

### ***Streetlight and Traffic Signal Contact Voltage Testing***

Of approximately 185,000 streetlight and traffic signal facilities, which the Company directly supplies electric service, and which are located on public thoroughfare, 111,730 facilities were required to be tested manually. The remaining facilities were tested under the mobile contact voltage program. Of the facilities visited, 351 could not be tested for contact voltage 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***

Contact voltage testing for the Underground Transmission system is conducted concurrently with the safety inspection program. Of approximately 2,200 underground transmission facilities, 602 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***

Contact voltage testing for the Overhead Transmission system is conducted concurrently with the safety inspection program. Con Edison visited and tested all the 1,286 Overhead Transmission facilities on the Company’s overhead transmission system.

### ***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 the 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 1<sup>st</sup> to March 31<sup>st</sup>). 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 2022 Contact Testing Program***

The results of the 2022 Contact Testing Program are provided in the following appendixes of 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 in effect during this reporting period require that Overhead Distribution Facilities, Underground Residential Distribution (URD) Facilities, Underground and Overhead Transmission Facilities and Substation fences be inspected at least once every five years. The first five-year cycle covered the period from 2005 through 2009, the second from 2010 through 2014, and the third from 2015 through 2019. The current cycle (Cycle 4) began in 2020. 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 inspect 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 Underground Distribution Facilities, Con Edison started cycle 4 on January 1, 2021 and is using a five-year inspection cycle for high priority structures (9,600); an eight-year inspection cycle for medium priority structures (136,600) and a ten-year inspection cycle for low priority structures (122,300)., The minimum number of inspections to be performed on a yearly basis is calculated as follows: Performance target =  $(85\% \times (\text{Total High Risk Facilities} / \text{Total High Risk Duration}) \times \text{High Risk Cycle Year}) + (85\% \times (\text{Total Medium Risk Facilities} / \text{Total Medium Risk Duration}) \times \text{Medium Risk Cycle Year}) + (85\% \times (\text{Total Low Risk Facilities} / \text{Total Low Risk Duration}) \times \text{Low Risk Cycle Year})$ .

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 conducted by 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 in Distribution Engineering has conducted train-the-trainer sessions as required in 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 department has also conducted various training seminars at workout 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 2022 Facility Inspection Program***

The results of the 2022 Facility Testing Program and associated facility repairs are provided in Appendix 4, entitled “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 fourth cycle ending December 31, 2024 for Overhead Distribution facilities, Underground Residential Distribution System facilities, Underground and Overhead Transmission facilities and Substation fences, Con Edison has cumulatively inspected 58% of its overall population of electric facilities. Underground Distribution Facilities is in the second year of cycle 4, and Con Edison has inspected 26% of its overall population of electric facilities (45% high priority: 35% medium priority, and 14% low priority). In addition, Con Edison was to prioritize inspection of 36,700 High and Medium Priority structures pending from Cycle 3. The Company completed 99% of high and medium priority structures pending from cycle 3 (100% High Priority and 99% Medium Priority). The percentages of inspections through December 31, 2022 by structure category are summarized in Table 1. Streetlight facilities are owned by the City of New York and by municipalities in Westchester, not Con Edison.

Con Edison inspects its underground transmission system at multiple intervals all in less than 5 years (Table 5). The total number of underground facilities to be inspected is approximately 2,200 and 602 inspections were completed in 2022.

Con Edison inspects the overhead transmission facilities (Table 3) and Unit substations/multi-bank fences (Table 7) every year.

**Table 1  
Facility Inspection Program Results**

<b>Category</b>	<b>Actual Cumulative Inspected as of 2022</b>
Overhead Distribution	58%
Overhead Transmission	100%
Underground Distribution	25%
Pad Mount (URD) Distribution	47%
Underground Transmission	94.7%
Substation	66%
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 (2020-2024) inspection cycle.

**Table 2  
Overhead Distribution Facilities**

<b>Inspection Year</b>	<b>Unique Number of Overhead Distribution Structures Inspected</b>	<b>% of Overall Facilities Inspected (Cumulative)</b>
2020	59,696	22.1%
2021	61,422	45%
2022	36,446	58%
2023		
2024		

**Table 3  
Overhead Transmission Facilities**

<b>Inspection Year</b>	<b>Unique Number of Overhead Transmission Facilities Inspected</b>	<b>% of Overall Facilities Inspected (Cumulative)</b>
2020	1,286	100%
2021	1,286	100%
2022	1,286	100%
2023		
2024		



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

Inspection Year	Unique Number of Pad Mount (URD) Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2020	3,961	22.4%
2021	3,440	42%
2022	953	47%
2023		
2024		

**Table 5  
Underground Transmission Facilities**

Inspection Year	Unique Number of Underground Transmission Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2020	656	29.8%
2021	825	67.3%
2022	602	94.7%
2023		
2024		

**Table 6  
Substation Facilities**

Inspection Year	Unique Number of Substation Sites	% of Overall Facilities Inspected (Cumulative)
2020	16	22.5%
2021	16	45.07%
2022	15	66.2%
2023		
2024		

**Table 7  
Unit Substation Facilities**

Inspection Year	Unique Number of Unit Substation Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2020	232	100%
2021	228	100%
2022	228	100%
2023		
2024		

***Underground Inspection Program Performance Summary***

The following table provides the annual completion and the cumulative percentages of the underground distribution inspection cycles.

**Table 8  
Underground Distribution Facilities**

**High Priority Structures (5-year cycle)**

Inspection Year	Unique Number of Underground Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2021	3,341	35%
2022	949	45%
2023		
2024		
2025		

**Medium Priority Structures (8-year cycle)**

Inspection Year	Unique Number of Underground Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2021	28,210	21%
2022	19,552	35%
2023		
2024		
2025		
2026		
2027		
2028		

**Low Priority Structures (10-year cycle)**

Inspection Year	Unique Number of Underground Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2021	8,374	7%
2022	8,629	14%
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		

### **Total Underground Structures Inspected**

Inspection Year	Unique Number of Underground Facilities Inspected	% of Overall Facilities Inspected (Cumulative)
2021	39,950	15%
2022	29,130	26%
2023		
2024		
2025		

## **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 2020, and that Con Edison has:

- Tested its publicly accessible electric facilities and streetlights 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 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 voltmeter 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 for the operating system. In 2022, 6,847 voltage findings resulted from contact voltage testing. These findings resulted from 2,771 sources of contact voltage. A total of 6,731 findings, approximately 98.3%, were detected by the Mobile Contact Voltage Testing Program. There were 116 findings (approx.

1.7%) identified by manual contact voltage testing. In 2022, there was one location where the Company experienced recurring findings on customer or municipal equipment that was found to be the result of a third party. Because the cause of the finding is not Company owned equipment, the Company cannot mitigate this recurring finding. Each time there was a finding at this location, the Company responded to the location, made the area safe, and notified the customer of the condition coming from their equipment. The Company has had numerous interactions with this customer to seek their support in mitigating this finding.

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. Four findings were recorded as a result of the 30-foot radius testing during manual contact voltage testing.

Contact voltage findings during 2022 resulted from a variety source as detailed in Tables 9 and 10. Table 9 provides the sources that were Con Edison’s responsibility.

**Table 9  
2022 Sources of Contact Voltage Finding  
Con Edison Responsibility**

Source of Contact Voltage	Con Edison
Defective riser	5
Ce temp service	4
Secondary burnout	123
Main ce neutral	33
UG SL ce neutral	28
Defective transformer gap	1
OH SL service	7
Defective insulator	1
Defective transformer equipment	4
OH secondary	2
Sump pump	40
Main	163
Loose UG SL service connection at ce structure	2
Secondary crab	72
Con Ed s/l reversed polarity	1
Abandoned sl service	5
UG service	432
OH service	29
Damaged/missing ground rod	11
OH service ce neutral	16
OH SL ce neutral	2
UG service ce neutral	135
UG SL service	600
Abandoned service	10
Con ed non-s/l reversed polarity	1
	<b>1727</b>

Table 10 contains the 2022 sources of contact voltage findings that were the responsibility of entities other than Con Edison (“Non-Con Edison Responsibility”).

**Table 10**  
**2022 Sources of Contact Voltage**  
**Non-Con Edison Responsibility**

Source of Contact Voltage	Con Edison
Loose connection at lamphouse	318
Customer reversed polarity	2
Non-ice temp service	9
Internal city wiring	358
Defective other commercial equip.	45
Other commercial neutral	2
Defective neon sign	2
Defective non-commercial equip.	281
Defective pigtail	1
Contractor damage	1
Customer damage	25
	<b>1044</b>

***Mitigation through Detection***

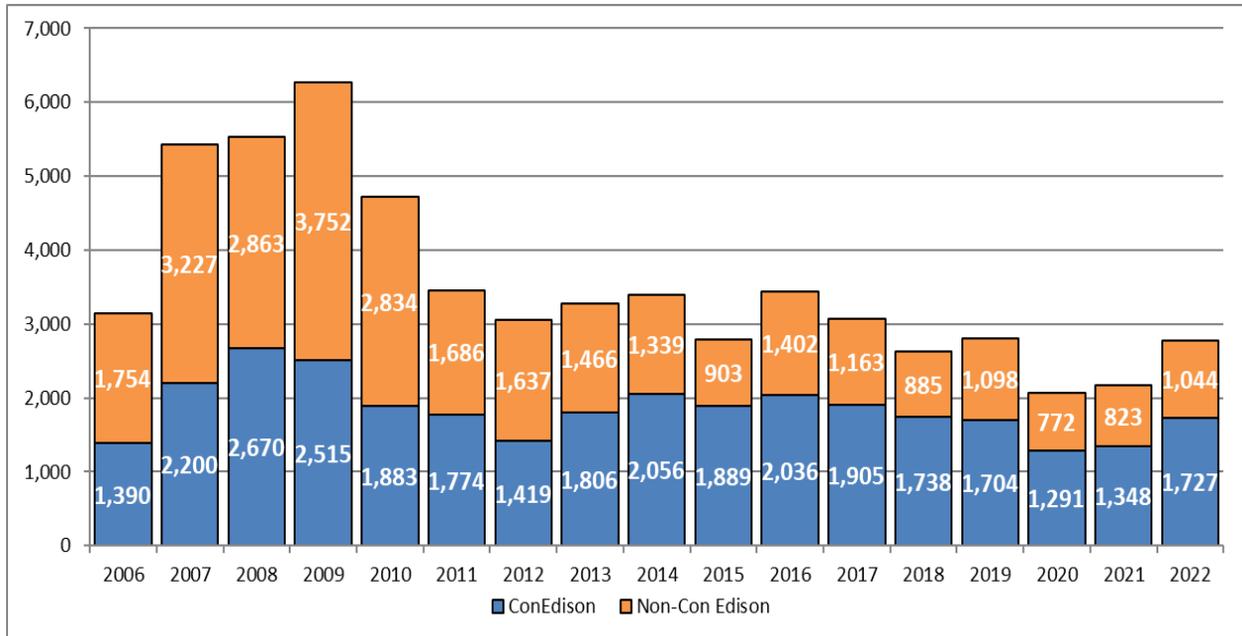
Five factors affect the likelihood that a member of the public or an animal could experience a shock. These factors are the number of energized structures (ENEs), duration of time an ENE remains undetected (“exposure time”), voltage and current levels associated with the ENEs, pedestrian density, and the weather. Appendix 3 contains the breakdown of electric shocks (ESRs) reported to Con Edison in 2022.

Since the likelihood of an ESR will increase or decrease in proportion to the total number of energized structures and exposure time, the timely 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 and over time, the potential ESRs decrease accordingly. As observed in Chart 1, the sources of ENEs have been decreasing since the inception of the program.

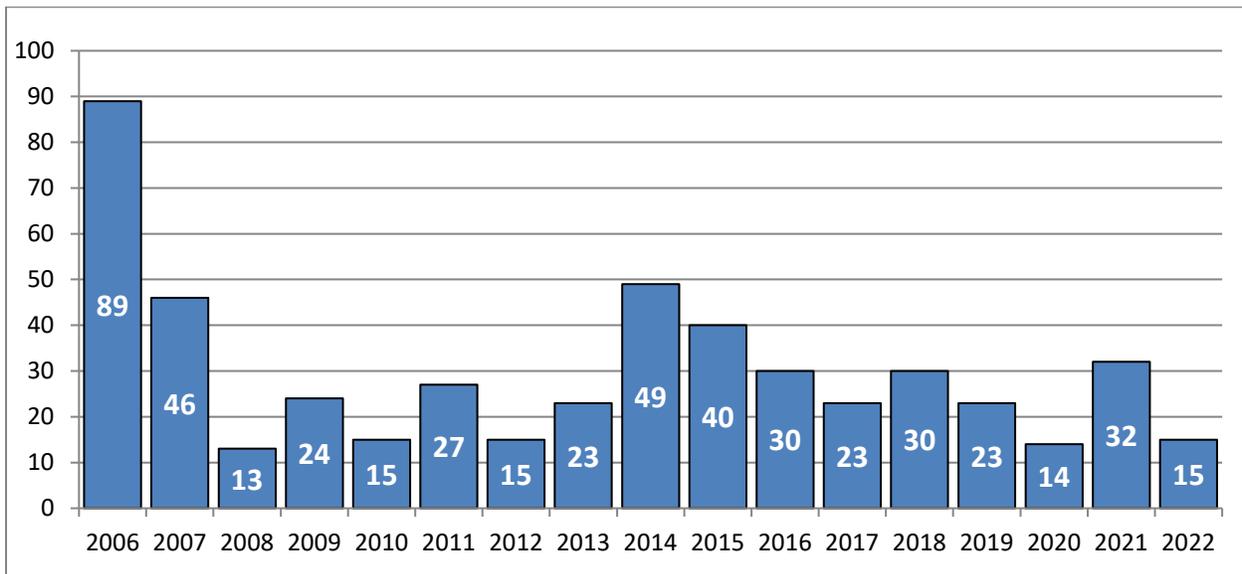
In addition, voltage and current levels on conductive surfaces may appear and/or change due to environmental factors such as moisture, humidity, soil, or concrete resistivity. This was demonstrated in January and February 2022 when significantly high salt was spread (~301,400 tons). Although the 2021-2022 winter seasonal snowfall was below normal at 17.5 inches, January 2022 alone saw 15.3” of snowfall. This was nearly double the normal monthly amount of 8.7”. In 2022, forty seven percent (47%) of all ESRs occurred in January and February. Hence, the slight increase in ESRs in 2022 can be attributed to the snowfall and salt spread.

Lastly, high pedestrian/animal traffic increases the likelihood of an ESR. As COVID-19 restrictions, including lockdowns, indoor dining, and school closures, were removed, that likelihood increased in 2022, contributing to increased numbers of ESRs.

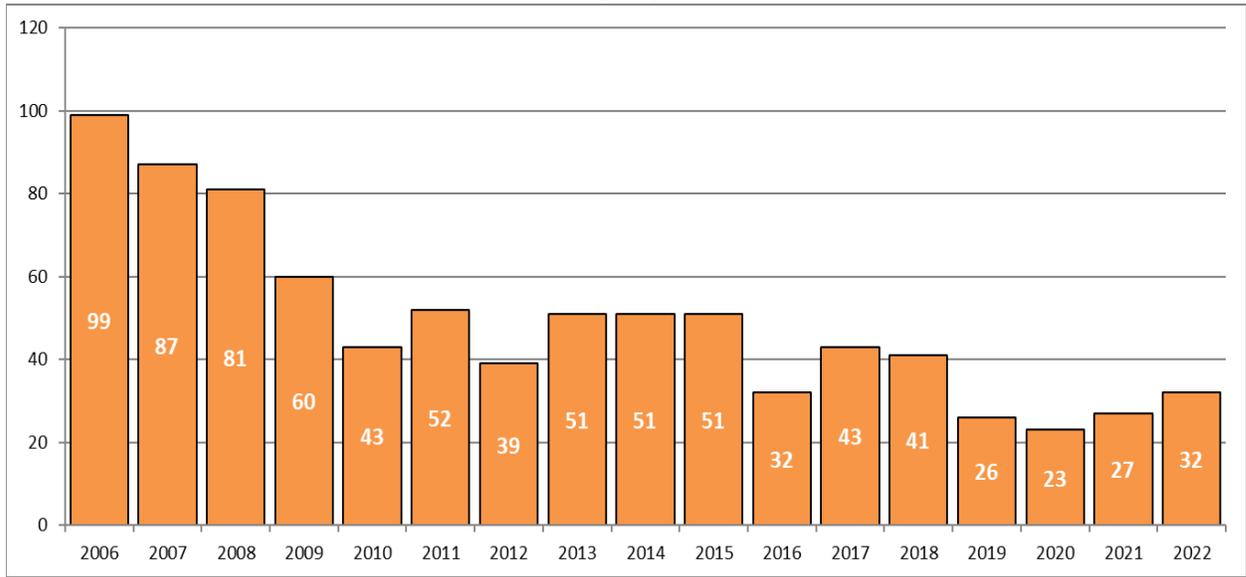
**Chart 1**  
**ENE Sources**



**Chart 2**  
**Con Edison ESR**



**Chart 3  
Non-Company ESR**



**IX. Analysis of Inspection Results**

Table 11 details the number of annual inspections performed for the current cycle for each facility type for the period from 2020 to 2024 (Cycle 4). Table 11A show the annual inspections performed for the Underground Distribution Structures for the period from 2021 to 2030 (Cycle 4).

**Table 11  
Cycle 4 - Yearly Inspection Breakdown**

<b>Facility Inspection Program</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>5-Year Cumulative Unique Inspections</b>	<b>Percent Completed</b>
Distribution URD	3,961	3,440	953			8,354	47%
Distribution Overhead	59,696	61,422	36,446			157,564	58%
Transmission Underground	656	825	602			2,083	94.7%
Transmission Overhead	1,286	1,286	1,286			1,286*	100%
Area Substation Fences	16	16	15			47	66.20%
Unit Substations	232	228	228			228*	100%
<b>Totals</b>	<b>65,395</b>	<b>67,188</b>	<b>39,530</b>			<b>169,562</b>	<b>58.4%</b>

\*All Transmission Overhead and Unit substations facilities are tested annually. This number is not cumulative.

**Table 11A**  
**Cycle 4 - Yearly Inspection Breakdown**

Facility Inspection Program	2021	2022	2023	2024	2025	5-Year Cumulative Unique Inspections	Percent Completed
Distribution Underground High Priority	3,366	949				4,315	45%
<b>Totals</b>	3,366	949				4,315	45%

Facility Inspection Program	2021	2022	2023	2024	2025	2026	2027	2028	8-Year Cumulative Unique Inspections	Percent Completed
Distribution Underground Medium Priority	28,210	19,552							47,762	35%
<b>Totals</b>	28,210	19,552							47,762	35%

Facility Inspection Program	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	10-Year Cumulative Unique Inspections	Percent Completed
Distribution Underground Low Priority	8,374	8,629									17,003	14%
<b>Totals</b>	8,374	8,629									17,003	14%

Facility Inspection Program	2021	2022	2023	2024	2025	5-Year Cumulative Unique Inspections	Percent Completed
Distribution Underground Total	39,950	29,130				69,080	26%
<b>Totals</b>	39,950	29,130				69,080	26%

Tables 12 through 15 show the number of deficiencies found in each inspected structure in 2022 by defect level. For example, Table 12 shows that 1,352 deficiencies or 15.96% of the total deficiencies found in the overhead were Level 2 and they were found on 1,244 overhead structures. Because a structure can have more than one deficiency, the same structure may be counted multiple times in different defect levels. However, the total number of structures in each of the tables is the unique number of structures inspected. In addition, the table does not show the structures that had no deficiencies.



**Table 12**  
**Overhead Distribution**  
**Breakdown of Locations with Deficiencies**

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	100	124	1.46%
2	1,244	1,352	15.96%
3	3,346	3,873	45.71%
4	2,943	3,124	36.87%
<b>Totals</b>	<b>7,633</b>	<b>8,473</b>	<b>100%</b>

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

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	2220	2291	3.76%
2	8,233	12,803	21.03%
3	1	1	0.00%
4	23,072	45,774	75.20%
<b>Totals</b>	<b>33,526</b>	<b>60,869</b>	<b>100%</b>

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

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	140	171	19.21%
2	352	362	40.67%
3	0	0	0.00%
4	256	357	40.11%
<b>Totals</b>	<b>748</b>	<b>890</b>	<b>100%</b>

**Table 15**  
**Overhead Transmission**  
**Breakdown of Locations with Deficiencies**

Defect Level	Number of Structures	Number of Deficiencies	% Deficiencies Found
1	1	2	1.87%
2	0	0	0.00%
3	15	21	19.63%
4	65	84	78.50%
<b>Totals</b>	<b>81</b>	<b>107</b>	<b>100%</b>

*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***

The Company found and repaired in 2022, 73% of the Level I, II, and III defects, distributed as follows: 99.5% of Level I; 83.59% of Level II, and 18.02% of Level III. Furthermore, the Company repaired an additional 14,690 Level II and III deficiencies towards eliminating the repair backlog.

**Table 16  
Deficiencies Repaired in 2022**

	<b>Repaired Deficiencies that were Generated before 12/31/2021</b>	<b>Repaired Deficiencies that were Generated in 2022</b>	<b>Total Completed Repairs</b>
Underground Facilities	1,504	13,600	15,104
Overhead Facilities	12,696	1,238	13,934
Pad Mount (URD) Facilities	490	482	972
<b>Total</b>	<b>14,690</b>	<b>15,320</b>	<b>30,010</b>

There is 1 Level I deficiency pending for Overhead and there are 6 Level I deficiencies pending repair for the Pad Mount (URD) facilities.

## Temporary Repairs

There are no Level I temporary repairs over 90 days.

## Analysis of Defects Found

Chart 5 shows the number of defects found per inspection by classification level. In 2022, the Company experienced a generation rate of L1 defects that was same as that of 2021, while L2 defects experienced 3% increase, and L3 defects experienced a slight decrease.

**Chart 5  
Defect Rate by Level**

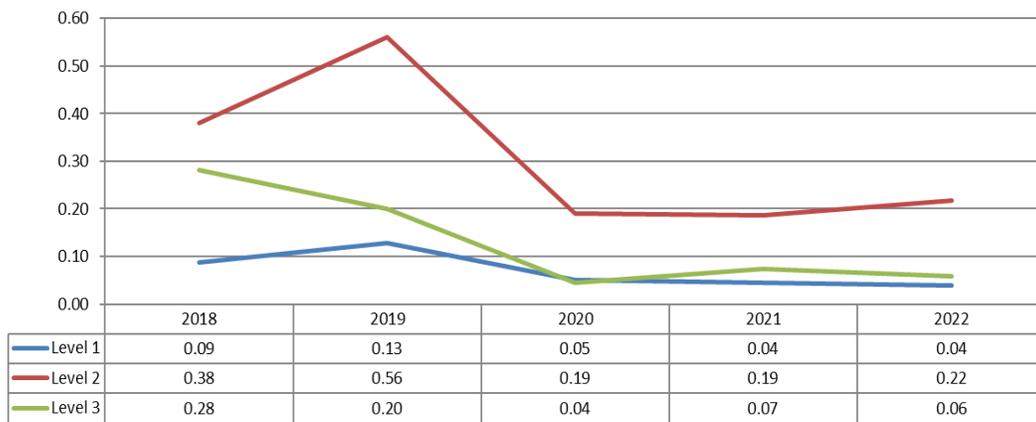
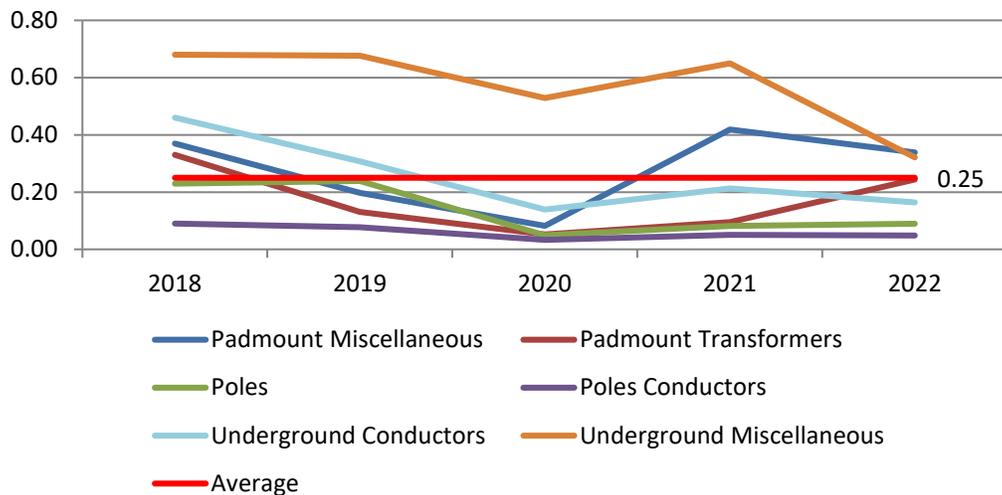


Chart 6 shows the 2022 Defect Rate by Category. The largest defect increase is in the category of Padmount Transformers specifically due to the hazard warning label missing and defective locks. while Underground Miscellaneous experienced significant decrease lead by a reduction in unsealed ducts and secondary end caps.

**Chart 6  
Defect Rate by Category**



## 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 2022, 2,013 quality assurance checks were conducted on 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 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 1,259 quality assurance checks of the underground distribution structures including underground residential distribution (URD), 285 quality assurance checks of overhead distribution structures and 469 quality assurance checks of municipally owned streetlights and underground manual testing program. Contact voltage was not found during any of these quality assurance reviews. In addition to the 2,013 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.***

Con Edison has a Central Quality Assurance group (QA) 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 perform underground structure inspections 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 2022, 1,544 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 1,259 underground and 285 overhead facilities. The results of the inspections of the randomly selected facilities are compared with the results of the previous inspection 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), CE-TS-6045 (Inspection and Preventive Maintenance and Contact Voltage Testing of Pipe Type Cable Systems) and CE-TS-6972 (Procedure for Periodic Inspection of Solid Dielectric Transmission Cable Systems) require that quality assurance inspections of randomly selected transmission components be performed. These randomly selected components 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 Central Engineering QA and Support Team along with Substation Operations QA which 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 recognizes that possessing strong organizational capability for innovation is critical to mitigating the risk to public safety and maintaining a reliable and resilient electric system. To that end, Con Edison continues to evolve our engineering and analytical solutions to achieve that goal.

Our innovation initiatives include leveraging the company's enterprise data analytics platform and AMI meter data to develop machine learning algorithms that identify the risk of defective neutral and ground conditions on customer services. Detecting and proactively repairing these conditions can avoid an electrical shock and/or disturbances in a customer's electrical service. In 2022, using predictive analytics and 3-phase AMI data, the company has identified and dispatched crews to 58 potential defective neutrals and have confirmed 55 conditions by responding in a timely manner to make it safe hence mitigating the risk. The Company won the AEIC Achievement Award for Enhanced Operational Processes Leveraging Advanced Meeting Infrastructure Initiative.

In addition, Con Edison is developing an asset defect detection system that uses machine learning and advanced image analytics to identify defects and categorizes images from Con Edison's inspection program and sensors deployed on the electric system. The Company's current inspection process requires a skilled utility personnel to enter the structure and perform visual inspections. This process is time-consuming, expensive, and exposes an individual to potentially hazardous conditions. As Con Edison's capability evolves, leveraging visual and thermal imagery eliminates the need for utility personnel to enter the structure, removes subjectivity, and optimizes the overall inspection program.

Lastly, Con Edison has designed and developed a mobile and desktop app called My Inspection Application (MIA) that allows users to upload photos relating to underground and overhead structures. MIA also contains a Photo Library where users can see photos and related data by structure, work order, or circuit. In the end, this streamlines image upload process by allowing users to easily upload photos, including thermal images and improve data availability by storing structure photos and retrieve photos of structures that have hotspots or defects, which can be used for job planning and better job briefings. Going forward, the company envisions entering inspection results within this application and have it serve as a platform for deploying image analytics, similar to the aforementioned asset defect detection system.

## **XII. Level II Deficiency Repairs**

As part of Con Edison's Reliability Performance Mechanisms,<sup>5</sup> for all Level II deficiencies that come into existence on or after January 1, 2022, Con Edison will attempt to make repairs to all within 365 days from the date of discovery or at a minimum complete 85% within 365 days.

The Company is required to report its performance in this contact voltage and inspection report in addition to the Annual RPM report that will be filed on March 31, 2023. The Company's annual RPM report will include the number of Level II Deficiencies discovered during the prior year; the status of Level II repairs; a description of any Level II Deficiencies that have been reclassified to a different level; a description of any deficiencies that were reclassified as a Level II deficiencies, and extraordinary circumstances, if any, that prevented the Company from achieving the target level for repairs.

During 2022, the Company discovered 14,517 Level II defects and repaired 12,339 (85%) within 365 days of discovery. In addition, there were no Level II defects found in 2022 that were reclassified to a different deficiency level and no other deficiencies were reclassified as Level II. The Company will provide additional detail on the Level II RPM work in the RPM Report on March 31, 2023.

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<sup>5</sup> Case 19-E-0065, et al, *Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan*, issued January 16, 2020, Joint Proposal, Appendix 14, pp. 18-19.



## Appendix 1: Summary of Manual Contact Voltage Testing

	Total System Units Requiring Testing	Units Completed	Percent Completed	Units with Voltage Found <sup>1</sup> (>= 1.0v)	Percent of Units Tested with Voltage (>= 1.0v )	Units Classified as Inaccessible
<b>Overhead Distribution Facilities</b>	36,446	36,446	100.00%	0	0.000%	0
Quarterly Update		12,642	34.69%	0	0.000%	0
<b>Underground Distribution Facilities</b>	139,011	139,011	100.00%	0	0.000%	171
Quarterly Update		16,836	12.11%	0	0.000%	171
<b>Street Lights / Traffic Signals<sup>2</sup></b>	111,730	111,730	100.00%	103	0.092%	351
Quarterly Update		31,896	28.55%	50	0.157%	351
<b>Substation Fences<sup>3</sup></b>	243	243	100.00%	0	0.000%	0
Quarterly Update		0	0.00%	0	0.000%	0
<b>Transmission (69kV and Above)</b>	1,286	1,286	100.00%	0	0.000%	0
Quarterly Update		0	0.00%	0	0.000%	0
<b>TOTAL</b>	288,716	288,716	100.00%	103	0.036%	522
Quarterly Update		61,374	21.26%	50	0.081%	522

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. 2022 is the third year of the five-year testing cycle for area substation fences. Cycle to date 47 out of 71 area substation fences have been completed as of 12/31/22.. Unit SS fences are tested annually.

## Appendix 2a: Summary of Energized Objects -Mobile Testing

	01/01/2022 - 12/31/2022						
	Initial Readings			Totals	Reading After Mitigation		
	1.0V-4.4V	4.5V-24.9V	>25V		<1.0V	1.0V-4.4V	>4.5V
<b>Distribution Facilities</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>19</b>	<b>19</b>	<b>0</b>	<b>0</b>
Ground	1	0	0	1	1	0	0
Guy	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Pole	4	7	7	18	18	0	0
Riser	0	0	0	0	0	0	0
<b>Underground Facilities</b>	<b>497</b>	<b>188</b>	<b>18</b>	<b>703</b>	<b>703</b>	<b>0</b>	<b>0</b>
Manhole	4	2	0	6	6	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	10	2	0	12	12	0	0
Service Box	385	155	14	554	554	0	0
Vault - Cover/Door	98	29	4	131	131	0	0
<b>Street Lights / Traffic Signals</b>	<b>1,035</b>	<b>320</b>	<b>239</b>	<b>1,594</b>	<b>1,594</b>	<b>0</b>	<b>0</b>
Metal Street Light Pole	418	186	169	773	773	0	0
Other	8	5	11	24	24	0	0
Pedestrian Crossing Pole	73	32	22	127	127	0	0
Traffic Control Box	3	3	1	7	7	0	0
Traffic Signal Pole	533	94	36	663	663	0	0
<b>Substation Fences</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Fence	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
<b>Transmission (Total)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
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
<b>Miscellaneous Facilities</b>	<b>3,022</b>	<b>1,161</b>	<b>232</b>	<b>4,415</b>	<b>4,415</b>	<b>0</b>	<b>0</b>
Bus Shelter	15	6	2	23	23	0	0
Control Box	2	0	0	2	2	0	0
Fire Hydrant	98	10	1	109	109	0	0
Gate/Fence/Awning	625	296	65	986	986	0	0
Other	876	295	62	1,233	1,233	0	0
Phone Booth	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
Scaffolding	63	33	16	112	112	0	0
Sidewalk	1,144	445	69	1,658	1,658	0	0
Traffic Sign	174	64	17	255	255	0	0
Water Pipe	25	12	0	37	37	0	0
<b>Total</b>	<b>4,559</b>	<b>1,676</b>	<b>496</b>	<b>6,731</b>	<b>6,731</b>	<b>0</b>	<b>0</b>

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

	01/01/2022 - 12/31/2022						
	Initial Readings			Totals	Reading After Mitigation		
	1.0V-4.4V	4.5V-24.9V	>25V		<1.0V	1.0V-4.4V	>4.5V
<b>Distribution Facilities</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>
Ground	0	0	0	0	0	0	0
Guy	0	1	0	1	1	0	0
Other	0	1	0	1	1	0	0
Pole	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
<b>Underground Facilities</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>7</b>	<b>0</b>	<b>0</b>
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	1	2	1	4	4	0	0
Vault - Cover/Door	0	2	1	3	3	0	0
<b>Street Lights / Traffic Signals</b>	<b>21</b>	<b>35</b>	<b>36</b>	<b>92</b>	<b>92</b>	<b>0</b>	<b>0</b>
Metal Street Light Pole	21	35	36	92	92	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	0	0	0	0	0	0
<b>Substation Fences</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Fence	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
<b>Transmission (Total)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
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
<b>Miscellaneous Facilities</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>0</b>
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	1	1	1	3	3	0	0
Other	5	2	1	8	8	0	0
Phone Booth	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
Scaffolding	0	0	0	0	0	0	0
Sidewalk	2	1	0	3	3	0	0
Traffic Sign	0	0	0	0	0	0	0
Water Pipe	0	1	0	1	1	0	0
<b>Total</b>	<b>30</b>	<b>46</b>	<b>40</b>	<b>116</b>	<b>116</b>	<b>0</b>	<b>0</b>

### Appendix 3: Summary of Shock Reports from the Public

2022	01/01/2022 - 12/31/2022	Yearly Total
<b>I. Total shock calls received</b>	<b>96</b>	<b>96</b>
Unsubstantiated	48	48
Normally Energized Equipment	1	1
Substantiated Stray Voltage	47	47
# Persons	28	28
# Animals	27	27
<b>II. Injuries Sustained</b>	<b>0</b>	<b>0</b>
Utility Responsibility - Person	0	0
Utility Responsibility - Animal	0	0
Non Utility Responsibility - Person	0	0
Non Utility Responsibility - Animal	0	0
Unsubstantiated - Person	0	0
Unsubstantiated - Animal	0	0
<b>III. Medical Attention Received</b>	<b>1</b>	<b>1</b>
Utility Responsibility - Person	1	1
Utility Responsibility - Animal	0	0
Non Utility Responsibility - Person	0	0
Non Utility Responsibility - Animal	0	0
Unsubstantiated - Person	0	0
Unsubstantiated - Animal	0	0
<b>IV. Voltage Source</b>	<b>47</b>	<b>47</b>
<b>Utility Responsibility</b>	<b>16</b>	<b>16</b>
Issue with primary, joint or transformer	0	0
Secondary joint(Crab)	5	5
SL service Line	2	2
Abandoned SL Service Line	0	0
Defective service line	4	4
Abandoned Service Line	0	0
OH Secondary	1	1
OH Service	1	1
OH Service neutral	1	1
OH SL Service	1	1
OH SL Service neutral	0	0
Pole	0	0
Riser	0	0
Other	1	1
<b>Customer Responsibility</b>	<b>24</b>	<b>24</b>
Contractor damage	2	2
Customer Equipment/Wiring	22	22
<b>Other Utility/Gov't Agency</b>	<b>7</b>	<b>7</b>
<b>Responsibility</b>		
SL Base Connection	3	3
SL Internal Wiring or Light Fixture	3	3
Overhead Equipment	0	0
Other - Utility	1	1
<b>V. Voltage Range</b>	<b>47</b>	<b>47</b>
1.0V to 4.4V	10	10
4.5V to 24.9V	9	9
25V and above	25	25
No Reading	3	3

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

Appendix 4 : Summary of Deficiencies and Repair Activity Resulting from the Inspection Process															
Overhead Facilities	2018			2019			2020			2021			2022		
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
<b>Overhead Facilities Total</b>															
<b>Total</b>															
Number of Deficiencies	161	1,590	6,422	16	347	1,574	246	1,193	3,701	184	893	7,316	124	1,352	3,873
Repaired in Time Frame	58	247	1,077	10	66	1,074	214	1,040	881	163	836	911	113	416	698
Repaired - Overdue	103	612	879	6	194	75	32	115	0	21	34	0	10	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	2,820	0	0	6,405	0	936	3,175
Not Repaired - Overdue	0	731	4,466	0	87	425	0	38	0	0	23	0	1	0	0
<b>Underground Facilities Total</b>															
<b>Total</b>															
Number of Deficiencies	2,151	12,049	2,395	2,620	12,430	1,656	4,167	16,088	1	3,987	17,135	3	2,290	12,797	0
Repaired in Time Frame	2,113	11,360	2,395	2,601	11,716	1,656	4,140	15,703	1	3,967	16,237	0	2,272	11,318	0
Repaired - Overdue	38	382	0	19	271	0	27	107	0	20	147	0	17	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	0	0	1	3	1	1,479	0
Not Repaired - Overdue	0	307	0	0	443	0	0	278	0	0	750	0	0	0	0
<b>Padmount Transformers Total</b>															
<b>Total</b>															
Number of Deficiencies	1,015	406	148	551	283	41	265	249	8	343	1,424	0	171	362	0
Repaired in Time Frame	934	243	148	495	164	41	179	101	8	261	1,208	0	132	342	0
Repaired - Overdue	81	38	0	56	25	0	86	0	0	82	31	0	28	0	0
Not Repaired - Not Due	0	0	0	0	0	0	0	0	0	0	0	0	5	20	0
Not Repaired - Overdue	0	125	0	0	94	0	0	148	0	0	185	0	6	0	0
<b>Streetlights Total</b>															
<b>Total</b>															
Number of Deficiencies															
Repaired in Time Frame															
Repaired - Overdue															
Not Repaired - Not Due															
Not Repaired - Overdue															
<b>Transmission Facilities Total</b>															
<b>Total</b>															
Number of Deficiencies	0	2	6	0	0	12	0	0	5	2	0	17	2	0	21
Repaired in Time Frame	0	2	6	0	0	12	0	0	5	2	0	8	2	0	15
Repaired - Overdue	0	0	0	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	9	0	0	6
Not Repaired - Overdue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Appendix 4: Summary of Deficiencies and Repair Activity Resulting from the Inspection Process (Cont.)**

<b>Summary of Deficiencies and Repair Activity Resulting from the Inspection Process</b>							
<b>Year</b>	<b>Priority Level / Repair Expected</b>		<b>Deficiencies Found (Total)</b>	<b>Repaired In-Time Frame</b>	<b>Repaired - Overdue</b>	<b>Not Repaired - Not Due</b>	<b>Not Repaired - Overdue</b>
<b>2018</b>	I	Within 1 week	3,327	3,105	222		
	II	Within 1 year	14,047	11,852	1,032		1,163
	III	Within 3 years	8,971	3,626	879		4,466
	IV	N/A	30,150	11,800	N/A	18,350	N/A
<b>2019</b>	I	Within 1 week	3,187	3,106	81		
	II	Within 1 year	13,060	11,946	490		624
	III	Within 3 years	3,283	2,783	75		425
	IV	N/A	23,739	9,585	N/A	14,154	N/A
<b>2020</b>	I	Within 1 week	4,678	4,533	145		
	II	Within 1 year	17,530	16,844	222		464
	III	Within 3 years	3,715	895		2,820	
	IV	N/A	41,327	11,153	N/A	30,174	N/A
<b>2021</b>	I	Within 1 week	4,516	4,393	123		
	II	Within 1 year	19,452	18,281	212	1	958
	III	Within 3 years	7,336	919		6,417	
	IV	N/A	37,591	8,161	N/A	29,430	N/A
<b>2022</b>	I	Within 1 week	2,587	2,519	55	6	7
	II	Within 1 year	14,511	12,076		2,435	
	III	Within 3 years	3,894	713		3,181	
	IV	N/A	31,187	7,254	N/A	23,933	N/A

**Appendix 4: Summary of Deficiencies and Repair Activity Resulting from the Inspection Process (Cont.)**

Summary of Deficiencies and Repair Activity Resulting from the Inspection Process - Level IV Conditions										
	2018		2019		2020		2021		2022	
	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 Total	9,982	2,887	1,472	932	6,045	565	5,488	903	3,124	337
Transmission Facilities Total	53	47	120	81	55	47	114	90	84	84
Underground Facilities Total	19,275	8,460	21,333	8,172	34,823	10,367	31,005	7,049	27,622	6,757
Padmount Transformers Total	840	406	814	400	404	174	984	119	357	76
Streetlight Total										
Total Level IV Conditions										
Overall Total	30,150	11,800	23,739	9,585	41,327	11,153	37,591	8,161	31,187	7,254

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## **Exhibit 1: Certifications**

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### **Certification of Contact Voltage Testing**

Shakira C. Wilson, on this 15 day of February 2023, 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 ending December 31, 2022 (“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.

  
Shakira C. Wilson

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## **Certification of Inspections**

Shakira C. Wilson, on this 15 day of February 2023, 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 ending December 31, 2022 (“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 54% of Overhead, URD electric distribution facilities, underground and overhead transmission, and substation fences and at least 20% of its Underground electric distribution facilities through December 31, 2022.



Shakira C. Wilson

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