



New York State Electric & Gas  
Corporation

**STRAY VOLTAGE TEST AND  
FACILITY INSPECTION  
PROGRAM**

Report on the results of Stray Voltage Tests and  
Facility Inspections for the 12-month period  
ending on December 31, 2018

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## **I. Background**

The New York State Public Service Commission's ("PSC" or "Commission") Electric Safety Standards Order issued on January 5, 2005, with subsequent revisions issued on July 21, 2005, December 15, 2008, March 22, 2013, and January 13, 2015 (Case 04-M-0159), and July 21, 2010 and June 23, 2011 (Case 10-E-0271), (collectively referred to herein as the "Safety Standards" or "Order"), require electric utilities in New York State, including New York State Electric & Gas Corporation ("NYSEG" or the "Company") to test annually all of their publicly accessible streetlights and underground electric facilities, and test their overhead distribution facilities, overhead and underground transmission facilities, underground residential distribution facilities (URD), and substation fences for stray voltage every five years coinciding with their electric facility inspections.

This report describes NYSEG's Stray Voltage Detection Program and Facility Inspection Program conducted in 2018.

## **II. Company Overview**

NYSEG, a subsidiary of AVANGRID serves approximately 891,000 electricity customers and 268,000 natural gas customers across more than 40% of upstate New York.

NYSEG's electric delivery infrastructure consists of approximately 833,630 distribution structures, 61,988 transmission structures, 60,812 underground/URD facilities, 435 substations, and 11,840 streetlight facilities.

## **III. Stray Voltage Testing Program**

During the 12-month period ending December 31, 2018, NYSEG conducted stray voltage testing of all its publicly accessible underground electric facilities, and all Company and non-Company owned metallic streetlights and traffic signals, as well as approximately 20% of its overhead transmission and distribution facilities, and underground residential distribution facilities that are capable of conducting electricity. The Company also tested all publicly accessible third party facilities in close proximity to NYSEG's system components identified with elevated voltage.

In addition, and in compliance with the Order, NYSEG:

- a. Immediately safeguarded and/or mitigated all voltage findings  $\geq 1.0$  volt. In instances where the stray voltage finding was determined to be caused by customer-owned equipment, the area was immediately made safe and the customer or responsible party associated with the premises was notified of the unsafe condition and the need for the customer to arrange for a permanent

repair. Voltage findings determined to be caused by a utility-owned facility were immediately safeguarded and/or mitigated. All permanent repairs were made within 45 days.

- b. Tested all publicly accessible structures within a 30 foot radius of the electric facility or streetlight where there was a stray voltage finding  $\geq 1.0$  volt.
- c. Responded, investigated, and mitigated positive findings of shock incidents reported by the public.

#### Structures Inaccessible to the Public

Contractors made every attempt to locate and test all structures. If the contractor could not reach the structure to perform a test, it was identified as “Inaccessible” and all other pertinent data was collected in the field. Of the 217,459 facilities visited, 1,879 were deemed Inaccessible to the public. As described below, there are several types of Inaccessible structures:

- a. Private Property – The structure was not tested if it was located on private property and was inaccessible due to walls, fences or barriers such as a locked gate, if excavation or bush/tree removal was required, or if there was unauthorized construction around the structure.
- b. NYSEG Property – Structure located on Company property, such as substations, are accessible only to Company personnel and authorized contractors.
- c. Buried / Paved Over – The structure was not tested if it had been covered over with dirt, pavement, or other foreign objects that would prohibit public access and prevent testing the structure.
- d. Inside Building – The structure was not tested if it is customer owned equipment inside a building, in a locked equipment room, that is accessible to authorized personnel only.
- e. Limited Access Highways – Structures located on highways, exit and entrance highway ramps. The performance of stray voltage testing would constitute an unacceptable risk to the employee/contractor.
- f. Dangerous Terrain – Poles located on cliffs and other dangerous terrain are generally inaccessible to personnel and are approached only under urgent circumstances. The performance of stray voltage testing would constitute an unacceptable risk to the employee/contractor.

#### **IV. Stray Voltage Testing Facilities**

##### Structure Categories

As presented in Appendix 1, NYSEG visited a total of 217,459 individual facilities in 2018. Of the 217,459 facilities visited, 45,641 did not require stray voltage testing because these structures and their associated equipment are non-metallic and incapable of conducting electricity. Additionally, 1,879 facilities were deemed inaccessible to the public. As a result, approximately 169,939

facilities required testing for the presence of stray voltage. These facilities are broken down into five main categories including:

Distribution Overhead – Of the 163,751 facilities visited, there are approximately 117,888 distribution pole structures that required testing for the presence of stray voltage in NYSEG’s territory. The testing criteria include all utility-owned or joint use wooden poles with utility electrical facilities located on both public thoroughfares and customer property, including backyards or alleys. Stray 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. Distribution overhead facilities are included in both the stray voltage and inspection programs.

Underground Facilities – Of the 11,508 facilities visited there are approximately 11,113 underground facilities that required testing for the presence of stray voltage that comprise NYSEG’s system. The testing criteria are comprised of subsurface structures, including above ground pad-mounted structures. Included in the underground facilities are pad-mount switchgear cases, pad-mount transformer cases, electric utility manhole covers, submersible transformer covers, electric utility handhole covers, network vaults and grates. These facilities are included in both the stray voltage and facility inspection programs.

Street lights and Traffic Signals – Of the 33,459 facilities visited, there are approximately 16,976 metallic street lights and approximately 16,065 traffic signals within NYSEG’s service territory that required testing for the presence of stray voltage. This total includes metallic street lights owned by NYSEG with the balance of the equipment owned by various municipalities. The testing criteria include all metallic streetlights, traffic signals, and pedestrian crosswalk signals located on publicly accessible thoroughfares. All stray voltage testing of street lights is performed at night while the fixtures are energized. All Company-owned streetlights are included in the facility inspection program.

Transmission Structures – Of the 8,457 facilities visited, there are approximately 7,613 individual poles/towers that required testing for the presence of stray voltage that comprise NYSEG’s transmission system. The testing criteria is comprised of all structures, guys, and down leads attached to the structures. Transmission structures support circuit voltages of 34.5 kilovolts and greater. Transmission poles as described above, with distribution under-build, are included in this transmission category. All transmission structures are included in both the stray voltage and facility inspection programs.

Substations – There are approximately 435 substation fences in NYSEG’s territory that require testing for the presence of stray voltage every five years. 284 substation fences were tested or recorded under this program throughout this cycle year.

## **Analysis of Causes of Findings and Stray Voltage**

All New York State utilities perform an inventory on all findings and report on the number of these findings each year. Section 1(f) of the Order 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 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.”

Generally, there are two types of reported findings;

The first is a confirmed voltage reading greater than or equal to 1 volt measured using a volt meter and 500 ohm shunt resistor which is the result of an abnormal power system condition.

The second type is a confirmed voltage reading greater than or equal to 1 volt measured using a volt meter and 500 ohm shunt resistor which results from the normal delivery and/or use of electricity. Transmission structures in the absence of apparent damage to the structure grounding system typically are found having an induced voltage deemed normal to operating conditions. Inclusion of these normal occurring voltages in the total findings can result in the perception that there are more potentially hazardous voltage findings than actually exist.

Utilities are required to report on all findings, regardless of whether or not the voltage is abnormal or normal to operating conditions. Causes of these findings can include, but are not limited to, naturally occurring neutral to earth voltages (as part of a multi-grounded WYE power system); poor soil grounding conditions; load imbalance between phases; long low voltage single phase circuit spurs with high current loads; and/or proximity to transmission lines.

True hazardous voltages have been identified and mitigated through the stray voltage testing program. These voltages resulted from a variety of conditions including: deterioration of conductors; age of equipment; exposure to the elements; and various customer related issues. Through the efforts of the stray voltage testing program, NYSEG has been able to repair these issues and mitigate the danger associated with the elevated voltage. A summary of energized objects included as Appendix 2 in this report displays the voltage ranges found for each stray voltage condition encountered this year.

In accordance with the PSC requirements; when a finding is discovered on an electric facility or streetlight during stray voltage testing, the Company is

obligated to perform stray voltage testing on all publicly accessible structures and sidewalks within a minimum 30 foot radius of the electric facility or streetlight. In this year's testing cycle there were no energized objects reported within a 30 foot radius of any stray voltage finding.

**V. Facility Inspection Program**

The Safety Standards require NYSEG to visually inspect approximately 20% of its facilities annually, resulting in 100% inspection of its electric facilities every five years.

The objective of all inspections is to conduct a careful and critical examination of an electric facility by a qualified individual to determine the condition of the facility and the potential to cause, or lead to safety hazards, or adverse effects on reliability.

Inspections conducted during routine maintenance and other work not directly related to the inspection program count as an inspection visit, provided that the inspection is performed using the same safety and reliability criteria and to the same extent as would otherwise be required under the Electric Safety Standards.

In accordance with the Safety Standards, NYSEG 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 shall be used for future monitoring purposes and planning proactive maintenance activities.

In accordance with the PSC requirements, 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. Temporary repairs that remain on the system for more than 90 days are due to extraordinary circumstances, i.e. storms, and require extensive repair activity. The Company puts forth best efforts

to conduct permanent repairs in the field, and only construct a temporary repair if/when absolutely necessary. For cycle year 2018, NYSEG had no open temporary repair exceptions to report at the end of the year.

**VII. Annual Performance Targets**

NYSEG performed the required stray voltage testing and facilities inspections in accordance with the requirements set forth in the Order.

In compliance with the Safety Standards, NYSEG has met the annual performance target for stray voltage testing of 100% of streetlights and underground electric facilities, and an average of 20% of the overhead distribution facilities, overhead and underground transmission facilities, underground residential distribution facilities, and substation fences per year, over the five year term 2015-2019 for the period ending December 31, 2018. The table below provides the annual inspection percentage for each year of this inspection cycle, based on the total number of structures to inspect, and is in compliance with the Safety Standards performance targets.

*Facility Inspection Annual Performance*

<b>Year</b>	<b>Inspection Percentage</b>
2015	21.30%
2016	21.30%
2017	19.80%
2018	19.50%
2019	
2015-2019 Cumulative	82%

The 2018 inspection results are summarized in the table below.

*Facility Inspection Program Results*

<b>Category</b>	<b>2018 NYSEG Inspection Target</b>	<b>Actual Cumulative Inspected as of 2018</b>
Overhead Distribution	20%	83%
Overhead Transmission	20%	75%
Underground	20%	81%
Padmounts	20%	76%
Streetlight	20%	64%



## 5-Year Inspection Performance Summary

### Overhead Distribution Facilities

Inspection Year	Number of Overhead Distribution Structures Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	174,688	21%
2016	184,869	43%
2017	169,236	63%
2018	163,563	83%
2019		

### Overhead Transmission Facilities

Inspection Year	Number of Overhead Transmission Facilities Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	17,134	25%
2016	9,837	40%
2017	11,061	56%
2018	8,234	75%
2019		

### Underground Facilities

Inspection Year	Number of Underground Facilities Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	4,572	21%
2016	5,275	46%
2017	4,187	66%
2018	4,306	81%
2019		

### Padmount Facilities

Inspection Year	Number of Underground Facilities Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	6,815	19%
2016	6,725	37%
2017	7,597	58%
2018	7,860	76%
2019		

Streetlights

Inspection Year	Number of Streetlights Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	2,424	19%
2016	91	19%
2017	33	19%
2018	5,007	64%
2019		

**VIII. Analysis of Inspection Results**

**Overhead Distribution Structures**

*Table of Locations with Deficiencies*

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
163,563	12,942	7.91%

*Breakdown of Locations with Deficiencies*

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	263	2.03%
2	3,852	29.76%
3	5,881	45.44%
4	2,946	22.76%
Total:	12,942	100%

**Overhead Transmission Facilities**

*Table of Locations with Deficiencies*

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
8,234	718	8.72%

*Breakdown of Locations with Deficiencies*

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	5	0.70%
2	152	21.17%
3	453	63.09%
4	108	15.04%
Total:	718	100%

**Underground Facilities**

*Table of Locations with Deficiencies*

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
4,306	119	2.76%

*Breakdown of Locations with Deficiencies*

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	6	5.04%
2	32	26.89%
3	70	58.82%
4	11	9.24%
Total:	119	100%

**Pad-mounts**

*Table of Locations with Deficiencies*

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
7,860	142	1.81%

*Breakdown of Locations with Deficiencies*

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	33	23.24%
2	55	38.73%
3	48	33.80%
4	6	4.23%
Total:	142	100%

**Streetlights**

*Table of Locations with Deficiencies*

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
5007	502	10.03%

*Breakdown of Locations with Deficiencies*

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	0	0%
2	63	12.55%
3	432	86.06%
4	7	1.39%
Total:	502	100%

In 2018, a total of 14,423 Level I – IV deficiencies were identified out of the 188,970 scheduled inspections conducted representing a deficiency rate of about 7.63% of the unique inspections performed. As described by the Safety Standards, Level IV conditions represent “Condition[s] 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 should be used for future monitoring purposes and planning proactive maintenance activities.” (Safety Standards Section 4 (j)). By excluding these atypical conditions focusing only on the 11,345 Level I - III deficiencies results in a deficiency rate of 6.0 % which is a more accurate representation.

## **IX. QA/QC Programs**

Overhead Transmission and Distribution, Streetlights, and Underground inspections were performed using a Field Workforce Mobility (FWM) Toughbook. The FWM Toughbooks are portable tablet computers with pre-loaded software that displays all assets to be inspected and includes pre-formatted inspection pick tables the inspectors use to document individual inspections. The FWM Toughbook has built-in GPS capability that displays its real-time position in relation to any company asset. Inspectors are required to document all inspections on the FWM Toughbook, and the resulting data is uploaded into the Company SAP system.

Notifications are automatically generated from the deficiencies uploaded into the SAP system. Any structure reported as inaccessible due to being buried or paved over in the Field Workforce Mobility (FWM) application is turned in to T&D Network Maintenance for verification with the Master Data Department. If Master Data confirms that the structure does exist, company and contractor crews follow up and attempt to locate, uncover, and inspect/test the structure. If the structure could not be found, it was then considered removed from the field, and updated as such in SAP, our system of record. The company routinely monitors these notifications to report status of the program and track any follow-up repairs.

### **Stray Voltage Testing QA/QC Program**

Stray voltage testing data is acquired through two means. The first is in conjunction with a distribution line or transmission line (DLI/TLI) facility inspection where a stray voltage test is performed at the same time an inspector is doing an inspection. Stray voltage test data is stored on the FWM toughbook and is uploaded weekly along with inspection data.

### Test Data with Inspections

Stray voltage tests are conducted on all distribution and transmission facilities and underground residential distribution facilities scheduled for inspection. Since the testing is done at the same time of inspection, test records are linked to the inspection record assuring a test for each asset. Inspectors upload this test data into SAP each week. Upon receipt of these files, QA/QC personnel verify not only every inspected asset has a test record but also all the required data fields are populated accurately.

The second means is in conjunction with the annual obligation to test all streetlights, traffic signal equipment, and underground manhole and handhole facilities.

### Stray Only Test Data

Stray voltage tests are conducted on all streetlights, traffic signal equipment, and underground manholes and handhole facilities. This testing data is also pre-loaded onto the FWM Toughbook device and displays all assets to be tested and includes pre-formatted pick tables the testers use to document individual tests. Similar to DLI/TLI Inspections, the Stray Only testing data is uploaded from the FWM Toughbook into the SAP system weekly. Upon receipt of the data, QA/QC personnel verify the consistency, completeness, and accuracy of the data.

At the end of each year, QA/QC personnel check company asset records to gather any new installations constructed in the current year. This evaluation allows us to identify any new structures which are then included in the testing contractor's scope to obtain going forward.

On an ongoing basis, NYSEG performs additional quality assurance measures to ensure testing data accuracy. These include, but are not limited to; investigations into inaccessible structures to determine the nature of inaccessibility, performance of individual testers, miscellaneous anomalies found in testing data, and checking circuit maps to ensure all structures have been visited. Problem testers, if any are identified to the testing contractor and, if need be, removed from the testing effort. If necessary, problem areas are retested in order to ensure testing accuracy.

In addition to these measures, Field Coordinators conduct random field visits to ascertain that field contractors are performing tests on all required structures. During these visits, the Field Coordinator will observe testers performing their work to ensure they're doing it correctly and answer any questions about map reading, structure IDs, and location of structures. The Field Coordinator also performs follow up on randomly chosen structures to check that were tested and recorded properly.

## **Facility Inspections QA/QC Program**

A thorough review of inspection data is made by QA/QC personnel to evaluate the effectiveness of the following three primary focus areas.

Focus Area 1 - Ensure all planned inspections (that make up the 20% obligation) developed for the current year are performed. To do this, a 5 year plan is established for each cycle which details what transmission and distribution circuits, and accompanying assets, are scheduled for any given year. This plan assures that all circuits are scheduled and any given year's asset count is balanced to the 20% goal. The scope of the inspection plan is communicated to the inspector contractor through data on the FWM toughbook. Inspection results are returned to the company each week. QA/QC personnel review progress to validate all planned inspections are made. Please note that the number of structures at NYSEG is slightly different than the number set as the 5 year target (983,351) back in 2015 due to normal system changes. Our QA/QC process includes reconciling those system changes to insure compliance with the order.

Focus Area 2 - Ensure inspector's evaluation of asset condition is accurate and consistent and performed in accordance with established procedures and applicable training manuals. To do this, QA/QC personnel conduct two types of assessments.

### Field Assessments

In the field review QA/QC personnel are given a list of assets to visit and inspect. This asset list consists of recent inspections made by our inspection contractor and the QA/QC personnel are unaware of the reported results. The QA/QC personnel independently inspect the assets and record their result. The results are then compared and any inconsistencies are discussed at the weekly meeting with the inspection contractor. Meeting Minutes and a Communication Log is used to document reporting decisions.

### Internal Assessments

This review looks at deficiencies reported by the inspection contractor. All reported Level 1 – 3 deficiencies have photographs attached. QA/QC personnel review deficiencies and their pictures to assert the accuracy of the reported problem and assigned priority. Any problems noted from this focus area are communicated back to the inspectors for correction. A total of 11,634 pictures were reviewed with 11,507 deemed accurately reported, resulting in a 99% confidence level.

Additionally, QA/QC personnel review all inaccessible inspections from the past week and provide contact information to the inspection supervisor. This enables the supervisor to contact the owner, explain the

importance of the program and to coordinate a revisit the following week while the inspectors are still in the general area.

Focus Area 3 – Ensure that all reported repairs made on deficiencies found as a result of the inspection program are completed. A sample set of reported deficiencies and associated repairs made are selected throughout each division. This sample set is given to the QA/QC personnel to be field verified. QA/QC personnel visit each specific asset and validate whether the reported repair work has been made. Any discrepancies found with this effort are communicated back to company personnel for follow-up action.

#### X. **Certifications**


Pursuant to Section 7 of Appendix A of the Safety Standards, the president or officer of each utility with direct responsibility for overseeing stray voltage testing and facility inspections shall provide an annual certification to the Commission that the utility has, to the best of his or her knowledge, exercised due diligence in carrying out a plan, including quality assurance, that is designed to meet the stray voltage testing and inspection requirements, and that the utility has:

- Tested all of its publicly accessible electric facilities and street lights, as referred to in the body of the February 15 Report, and
- Inspected the requisite number of electric facilities.

The certifications are attached as Exhibit 1 of this report.

## Appendix 1


## Stray Voltage Testing Summary

	2018 Targets	Units Completed	Percent Completed	Units with Voltage Found (>= 1.0v)	Percent of Units Tested with Voltage (>= 1.0v )	Units Classified as Inaccessible
Distribution Facilities	159,658	163,751	103%	16	0.010%	1,183
Underground Facilities	10,199	11,508	113%	0	0.000%	146
Street Lights / Traffic Signals	33,436	33,459	100%	4	0.012%	240
Substation Fences	435	284	65%	14	4.930%	0
Overhead Transmission	10,221	8,457	83%	5	0.059%	310
<b>TOTAL</b>	<b>213,950</b>	<b>217,459</b>	<b>102%</b>	<b>39</b>	<b>0.018%</b>	<b>1,879</b>




Appendix 2

**Summary of Energized Objects**

	Initial Readings				Readings after Mitigation		
	1-4.4V	4.5-24.9V	>25V	Totals	< 1V	1-4.4V	>4.5V
<b>Distribution Facilities</b>	7	7	2	16	16	0	0
Pole	0	0	0	0	0	0	0
Ground	5	6	2	13	13	0	0
Guy	2	1	0	0	3	0	0
Riser	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
<b>Underground Facilities</b>	0	0	0	0	0	0	0
Manhole/ Pull box	0	0	0	0	0	0	0
Manhole	0	0	0	0	0	0	0
Padmount Switchgear	0	0	0	0	0	0	0
Padmount Transformer	0	0	0	0	0	0	0
Vault-Cover/Door	0	0	0	0	0	0	0
Pedestal	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
<b>Street Lights/Traffic Signals</b>	1	1	2	4	4	0	0
Metal Street Light Pole	1	1	2	4	4	0	0
Traffic Signal Pole	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
Other	0	0	0	0	0	0	0
<b>Substation Fences</b>	13	1	0	14	5	1	0
Fence	13	1	0	14	5	1	0
Other	0	0	0	0	0	0	0
<b>Transmission (Total)</b>	4	1	0	5	5	0	0
Lattice Tower	0	0	0	0	0	0	0
Pole	0	0	0	0	0	0	0
Ground	3	1	0	4	4	0	0
Guy	1	0	0	1	1	0	0
Other	0	0	0	0	0	0	0
<b>Miscellaneous Facilities</b>	0	0	0	0	0	0	0
Sidewalk	0	0	0	0	0	0	0
Gate/Fence/Awning	0	0	0	0	0	0	0
Control Box	0	0	0	0	0	0	0
Scaffolding	0	0	0	0	0	0	0
Bus Shelter	0	0	0	0	0	0	0
Fire Hydrant	0	0	0	0	0	0	0
Phone Booth	0	0	0	0	0	0	0
Water Pipe	0	0	0	0	0	0	0
Riser	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0

## Appendix 3

### Summary of Shock Reports from the Public

	Data collected as of December 31, 2018	Yearly Total
<b>I. Total Shock Calls Received:</b>		<b>34</b>
Unsubstantiated		2
Normally Energized Equipment		17
<b>Stray Voltage:</b>		<b>15</b>
Person		13
Animal		2
<b>II. Injuries Sustained/Medical Attention Received:</b>		<b>3</b>
Person		1
Animal		2
<b>III. Stray Voltage Source:</b>		<b>15</b>
<b>Utility Responsibility (Total)</b>		<b>5</b>
Overhead Distribution System		5
Underground Distribution System		0
Transmission System		0
<b>Other Utility/Gov't Agency (Total)</b>		<b>3</b>
Streetlight		0
Other (Total)		3
<b>Customer Responsibility (Total)</b>		<b>7</b>
<b>IV. Stray Voltage Range:</b>		<b>15</b>
1.0V to 4.4V		0
4.5V to 24.9V		0
25V and above		5
Unknown		10

## Appendix 4

## New York State Electric and Gas

## Annual Summary of Deficiencies and Repair Activity Resulting from the Inspection Process

As of December 31, 2018

Detail of Deficiencies by Facilities	2014				2015				2016				2017				2018			
	I Within 1 week	II Within 1 year	III Within 3 years	IV	I Within 1 week	II Within 1 year	III Within 3 years	IV	I Within 1 week	II Within 1 year	III Within 3 years	IV	I Within 1 week	II Within 1 year	III Within 3 years	IV	I Within 1 week	II Within 1 year	III Within 3 years	IV
<b>Overhead Facilities</b>																				
Repaired in Time Frame	139	1,414	2,807	1,982	184	1,081	1,269	663	283	1,517	1,486	396	240	1,035	775	121	240	224	112	37
Repaired - Overdue	1	639	344	0	55	916	196	0	38	1,256	0	0	19	753	0	0	23	0	0	0
Not Repaired - Not Due	0	0	0	9,011	0	0	0	11,990	0	0	4,037	13,726	0	0	7,646	8,874	0	3,628	5,769	2,909
Not Repaired - Overdue	0	102	743	0	0	312	2,011	0	0	1,702	0	0	0	3,808	0	0	0	0	0	0
<b>Total Overhead Facilities</b>	<b>140</b>	<b>2,155</b>	<b>3,894</b>	<b>10,993</b>	<b>239</b>	<b>2,309</b>	<b>3,476</b>	<b>12,653</b>	<b>321</b>	<b>4,475</b>	<b>5,523</b>	<b>14,122</b>	<b>259</b>	<b>5,596</b>	<b>8,421</b>	<b>8,995</b>	<b>263</b>	<b>3,852</b>	<b>5,881</b>	<b>2,946</b>
<b>Underground Facilities</b>																				
Repaired in Time Frame	15	5	88	34	11	8	16	23	26	15	49	15	18	1	21	0	5	2	4	0
Repaired - Overdue	9	21	8	0	6	9	11	0	1	10	0	0	0	11	0	0	1	0	0	0
Not Repaired - Not Due	0	0	0	112	0	0	0	652	0	0	70	426	0	0	71	48	0	30	66	11
Not Repaired - Overdue	0	24	87	0	0	13	26	0	0	9	0	0	0	15	0	0	0	0	0	0
<b>Total Underground Facilities</b>	<b>24</b>	<b>50</b>	<b>183</b>	<b>146</b>	<b>17</b>	<b>30</b>	<b>53</b>	<b>675</b>	<b>27</b>	<b>34</b>	<b>119</b>	<b>441</b>	<b>18</b>	<b>27</b>	<b>92</b>	<b>48</b>	<b>6</b>	<b>32</b>	<b>70</b>	<b>11</b>
<b>Pad Mount Facilities</b>																				
Repaired in Time Frame	16	29	32	6	25	19	13	5	16	6	3	2	32	8	8	2	27	0	3	0
Repaired - Overdue	4	9	3	0	9	1	4	0	2	6	0	0	2	13	0	0	6	0	0	0
Not Repaired - Not Due	0	0	0	33	0	0	0	32	0	0	23	11	0	0	63	27	0	55	45	6
Not Repaired - Overdue	0	3	17	0	0	5	14	0	0	3	0	0	0	26	0	0	0	0	0	0
<b>Total Pad Mount Facilities</b>	<b>20</b>	<b>41</b>	<b>52</b>	<b>39</b>	<b>34</b>	<b>25</b>	<b>31</b>	<b>37</b>	<b>18</b>	<b>15</b>	<b>26</b>	<b>13</b>	<b>34</b>	<b>47</b>	<b>71</b>	<b>29</b>	<b>33</b>	<b>55</b>	<b>48</b>	<b>6</b>
<b>Streetlight Facilities</b>																				
Repaired in Time Frame	0	0	17	9	0	1	3	0	0	1	1	0	0	0	0	0	0	0	3	0
Repaired - Overdue	0	1	0	0	0	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Not Repaired - Not Due	0	0	0	74	0	0	0	24	0	0	1	1	0	0	5	2	0	60	432	7
Not Repaired - Overdue	0	0	4	0	0	3	2	0	0	1	0	0	0	5	0	0	0	0	0	0
<b>Total Streetlight Facilities</b>	<b>0</b>	<b>1</b>	<b>21</b>	<b>83</b>	<b>0</b>	<b>7</b>	<b>6</b>	<b>24</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>63</b>	<b>432</b>	<b>7</b>
<b>Transmission Facilities</b>																				
Repaired in Time Frame	5	17	169	77	5	66	116	0	1	88	229	44	1	48	62	6	3	2	1	0
Repaired - Overdue	0	76	122	0	2	28	2	0	0	29	0	0	0	4	0	0	2	0	0	0
Not Repaired - Not Due	0	0	0	183	0	0	0	181	0	0	515	199	0	0	642	413	0	150	452	108
Not Repaired - Overdue	0	7	454	0	0	136	846	0	0	299	0	0	0	255	0	0	0	0	0	0
<b>Total Transmission Facilities</b>	<b>5</b>	<b>100</b>	<b>745</b>	<b>260</b>	<b>7</b>	<b>230</b>	<b>964</b>	<b>181</b>	<b>1</b>	<b>416</b>	<b>744</b>	<b>243</b>	<b>1</b>	<b>307</b>	<b>704</b>	<b>419</b>	<b>5</b>	<b>152</b>	<b>453</b>	<b>108</b>

## Appendix 4a

## NYSEG 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
2014	I Within 1 week	189	175	14	0	0
	II Within 1 year	2,347	1,465	746	0	136
	III Within 3 years	4,895	3,113	477	0	1,305
	IV N/A	11,521	2,108	n/a	9,413	n/a
2015	I Within 1 week	297	225	72	0	0
	II Within 1 year	2,601	1,175	957	0	469
	III Within 3 years	4,530	1,417	214	0	2,899
	IV N/A	13,570	691	n/a	12,879	n/a
2016	I Within 1 week	367	326	41	0	0
	II Within 1 year	4,943	1,627	1,302	0	2,014
	III Within 3 years	6,414	1,768	0	4,646	0
	IV N/A	14,824	457	n/a	14,367	n/a
2017	I Within 1 week	312	291	21	0	0
	II Within 1 year	5,982	1,092	781	0	4,109
	III Within 3 years	9,293	866	0	8,427	0
	IV N/A	9,493	129	n/a	9,364	n/a
2018	I Within 1 week	307	275	32	0	0
	II Within 1 year	4,154	231	0	3,923	0
	III Within 3 years	6,884	120	0	6,764	0
	IV N/A	3,078	37	n/a	3,041	n/a

**Exhibit 1**

**CERTIFICATION**  
**[STRAY VOLTAGE TESTING]**

STATE OF Connecticut            )  
  ) ss.:  
COUNTY OF New Haven         )

Ana Lafuente, on this 11 day of February 2019 certifies as follows:

1. I am the Vice President, Processes and Technologies of New York State Electric & Gas (the "Company"), and in that capacity I make this Certification for the annual period ending December 31<sup>st</sup>, 2018 based on my knowledge of the testing program adopted by the Company in accordance the Public Service Commission's Orders issued and effective January 5, July 21, 2005, December 15, 2008, March 22, 2013 and January 13, 2015 in Case 04-M-0159 and July 21, 2010 and June 23, 2011 in Case 10-E-0271 (collectively the "Orders"), including the Quality Assurance Program filed by the Company with the Commission.
2. In accordance with the requirements of the Orders, the Company developed a program designed to test (i) all of the publicly accessible electric facilities owned by the Company ("Facilities") and (ii) all streetlights located in public thoroughfares in the Company's service territory ("Streetlights"), as identified through a good faith effort by the Company, for stray voltage (the "Stray Voltage Testing Program").

3. I am responsible for overseeing the Company's Stray Voltage Testing Program and in that capacity I have monitored the Company's Stray Voltage Testing Program during the twelve months ended December 31<sup>st</sup>, 2018 (the "Twelve-Month Period").
  
4. I hereby certify that the Company exercised due diligence in carrying out a plan designed to meet the stray voltage testing requirements, including quality assurance, and, to the best of my knowledge, the Company has tested all of its publically accessible electric facilities and streetlights, except those identified in the Annual Report. I make this certification subject to the condition and acknowledgment that it is reasonably possible that, notwithstanding the Company's good faith implementation and completion of the Stray Voltage Testing Program, there may be Facilities and Streetlights that, inadvertently, may not have been tested or were not discovered or known after reasonable review of Company records and reasonable visual inspection of the areas of the service territory where Facilities and Streetlights were known to exist or reasonably expected to be found.

Ara Lafuente

Sworn to before me this 11<sup>th</sup> day of February, 2019  
Notary Public: exp. 12/2019  
State of CT  
Janet Mawri

**CERTIFICATION**  
**[FACILITY INSPECTIONS]**

STATE OF Connecticut            )  
  ) ss.:  
COUNTY OF New Haven         )

Ana Lafuente, on this 8 day of February 2019, certifies as follows:

1. I am the Vice President, Processes and Technologies of New York State Electric & Gas (the “Company”), and in that capacity I make this Certification for the annual period ending December 31<sup>st</sup>, 2018 based on my knowledge of the inspection program adopted by the Company in accordance the Public Service Commission’s Orders issued and effective January 5, July 21, 2005, December 15, 2008, March 22, 2013, and January 13, 2015 in Case 04-M-0159 and July 21, 2010 and June 23, 2011 in Case 10-E-0271 (collectively the “Orders”), including the Quality Assurance Program filed by the Company with the Commission.
  
2. The Company has an inspection program that is designed to inspect all of its electric facilities on a five-year inspection cycle, as identified through a good faith effort by the Company (“Facilities”), in accordance with the requirements of the Orders (the “Facility Inspection Program”).

3. I am responsible for overseeing the Company's Facility Inspection Program and in that capacity I have monitored the program during the twelve months ended December 31<sup>st</sup>, 2018 (the "Twelve-Month Period"). I hereby certify that the utility has exercised due diligence in carrying out a plan designed to meet the inspection requirements, including quality assurance, and, to the best of my knowledge, the utility has inspected the requisite number of electric facilities. In addition, the utility has inspected all of its electric facilities during the previous five year period, except those identified in the Annual Report.

*Aver Laferte.*

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Sworn to before me this 8<sup>th</sup> day of February, 2019

Notary Public: *exp 12/2019*  
*State of CT*  
*Janice Mauiri*