



## 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, 2015

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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 ("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 Rochester Gas and Electric Stray Voltage Detection Program, the Mobile Stray Voltage Program, and the Facility Inspection Program conducted in 2015.

## **II. Company Overview**

RG&E serves approximately 373,000 electricity customers and 309,000 natural gas customers in a nine-county region centered on the City of Rochester.

RG&E's electric delivery infrastructure consists of approximately 226,996 distribution structures, 17,568 transmission structures, 50,571 underground/URD facilities, 153 substations, and 9,168 streetlight facilities.

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

During the 12-month period ending December 31, 2015, 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  $\geq 1.0$  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 a structure to perform a test, it was identified as “Inaccessible” and all other pertinent data was collected in the field. Of the 105,085 facilities visited, 242 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. Contractors noted the structure ID on the issued maps and turned them in to Maintenance Engineering for verification with the Maps and Records Department. If Maps and Records confirmed that the structure does exist, company and contractor crews followed up and attempted to locate, uncover, and test the structure. If the structure could not be found, it was then considered removed from the field, and revisions to mapping were generated.
- d. Inside Building – If a tester identified a structure as being inside a building, RG&E personnel verified that the structure was actually inside the building. If the RG&E personnel verified that the structure was accessible to the public, a test was performed. Typically, customer owned equipment that is inside a building is 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.
- f. Dangerous Terrain – Poles located on cliffs and other dangerous terrain are generally inaccessible to Company personnel and are approached only under urgent circumstances. The performance of stray voltage testing would constitute an unacceptable risk to the employee.

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 2015. The report on results from the mobile scan filed with the Public Service Commission in November 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 105,085 individual facilities in 2015. Of the 105,085 facilities visited, 20,142 facilities did not require stray voltage testing because these structures and their associated equipment are non-metallic and incapable of conducting electricity. Additionally, 242 facilities were deemed inaccessible. As a result, approximately 84,701 facilities required testing for the presence of stray voltage. These facilities are broken down into five main categories including:

Distribution Overhead – Of the 51,548 facilities visited there are approximately 31,617 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 16,696 facilities visited there are approximately 16,518 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 34,005 facilities visited there are approximately 25,840 metallic street lights and approximately 8,124 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 2,836 facilities visited there are approximately 2,602 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 tested for the presence of stray voltage every five years. No unique stray voltage tests were performed on substation fences this 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.

As Appendix 1 shows; of the 105,085 facilities visited during this year’s testing a total of 62 stray voltage conditions were found equating to an overall detection rate of .059%. Of the 62 reported findings, 47 were 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. Excluding these 47 normal occurring voltages from the 62 findings overall results in a more accurate detection rate of .014%.

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 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 were no energized objects reported within a 30 foot radius of any stray voltage 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 2015, RG&E has no temporary repair exceptions to report.

**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, 2015.

In addition, in compliance with the Safety Standards, RG&E has met the first year annual performance target for inspection of its electric facilities for the period ending December 31, 2015; thus beginning the third cycle.

The results are summarized in the table below.

*Facility Inspection Program Results*

| <b>Category</b>       | <b>RG&amp;E Inspection Target</b> | <b>Actual Cumulative Inspected as of 2015</b> |
|-----------------------|-----------------------------------|---|
| Overhead Distribution | 20%                               | 22%   |
| Overhead Transmission | 20%                               | 15%   |
| Underground           | 20%                               | 11%   |
| Padmounts             | 20%                               | 20%   |
| Streetlight           | 20%                               | 18%   |



## **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            |  |   |
| 2017            |  |   |
| 2018            |  |   |
| 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            |  |   |
| 2017            |  |   |
| 2018            |  |   |
| 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            |  |   |
| 2017            |  |   |
| 2018            |  |   |
| 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            |  |   |
| 2017            |  |   |
| 2018            |  |   |
| 2019            |  |   |

Streetlights

| Inspection Year | Number of Streetlights Inspected | % of Overall System Inspected (Cumulative in Five Year Cycle 2015-2019) |
|-----------------|----------------------------------|---|
| 2015            | 1,610                            | 18%   |
| 2016            |                                  |   |
| 2017            |                                  |   |
| 2018            |                                  |   |
| 2019            |                                  |   |

**VIII. Analysis of Inspection Results**

Overhead Distribution Structures

*Table of Locations with Deficiencies*

| Locations Inspected | Locations w/ Deficiencies | % Locations w/ Deficiencies |
|---------------------|---------------------------|-----------------------------|
| 49,407              | 6,995                     | 14.16%                      |

*Breakdown of Locations with Deficiencies*

| Priority Rating | Number of Deficiencies | % Deficiencies Found |
|-----------------|------------------------|----------------------|
| 1               | 48                     | .69%                 |
| 2               | 850                    | 12.15%               |
| 3               | 1,887                  | 26.98%               |
| 4               | 4,210                  | 60.19%               |
| Total:          | 6,995                  | 100%                 |

Overhead Transmission Facilities

*Table of Locations with Deficiencies*

| Locations Inspected | Locations w/ Deficiencies | % Locations w/ Deficiencies |
|---------------------|---------------------------|-----------------------------|
| 2,581               | 208                       | 8.06%                       |

*Breakdown of Locations with Deficiencies*

| Priority Rating | Number of Deficiencies | % Deficiencies Found |
|-----------------|------------------------|----------------------|
| 1               | 0                      | 0%                   |
| 2               | 21                     | 10.10%               |
| 3               | 150                    | 72.12%               |
| 4               | 37                     | 17.79%               |
| Total:          | 208                    | 100%                 |

Underground Facilities

*Table of Locations with Deficiencies*

| Locations Inspected | Locations w/ Deficiencies | % Locations w/ Deficiencies |
|---------------------|---------------------------|-----------------------------|
| 2,784               | 234                       | 8.41%                       |

*Breakdown of Locations with Deficiencies*

| Priority Rating | Number of Deficiencies | % Deficiencies Found |
|-----------------|------------------------|----------------------|
| 1               | 3                      | 1.28%                |
| 2               | 39                     | 16.67%               |
| 3               | 120                    | 51.28%               |
| 4               | 72                     | 30.77%               |
| Total:          | 234                    | 100%                 |

Pad-mounts

*Table of Locations with Deficiencies*

| Locations Inspected | Locations w/ Deficiencies | % Locations w/ Deficiencies |
|---------------------|---------------------------|-----------------------------|
| 5,024               | 58                        | 1.15%                       |

*Breakdown of Locations with Deficiencies*

| Priority Rating | Number of Deficiencies | % Deficiencies Found |
|-----------------|------------------------|----------------------|
| 1               | 15                     | 25.86%               |
| 2               | 9                      | 15.52%               |
| 3               | 20                     | 34.48%               |
| 4               | 14                     | 24.14%               |
| Total:          | 58                     | 100%                 |

Streetlights

*Table of Locations with Deficiencies*

| Locations Inspected | Locations w/ Deficiencies | % Locations w/ Deficiencies |
|---------------------|---------------------------|-----------------------------|
| 1,610               | 21                        | 1.30%                       |

*Breakdown of Locations with Deficiencies*

| Priority Rating | Number of Deficiencies | % Deficiencies Found |
|-----------------|------------------------|----------------------|
| 1               | 0                      | 0%                   |
| 2               | 1                      | 4.76%                |
| 3               | 7                      | 33.33%               |
| 4               | 13                     | 61.90%               |
| Total:          | 21                     | 100%                 |

In 2015, a total of 7,516 Level I – IV deficiencies were identified through scheduled inspections representing a deficiency rate of about 12.21% 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 3,170 Level I - III deficiencies results in a deficiency rate of 5.1% which is a more accurate representation.

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

Overhead Distribution, Streetlights, and Underground inspections were performed using a Distribution Line Inspection (“DLI”) Toughbook. The DLI Toughbooks are portable laptop computers with pre-loaded software that displays all assets to be inspected and includes pre-formatted inspection pick tables the inspectors will use to document individual inspections. The DLI 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 DLI Toughbook, and the resulting data is uploaded into the Company SAP system. Overhead transmission inspections are performed using maps that display specific lines to be inspected and resulting data is also uploaded into the Company SAP system.

Notifications are made from the deficiencies in the SAP system and are sent to field crews noting the necessary repair. When completed, the field crews close out the notification. 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 (DLI) facility inspection where a stray voltage test is performed at the same time an inspector is doing a DLI inspection. Stray voltage test data is stored on the DLI Toughbook and is acquired by the Company through weekly uploads along with inspection data.

The second means is in conjunction with planned transmission line (TLI) facility inspections and the annual obligation to test all streetlights, traffic signal equipment, and underground facilities. This testing data is captured on a separate handheld PDA device. These PDA units are preloaded with all the scheduled testable objects and given to field testers. Resulting test data is stored on the PDA and forwarded to the company in batch files.

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.

#### *DLI (Tough Book) Test Data*

Stray voltage tests were conducted on all 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 Company files 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.

#### *Handheld PDA Test Data*

All other required stray voltage tests conducted and collected by the inspecting/testing contractor are captured utilizing a Trimble GeoXt handheld device (PDA) and submitted to the Company in the form of batches. These batch files are subject to multiple QA/QC reviews.

The first review assesses data accuracy. Batch files are scanned to ensure proper formatting and appropriate data is populated in each of the required fields. If approved, the file is loaded into a production database.

Once in the database, a second review is made to check the data for positional (GPS) accuracy and content. QA/QC personnel check new data to make sure a test is performed at all planned locations. They do this by comparing the new test data against a control set of planned test data sent to the testing contractor in the beginning of the year. They also check to see if time stamps on each test are reasonable and all reported findings are documented and follow up repairs are scheduled accordingly. If any part of the data is not acceptable, the batch is rejected and the contractor is notified of the reasons for failure. The testing contractor remediates the problems and re-submits the rejected batch file with corrections. Final repair efforts are monitored with company crews on all findings to ensure they are made.

#### *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. This evaluation allows us to identify any new structures which are included in the testing contractor's scope to obtain.

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 testing data, and checking circuit maps to ensure all structures have been visited. Problem testers 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. Any discrepancies found as a result of random data sampling checks like wrong town or street name, or incorrect spellings are also corrected.

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 completed maps to check that all structures 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 toughbook and supplemental drawings. Inspection results are returned to the company each week. QA/QC personnel review progress to validate all planned inspections are made.

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.

The first is a field review. 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 though the QA/QC personnel are unaware of the reported results and independently inspect them. Results are then compared.

The second review is made in the office. This review looks at deficiencies reported by the inspection contractor. All reported 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.

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 issues 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

| <br>RG&E | 2015<br>Targets | Units<br>Completed | Percent<br>Completed | Units with<br>Voltage Found<br>( $\geq 1.0\text{v}$ ) | Percent of<br>Units Tested<br>with Voltage<br>( $\geq 1.0\text{v}$ ) | Units<br>Classified as<br>Inaccessible |
|---|-----------------|--------------------|----------------------|---|--|--|
| <b>Distribution Facilities</b>  | 49,407          | 51,548             | 100%                 | 0   | 0.000%   | 43                                     |
| <b>Underground Facilities</b>   | 16,665          | 16,696             | 100%                 | 0   | 0.000%   | 158                                    |
| <b>Street Lights / Traffic Signals</b>  | 33,819          | 34,005             | 100%                 | 15  | 0.044%   | 32                                     |
| <b>Substation Fences</b>  | 0               | 0                  | 0%                   | 0   | 0%   | 0                                      |
| <b>Overhead Transmission</b>  | 2,581           | 2,836              | 100%                 | 47  | 1.657%   | 9                                      |
| <b>TOTAL</b>  | 102,472         | 105,085            | 100%                 | 62  | 0.059%   | 242                                    |




## 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>  | 0                | 0         | 0    | <b>0</b>  | 0                         | 0      | 0     |
| Pole  |                  |           |      | 0         |                           |        |       |
| Ground  |                  |           |      | 0         |                           |        |       |
| Guy   |                  |           |      | 0         |                           |        |       |
| Riser   |                  |           |      | 0         |                           |        |       |
| Other   |                  |           |      | 0         |                           |        |       |
| <b>Underground Facilities</b>   | 0                | 0         | 0    | <b>0</b>  | 0                         | 0      | 0     |
| Manhole/ Pull box   |                  |           |      | 0         |                           |        |       |
| Manhole   |                  |           |      | 0         |                           |        |       |
| Padmount Switchgear   |                  |           |      | 0         |                           |        |       |
| Padmount Transformer  |                  |           |      | 0         |                           |        |       |
| Vault-Cover/Door  |                  |           |      | 0         |                           |        |       |
| Pedestal  |                  |           |      | 0         |                           |        |       |
| Other   |                  |           |      | 0         |                           |        |       |
| <b>Street Lights/Traffic Signals</b>  | 2                | 6         | 7    | <b>15</b> | 14                        | 0      | 0     |
| Metal Street Light Pole   | 2                | 4         | 7    | 13        | 12                        | 0      | 0     |
| Traffic Signal Pole   | 0                | 1         | 0    | 1         | 1                         | 0      | 0     |
| Pedestrian Crossing Pole  |                  |           |      | 0         |                           |        |       |
| Traffic Control Box   |                  |           |      | 0         |                           |        |       |
| Other   | 0                | 1         | 0    | 1         | 1                         | 0      | 0     |
| <b>Substation Fences</b>  | 0                | 0         | 0    | <b>0</b>  | 0                         | 0      | 0     |
| Fence   |                  |           |      | 0         |                           |        |       |
| Other   |                  |           |      | 0         |                           |        |       |
| <b>Transmission (Total)</b>   | 34               | 5         | 8    | <b>47</b> | 2                         | 40     | 5     |
| Lattice Tower   |                  |           |      | 0         |                           |        |       |
| Pole  |                  |           |      | 0         |                           |        |       |
| Ground  | 31               | 5         | 8    | 44        | 2                         | 37     | 5     |
| Guy   | 3                | 0         | 0    | 3         | 0                         | 3      | 0     |
| Other   |                  |           |      | 0         |                           |        |       |
| <b>Miscellaneous Facilities</b>   | 0                | 0         | 0    | <b>0</b>  | 0                         | 0      | 0     |
| Sidewalk  |                  |           |      | 0         |                           |        |       |
| Gate/Fence/Awning   |                  |           |      | 0         |                           |        |       |
| Control Box   |                  |           |      | 0         |                           |        |       |
| Scaffolding   |                  |           |      | 0         |                           |        |       |
| Bus Shelter   |                  |           |      | 0         |                           |        |       |
| Fire Hydrant  |                  |           |      | 0         |                           |        |       |
| Phone Booth   |                  |           |      | 0         |                           |        |       |
| Water Pipe/Cap  |                  |           |      | 0         |                           |        |       |
| Riser   |                  |           |      | 0         |                           |        |       |
| Other   |                  |           |      | 0         |                           |        |       |

## Appendix 3

### Summary of Shock Reports from the Public

|  | Data collected as of December 31, 2015 | Yearly<br>Total |
|---|--|-----------------|
| <b>I. Total Shock Calls Received:</b>   |  | <b>14</b>       |
| Unsubstantiated   |  | 2               |
| Normally Energized Equipment  |  | 6               |
| <b>Stray Voltage:</b>   |  | <b>6</b>        |
| Person  |  | 5               |
| Animal  |  | 1               |
| <b>II. Injuries Sustained/Medical Attention Received:</b>                         |  | <b>5</b>        |
| Person  |  | 5               |
| Animal  |  | 0               |
| <b>III. Stray Voltage Source:</b>   |  | <b>6</b>        |
| <b>Utility Responsibility (Total)</b>   |  | <b>2</b>        |
| Overhead Distribution System  |  | 1               |
| Underground Distribution System   |  | 1               |
| Transmission System   |  | 0               |
| <b>Other Utility/Gov't Agency (Total)</b>   |  | <b>1</b>        |
| Streetlight   |  | 0               |
| Other (Total)   |  | 1               |
| <b>Customer Responsibility (Total)</b>  |  | <b>3</b>        |
| <b>IV. Stray Voltage Range:</b>   |  | <b>6</b>        |
| 1.0V to 4.4V  |  | 0               |
| 4.5V to 24.9V   |  | 0               |
| 25V and above   |  | 1               |
| Unknown   |  | 5               |

Appendix 4

Rochester Gas and Electric

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

As of December 31, 2015

| Detail of Deficiencies by Facilities | 2011                  |                        |                          |            | 2012                  |                        |                          |              | 2013                  |                        |                          |              | 2014                  |                        |                          |              | 2015                  |                        |                          |              |
|--------------------------------------|-----------------------|------------------------|--------------------------|------------|-----------------------|------------------------|--------------------------|--------------|-----------------------|------------------------|--------------------------|--------------|-----------------------|------------------------|--------------------------|--------------|-----------------------|------------------------|--------------------------|--------------|
|                                      | I<br>Within<br>1 week | II<br>Within<br>1 year | III<br>Within<br>3 years | IV         | I<br>Within<br>1 week | II<br>Within<br>1 year | III<br>Within<br>3 years | IV           | I<br>Within<br>1 week | II<br>Within<br>1 year | III<br>Within<br>3 years | IV           | I<br>Within<br>1 week | II<br>Within<br>1 year | III<br>Within<br>3 years | IV           | I<br>Within<br>1 week | II<br>Within<br>1 year | III<br>Within<br>3 years | IV           |
| <b>Overhead Facilities</b>           |                       |                        |                          |            |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |
| Repaired in Time Frame               | 35                    | 192                    | 101                      | 0          | 15                    | 189                    | 966                      | 45           | 30                    | 323                    | 632                      | 73           | 26                    | 211                    | 788                      | 81           | 34                    | 217                    | 366                      | 3            |
| Repaired - Overdue                   | 2                     | 8                      | 0                        | 0          | 1                     | 0                      | 48                       | 0            | 5                     | 287                    | 0                        | 0            | 0                     | 357                    | 0                        | 0            | 14                    | 0                      | 0                        | 0            |
| Not Repaired - Not Due               | 0                     | 0                      | 0                        | 173        | 0                     | 0                      | 0                        | 2,617        | 0                     | 0                      | 302                      | 2,359        | 0                     | 0                      | 175                      | 2,374        | 0                     | 633                    | 1,521                    | 4,207        |
| Not Repaired - Overdue               | 0                     | 0                      | 2                        | 0          | 0                     | 0                      | 47                       | 0            | 0                     | 55                     | 0                        | 0            | 0                     | 82                     | 0                        | 0            | 0                     | 0                      | 0                        | 0            |
| <b>Total Overhead Facilities</b>     | <b>37</b>             | <b>200</b>             | <b>103</b>               | <b>173</b> | <b>16</b>             | <b>189</b>             | <b>1,061</b>             | <b>2,662</b> | <b>35</b>             | <b>665</b>             | <b>934</b>               | <b>2,432</b> | <b>26</b>             | <b>650</b>             | <b>963</b>               | <b>2,455</b> | <b>48</b>             | <b>850</b>             | <b>1,887</b>             | <b>4,210</b> |
| <b>Underground Facilities</b>        |                       |                        |                          |            |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |
| Repaired in Time Frame               | 7                     | 31                     | 44                       | 0          | 2                     | 49                     | 30                       | 0            | 1                     | 10                     | 44                       | 17           | 2                     | 63                     | 10                       | 0            | 1                     | 4                      | 18                       | 6            |
| Repaired - Overdue                   | 2                     | 13                     | 3                        | 0          | 1                     | 13                     | 0                        | 0            | 0                     | 4                      | 0                        | 0            | 1                     | 15                     | 0                        | 0            | 2                     | 0                      | 0                        | 0            |
| Not Repaired - Not Due               | 0                     | 0                      | 0                        | 4          | 0                     | 0                      | 0                        | 6            | 0                     | 0                      | 23                       | 7            | 0                     | 0                      | 46                       | 14           | 0                     | 35                     | 102                      | 66           |
| Not Repaired - Overdue               | 0                     | 0                      | 3                        | 0          | 0                     | 13                     | 1                        | 0            | 0                     | 4                      | 0                        | 0            | 0                     | 7                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            |
| <b>Total Underground Facilities</b>  | <b>9</b>              | <b>44</b>              | <b>50</b>                | <b>4</b>   | <b>3</b>              | <b>75</b>              | <b>31</b>                | <b>6</b>     | <b>1</b>              | <b>18</b>              | <b>67</b>                | <b>24</b>    | <b>3</b>              | <b>85</b>              | <b>56</b>                | <b>14</b>    | <b>3</b>              | <b>39</b>              | <b>120</b>               | <b>72</b>    |
| <b>Pad Mount Facilities</b>          |                       |                        |                          |            |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |
| Repaired in Time Frame               | 1                     | 95                     | 36                       | 0          | 4                     | 17                     | 139                      | 10           | 11                    | 11                     | 16                       | 2            | 15                    | 9                      | 13                       | 0            | 14                    | 3                      | 12                       | 0            |
| Repaired - Overdue                   | 3                     | 31                     | 14                       | 0          | 2                     | 2                      | 38                       | 0            | 2                     | 1                      | 0                        | 0            | 11                    | 0                      | 0                        | 0            | 1                     | 0                      | 0                        | 0            |
| Not Repaired - Not Due               | 0                     | 0                      | 0                        | 65         | 0                     | 0                      | 0                        | 211          | 0                     | 0                      | 4                        | 31           | 0                     | 0                      | 13                       | 11           | 0                     | 6                      | 8                        | 14           |
| Not Repaired - Overdue               | 0                     | 4                      | 2                        | 0          | 0                     | 3                      | 6                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 1                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            |
| <b>Total Pad Mount Facilities</b>    | <b>4</b>              | <b>130</b>             | <b>52</b>                | <b>65</b>  | <b>6</b>              | <b>22</b>              | <b>183</b>               | <b>221</b>   | <b>13</b>             | <b>12</b>              | <b>20</b>                | <b>33</b>    | <b>26</b>             | <b>10</b>              | <b>26</b>                | <b>11</b>    | <b>15</b>             | <b>9</b>               | <b>20</b>                | <b>14</b>    |
| <b>Streetlight Facilities</b>        |                       |                        |                          |            |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |
| Repaired in Time Frame               | 0                     | 0                      | 0                        | 0          | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 1                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 1                        | 0            |
| Repaired - Overdue                   | 0                     | 0                      | 0                        | 0          | 0                     | 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                        | 7            | 0                     | 0                      | 0                        | 27           | 0                     | 1                      | 6                        | 13           |
| Not Repaired - Overdue               | 0                     | 0                      | 0                        | 0          | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            |
| <b>Total Streetlight Facilities</b>  | <b>0</b>              | <b>0</b>               | <b>0</b>                 | <b>0</b>   | <b>0</b>              | <b>0</b>               | <b>0</b>                 | <b>0</b>     | <b>0</b>              | <b>0</b>               | <b>1</b>                 | <b>7</b>     | <b>0</b>              | <b>0</b>               | <b>0</b>                 | <b>27</b>    | <b>0</b>              | <b>1</b>               | <b>7</b>                 | <b>13</b>    |
| <b>Transmission Facilities</b>       |                       |                        |                          |            |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |                       |                        |                          |              |
| Repaired in Time Frame               | 0                     | 32                     | 43                       | 0          | 0                     | 15                     | 42                       | 0            | 0                     | 3                      | 46                       | 0            | 0                     | 8                      | 76                       | 0            | 0                     | 4                      | 4                        | 0            |
| Repaired - Overdue                   | 0                     | 0                      | 0                        | 0          | 0                     | 0                      | 0                        | 0            | 0                     | 4                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            |
| Not Repaired - Not Due               | 0                     | 0                      | 0                        | 50         | 0                     | 0                      | 0                        | 128          | 0                     | 0                      | 53                       | 5            | 0                     | 1                      | 242                      | 95           | 0                     | 17                     | 146                      | 37           |
| Not Repaired - Overdue               | 0                     | 0                      | 2                        | 0          | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            | 0                     | 0                      | 0                        | 0            |
| <b>Total Transmission Facilities</b> | <b>0</b>              | <b>32</b>              | <b>45</b>                | <b>50</b>  | <b>0</b>              | <b>15</b>              | <b>42</b>                | <b>128</b>   | <b>0</b>              | <b>7</b>               | <b>99</b>                | <b>5</b>     | <b>0</b>              | <b>9</b>               | <b>318</b>               | <b>95</b>    | <b>0</b>              | <b>21</b>              | <b>150</b>               | <b>37</b>    |



## **Rochester Gas and Electric**

Report of Findings from the 2015 Mobile Detection  
Program Case 10-E-0217

### **Results**

# Appendix 5

## **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 ("RG&E") submits its 2015 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 (2015) marks the seventh 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 2015 mobile stray voltage testing effort.

## **The Mobile Scan of Rochester**

Mobile testing commenced on October 5, 2015 at darkness each night in order 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 requiring mobile testing. City agencies were given advance notice 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.

## **Mobile Testing Process**

Power Survey scanned all identified city streets using their SVD2000 mobile system and upon detecting an energized object stopped the vehicle to investigate, identify, measure, and properly document the 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, RG&E provided two full-time Field Coordinators and an electrician. 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 aiding 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 were immediately made safe.

# Appendix 5

## Mobile Testing Results

The mobile scan of the City of Rochester included approximately 19,304 testable structures and the results for this effort are as follows:

| 2015 Mobile Testing Summary of Events          |    |       |
|--|----|-------|
| Total Number of Events                         | 37 |       |
| Below 4.5 Volts                                | 29 | 78.4% |
| Greater or Equal to 4.5 And Less Than 25 Volts | 6  | 16.2% |
| Greater or Equal to 25 Volts                   | 2  | 5.4%  |

Final results of the mobile scan confirmed 37 energized objects with 78% reading below 4.5 volts. All stray voltage findings greater than or equal to 1 volt and less than 4.5 volts were immediately safeguarded and all finding greater or equal to 4.5 volts were immediately made safe to the public.

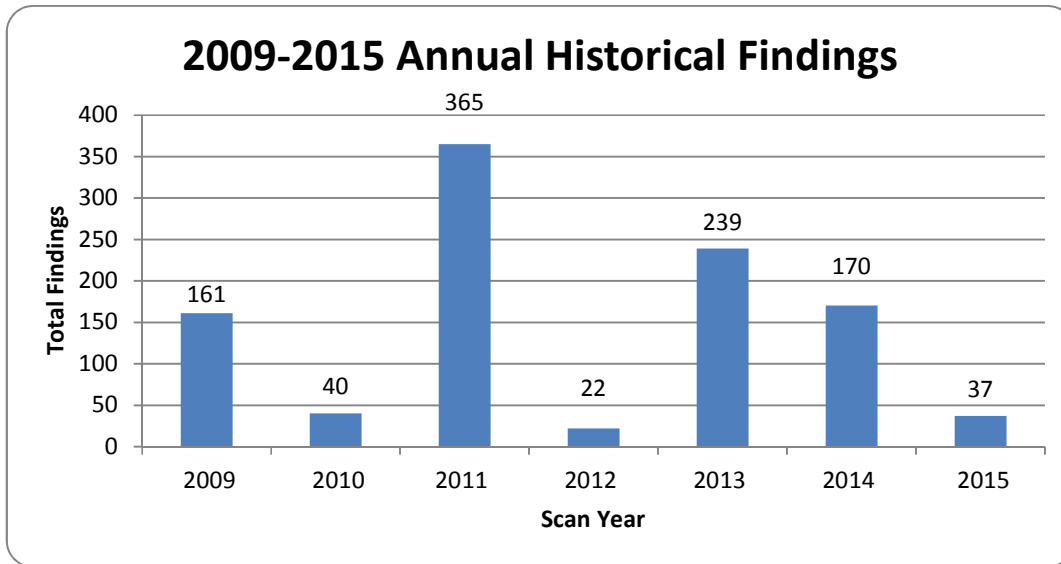
## Mobile Testing Historical Summary

The table below lists historical costs incurred from the mobile testing provider, and an equivalent cost if manual testing were performed for the same area, in accordance with the current Electric Safety Standards Order 04-M-0159.

| Test Year | Total Number of Detections | Mobile Program Costs | Manual Program Costs |
|-----------|----------------------------|----------------------|----------------------|
| 2015      | 37                         | \$140,440            | \$97,880             |
| 2014      | 170                        | \$133,752            | \$97,880             |
| 2013      | 239                        | \$117,984            | \$97,880             |
| 2012      | 22                         | \$46,897             | \$97,567             |
| 2011      | 365                        | \$80,000             | \$129,000            |
| 2010      | 40                         | \$93,000             | \$129,000            |
| 2009      | 161                        | \$520,000            | \$135,000            |

## Appendix 5

Historical detections of the Mobile Testing program from inception to current year are displayed below.



### Observations

Results from this year's mobile scan show the majority of energized objects found (33) were on streetlights and traffic signal equipment owned by other Municipalities including the City of Rochester and Monroe County. Final results depict a significant reduction in findings from previous years. This reduction can be attributed to the effort RG&E has made working more closely with the City of Rochester over the last year to assist and encourage proper investigation and remediation work be completed on a timely basis. A detailed summary of energized objects found during the 2015 mobile testing effort and status of repairs can be viewed in the Appendix of this report.

Following completion of this year's scan both Municipalities have been notified of all findings on their streetlights and traffic signal equipment, and of their responsibility for follow-up mitigation and repair. RG&E will continue to monitor all final repairs to reassure a timely completion.

## Appendix 5

| APPENDIX  |                  |            |          |           |                           |          |          |
|---|------------------|------------|----------|-----------|---------------------------|----------|----------|
| <b>2015 Mobile Summary of Energized Objects</b> |                  |            |          |           |                           |          |          |
| <b>RG&amp;E</b>                                 | Initial Readings |            |          |           | Readings after Mitigation |          |          |
|   | 1- 4.4V          | 4.5- 24.9V | >25V     | Totals    | < 1V                      | 1- 4.4V  | >4.5V    |
| <b>Distribution Facilities</b>                  | <b>0</b>         | <b>0</b>   | <b>0</b> | <b>0</b>  | <b>0</b>                  | <b>0</b> | <b>0</b> |
| Pole  |                  |            |          | 0         |                           |          |          |
| Ground  |                  |            |          | 0         |                           |          |          |
| Guy   |                  |            |          | 0         |                           |          |          |
| Riser   |                  |            |          | 0         |                           |          |          |
| Other   |                  |            |          | 0         |                           |          |          |
| <b>Underground Facilities</b>                   | <b>1</b>         | <b>0</b>   | <b>0</b> | <b>1</b>  | <b>1</b>                  | <b>0</b> | <b>0</b> |
| Handhole  |                  |            |          | 0         |                           |          |          |
| Manhole   | 1                | 0          | 0        | 1         | 1                         | 0        | 0        |
| Padmount Switchgear                             |                  |            |          | 0         |                           |          |          |
| Padmount Transformer                            |                  |            |          | 0         |                           |          |          |
| Vault-Cover/Door                                |                  |            |          | 0         |                           |          |          |
| Pedestal  |                  |            |          | 0         |                           |          |          |
| Other   |                  |            |          | 0         |                           |          |          |
| <b>Street Lights/Traffic Signals</b>            | <b>25</b>        | <b>6</b>   | <b>2</b> | <b>33</b> | <b>28</b>                 | <b>2</b> | <b>0</b> |
| Metal Street Light Pole                         | 16               | 4          | 2        | 22        | 21                        | 1        | 0        |
| Traffic Signal Pole                             | 6                | 0          | 0        | 6         | 4                         | 1        | 0        |
| Pedestrian Crossing Pole                        |                  |            |          | 0         |                           |          |          |
| Traffic Control Box                             | 3                | 2          | 0        | 5         | 3                         | 0        | 0        |
| Other   |                  |            |          | 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         |                           |          |          |
| Other   |                  |            |          | 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         |                           |          |          |
| Pole  |                  |            |          | 0         |                           |          |          |
| Ground  |                  |            |          | 0         |                           |          |          |
| Guy   |                  |            |          | 0         |                           |          |          |
| Other   |                  |            |          | 0         |                           |          |          |
| <b>Miscellaneous Facilities</b>                 | <b>3</b>         | <b>0</b>   | <b>0</b> | <b>3</b>  | <b>1</b>                  | <b>0</b> | <b>0</b> |
| Sidewalk  |                  |            |          | 0         |                           |          |          |
| Gate/Fence/Awning                               | 1                | 0          | 0        | 1         | 1                         | 0        | 0        |
| Control Box                                     |                  |            |          | 0         |                           |          |          |
| Scaffolding                                     |                  |            |          | 0         |                           |          |          |
| Bus Shelter                                     |                  |            |          | 0         |                           |          |          |
| Fire Hydrant                                    |                  |            |          | 0         |                           |          |          |
| Phone Booth                                     |                  |            |          | 0         |                           |          |          |
| Water Pipe (Cap)                                |                  |            |          | 0         |                           |          |          |
| Riser   |                  |            |          | 0         |                           |          |          |
| Other   | 2                | 0          | 0        | 2         | 0                         | 0        | 0        |





program during the twelve months ended December 31<sup>st</sup>,  
2015 (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.



Sworn to before me this 4<sup>th</sup> day of February, 2016

Notary Public: Shelley Morris

**SHELLEY MORRIS**  
NOTARY PUBLIC  
State of Maine  
My Commission Expires  
May 26, 2018



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>, 2015 (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.

*[Handwritten Signature]*

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Sworn to before me this 4<sup>th</sup> day of February, 2016

Notary Public: *[Handwritten Signature: Shelley Morris]*

**SHELLEY MORRIS**  
NOTARY PUBLIC  
State of Maine  
My Commission Expires  
May 26, 2018