



Rochester Gas and Electric 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 (Case 04-M-0159), with subsequent revisions issued on July 21, 2005, December 15, 2008, March 22, 2013, July 21, 2010 and January 13, 2015 (Case 10-E-0271), (collectively referred to herein as the "Safety Standards" or "Order"), require electric utilities in New York State, including Rochester Gas and Electric Corporation ("RG&E" 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 the RG&E Stray Voltage Detection Program, the Mobile Stray Voltage Program, and the Facility Inspection Program conducted in 2018.

II. Company Overview

RG&E, a subsidiary of AVANGRID serves approximately 377,000 electricity customers and 316,000 natural gas customers in a nine-county region centered on the City of Rochester.

RG&E's electric delivery infrastructure consists of approximately 219,010 distribution structures, 16,853 transmission structures, 50,337 underground/URD facilities, 153 substations, and 8,471 streetlight facilities.

III. Stray Voltage Testing Program

During the 12-month period ending December 31, 2018, RG&E 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 their system components identified with elevated voltage.

In accordance with the Order, RG&E:

- a. Immediately safeguarded and/or mitigated all voltage findings ≥ 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 ≥ 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 a structure to perform a test, it was identified as “Inaccessible” and all other pertinent data was collected in the field. Of the 93,472 facilities visited, 628 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. RG&E 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.

As required by the Safety Standards, RG&E completed its annual mobile stray voltage scan of the underground network within the City of Rochester in 2018. The report on results from the mobile scan filed with the Public Service Commission in May can be found in Appendix 5 of this report.

IV. Stray Voltage Testing Facilities

Structure Categories

As presented in Appendix 1, RG&E visited a total of 93,472 individual facilities in 2018. Of the 93,472 facilities visited, 16,816 facilities did not require stray voltage testing because these structures and their associated equipment are non-metallic and incapable of conducting electricity. Additionally, 628 facilities were deemed inaccessible. As a result, approximately 76,028 facilities required testing for the presence of stray voltage. These facilities are broken down into five main categories including:

Distribution Overhead – Of the 41,113 facilities visited there are approximately 24,615 distribution pole structures that required testing for the presence of stray voltage in RG&E'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 25,337 facilities visited there are approximately 24,847 underground facilities that required testing for the presence of stray voltage that comprise RG&E's system. The testing criteria are comprised of subsurface structures, including above ground pad-mounted structures. Included in the underground facilities are padmount switchgear cases, padmount 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 23,606 facilities visited there are approximately 12,041 metallic street lights and approximately 11,429 traffic signals within RG&E's service territory that required stray voltage testing. This total includes all conductive street lights owned by RG&E with the balance of the equipment owned by various municipalities. The testing criterion includes 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 3,263 facilities visited there are approximately 2,943 individual poles/towers that required testing for the presence of stray voltage that comprise RG&E's transmission system. The testing criteria are 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 153 substation fences in RG&E’s territory that require testing for the presence of stray voltage every five years. 153 substation fences were tested or recorded under this program throughout this cycle year.

V. **Analysis of Causes of Findings and Stray Voltage**

All New York State utilities maintain 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, RG&E 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 was one energized object reported within a 30 foot radius of a stray voltage finding and it was cleared with mitigation of the finding.

VI. Facility Inspection Program

The Safety Standards require RG&E 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, RG&E 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, RG&E had no open temporary repair exceptions to report at the end of the year.

VII. Annual Inspection Performance Targets

RG&E 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, RG&E 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

Year	Inspection Percentage
2015	20.90%
2016	21.20%
2017	19.70%
2018	19.40%
2019	
2015-2019 Cumulative	81%

The 2018 inspection results are summarized in the table below.

Facility Inspection Program Results

Category	2018 RG&E Inspection Target	Actual Cumulative Inspected as of 2018
Overhead Distribution	20%	84%
Overhead Transmission	20%	70%
Underground	20%	68%
Padmounts	20%	81%
Streetlight	20%	71%

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	49,407	22%
2016	49,032	43%
2017	45,151	63%
2018	40,552	84%
2019		

Overhead Transmission Facilities

Inspection Year	Number of Overhead Transmission Facilities Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	2,581	15%
2016	3,160	33%
2017	2,747	48%
2018	3,320	70%
2019		

Underground Facilities

Inspection Year	Number of Underground Facilities Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	2,784	11%
2016	2,835	22%
2017	5,841	44%
2018	5,992	68%
2019		

Pad-mount Facilities

Inspection Year	Number of Underground Facilities Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	5,024	20%
2016	7,021	49%
2017	4,132	66%
2018	3,745	81%
2019		

Streetlights

Inspection Year	Number of Streetlights Inspected	% of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019)
2015	1,610	18%
2016	461	23%
2017	238	25%
2018	3,691	71%
2019		

VIII. Analysis of Inspection Results

Overhead Distribution Structures

Table of Locations with Deficiencies

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
40,552	2,753	6.79%

Breakdown of Locations with Deficiencies

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	23	.84%
2	543	19.72%
3	1,835	66.65%
4	352	12.79%
Total:	2,753	100%

Overhead Transmission Facilities

Table of Locations with Deficiencies

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
3,320	347	10.45%

Breakdown of Locations with Deficiencies

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	0	0%
2	44	12.68%
3	297	85.59%
4	6	1.73%
Total:	347	100%

Underground Facilities

Table of Locations with Deficiencies

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
5,992	671	11.20%

Breakdown of Locations with Deficiencies

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	24	3.58%
2	125	18.63%
3	522	77.79%
4	0	0%
Total:	671	100%

Pad-mounts

Table of Locations with Deficiencies

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
3,745	54	1.44%

Breakdown of Locations with Deficiencies

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	5	9.26%
2	24	44.44%
3	21	38.89%
4	4	7.41%
Total:	54	100%

Streetlights

Table of Locations with Deficiencies

Locations Inspected	Locations w/ Deficiencies	% Locations w/ Deficiencies
3,691	0	0%

Breakdown of Locations with Deficiencies

Priority Rating	Number of Deficiencies	% Deficiencies Found
1	0	0%
2	0	0%
3	0	0%
4	0	0%
Total:	0	0%

In 2018, a total of 3,825 Level I – IV deficiencies were identified out of the 57,300 scheduled inspections representing a deficiency rate of about 6.68% 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 3,463 Level I - III deficiencies results in a deficiency rate of 6.04% 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 three 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 a test record is received for each inspection and 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 test data is uploaded from the FWM device into the SAP system weekly. Upon receipt of the data, QA/QC personnel verify the consistency, completeness, and accuracy of this testing data.

The third means is through our mobile testing effort where data is acquired and tracked in a database system managed by the mobile testing vendor. The mobile testing vendor submits critical findings to the Company on a daily basis and detailed finding information weekly in the form of batches.

Mobile Testing Data

Prior to the mobile scan of the City of Rochester, RG&E provides the vendor with specific locations within the City they are to mobile scan. All data is collected by the mobile vendor in a database system and submitted to RG&E in a specific format. RG&E QA/QC personnel assure that all specified locations are scanned and all critical findings are collected and documented correctly.

At the end of each year, QA/QC personnel check company asset records to gather any new installations constructed in the current year as well as any devices that may have been removed from the field. This evaluation allows us to identify any new structures to include in the testing contractor's scope to obtain or any structures to omit going forward.

On an ongoing basis, RG&E 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 the test 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 inspection/ testing effort. If necessary, problem areas are retested in order to ensure 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 they 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 inspection 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 RG&E is slightly different than the number set as the 5 year target (304,456) 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, 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 discrepancies noted from this focus area are

communicated back to the inspectors for correction. A total of 3,420 pictures were reviewed with 3,382 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 all reported repairs made on deficiencies found, as a result of the inspection program are completed. QA/QC personnel select a sample set of reported deficiencies and associated repairs made 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

 RG&E	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	41,142	41,113	100%	1	0.002%	35
Underground Facilities	25,111	25,337	101%	0	0.000%	463
Street Lights / Traffic Signals	23,604	23,606	100%	6	0.025%	110
Substation Fences	153	153	100%	0	0.000%	0
Overhead Transmission	2,838	3,263	115%	0	0.000%	20
TOTAL	92,848	93,472	101%	7	0.007%	628

* 100% of all streetlights, traffic signals, and underground manholes and handholes were tested as required


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
Distribution Facilities	0	0	1	1	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
Riser	0	0	1	1	0	0	0
Other	0	0	0	0	0	0	0
Underground Facilities	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
Street Lights/Traffic Signals	0	2	4	6	6	0	0
Metal Street Light Pole	0	2	4	6	6	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
Substation Fences	0	0	0	0	0	0	0
Fence	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Transmission (Total)	0	0	0	0	0	0	0
Lattice Tower	0	0	0	0	0	0	0
Pole	0	0	0	0	0	0	0
Ground	0	0	0	0	0	0	0
Guy	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Miscellaneous Facilities	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/Cap	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
I. Total Shock Calls Received:	6
Unsubstantiated	0
Normally Energized Equipment	5
Stray Voltage:	1
Person	1
Animal	0
II. Injuries Sustained/Medical Attention Received:	1
Person	1
Animal	0
III. Stray Voltage Source:	1
Utility Responsibility (Total)	1
Overhead Distribution System	1
Underground Distribution System	0
Transmission System	0
Other Utility/Gov't Agency (Total)	0
Streetlight	0
Other (Total)	0
Customer Responsibility (Total)	0
IV. Stray Voltage Range:	1
1.0V to 4.4V	0
4.5V to 24.9V	0
25V and above	0
Unknown	1

Appendix 4

Rochester Gas and Electric

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
Overhead Facilities																				
Repaired in Time Frame	26	307	892	940	34	412	1,414	506	23	286	303	476	27	215	131	3	18	21	7	0
Repaired - Overdue	0	334	24	0	14	342	232	0	11	461	0	0	1	73	0	0	5	0	0	0
Not Repaired - Not Due	0	0	0	1,515	0	0	0	3,706	0	0	1,242	2,069	0	0	1,837	1,619	0	522	1,828	352
Not Repaired - Overdue	0	9	47	0	0	4	213	0	0	257	0	0	0	837	0	0	0	0	0	0
Total Overhead Facilities	26	650	963	2,455	48	758	1,859	4,212	34	1,004	1,545	2,545	28	1,125	1,968	1,622	23	543	1,835	352
Underground Facilities																				
Repaired in Time Frame	2	47	14	2	1	13	51	68	4	1	30	24	28	0	135	0	21	0	61	0
Repaired - Overdue	1	34	0	0	2	27	0	0	0	0	0	0	5	1	0	0	3	0	0	0
Not Repaired - Not Due	0	0	0	12	0	0	0	23	0	0	75	14	0	0	421	2	0	125	461	0
Not Repaired - Overdue	0	4	44	0	0	6	70	0	0	55	0	0	0	143	0	0	0	0	0	0
Total Underground Facilities	3	85	58	14	3	46	121	91	4	56	105	38	33	144	556	2	24	125	522	0
Pad Mount Facilities																				
Repaired in Time Frame	19	8	17	8	14	4	16	13	16	1	3	38	13	6	0	0	2	2	1	0
Repaired - Overdue	7	1	0	0	1	1	0	0	2	11	0	0	3	1	0	0	2	0	0	0
Not Repaired - Not Due	0	0	0	3	0	0	0	1	0	0	14	7	0	0	62	65	1	22	20	4
Not Repaired - Overdue	0	1	9	0	0	4	4	0	0	5	0	0	0	44	0	0	0	0	0	0
Total Pad Mount Facilities	26	10	26	11	15	9	20	14	18	17	17	45	16	51	62	65	5	24	21	4
Streetlight Facilities																				
Repaired in Time Frame	0	0	0	10	0	0	6	13	0	0	0	0	0	0	3	0	0	0	0	0
Repaired - Overdue	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Not Repaired - Not Due	0	0	0	17	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
Not Repaired - Overdue	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Streetlight Facilities	0	0	0	27	0	1	7	13	0	0	0	1	0	0	4	1	0	0	0	0
Transmission Facilities																				
Repaired in Time Frame	0	9	100	78	1	12	51	0	0	2	48	6	2	1	35	0	0	0	1	0
Repaired - Overdue	0	0	96	0	0	5	0	0	0	5	0	0	0	15	0	0	0	0	0	0
Not Repaired - Not Due	0	0	0	17	0	0	0	37	0	0	369	43	0	0	212	26	0	44	296	6
Not Repaired - Overdue	0	0	122	0	0	4	99	0	0	13	0	0	0	52	0	0	0	0	0	0
Total Transmission Facilities	0	9	318	95	1	21	150	37	0	20	417	49	2	68	247	26	0	44	297	6

Appendix 4a

RG&E 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	55	47	8	0	0
	II	Within 1 year	754	371	36	0	14
	III	Within 3 years	1,365	1,023	120	0	222
	IV	N/A	2,602	1,038	n/a	1,564	n/a
2015	I	Within 1 week	67	50	17	0	0
	II	Within 1 year	835	441	376	0	18
	III	Within 3 years	2,157	1,538	232	0	387
	IV	N/A	4,367	600	n/a	3,767	n/a
2016	I	Within 1 week	56	43	13	0	0
	II	Within 1 year	1,097	290	477	0	330
	III	Within 3 years	2,084	384	0	1,700	0
	IV	N/A	2,678	544	n/a	2,134	n/a
2017	I	Within 1 week	79	70	9	0	0
	II	Within 1 year	1,388	222	90	0	1,076
	III	Within 3 years	2,837	304	0	2,533	0
	IV	N/A	1,716	0	n/a	1,716	n/a
2018	I	Within 1 week	52	41	10	1	0
	II	Within 1 year	736	23	0	713	0
	III	Within 3 years	2,675	70	0	2,605	0
	IV	N/A	362	0	n/a	362	n/a



Rochester Gas and Electric Corporation

Report of Findings from the 2018 Mobile Detection
Program Case 10-E-0271

Background

Pursuant to the Public Service Commission's *Order Requiring Additional Mobile Stray Voltage Testing* ("Order"), Case 10-E-0271- In the Matter of Examining the Mobile Testing Requirements of the Electric Safety Standards, issued and effective July 21, 2010 and June 23, 2011; Rochester Gas and Electric Corporation ("RG&E") submits its 2018 Mobile Stray Voltage Testing Results.

In accordance with the Order, RG&E's annual Mobile Stray Voltage Testing obligation consists of one mobile scan of the underground network within the City of Rochester. This year (2018) marks the tenth consecutive year RG&E has been performing mobile testing in the City of Rochester, which began in 2009. RG&E contracted with Power Survey, 25 Campus Drive, Kearny, NJ 07031 to perform the 2018 mobile stray voltage testing effort.

The Mobile Scan of Rochester

Mobile testing commenced on May 7, 2018 at darkness each night to ensure all street light circuits would be energized. Power Survey provided a single crew (2 Technicians) and their truck mounted test equipment and drove the 331 street miles identified by RG&E as requiring mobile testing. RG&E gave advance notice to city agencies of the event to prepare for any questions or concerns residents of the city might have. Upon conclusion of field-testing, all data was received and validated through various QA/QC reviews by RG&E personnel.

Mobile Testing Process

Power Survey scanned all identified city streets using their SVD2000 mobile system and upon detecting an electric field stopped the vehicle to investigate, identify, measure, and properly document any stray voltage finding in accordance to RG&E's Stray Voltage Mobile Test Procedure.

In addition to the mobile detection equipment and technicians provided by Power Survey, two full-time RG&E Field Coordinators and an electrician assisted with the endeavor. The Field Coordinators accompanied the Power Survey crew throughout the testing effort, monitoring the mobile testing activities and collecting GPS data. GPS data was used to document nightly progress, and provide positional attributes to structures with detected voltages which aided in analysis and follow-up repairs. The Field Coordinators also collected independent data on all detections, ensured all documented voltage reads were accurate, and with the electrician, made sure all findings equal to or greater than 4.5 volts were immediately made safe.

Mobile Testing Results

The mobile scan of the City of Rochester included approximately 19,300 testable structures and the results from this effort are as follows:

2018 Mobile Testing Summary of Events		
Total Number of Findings	82	
Below 4.5 Volts	56	68.3%
Greater or Equal to 4.5 And Less Than 25 Volts	20	24.4%
Greater or Equal to 25 Volts	6	7.3%

2018 Findings by Structure Type	
Streetlights	50
Other	17
Traffic Signals	11
Underground	4
Total findings	82

All stray voltage findings greater than or equal to 1 volt and less than 4.5 volts were immediately safeguarded and all findings greater than or equal to 4.5 volts were immediately made safe and/or the property owner contacted.

Observations

Upon analyzing the 82 energized objects detected during the mobile scan, it should be noted that 12 of those objects were discovered after testing everything within a 30-foot radius of the primary energized object. This lowers the number of discrete detections by the actual mobile scan to 70.

Overall, the number of discrete detections increased from 68 discrete detections in 2017 to 70 discrete detections in 2018.

The following chart displays the 12 objects found within the 30-foot radius and the four primary structures detected.

Primary Detection Structure	Number of additional detections w/in 30-foot radius	Object(s)
Streetlight	1	10 foot metal fence
Streetlight	4	equip fence, vault cover, 2 sign post
Streetlight	6	grass patch, 2 RG&E access hatches, storm drain, fire hydrant, sign pole
Streetlight	1	metal fence 20 ' long

Year after year, the vast majority of energized objects are streetlights owned by the City of Rochester, and traffic signal equipment owned by Monroe County.

Status of Findings and Repairs

Following completion of this year's scan, Municipalities and private property owners have been notified of all findings on their assets, and of their responsibility for follow-up, mitigation, and repair.

Out of the 82 detected objects, repair crews have completed 72 repairs to date. RG&E mitigated all company owned equipment with detected voltage. RG&E will continue to work with the City Of Rochester and Monroe County to assure mitigation of all detected objects.

This table denotes the items still out for repair.

Facility	Quantity	Facility Owner	Status
Aluminum Pole	1	City of Rochester	Made safe, turned over to repair crew
Aluminum Pole, 20' Metal fence	2	City of Rochester	Made safe, monitoring
5 Traffic Signal (TS) Cabinet, TS Pole, TS Pole Light	7	Monroe County	Made safe, turned over for repair

There has been a great value in conducting mitigation efforts during the night-time hours and RG&E will continue to do so, and will encourage other municipalities to do the same to ensure appropriate investigation and mitigation of equipment.

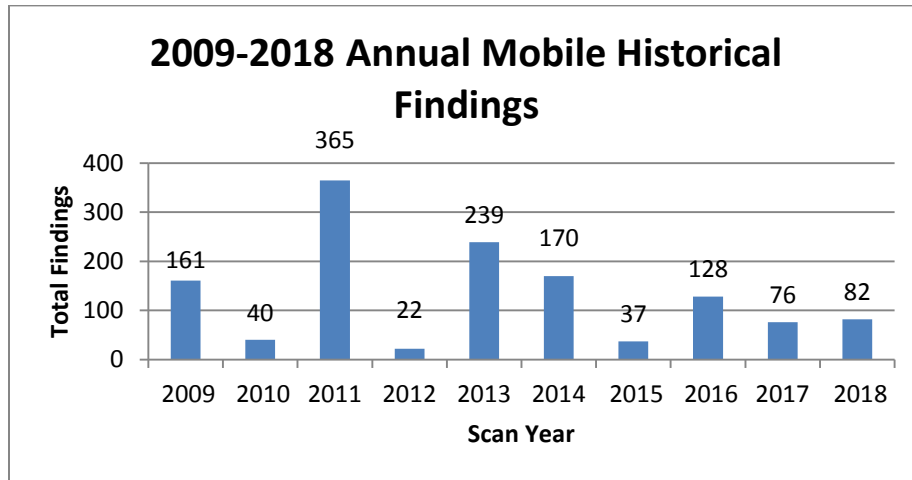
A detailed summary of the energized objects found during the 2018 mobile testing effort and the status of repairs is included in the Appendix to this report.

Historical Costs and Detections for Mobile Testing

The table below lists historical costs associated with performing 1 mobile scan in Rochester, along with an estimate of the cost of manual testing being performed for the same area in accordance with the current Electric Safety Standards Order 04-M-0159.

Year	Number of Detections	Mobile Program Cost	Manual Test Cost
2018	82	\$135,421	\$75,062
2017	76	\$149,716	\$73,912
2016	128	\$145,355	\$97,880
2015	37	\$140,440	\$97,880
2014	170	\$133,752	\$97,880
2013	239	\$117,984	\$97,880
2012	113	\$46,897	\$97,567
2011	365	\$80,000	\$129,000
2010	40	\$93,000	\$129,000
2009	161	\$520,000	\$135,000

The chart below illustrates the trend of total findings from the inception of the Mobile Testing program through the current year.



The table below summarizes the 10-year cumulative total number of findings from the inception of the Mobile Testing program through the current year.

Historical Findings by Structure Type 2009 - 2018	
Streetlights	970
Traffic Signals	187
Underground	37
Other	126
Total	1,320

APPENDIX

2018 Mobile Summary of Energized Objects

RG&E	Initial Readings				Readings after Mitigation		
	1- 4.4V	4.5- 24.9V	>25V	Totals	< 1V	1- 4.4V	>4.5V
Distribution Facilities	0	0	0	0	0	0	0
Pole				0			
Ground				0			
Guy				0			
Riser				0			
Other				0			
Underground Facilities	5	3	0	8	8	0	0
Handhole				0			
Manhole	2			2	2		
Padmount Switchgear				0			
Padmount Transformer				0			
Vault-Cover/Door	2			2	2		
Pedestal				0			
Other	1	3		4	4		
Street Lights/Traffic Signals	40	15	6	61	52	0	0
Metal Street Light Pole	33	15	6	54	52		
Traffic Signal Pole	1			1			
Pedestrian Crossing Pole				0			
Traffic Control Box	5			5			
Other	1			1			
Substation Fences	0	0	0	0	0	0	0
Fence				0			
Other				0			
Transmission (Total)	0	0	0	0	0	0	0
Lattice Tower				0			
Pole				0			
Ground				0			
Guy				0			
Other				0			
Miscellaneous Facilities	11	2	0	13	12	0	0
Sidewalk				0			
Gate/Fence/Awning	3			3	2		
Control Box				0			
Scaffolding				0			
Bus Shelter				0			
Fire Hydrant		2		2	2		
Phone Booth				0			
Water Pipe (Cap)				0			
Riser				0			
Other	8			8	8		
Totals	56	20	6	82	72	0	0

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 Rochester Gas and Electric (the "Company"), and in that capacity I make this Certification for the annual period ending December 31st, 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 31st, 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.

Ane Laforte.

Sworn to before me this 11th day of February, 2019

Notary Public: *exp. 12/2019*
State of CT

James E. Mauri

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 Rochester Gas and Electric (the “Company”), and in that capacity I make this Certification for the annual period ending December 31st, 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 31st,
2018 (the "Twelve-Month Period").

4. 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.

Ara Loforte.

Sworn to before me this 8th day of February, 2019

Notary Public: exp 12/2019
State of CT

Jane E. Mawri