



CENTRAL HUDSON GAS and ELECTRIC CORPORATION

STRAY VOLTAGE TEST and FACILITY INSPECTION

**Report on the Results of Stray Voltage Tests and Inspections
For the 12-Month Period Ending on November 30, 2005**

January 15, 2006

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Appendix 1

Stray Voltage Testing Summary – Annual Report

I. Background

Pursuant to the Public Service Commission's Order on Petitions for Rehearing and Waiver (the "Order") issued and effective on July 21, 2005 in Case 04-M-0159 – Proceeding on Motion of the Commission to Examine the Safety of Electric Transmission and Distribution Systems, utilities are required to file a comprehensive report by January 15 each year that:

- Details the results of stray voltage tests and inspection conducted over the 12-month period ending on November 30 of each prior calendar year.
- Addresses the performance mechanism specified in Section 10 of Appendix A to the Order
- Contains the certifications described in Section 7 of Appendix A to the Order
- Discusses the analyses undertaken on the causes of stray voltage within the utility's electric system, the conclusions drawn there from, the preventive and remedial measures identified, and the utility's plans to implement those measures.
- Includes all other information that is pertinent to the issues addressed by the safety standards.

II. Overview

Central Hudson is an investor owned utility delivering natural gas and electricity in a 2600 square mile service territory located primarily in the Mid Hudson valley in New York State. Central Hudson serves approximately 289,000 electric customers and about 70,000 natural gas customers.

Stray Voltage Testing Program

Central Hudson's program to test all of its facilities for the presence of Stray Voltage began in the first quarter of 2005 in response to the PSC's Order Instituting Safety Standards (issued January, 2005).

Central Hudson began responding immediately to the initial order by mobilizing required resources to address the new testing program. The Stray Voltage Testing program was a new program, which required significant effort to develop and implement. A dedicated project manager was assigned to this program. Initial testing and training procedures and protocols were developed. Data collection and processing criteria were established. Training programs were developed and implemented. QA/QC measures were prepared and implemented and resources were allocated to achieve these criteria. Manpower resources were obtained and trained, and contracts with vendors were finalized. Hardware required for data collection and stray voltage testing were specified and purchased as needed to outfit both the contractor and Central Hudson personnel. By May of 2005, field-testing and reporting activities had begun.

The Stray Voltage Testing program requires that all facilities which are publicly accessible and capable of conducting electricity be tested and that any detected presence of stray voltage over 8 volts be immediately made safe with respect to public exposure and that permanent repairs be made within 45 days. Central Hudson has chosen to evaluate any voltages found and mitigate any that exceed 4.5 volts. The Order required a minimum of 50 % of the distribution overhead, pad mounted and transmission facilities be tested by November 30, 2005 with the balance of these facilities tested by August 31, 2006. In addition 100% of the streetlights/traffic signals, substation fences, manholes and pull boxes were to be tested by November 30, 2005.

Facility Inspection Program

Central Hudson's Facility Inspection program has been in place for many years. The Order Instituting Safety Standards also detailed the requirements of facility inspections. All of Central Hudson's facility inspection activities comply with the minimum requirements set forth in the standards. The purpose of the inspections is to

visually evaluate the equipment associated with Overhead Distribution and Transmission facilities as well as Underground Distribution facilities. Prior to the Order, Central Hudson had in place a comprehensive inspection program that in many cases exceeded the minimum requirements set forth in the standards.

The facility inspection program parallels the stray voltage program in that many of the steps in the process are similar. Data collection and processing criteria are in place. QA/QC measures were prepared and implemented. Both Central Hudson personnel and contractors supplied manpower resources. Existing hardware was utilized for data collection of facility inspections. Data collection is facilitated electronically through the use of field pen computers and mainframe based data management systems.

Inspection frequency for Transmission structures is based on a five-year cycle. All other facilities (Distribution Overhead and Underground) are set at a three-year inspection cycle.

Structure Categories

Central Hudson Gas and Electric has approximately 250,000 individual facilities that require testing for the presence of stray voltage and in some cases facility inspection. These facilities are broken down into five main categories including:

Distribution Overhead - wooden poles, guy wires, metallic risers, and all attached devices that are accessible from the ground.

Underground Facilities - Manholes, Pull-boxes, and URD Pad-mounted equipment and all devices associated with underground facilities.

Streetlights and Traffic Signals - metal poles supporting these devices, handholds and all attachments including guys and support poles.

Substation Fencing - gates, support posts and grounding wires as well as the fencing itself.

Transmission Structures - all structures, guys and down leads attached to the structures. Transmission structures support circuit voltages of 69,000 volts and greater. Facilities that house circuits of lower voltage in addition to the transmission voltage levels are included in this category.

Distribution Overhead

There are approximately 220,116 distribution pole structures in Central Hudson's territory. These consist of primarily wooden poles. The poles support electric power

distribution lines and equipment as well as telephone, cablevision and other miscellaneous attachments. Those distribution structures that have ground wires, metallic risers, guy wires or metal control boxes are required to be tested for stray voltage as part of the program. Distribution Overhead facilities are inspected by drive by visual inspection process. In addition facilities that are found to have conditions requiring follow-up action are inspected individually.

Underground Facilities

There are 1317 system manholes and pull boxes as well as 13,649 URD pad mounted devices on Central Hudson's system. The manholes and pull boxes are primarily located in the Company's network areas. Pull boxes are typically provided with a concrete cover in a cast iron frame. Manholes are covered with a cast iron cover, steel grating, or reinforced concrete cover. The pad-mounted devices are associated with our URD or Underground Rural Development distribution facilities. The pad-mounted devices are installed on concrete or fiberglass bases and are themselves enclosed in metallic or fiberglass cabinets. These facilities are included in both the Stray Voltage and Facility Inspection programs.

Streetlights/Traffic Signals

There are approximately 5500 metal pole streetlights and 768 traffic signals within Central Hudson's service territory. This total includes 104 streetlights owned by Central Hudson with the balance of the equipment owned by various municipalities. Local municipalities and the Department of Transportation provided the total count for these facilities. Central Hudson's Marketing Division then worked with the municipalities to compile a complete inventory of the municipal equipment. Marketing then took this inventory information and transferred it to quadrant maps for use in the field by the testing contractors. A total of 6268 facilities were tested. All testing of streetlights occurred at night while the fixtures were energized and the lights were illuminated.

A majority of the lights are located in higher population areas including cities, apartment complexes and parks. Other area and street lighting that is privately owned was not included in this Stray Voltage testing program as per the initial orders requirements.

Substation Fences

Central Hudson operates and maintains substation facilities that are necessary for the operation of the electric grid. These stations are fenced in for security as well as to protect the safety of the general public. There are 108 substation fences that were tested under this program.

Transmission

Transmission facilities consist of all overhead transmission towers and pole structures with operating voltages of 69 kV or higher. There are a total of 7270 individual Transmission towers / poles on Central Hudson's system. Transmission structures that are either metallic or wood and have down grounds, guys or riser pipes were tested for stray voltage as part of this program. All Transmission structures are field inspected as part of the Company's Facility Inspection program.

III. Details of Stray Voltage Testing

Central Hudson's testing procedures consist of having trained and qualified employees and contractors, equipped with safety and work equipment, performing field data collection activities. Each facility is visited and if necessary tested for the presence of stray voltage. All testing data is entered, under field conditions, into hand held (PDA) devices. These data are then uploaded daily and stored for future processing. If stray voltage is found to be present by using the initial testing (HD Electric – LV-S-5 Direct Contact Low Voltage Detector) probe, a specific voltage reading is then required to be taken using a standard (FLUKE model 177) volt meter with 500 ohm shut resistor. If the voltage is above 8 volts (PSC order established action threshold level) then the facility must be immediately made safe with respect to public exposure. Central Hudson mitigates all voltages above 4.5 volts. Retesting to ensure that the stray voltage has been eliminated is conducted for all locations found to initially have stray voltage present.

All activities associated with the Stray Voltage Testing program were performed in accordance with Central Hudson's published procedures and protocols. The testing program included personnel training, testing and certification, field detection testing, data collection, processing and reporting, engineering review and analysis, field remedial and repair activities, and retesting of repaired facilities. The results of the field-testing program are summarized and detailed on the attached report (attachment A). These results are presented in the same format as the standard monthly progress reports to the Public Service Commission.

Test result data was broken down into several major areas including test identification, actual stray voltage test results and exceptions. The test identification data record included identification of the date, time and GPS location of each test. The ID number of the employee taking the test and the data collection device (PDA) used to store that data were also recorded.

The actual test results included whether a test was required (was there the presence of a device that could be energized such as a ground wire or guy), was the test performed, was a voltage reading detected, what was that voltage level and where was the voltage detected.

Other data was collected in addition to the required stray voltage test. This included items such as how far the device was set back off of the edge of the highway, is the device considered "off road", was a pole identification tag present, was a safety reflector installed, and does the facility require further inspection due to obvious visual conditions requiring maintenance or repair. Actual results of the testing activities were recorded in the five device categories.

Exceptions noted in the field included: inaccessible facilities, facilities not found, and voltage detected above the threshold levels. Inaccessible structures were structures that were found in the field but were not able to be tested because of an

existing field condition. These conditions included facilities in water or swampy areas, facilities on private property and within fences, walls or other buildings, paved over, and terrain or other conditions that pose immediate personal hazard to the individual performing the test.

The contractors were required to make two attempts to locate facilities identified as "Not Found". As a final review, Central Hudson personnel or employees will then further research facilities still identified as "Not Found" to determine if those facilities in fact do not exist.

Distribution Poles

The distribution facilities testing program began May 17th and is on-going. As of December 2, 2005, 162,085 wooden distribution poles have been visited. This represents 73.64 percent of Central Hudson's total distribution pole facilities. Central Hudson's proposed plan, included in the 45-day filing, stated that approximately 150,000 poles would be visited in 2005. The testing found a total of two incidents of stray voltage readings over Central Hudson's 4.5-volt thresholds. These were 4.90 volts and 5.51 volts. There were no readings found in excess of the 8.0-volt action level. Both occurrences of stray voltage were mitigated through structural changes (guy break insulator installation and additional grounding). Two contractors performed all of the field-testing activities. A total of approximately 50 individuals were involved in this program.

Underground Facilities

Testing activities of the underground facilities began in June of 2005 and are on-going. Underground facilities were broken down into two categories: Manholes and Pull Boxes (or Non-URD facilities) and Pad-mounted devices. During 2005, 100 percent of the systems total 1317 manholes and pull boxes were tested. The manholes and pull boxes were tested using company personnel. Approximately 10 people were involved in this process. There were no incidents of stray voltage above the 4.5-volt threshold detected on these facilities. All manholes and pull boxes will be retested again in 2006.

The remaining facilities, Pad-mounted devices, are associated with our URD facilities. Of the 13,647 total system devices, approximately 8630 or 63 % of the total were tested in 2005. Again there were no incidents of stray voltage above the 4.5-volt threshold detected on the URD facilities. The remaining URD facilities will be tested in 2006. The pad mounts were tested both by Company personnel and contractors. This involved more than 30 people.

Street Lights / Traffic Signals

Street Lights and Traffic signals were tested beginning in August and September respectively. All testing of streetlights occurred at night while the fixtures were energized and the lights were illuminated. A total of 6268 facilities were tested.

The same contractors that conducted the Distribution Overhead testing performed the testing for streetlights and traffic signals. A total of 5500 streetlights were tested. In addition, one contract employee tested all 768 traffic devices. While there were no incidents of stray voltage above the 4.5-volt threshold found on the traffic signals, there were 9 separate incidents of stray voltage found on the municipally owned streetlights. The detected stray voltage levels of the 9 occurrences ranged from below 8 volts to close to 100 volts. Each of these locations was made safe by either disconnecting the power source or repairing the facility in the field. Two of the locations were repaired at the time of initial testing. For the remaining seven occurrences, the owner/operator of the device was notified that there was stray voltage detected at their facility and that it was their responsibility to repair the condition before the facility was reenergized. Upon completion of the repairs the municipality will notify Central Hudson of the corrective action. Central Hudson will then arrange to have the facility retested. If the stray voltage has been mitigated, then the facility would be energized. If the stray voltage was still present, then the facility would not be reenergized and the municipality would be again informed of the condition and that they were required to repair it.

Substation Fencing

Testing of the substation fencing began in June and was completed by the end of July. Four Central Hudson personnel performed this testing and a total of 108 facilities were tested. There were no occurrences of stray voltage above the 4.5-volt threshold detected on these facilities.

Transmission

Transmission structure testing and facility inspection began April 18th, 2005. Four contract employees performed the testing. As of November 30th, 2005, 3287 structures were visited. Of this total number, four locations were found to have voltage above 4.5-volt threshold. None of these were above the 8.0 voltage level. All four of these occurrences were mitigated through engineered changes, primarily bonding together of static wires or structures. The locations were then retested with respect to stray voltage and found to have no measurable voltage present.

IV. Details of Facility Inspections

The Company's electric inspection program fully complies with or exceeds the standards established in the Commission Order. The inspection program in many cases is more stringent than the requirements set forth in the Order.

The purpose of Central Hudson's facility inspection program is to visually evaluate equipment and verify that it is in a safe, operational and reliable condition. This inspection program is on going and has in place a reporting and documenting procedure that allows for any observed deficiencies to be recorded and prioritized for timely repair. Central Hudson performed physical inspections of the following facilities:

Distribution Overhead
URD – Pad-Mounted equipment
Underground – Manholes / Pull Boxes
Transmission Overhead

Conditions found in the field as part of the inspections are categorized into specific areas relative to each facility type. These conditions are listed below for each facility type. In addition each condition finding is given a rating code that allows Central Hudson to prioritize any corrective action required. The priority ratings range from 0 to 5 with five being the most urgent. A description of each priority rating is as follows. Categories 0 and 1 are not included in the tabulated results found in this report.

- 0 – Record Discrepancy – Corrected in the field
- 1 - Insignificant – No action required
- 2 – Very Minor Condition – No action needed at this time
- 3 – Monitor for future action.
- 4 – Serious Condition – May cause an interruption of service or problem in the future (repair or replace within six months to a year)
- 5 – Critical Condition – Immediate repair or replacement (repair or replace within six months)

Distribution Overhead

For calendar year 2005, a total of 75,685 distribution poles were inspected on 105 separate circuits or approximately 34.4% of the system total. Conditions found that required some form of follow-up action were compiled and categorized into six areas including Poles, Conductors, Transformers, Trimming, Hardware and Other.

- Poles - 305 occurrences (0.40 % of the total facilities inspected)
- Conductors - 11 occurrences (0.01% of the total)
- Transformers - 38 occurrences (0.05%)

Trimming - 1295 occurrences (1.17%).

It is noted that the majority of this category (Trimming) is directly related to the current process for the Company's trimming program. Inspections of distribution facilities are, by design, planned for the year prior to when the line trimming is scheduled. Conditions identified by the inspections are included in the work scope for the trimming program.

Hardware - 264 occurrences (0.35%)

Other - 73 occurrences (0.10%)

The priority ratings associated with the conditions found in the field during the inspections are tabulated below.

Priority Rating	Number of Occurrences	% Of Total Occurrences
2	10	0.5 %
3	174	9.1 %
4	1686 (1295 trimming items)	88.2 %
5	41	2.1 %

URD – Pad Mounted Equipment

For URD – Pad Mounted equipment, 4904 devices were inspected. This accounted for 35.93% of the total of those devices on Central Hudson's system. The inspection results are broken down into three categories:

Conductors – 1 occurrence or 0.02 % of the total units inspected

Transformer Equipment – 105 occurrences or 2.14%

Other - 46 occurrences or 0.94%

Priority codes associated with these conditions are listed below.

Priority Rating	Number of Occurrences	% Of Total Occurrences
2	8	5.97 %
3	39	29.10 %
4	73	54.48 %
5	14	10.45 %

Manholes and Pull Boxes

Central Hudson has a total of 1317 Manhole and Pull boxes on its system. For 2005, 574 devices were inspected. This is approximately 43.58% of the system total. Conditions found in the field were listed in five categories including:

Access – 8 occurrences or 1.39% of the total units inspected

Structures – 146 occurrences or 25.44%

- Cables – 21 occurrences or 3.66%
- Equipment – 14 occurrences or 2.44%
- Other - 61 occurrences or 10.63%

Priority ratings associated with these conditions are listed below.

Priority Rating	Number of Occurrences	% Of Total Occurrences
2	33	13.2 %
3	93	37.2 %
4	102	40.8 %
5	22	8.8 %

Transmission

The stray voltage testing for Transmission structures was conducted in conjunction with the facilities inspection activities. Both Company personnel and contractors performed all inspection and Stray voltage testing activities. Field-testing began in April and is on-going. For 2005 a total of 26 individual transmission circuits were inspected and tested. This included approximately 3235 individual poles or towers. The total number of structures inspected is approximately 44.5 % of Central Hudson's total facilities.

Field conditions found were placed into specific categories including:

- Guy Wires – 398 occurrences
- Conductors – 12 occurrences
- Poles – 45 occurrences
- Wood Pecker Holes - 141 occurrences
- Ground Wires – 63 occurrences
- Vegetation – 65 occurrences
- Insulators – 32 occurrences
- Foundations – 37 occurrences
- Other – 128 occurrences.

Priority ratings associated with these various categories are listed in the table below. Descriptions of the priority ratings for Transmission structures are as follows:

- Priority 3 - No immediate action required. Condition warrants monitoring status in the next inspection cycle.
- Priority 4 – Repair or replacement within 6 months to a year.
- Priority 5 – Immediate repair or replacement.

Transmission Structure Inspections – Priority Ratings

Priority Rating	Number of Occurrences	% Of Total Occurrences
3	828	89.9 %
4	91	9.9 %
5	2	0.2 %

V. Annual Performance Targets

Central Hudson performed the required Stray Voltage testing and facilities inspections in accordance with all performance guidelines and requirements as set forth in the Order.

The targets for all equipment categories within the Stray Voltage Testing Program have been met for the period ending November 30, 2005. The results are summarized in the table below. These results are in accordance with the certification included in Section VI. Therefore no performance penalties were incurred.

Stray Voltage Testing Program Results:

Category	PSC Order Requirement	Actual Tested – 2005
Distribution Poles URD – Pad Mounted Transmission Structures	50%	72.19%
Manholes and Pull Boxes	100%	100%
Streetlights / Traffic Signals	100%	100%
Substation Fences	100%	100%
Total Combined Facilities	51.54%	73.05%

The targets for all equipment categories within the Facility Inspection Program have been met for the period ending November 30, 2005. The results are summarized in the table below. These results are in accordance with the certification included in Section VI. Therefore no performance penalties were incurred.

Facility Inspection Program Results:

Category	PSC Order Requirement	Central Hudson Prog. Requirement	Actual Inspected 2005
Distribution Overhead	20%	33%	34.4%
URD Pad Mounted	20%	33%	35.9%
Manholes/Pull Boxes	20%	33%	43.6%
Transmission	20%	20%	44.5%

VI. Certifications

Pursuant to Section 7 of Appendix A of the Electric Safety Standards, the President or Officer of each Utility with direct responsibility for overseeing stray voltage testing and facility inspections shall provide annual certification to the Commission that the Utility has, to the best of their 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 streetlights, as referred to in the body of the January 15 Report
- Inspected the requisite number of electric facilities

Following are the Stray Voltage Testing and Facility Inspection Certifications for Central Hudson Gas and Electric Corporation.

CERTIFICATION
[STRAY VOLTAGE TESTING]

STATE OF NEW YORK)
) ss.:
COUNTY OF DUTCHESS)

James P Lovette, on this 14th day of January, 2006, certifies as follows:

1. I am the Vice President, Engineering and Environmental Affairs of Central Hudson Gas and Electric Corporation (the “Company”), and in that capacity I make this Certification for the annual period ending November 30th, 2005 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, and July 21, 2005 in Case 04-M-0159 (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 November 30th, 2005 (the “Twelve-Month Period”).

4. I hereby certify that, to the best of my knowledge, information and belief, the Company has implemented and completed its Stray Voltage Testing program for the Twelve Month Period. Except for untested structures that are identified as temporarily inaccessible in the Company's Annual Report, submitted herewith, the Company is unaware of any Facilities or Streetlights that were not tested during the Twelve-Month Period.

5. 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.

Sworn to before me this ___ day of January, 2006

Notary Public:

CERTIFICATION
[FACILITY INSPECTIONS]

STATE OF NEW YORK)
) ss.:
COUNTY OF DUTCHESS)

James P. Lovette, on this 14th day of January, 2006, certifies as follows:

1. I am the Vice President, Engineering and Environmental Affairs of Central Hudson Gas and Electric Corporation (the “Company”), and in that capacity I make this Certification for the annual period ending November 30th, 2005 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, and July 21, 2005 in Case 04-M-0159 (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 November 30th, 2005 (the “Twelve-Month Period”).

4. I hereby certify that, to the best of my knowledge, information and belief, the Company has implemented and completed its Facility Inspection Program to inspect 17 % of its Facilities during the year 2005, in order to comply with the five-year inspection cycle required under the Order.

Sworn to before me this ___ day of January, 2006

Notary Public:

VII. Analyses of the cause of stray voltage, conclusions drawn, remedial measures identified and plans to implement those measures

Distribution Overhead

The 2005 Stray Voltage Testing Program for Distribution Overhead facilities was completed on November 30th. Of the approximately 162,000 locations visited none were found to have voltage above the PSC action level of 8.0 volts. Of the 162,000 locations visited, 122,877 locations required testing for Stray voltage. Two locations were found with readings of stray voltage above 4.5 volts, but below the PSC action level of 8.0 volts. This yields a failure rate of 0.00% above the PSC action level.

The two instances were detected on guy wires. Remedial actions taken with respect to the two occurrences were successful in eliminating the presence of stray voltage. In one case a guy break insulator was installed to improve clearance between the guy and energized equipment on the pole. In the second case voltage was found on a telephone guy wire. A down ground and bonding were added to the guy.

URD Pad Mounted Equipment

There were no occurrences of stray voltage detected on the Pad Mounted facilities. This equates to a failure rate of 0.00 % above the PSC action level.

Manholes / Pull Boxes

There were no occurrences of stray voltage detected on the Man Holes and Pull Boxes. This equates to a failure rate of 0.00 % above the PSC action level.

Streetlights / Traffic Signals

Streetlights accounted for all incidents of stray voltage above the PSC action level detected as part of the testing program. A total of 9 locations were found to contain stray voltage above the 4.5-volt level. Seven of these locations had voltage levels above the 8.0-volt action threshold. This equates to a failure rate of 0.13 % above the PSC action level.

All of the locations where stray voltage was found are owned and maintained by municipalities or entities other than Central Hudson. Accordingly Central Hudson's response to the incidents of detected stray voltage was to make the facility safe, primarily by disconnecting the power feed, and notifying the entity responsible for maintenance of the streetlight. Follow-up activities on the part of Central Hudson included contact letters to the appropriate municipalities requesting status of the repairs

and indicating the requirement for Central Hudson to retest these facilities after they have been repaired and before they are placed back in service.

The causes of the stray voltage in two cases were determined at the time Central Hudson employees responded to the location. In one case a neutral wire was contacting the pole inducing a voltage on that pole. The remediation action was to remove the neutral wire from contact with the pole and secure it. In another case the pole wiring was discovered to be faulty and was contacting the pole creating a voltage on the metal pole. For the other seven cases of detected stray voltage the causes were not known, Central Hudson crews did not investigate the causes due to the fact that the facilities were owned and maintained by others. Central Hudson’s response was to make the facility safe with respect to public exposure and then to notify the owner that their facility was tested, shown to have stray voltage present and that their responsibility was to repair that facility before it is placed back in service. These causes are summarized in the table below.

Streetlight Testing – Causes of Stray Voltage

Structure Type	Cause of Stray Voltage	Number of Occurrences
Streetlights	Neutral Wire Contacting Pole	1
Streetlights	Defective Conductor	1
Streetlights	Unknown	7

There were no incidents of stray voltage detected on the 768 traffic signal locations tested. This equates to a failure rate of 0.00% above the PSC action level.

Substation Fences

There were no incidents of stray voltage detected on the 108 substation fences tested. This equates to a failure rate of 0.00% above the PSC action level.

Transmission Structures

A total of 3287 transmission line structures were visited. The testing for Stray voltage was performed in conjunction with the transmission facility inspection program. Of the total number of structures visited, a total of 4 incidents of stray voltage were detected above 4.5 volts but below the PSC action level of 8.0 volts. This equates to a failure rate of 0.00% above the PSC action level. The Transmission Design Section at Central Hudson was assigned to investigate each of the four occurrences. Corrective action plans were recommended and implemented. These corrective actions included improved bonding of static wires at dead end structures to allow for continuity of circuitry, and/or installation of additional static wires to tie parallel circuits together. The locations were then retested and stray voltage was no longer present at any of the locations.

VIII. Other Pertinent Information

QA/QC program

Central Hudson has implemented a QA/QC program that is used to review the effectiveness and accuracy of the Stray Voltage Testing and Facility Inspection Programs and their associated activities. This program resulted in specific improvements to the various processes, which have contributed toward increased program efficiency and accuracy as well as reduced potential for error. The QA/QC program called for several types of audits and for constant feedback with respect to the data collection and processing. The various audits covered personnel training, field testing and inspection procedures and practices, testing and inspection records, and field trailing audits.

To date there has been one audit of the training records, two audits of actual test data records and three audits of field-testing and inspection activities. The completed audits indicated that all significant activities associated with the Stray Voltage Testing and Facilities Inspection Programs are being conducted in accordance with established protocols. The audit's findings resulted in no issues that required formal remedial action plans.

As a result of the audit review process several areas of opportunity were identified. These opportunities lead to minor changes that were implemented immediately or are currently being implemented. These opportunities primarily centered on the verification of accuracy and improvement in the process of data collection. Some of those items are listed below:

- 1 - Verification that locations identified as inaccessible by the field testers were in fact inaccessible.
- 2 - Assurance that at locations where testing was required but the test was not initially recorded, that there was follow-up testing and that this testing was documented.
- 3 - Identification of unique employees with respect to data collection. Unique ID numbers were being reused and this caused confusion with respect to data verification.
- 4 - Identification of an automated date/time stamp on the test data record that could not be altered. This was corrected easily by a simple programming change to the hand held data collection device.
- 5 - Verification of accuracy and effectiveness of classroom training/testing.
- 6 - Assurance that testers are trained before they begin fieldwork.

7 – Verification that contractor personnel are qualified to train other employees and evaluate practical examinations.

Shock Reports

Associated with the overall safety program is an established reporting procedure of all electric shock incidents. This procedure involves immediate notification to the PSC of all shock incidents. The reporting is facilitated by a standard format and all reports are kept on file at Central Hudson.

In 2005 there were a total of 6 known shock incidents reported. No serious injuries occurred and remedial action was implemented as required. These incidents can be broken down into several categories. None of these categories are directly associated with Stray Voltage. The categories and frequency of the shock incidents are listed below.

- 2 - Broken Pole/ Downed Wire
- 3 - Primary Phase Wire Contact
- 1 - Not Grounded/Not Dead

There were two incidents involving a downed wire. One resulted in a fatal injury to a horse. The details of the second incident are unclear, but the individual involved allegedly suffered a broken leg.

Three incidents reportedly involved contacting of an energized conductor from the elevated position. No injuries were reported from these incidents.

One shock report resulted from a residential electrical service being reenergized while an electrician was working on it. The circuit was not grounded and was assumed by the electrician to be de-energized.

Of the six reported incidents no personal injury or treatment was recorded except for the incident in which the individual suffered a broken leg. None of these incidents were associated with stray voltage.

Research and Development

Central Hudson continues to participate in the NYS Residential Stray Voltage Committee Activities, and through its EPRI and CEA membership, continues to ensure that the best operational, construction and maintenance practices are being utilized. Central Hudson also participates with the New York State Utilities and the PSC in discussing issues and opportunities regarding both Stray Voltage Testing and Facility Inspection.

Central Hudson keeps abreast of technological improvements. One such improvement came from Sarnoff Corporation. They have developed a mobile testing device (SVD2000), which from a moving vehicle will detect surrounding levels of stray voltage. This device was demonstrated at Sarnoff's facilities in Princeton, NJ. in November of 2005. Central Hudson as well as other utilities attended this demonstration. The device utilizes cameras and electronic field detection equipment to visually and electronically display and record voltage fields with-in a range of 15 feet from the vehicle. This data is recorded while the vehicle is moving at up to a nominal 15 miles per hour. The system allows the operator to pause and investigate any significant voltage readings. Comments can be added to the test record at any time.

Several field conditions affect the accuracy and usefulness of this device. The presence of overhead electric distribution and transmission facilities and their associated electric fields significantly affects the accuracy of the device in recording lower voltage fields. Application of this device is for areas containing predominantly underground electrical facilities where extraneous voltage fields are minimized. Most of Central Hudson's electric facilities are overhead construction. Therefore it was determined by Central Hudson's engineering division that this device was not cost effective for use in our Stray Voltage Testing Program at this time.