Jennifer Brooks Hutchinson
Senior Counsel

April 29, 2011

VIA HAND DELIVERY & ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Commission Investigation relating to Stray and Contact Voltage Occurring in Narragansett Electric Company Territories
Responses to Commission Data Requests (Set 2)

Dear Ms. Massaro:

On behalf National Grid[1] enclosed please find ten (10) copies of the Company's responses to the Commission's Second Set of Data Requests issued in the above-captioned proceeding.

Thank you for your attention to this transmittal. If you have any questions, please feel free to contact me at (401) 784-7667.

Very truly yours,

Jennifer Brooks Hutchinson

Enclosure

cc: Docket 4237 Service List
Steve Scialabba
Leo Wold, Esq.

[1] The Narragansett Electric Company d/b/a National Grid ("National Grid" or the "Company").

Certificate of Service

I hereby certify that a copy of the cover letter and/or any materials accompanying this certificate were electronically submitted and/or sent via US Mail in Docket 4237. One original and 10 copies were hand delivered to the Commission.

Joanne M. Scanlon
National Grid

April 29, 2011
Date

Docket No. 4237 - Commission's Investigation Into Stray Voltage and Contact Occurring in Utilities' Service Areas Updated 4/11/11

Name	E-mail Distribution List	Phone/FAX
Thomas Teehan, Esq. National Grid 280 Melrose Street Providence, RI 02907-1438	Thomas.teehan@us.ngrid.com Joanne.scanlon@us.ngrid.com	401-784-7667 401-784-4321
Michael R. Kirkwood, General Mgr./CEO Pascoag Utility District 253 Pascoag Main St. PO Box 107 Pascoag, RI 02859	mkirkwood@pud-ri.org Jallaire@pud-ri.org	401-568-6222 401-568-0066
William L. Bernstein, Esq. 627 Putnam Pike Greenville, RI 02828	wlblaw@verizon.net	401-949-2228 401-949-1680
Michael McElroy, Esq. 21 Dryden Lane PO Box 6721 Providence, RI 02940-6721	McElroyMik@aol.com	401-351-4100 401-421-5696
Dr. Albert Cassaza	albertrc@optimum.net	
Cliff McGinnes	ifrtruck35@mac.com	
Leo Wold, Esq. Dept. of Attorney General 150 South Main St. Providence, RI 02903	lwold@riag.state.ri.us Steve.scialabba@ripuc.state.ri.us David.stearns@ripuc.state.ri.us Jlanni@ripuc.state.ri.us Tkogut@ripuc.state.ri.us Al.contente@ripuc.state.ri.us	401-222-2424 ext. 2299 401-222-3016

	dmacrae@riag.ri.gov	
	mcorey@riag.ri.gov	
File Original & 10 copies file w/: Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Boulevard Warwick, RI 02888	Lmassaro@puc.state.ri.us	401-780-2107
	Adalessandro@puc.state.ri.us	
	dshah@puc.state.ri.us	
	anault@puc.state.ri.us	
	nucci@puc.state.ri.us	

Commission 2-1

Request:

The response to Commission 1-3 indicates that Grid has purchased three NARDA 8950/10 detection systems. Please indicate:

a. The cost of the equipment
b. If the equipment will be utilized exclusively in Rhode Island
c. If the equipment is to be used both inside and outside of Rhode Island, how the cost of the equipment will be allocated.
d. The process by which the equipment was selected.
e. What, if any, alternative equipment was evaluated and the reason for rejection of said equipment.

Response:

a. The cost of the NARDA equipment is approximately $40,000 per unit.

b. National Grid intends to purchase equipment for Rhode Island use only

c. National Grid intends to purchase equipment for Rhode Island use only. Please refer to the Company's Response to Commission 2-1 (b). However, if the Company determines in the future that there is a benefit to sharing equipment among its other jurisdictions, the Company will track actual use in each jurisdiction to ensure that costs are allocated appropriately.

d. National Grid selected the only commercially available option, the NARDA equipment. The Company is aware of only two devices currently available for mobile testing. The first device is the NARDA equipment, which may be purchased commercially by the Company and used by National Grid or a third party to conduct mobile survey. The second device is the SDV-2000. Power Survey, a stray voltage survey contractor, has proprietary rights for the SDV-2000, and thus is not available for purchase by the Company. To use the SDV-2000, National Grid must enter into a sole source contract with Power Survey for mobile stray voltage survey services.

e. Please refer to the Company's Response to Commission 2-1 (d).

Prepared by or under the supervision of: John Gavin

Commission 2-2

Request:

With regard to the attachments to the Commission's 1st set of data requests, are attachments COMM 1-2(c) – Elevated Voltage Report-Rhode Island and COMM 1-2(d) – Shock Reports from the Public provided to the RIPUC and RIDPUC on a regular basis?

Response:

No. These attachments are not included as part of any standard reports the Company provides the RIPUC and RIDPUC on a regular basis.

Prepared by or under the supervision of: John Gavin

Commission 2-3

Request:

For each instance listed on Attachment COMM 1-2(c) – Elevated Voltage Report-Rhode Island, the response is either no or there is no entry in the "Injury" column. Attachment COMM 1-2(d) – Shock Reports lists multiple instances of "Injuries Sustained / Medical Attention Received". Please explain the apparent inconsistencies between the two attachments.

Response:

While both reports were created to capture instances of elevated voltage reported to the Company, the formats differ because each report was developed to comply with specific state regulatory directives. The report provided in COMM 1-2(c) was created to comply with a request by the Massachusetts Department of Public Utilities ("MA DPU"). National Grid expanded that report for use in Rhode Island and New Hampshire, although neither state has a specific reporting requirement with regard to tracking elevated voltage instances. Attachment COMM 1-2 (d) was created to comply with a request for the New York Public Service Commission.

Therefore, the apparent inconsistencies noted may be attributed to differences in the formatting that was developed specifically for each of the regulatory agencies. Furthermore, the difference in the number of instances of "Injuries Sustained/Medical Attention Received" for New York, and the information shown in the "Injury" column in the Massachusetts, Rhode Island and New Hampshire report are based on the number of actual injury reports that the Company received for each state.

Prepared by or under the supervision of: John Gavin

Commission 2-4

Request:

Did Channel 10 or the stray voltage detection company referenced in Channel 10's February news piece provide any information to Grid relative to their stray voltage findings? If yes, please provide copies.

Response:

No information was provided to the Company by Power Survey or Channel 10. National Grid requested information regarding stray voltage findings referenced in the news story from Power Survey. Their response was, "The sampling was performed one evening this week for a third party. I assume the data belongs to that third party. Although it may not be the optimal format for you, all the records are available on the NBC website."

Channel 10 was asked twice to provide the locations where stray voltage was found. The first request was ignored. The second request was made in a phone conversation with the station's news director the day after the first installment of the two part series aired. He told National Grid to get the information from their website.

The Company obtained the information available from the Channel 10 website and surveyed those locations. National Grid found that of the 43 locations listed, five were not National Grid structures, two were duplicate sites, one site could not be located, and 8 required no action. National Grid took appropriate remediation action for all Company-owned structures found to have elevated voltage readings. A summary of the follow up survey for the locations posted on the Channel 10 website is provided in Attachment COMM 2-4.

Prepared by or under the supervision of: John Gavin and David Graves

Town	Address	Power Survey Voltage	NGrid Voltage	Equipment	UG Contacted	UG On site	Actions Taken	Date Repaired	Post Mitigation Voltage	Assigned To	Assigned To Date
Warwick	329 Bald Hill Rd. at W. Natick Rd.	76.9	70	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Cranston	Opposite 1594 Elmwood Ave. at 2nd Ave. (Portugues Club)	53.2	34	Illuminated sign	25-Feb	Y	Customer owned			Need to return at night, customer owned sign	25-Feb
Providence	771 Elmwood Ave. at Russell St.	32.4	40	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	1222 Broad St. at Cass St.	4.6	3	Street light	25-Feb	Y	Cut and clear at base		0	UG	25-Feb
Providence	728 Broad St. at Saratoga St.	6.5	5	Street light	25-Feb	Y	Cust and clear at HH		0	UG	25-Feb
Providence	Opposite 568 Broad St. at Parkis St.	5.2	2	Street light	25-Feb	Y	Cut and clear at base		0	UG	25-Feb
Providence	Broad St. at Parkis St.	5.2 volts each	0	Street light, traffic signal and control box	25-Feb	Y	No Action			UG	25-Feb
Providence	Broad St. at Pine St.	83.4	0	Street light	25-Feb	Y	NA	NA	NA	Inspections	25-Feb
Providence	79 Elmwood Ave. at Westfield St.	117.7 volts each	93	Manhole, street light, access hatch	25-Feb	Y	Cut and clear in HH		0	Inspections	25-Feb
Providence	5 Elmwood Ave. at Bridgham St.	58.9	60	Bus shelter	25-Feb	Y	Cut and clear in HH		0	Inspections	25-Feb
Providence	358 Broad St. at Somerset St.	119 volts each	NA	Street light, illuminated sign post, guard rail and a guard post	25-Feb	Y	Customer owened sign, Customers secondary wire (Romex) has exsposed jacket energizing sign	NA	NA	Inspections	25-Feb
Providence	Broadway at Barton St.	88.3	0	Street light	25-Feb	Y	No Action		0	UG	25-Feb
Providence	225 Plainfield St. at Whittier Ave.	10.7	11	Street light	25-Feb	Y	Cut and clear at base		0	UG	25-Feb
Providence	Atwells Ave. at Knight St.	93.3 volts each	(2) 60V	Manhole, sidewalk, storm drain, lamp post, roadway	25-Feb	Y	City of Providence owned Street lights (2), had electricain make repairs to exsposed condutor. Lamp post, storm drain, roadway all read zero volts after repair.	02/26/2011	0	Inspections	25-Feb
Providence	Opposite 441 Atwells Ave. at Knight St.	102.5 volts each	0	Manhole, hand well, lamp post	25-Feb	Y	No Action		0	Inspections	25-Feb
Providence	Opposite 340 Atwells Ave. at Sutton St.	3.2	0	Lamp post	25-Feb	Y	Customer owned		0	Inspections	25-Feb
Providence	Dean St. at Spruce St.	5.7 volts each	0	Street light, ped x-ing	25-Feb	Y	Customer owned		0	Inspections	25-Feb
Providence	Prominade St. at Park Ave.	5.8 volts each	0	Traffic signal, traffic control box	25-Feb		No Action		0	Inspections	25-Feb
Providence	100 South St. at Parsonage St.	19	14	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	South St. at Parsonage Ave.	34.2	NA	Street light	25-Feb	NA	does not exist	NA	NA	NA	NA
Providence	60 Ship St. at Elbow St.	10.1	5.7	Street light	25-Feb	Y	pulled fuse		0	UG	25-Feb
Providence	Ship St. at Richmond St.	10.2 volts each	8.1	Street light, sign post	25-Feb	Y	cut in mh ..p5		0	UG	25-Feb
Providence	Opposite 3 Ship St. at Richmond St.	11.8	6.7	Street light	25-Feb	Y	cut in MH..p16		0	UG	25-Feb
Providence	196 Richmond St. at Ship St.	10.5		Street light	DUPLICATE	DUPLICATE	DUPLICATE				
Providence	Pine St. at Garnet St.	77.1 volts each	48.2	Manhole, street light, gas cap and sign post	25-Feb	Y	Cut and clear in HH		0	UG	25-Feb
Providence	Exchange St. at Fulton St.	16.9	8	Street light	25-Feb	Y	Cut drop		0	UG	25-Feb
Providence	Benefit St. at Waterman St.	7.2	3.4	Street light	25-Feb	Y	cut it mh 1087		0	UG	25-Feb

Town	Address	Power Survey Voltage	NGrid Voltage	Equipment	UG Contacted	UG On site	Actions Taken	Date Repaired	Post Mitigation Voltage	Assigned To	Assigned To Date
Providence	Prospect St. at George St.	61.4		Street light	DUPLICATE	DUPLICATE	DUPLICATE				
Providence	47 George St. at Prospect St.	57.5	38.4	Street light	25-Feb	Y	cut in mh 1277		0	UG	25-Feb
Providence	184 Hope St. at Manning St.	102	0	Stairway light	25-Feb	Y	No Action			Need to return at night	25-Feb
Providence	151 Waterman St. at Cook St.	21 volts each	14 / 1.7	Street light, asphalt	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	353 Angell St. at Ives St.	10.1	4.6 / 1.9	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	420 Angell St. at Taber Ave.	41	32	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	Opposite 262 Waterman St. at Butler Ave.	32.1	28 / 11.3	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	Opposite 13 Constitution Hill at Schely Sq.	73.1	48	Street light	25-Feb	Y	Cut and clear at base		0	UG	25-Feb
Providence	Opposite 400 N. Main St. at Schely Sq. (P24)	82.5	54	Street light	25-Feb	Y	Cut and clear in HH		0	Inspections	25-Feb
Providence	Opposite 424 N. Main St. at Schley Sq. (24-50)	69.3	64	Street light	25-Feb	Y	Cut and clear in HH		0	Inspections	25-Feb
Providence	Ashburton St. at Randall St.	15.9	1.2	Street light	25-Feb	NA	no action, 1.2 volts	NA	NA	T-man	25-Feb
Providence	528-530 N. Main St. at Stevens St.	35.2	33	Street light	25-Feb	Y	Cut and clear at base		0	Inspections	25-Feb
Providence	50 Randall St. at N. Main St.	63.2 volts each	58	Street light, hand well	25-Feb	Y	cut and clear hh - de energized StP 7,8 & 9		0	Inspections	25-Feb
Providence	100 Randall St. at N. Main St. (P7)	20.2 volts each	11.7 / 1.7	Street light, metal fence, patch of grass, hand well	25-Feb	Y	Cut and clear in HH		0	UG	25-Feb
Providence	Randall St. at N. Main St. (P51)	20	60	Street light	25-Feb	Y	Cut and clear at base		0	UG	25-Feb
Providence	N. Main St. at Doyle Ave	95.2	1.2	Street light	25-Feb	NA	no action, 1.2 volts	NA	NA	Inspections	25-Feb

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Commission 2-5

Request:

Are all the instances of stray voltage referenced in the February news piece by Channel 10 included in attachment COMM 1-2(c) – Elevated Voltage Report-Rhode Island? If not, why not?

Response:

No. Attachment COMM 1-2(c) is the Massachusetts "Siemens" report used to report elevated voltage shock events. The Company expanded the report to include shock events reported in Rhode Island and New Hampshire. Please refer to the Company's Response to Commission 2-3.

The Siemens Report captures shock events reported by the public and called in to the Company. Since the Company did not receive any reports of shocks associated with the instances of stray voltage referenced in the February news piece, the instances do not appear on this report.

Please see the Company's Response to Commission 2-4 for the results of instances referenced in the February news piece by Channel 10.

Prepared by or under the supervision of: John Gavin and David Graves

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Commission 2-6

Request:

Regarding your Comm 1-4 Attachment, please define the following codes, acronyms or terms:

a) Under the heading “Volt Fnd”, please explain the meaning of the letter "B”.
b) Under the heading “Contractor”, please explain the meaning of “OS”
c) Under the heading “Action Taken”, please explain the meaning of “BT”
d) Under the heading “Match”, please explain the meaning of “Y”

Response:

a) "B”. = Below Threshold, the threshold is 4.5 volts and no action is required.
b) “OS” = Contractor was OSMOSE
c) “BT” = Below Threshold, the threshold is 4.5 volts
d) “Y” = a preloaded record that was matched to the field.

Prepared by or under the supervision of: John Gavin

Commission 2-7

Request:

Regarding Comm 1-4 Attachment, Stray Voltage Report, please answer the following questions:

a) What does the term "Preload Year 2005" mean? Please include in your response an explanation as to why the "preload year" listed at the top of the report does not always match the year of inspection or year of repair.

b) In the 4 years in which inspections were performed (2006 through 2009), it appears from the "Person Making Repair" column that repairs have been made to streetlights 5 times during this 4 year period. Is that true?

c) In each of the 5 instances in which a repair was performed, there was at least a 4 month lag between the date of inspection and date of repair. Please explain the reason for this time lag.

d) Please explain why the dates covered by this report appear to overlap the dates of the Siemens Report relating to Rhode Island (Comm 1-2(c))

e) An individual named S. Gouveia made each of the 5 repairs referred to above in the Stray Voltage Report. Is this person a National Grid employee, and if not, by whom is he employed?

f) Was the Stray Voltage Report prepared by a National Grid employee, and if so, was it prepared in the ordinary course of business or for the specific purpose of complying with the previous data request?

Response:

a) Preload Year indicates the parameter for the query run to create the report. For example, preload year 2005 indicates the data query requested all of the records from 2005 to date. The preload year may vary from the inspection year because it is shows the date the inspection or occurred.

b) Yes, repairs were made 5 times during the 4 year period where voltages found were above the 4.5 volt threshold. If the voltage is less than 4.5V no mitigation is required.

Commission 2-7 (continued)

c) The Company has two voltage thresholds. Voltages below 4.5 do not require repair. Voltages above 4.5 and below 8 volts require action. For voltages above 8 volts the facility must be guarded until made safe. Any immediate repair is temporary in nature. Permanent repairs are scheduled for a later date to allow efficient use of resources.

d) The "Siemens" report documents elevated voltage shock events reported by the public and called in to the company. Findings from ongoing testing activities are not covered in the Siemens Report because they are not called in by the public. Elevated voltages identified through ongoing testing are tracked in another database.

e) S. Gouveia is retired National Grid Operations Supervisor. He was an active employee at the time these reports were generated.

f) Stray voltage reports were prepared by a National Grid employee and were created to comply with the previous data request.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox

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Commission 2-8

Request:

Is the individual responsible for preparing the Siemens Report (Comm 1-2) a National Grid employee, and if so, was it prepared in the ordinary course of business or for the specific purpose of complying with the previous data request?

Response:

The individual who prepared the Siemens Report is a National Grid employee. The report has been prepared as part of the normal course of business since 2006 when National Grid developed an implementation plan to address stray voltage as result of recommendations from the Massachusetts Department of Public Utilities in December 2005.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox

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Commission 2-9

Request:

Regarding Comm 1-3 Attachment, please explain why subsection E is missing from Section II of the 2009 document NG-USA EOP-G016 but included in the 2006 document NG-USA EOP-G016 (Comm 1-6 Attachment 3).

Response:

The requirement for Elevated Voltage Testing in Substations in the 2006 document NG-USA (Electrical Operating Procedure) EOP-G016 (Comm 1-6 Attachment 3) was removed from Section II of the 2009 document NG-USA EOP-G016 because substations are visited bimonthly and inspection of the grounding system is conducted during those visits which makes an elevated voltage test redundant. This is because all electrical substations have grounding systems to provide for personnel protection during fault conditions, to allow for discharge of lightning currents and switching surge currents, and to allow for proper operation of relay and control equipment in the substation. The grounding system is made up of buried ground cable, ground rods, concrete footings, overhead ground wires (static wires), and neutral buses. The ground grid extends three feet beyond the fence perimeter with the fence grounded at each corner and every third post. The risk of hazardous voltage for personnel working in the substation, the public, and malfunction of equipment is minimized.

The requirement remains in New York because elevated testing of substation fences is specifically mandated in New York. Since the Company began conducting elevated testing of substation fences in New York no instances of elevated voltage have been reported.

Prepared by or under the supervision of: John Gavin

Commission 2-10

Request:

Regarding the documents entitled "NG-USA EOP D004" and "NG-USA EOP UG006" (Comm 1-3 Attachment, NG-USA EOP G016), please answer the following questions:

a) Regarding NG-USA EOP UG006, please explain why one- fifth of all metallic handhole covers, padmount transformers and switchgear are inspected in Rhode Island annually.
b) Regarding NG-USA EOP UG006, please explain the basis or rationale for the requirement that one-fifth of the underground facilities referenced in (a) are to be inspected annually.
c) Please provide the Commission with a copy of NG-USA EOP D004.
d) Please state whether these reports (NG-USA EOP UG006 and NG-USA EOP D004) were prepared by National Grid in the ordinary course of business.
e) If the aforementioned documents were not prepared in the ordinary course of business, please identify the purpose for which they were prepared.

Response:

The responses below provide details on the Company's current practices. National Grid continues to evaluate best practices for detecting stray, elevated and contact voltage.

a) The inspection cycle is set at five years by National Grid for consistency between National Grid's operating regions and is based on the cycle mandated by the New York Public Service Commission under Safety Order 04-M-0159.

b) National Grid inspects one fifth of the underground facilities annually to identify any potential equipment or safety issues associated with that equipment and to leverage the inspections evenly over the five year period.

c) Please see Attachment COMM 2-10.

d) Yes these documents were created as part of normal business.

e) See response to (d).

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox

nationalgrid	**ELECTRIC OPERATING PROCEDURE** **DISTRIBUION OVERHEAD**	Doc. # **NG-EOP D004** Page 1 of 11
	DISTRIBUTION LINE PATROL AND MAINTENANCE	Version 1.0 – 04/01/11

INTRODUCTION

The purpose of this procedure is to outline the requirements for the patrol and maintenance activities associated with National Grid Distribution feeders. The Distribution Maintenance Program was designed to provide for a patrol and subsequent maintenance of each distribution feeder once every five (5) years in NY and once every six (6) years in NE. The patrols are conducted by a Distribution Inspector identifying all required maintenance on a *Windows*® based hand held computer. The maintenance items identified through this patrol are separated into four priority levels 1, 2, 3, and 4. The problem codes identified default to the appropriate priority level. The default priority level can be adjusted by the individual performing the inspection based on actual field conditions. These priority levels are defined as follows:

Level 1- An identified facility/component or tree condition that must be repaired/replaced within 1 week.

Level 2 - *Identified facility/component condition that must be repaired/replaced within 1 year.*

Level 3 – *Identified facility/component condition that must be repaired/replaced within 3 years.*

Level 4 – This priority category is to collect inventory information on actual field conditions to be used by Investment Strategy and Work Planning.

All Level 1 priority conditions identified in the field shall be called in by the Distribution Inspector as follows:

Notification by location:

New York: System Operations Dispatch 1-877-716-4996
NE North: Westboro Control Center 1-508-421-7879
NE South: Lincoln Control Center 1-508-421-7885

Detailed information provided to the regional notification location:

Identify yourself as a Company Distribution Inspector and your work reporting area.

Details of the Level 1 Priority Condition:

Problem found.
District, Feeder No., Line No., Tax District and Pole No.
Street address and any additional information that would assist in finding the location of the problem.
If you are standing by or have secured the location.

Notification to area Inspections Supervisor for follow-up.

PURPOSE

This procedure applies to all personnel involved with or responsible for the inspection and repair of Overhead (OH) Distribution facilities, Underground Residential Developments (URDs) and Underground Commercial Developments (UCDs).

ACCOUNTABILITY

1. Distribution Engineering Services
   A. Update EOP as necessary.
2. Customer Operations
   A. Ensure the work generated by the Distribution Maintenance Program and assigned by Asset Strategy and Investment Planning is completed in the appropriate time frame.
   B. Request assistance from CMS when necessary to complete work assigned in the appropriate time frame.
3. Contract Management Services
   A. At the request of Customer Operations obtain, schedule and manage contractors to perform inspections and required maintenance.
   B. Provide input into program revisions.
4. Distribution Inspector
   A. Demonstrate the ability to identify maintenance concerns and the aptitude to become proficient in the use of a hand held computer and desktop computer.
   B. Demonstrate the understanding and requirements of this NG-EOP D004.
   C. Possess the ability to do walking patrols, collect information on a hand held, download to a desk top computer, edit data, provide requested information/reports/work tickets to supervision, and track/close out work completed in the database system.
5. Distribution Asset Strategy
   A. Select program codes/circuits to be scheduled for maintenance repair work using data collected through Distribution Maintenance Program.
   B. Approve changes to the maintenance code table.
   C. Select circuits to be patrolled for a running five-year cycle.
   D. Provide input into program revisions.
6. Inspections
   A. Ensure circuits scheduled for patrol are completed each year.
   B. Provide qualified personnel as inspectors to provide consistent and accurate identified maintenance concerns/problems.
   C. Provide program management.
   D. Report System Maintenance progress monthly by Division.

7. Process and Systems.
   A. Provide and support database.

REFERENCES

Applicable National Grid Safety Rules and Procedures

NY PSC Order 04-M-0159

NY PSC Order Order Adopting Changes to Electric Safety Standard, December 2008

Elevated Equipment Voltage Testing NG-EOP G016

Underground Inspection NG USA EOP UG006

Massachusetts DTE Directive 12/9/05

DEFINITIONS

Patrol: A walking/vehicle assessment of National Grid distribution facilities for the purpose of determining the condition of the facility and its associated components.

Hand Held Computer: A *Windows*® based data recording device that is used in the field to create a record of conditions found.

Desktop Computer: A personal computer that is connected to the National Grid network that is used to download the Hand Held Computer and retrieve the information in the form of reports.

Distribution Inspector: An employee that has been trained to identify deficiencies or non-standard construction conditions on National Grid facilities.

TRAINING

Provide training upon request.

DOCUMENT CONTENTS

Table of Contents

1.0 DISTRIBUTION PATROL

1.1 Distribution Patrols are conducted by a Distribution Inspector that has been trained to identify deficiencies or non-standard construction conditions on National Grid facilities. Distribution patrols are scheduled in such a manner that each distribution feeder is examined in the field once every five (5) years in NY and once every six (6) years in NE. In NY, the patrols shall be completed by December 31 due to regulatory reporting. In NE the patrols shall be completed by March 31. The most current Distribution Patrol schedule can be found in the Distribution Maintenance Program data base (RPT 1310 Feeder Patrol Status). New Distribution Feeders added to the system will be incorporated through our Geographic Information System (GIS) system and added to the appropriate inspection cycle. If the Distribution Inspector finds unmapped facilities from the information supplied from GIS, the inspector shall add the information into the *Windows*® based hand held computer for maintenance tracking purposes. NG-USA EOP G011, Preparation and Distribution of Electric Facilities Records, identifies the correct procedure for updating GIS records, if needed.

1.2 Distribution Patrol data is recorded by the Distribution Inspector on a *Windows*® based hand held computer and downloaded to the Distribution Maintenance Program. The Distribution Inspector shall also complete maintenance code 118, stencil installed and maintenance code 220, guy wire marker, maintenance code 660, switchgear missing nomenclature, maintenance code 681, transformer missing nomenclature, and maintenance code 745, enclosure missing nomenclature if found deficient upon inspection while at the site. Maintenance Codes are shown on the Distribution Field Survey Worksheet #NG0236 (Page 7). The Distribution Field Survey Worksheet can be used by the field to record maintenance items and is used for informational purposes only. The latest distribution maintenance codes are downloaded to the Hand Held Computer each time there is a change that affects the maintenance code table contained in the Distribution Maintenance Database. Printed copies of the latest maintenance code tables may be obtained by running a report on the look up tables from the Distribution Maintenance Database.

1.3 The *Windows*® based hand held computer is to be used as the primary vehicle for recording maintenance problems in the field. There may be times where it is not practicable to use the hand held computer. In these cases, the person performing the inspection should record the information on the Distribution Field Survey Worksheet #NG0236).
http://docuweb3:8092/ngs/servlet/NgStreamer?name=NG0236+Dist+Field+Survey+Wksht+D004

Once complete, the Distribution Field Survey Worksheet information must be input into the Distribution Maintenance Database by the inspector, clerk, or supervisor or their designee.

2.0 EQUIPMENT TO BE INSPECTED AND MAINTENANCE CODES

Wood Pole Mounted Street Light
Poles
Crossarms
Insulators
Primary
Transformers
Capacitor
Regulator
Sectionalizer
Recloser
Switches
Ground
Guy
Anchor
Secondary
Service
ROW
GIS
Spacer Cable
Cutout
Risers
Switchgear
Padmount Transformers
Enclosures

DISTRIBUTION FIELD SURVEY WORKSHEET

nationalgrid

REGION	DISTRICT	EMPLOYEE ID	DATE
FEEDER	TAX DISTRICT/TOWN	MAP #	
LINE # / ROUTE #	POLE #/SUFFIX #		
LOCATION			
# MAIN LINE CATV ATTACHMENT 1 2 3 4 5	# MAIN LINE TELEPHONE ATTACHMENT 1 2 3 4 5	STREET LIGHT ATTACHED ☐ Yes ☐ No	

WOOD POLE MOUNTED STREET LIGHT	P/Q	SECTIONALIZER	P/Q	CUTOUT	P/Q
098 1,2,9 (NR) ☐ Street Light Hazard Cond.	/	180 1,2,9 (NR) ☐ Oil Weeping	/	280 1,2,9 (R) ☐ Defective Cutout	/
099 2,9 (NR) ☐ Not Bonded	/	181 1,2 (R) ☐ Bushings Broken/Cracked	/	281 2 (R) ☐ Potted Porcelain	/
POLE		182 2,9 (R) ☐ Missing Ground Wire	/	282 4 (NR) ☐ Banded Porcelain	/
106 3 (NR) ☐ Dbl Wood-NG Trnsf Req'd	/	183 4 (NR) ☐ Control Cab Height/Ground	/	283 4 (NR) ☐ Enclosed	/
107 4 (NR) ☐ Dbl Wood-Tel Trnsf Req'd	/	184 3,9 (R) ☐ Improper/Missing Bond	/	284 4 (NR) ☐ Non Porcelain	/
108 4 (NR) ☐ Dbl Wood-CATV Trnsf Req'd	/	185 3,9 (R) ☐ Animal Guard Missing	/	285 4 (NR) ☐ Hybrid	/
110 1,2,9 (R) ☐ Broken/severely damaged	/	186 3,9 (R) ☐ LA Blown/Missing/Improper	/	286 4 (R) ☐ SpurTap Not Fused	/
111 1,2,3,4 (RP) ☐ Visual Rotting Grd Line	/	**RECLOSER**		289 4 (NR) ☐ Other	/
113 3 (NR) ☐ CuNap Treated Bthmark Yr	/	190 1,2,9 (NR) ☐ Oil Weeping	/	**RISER**	
114 2,4 (R) ☐ Woodpecker Holes	/	191 1,2 (R) ☐ Bushings Broken/Cracked	/	290 1,2,3,9 (NR) ☐ Improp Cable Supp/Term	/
115 1,2,3,9 (NR) ☐ Riser Guard Req'd	/	192 2,9 (R) ☐ Missing Ground Wire	/	291 2,9 (R) ☐ Improper/Missing Bond	/
116 1,2,3,4 (RP) ☐ Visual Rotting Pole Top	/	193 4 (NR) ☐ Control Cab Height/Ground	/	292 3,9 (R) ☐ Animal Guard Missing	/
117 1,2 (NR) ☐ Leaning Pole	/	194 3,9 (R) ☐ Improper/Missing Bond	/	293 2,3,9 (R) ☐ LA Blown/Missing/Improper	/
118 P (NR) ☐ Stencil / Correction Req'd	/	195 3,9 (R) ☐ Animal Guard Missing	/	**INFRARED**	
119 4 (NR) ☐ Bird's Nest	/	196 2,3,9 (R) ☐ LA Blown/Missing/Improper	/	400 1,2,3,9 (R) ☐ Problem - Switch	/
CROSSARM		**SWITCH**		401 1,2,3,9 (R) ☐ Problem - Cutout	/
120 1,2,4,9 (R) ☐ Damage Arm	/	203 1,2 (R) ☐ Gang Oper'd Defective	/	402 1,2,3,9 (R) ☐ Problem - Splice	/
121 1,2,4 (NR) ☐ Loose/Defective Pins	/	204 1,2,3,9 (R) ☐ Single Phase Defective	/	403 1,2,3,9 (R) ☐ Problem - Other	/
122 3,9 (NR) ☐ Wooden Pine 13.2kv	/	205 3,9 (R) ☐ Improper/Missing Bond	/	**HANDHOLES**	
123 1,2,4 (R) ☐ Loose Brace, Hrdwr	/	207 3,4,9 (R) ☐ LA Blown/Missing/Improper	/	600 1,2,9 (NR) ☐ Broken/Damaged/Unsecured	/
124 1,2,4,9 (R) ☐ Damage Dbl Crossarm	/	208 2,9 (NR) ☐ Handle Not Bonded	/	602 P (NR) ☐ Missing Nomenclature	/
125 1,2,4,9 (R) ☐ Damage Alley Arm	/	**GROUND**		603 1 (R) ☐ Secondary Needs Repair	/
127 1,2,9 (R) ☐ Primary On Arm	/	210 1,2,9 (R) ☐ Wire Broken/Loose	/	604 4 (NR) ☐ Other (use comments)	/
INSULATOR		211 1,2,9 (R) ☐ Hazard Condition	/	**SWITCHGEAR**	
130 1,2 (R) ☐ Broken/Cracked/Flashed	/	212 3,4 (NR) ☐ Guard Req'd	/	651 1,2,3,9 (R) ☐ Barrier Brkn/Dmgd/Unsec	/
131 1,2,9 (R) ☐ Floating	/	213 3,4 (NR) ☐ Non Standard	/	652 1,2 (NR) ☐ Base Broken/Damaged	/
132 3,4 (NR) ☐ I7 Aluminum Capped	/	214 3,9 (NR) ☐ Not Bonded to Neutral	/	654 2,9 (R) ☐ Cable Not Bonded	/
133 3,9 (R) ☐ Non-Standard Voltage	/	**GUY**		656 2,9 (R) ☐ Door Broken/Damaged	/
134 3,4 (NR) ☐ AL Cap Assoc w/Switch/Fuse	/	220 P (NR) ☐ Guy Wire Marker	/	657 F (NR) ☐ Excessive Vegetation	/
PRIMARY		221 2,9 (NR) ☐ Not in Compliance w/Code	/	659 2,9 (R) ☐ Missing Ground	/
140 1,2,9 (R) ☐ Insuff. Grnd Clearance	/	222 3,9 (NR) ☐ Excessive Slack	/	660 P (NR) ☐ Missing Nomenclature	/
141 1,2,3,9 ☐ Damaged Cond/Brkn Strands	/	223 1,2,3,9 (R) ☐ Broken Wire	/	661 4 (NR) ☐ Other	/
142 1, F (NR) ☐ Limbs on Primary	/	225 4 (NR) ☐ Guy not Bonded/Isolated per Standards	/	662 4 (NR) ☐ Rusted/Paint Peeling	/
145 1,2,3,9 (R) ☐ Dmg'd Stirups/Connector	/			**PAD TRANSFORMER**	
146 2,3 (R) ☐ Improper Sag	/	**ANCHOR**		672 1,2,3,9 (R) ☐ Bushing Broken/Cracked	/
147 4 (R) ☐ LA Missing Transition	/	226 1,2,3,9 (NR) ☐ Req'd - Jt. Owned	/	673 1,2,P (R) ☐ Door Broken/Damaged	/
148 4 (R) ☐ LA Missing End of Line	/	227 1,2,3,9 (NR) ☐ Req'd - Sole NG	/	675 1,2 (R) ☐ Elbows/Terminator/ Tracking/Burned	/
149 3,9 (R) ☐ LA Blown	/	**SECONDARY**			
TRANSFORMER		231 1,F (NR) ☐ Limb on Secondary	/	676 F (NR) ☐ Excessive Vegetation	/
150 1,2,9 (NR) ☐ Oil Weeping	/	232 1,2 (NR) ☐ Improper Sag	/	680 2,9 (R) ☐ Missing Ground	/
151 1,2 (R) ☐ Bushings Broken/Cracked	/	234 1,2,3,9 (NR) ☐ Floating	/	681 P (NR) ☐ Missing Nomenclature	/
152 2 (R) ☐ Missing Ground Wire	/	**SERVICE**		684 1,2,9 (NR) ☐ Oil Weeping	/
153 2,4 (R) ☐ LA Blown/Missing/Improper	/	240 1 (NR) ☐ Ins. Loose from House	/	685 1,2,3,4,9 (NR) ☐ Pad Broken/Damaged	/
155 4 (R) ☐ Animal guards required	/	241 1,F (NR) ☐ Limb on Service	/	686 4 (NR) ☐ Protection (Ballards)	/
156 3,9 (NR) ☐ Non Std Install of Gap	/	243 1 (NR) ☐ Non Std/Unsecured	/	687 4 (NR) ☐ Rusted/Paint Peeling	/
157 2,9 (R) ☐ Improper/Missing Bond	/	**ROW**		**ENCLOSURES**	
CAPACITOR		250 F (NR) ☐ Brush/Tree/Washout	/	740 1,2,3,4,9 (R) ☐ Base Broken/Cracked	/
160 1,2,9 (NR) ☐ Oil Weeping	/	**GIS**		741 1,2,3,9,P (R) ☐ Door Brkn/Dmgd/Unsec	/
161 1,2,9 (R) ☐ Bulging	/	260 4 (NR) ☐ Map Doesn't Match Field	/	742 1,2,3,9 (R) ☐ Elbows Tracking/Burned	/
162 1,2 (R) ☐ Bushings Broken/Cracked	/	261 4 (NR) ☐ Pole/Line Numbering Error	/	743 F (NR) ☐ Excessive Vegetation	/
163 2,9 (NR) ☐ Missing Ground Wire	/	262 4 (NR) ☐ Equip/Hardware/Missing	/	744 2 (NR) ☐ Missing Ground	/
164 2,9 (NR) ☐ Blown Fuse	/	263 4 (NR) ☐ Equip Removed in Field, Remove From GIS	/	745 P (NR) ☐ Missing Nomenclature	/
165 3,9 (NR) ☐ Improper/Missing Bond	/			746 4 (NR) ☐ Rusted/Paint Peeling	/
166 3,9 (R) ☐ Animal Guard Missing	/	269 4I (NR) ☐ Other GPS/GIS Errors	/	**POLE INSPECTION**	
167 3,9 (R) ☐ LA Blown/Missing/Improper	/	**SPACER CABLE**		801 1,2,3,4,9 (NR) ☐ Identified Priority Pole	/
168 4 (NR) ☐ Control Cab Heigh/Ground	/	270 1,2,3,9 (R) ☐ Damaged/Missing Spacer	/	802 1,2,3,4,9 (NR) ☐ Identified Reject Pole	/
REGULATOR		271 1,2,3,9 (R) ☐ Bracket Damage	/	803 4 (NR) ☐ Excessive Checking	/
170 1,2,9 (NR) ☐ Oil Weeping	/	272 3,9 (R) ☐ Bracket Not Bonded	/	804 4 (NR) ☐ Climbing Inspection	/
171 1,2 (R) ☐ Bushings Broken/Cracked	/	273 3,9 (R) ☐ Messenger Not Bonded	/		
172 2,9 (R) ☐ Missing Ground Wire	/	274 3,9 (R) ☐ Messenger Guard Missing	/		
174 4 (NR) ☐ Control Cab Height/Ground	/	276 3,9 (R) ☐ Uncovered Splice	/	**KEY**	
175 3,9 (R) ☐ Improper/Missing Bond	/			P/Q = Priority / Quantity	
176 3,9 (R) ☐ Animal Guard Missing	/			NR = Maint. Code May Not Direct Affect Reliability	
177 3,9 (R) ☐ LA Blown/Missing/Improper	/			R = Maint. Code May Affect Reliability	
				RP = Maint. Code May Affect Reliability and Has Specific Program to Place to Address	

Comments:

NG0236 (01.11)

3.0 DISTRIBUTION MAINTENANCE DATA BASE

3.1 The Distribution Maintenance database consists of information collected in the field down loaded from the *Windows*® based hand held computer and data gathered from other sources entered from the desktop computer. The *Windows*® based hand held computer can be down loaded to any National Grid desk top computer that is connected to the network by an employee that has been authorized to perform this function. The Distribution Maintenance database is used by various departments throughout National Grid to generate maintenance reports and cost estimates.

3.2 The Distribution Maintenance database contains information to be used by Asset Strategy and Investment Planning to track maintenance codes that may affect reliability (R), affect reliability that have a specific program in place to address (RP), or may not directly affect reliability (NR):

4.0 MAINTENANCE SCHEDULE

4.1 Maintenance activities are scheduled by priority Levels. All “Level 1 Priority” conditions identified must be repaired/corrected within 1 week. All “Level 2 Priority” conditions identified must be repaired/corrected within 1 year. All “Level 3 Priority” conditions must be repaired within 3 years. Level 4 Priority is for inventory purposes only.

4.2 Once the Distribution Feeder is completed in the Distribution Maintenance Database or 21 days have elapsed since the inspection, the Level 2 and Level 3 Priority maintenance codes are downloaded into STORMS. Expense maintenance work goes straight to scheduling while the capital work goes to Distribution Design. Level 1 Priority maintenance codes are communicated by the Distribution Inspector directly to the field operations group for the area where the feeder is located.

5.0 COMPLETION OF MAINTENANCE CODES

5.1 Level 1 priority maintenance codes completion process:

5.1.1 Distribution Inspector contacts System Operations Dispatch (SOD) providing information on the Level 1 maintenance item and fills out a Level 1 Priority Report Form (page 10).

5.1.2 SOD generates a PowerOn order from Regional Control.

5.1.3 Inspections Supervisor captures PowerON ID # and details for Level 1 maintenance item status. Inspections Supervisor tracks Level 1 maintenance status with operations ensuring that the Level 1 item is completed within 1 week. Inspection Supervisor closes out the Level 1 maintenance item in the Distribution Maintenance Database by adding the PowerOn ID # number to maintenance record.

5.2 Level 2 and Level 3 priority maintenance codes are completed in the Distribution Maintenance database once the 699 requirement is completed in STORMS for the work request associated with the maintenance code.

ALL MAINTENANCE WORK IS TO BE COMPLETED PER NATIONAL GRID DISTRIBUTION STANDARDS.

ALL MAINTENANCE WORK PERFORMED THAT WAS IDENTIFIED ON THE WORK ORDER OR DISCOVERED DURING THE REPLACEMENT/REPAIR/CORRECTION OF THE ORIGINAL MAINTENANCE PROBLEM MUST BE LISTED ON THE DATABASE AND THEN CLOSED OUT WHEN COMPLETE.

Level "1" & Elevated Voltage Priority Report Form

Any Level "1" Priority or Elevated Voltage condition found must be called into Dispatch.

Feeder:_____

Line #:_____

Pole #:_____

Closest Meter #:_____

Street Address: _____

City/Town: _____

Level "1" Priority/Elevated Voltage condition found.

_____

_____

Call Dispatch to inform that this is either an Elevated Voltage call or an Inspection issue.

Dispatcher notified: _____

Date/Time: _____

Inspector: _____

6.0 REVISION HISTORY

Version	Date	Description of Revision
1.0	04/01/11	This document supersedes document dated 08/17/09.

Commission 2-11

Request:

Referring to Subsection F of Comm. 1-3 (document entitled "NG-USA EOP-G016"), does this subsection exempt substation fences from elevated voltage testing, or does this exemption apply strictly to private property.

Response:

This subsection exempts gated and fenced off private property from elevated voltage testing. It contains no reference to utility-owned substation fences.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox

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Commission 2-12

Request:

Referring again to Comm 1-3 (document entitled "NG-USA EOP-G016"), does this document require elevated voltage testing of substation fencing?

a) If the answer to No. 11 is no, is testing of substation fences required by any other manuals, policies or procedures, written or otherwise, implemented or practiced by National Grid?
b) Does National Grid or any of its agents, employees or assigns conduct elevated voltage testing of substation fences in the state of Rhode Island, and if so, with what frequency?

Response:

This document requires testing of substation fences in New York, as mandated by the New York Public Service Commission, but does not require testing of substation fences in National Grid's other jurisdictions.

a) Testing of substation fences is not required by any other manuals, policies or procedures, written or otherwise, implemented or practiced by National Grid. Also see the Company's Response to Commission 2-9.

b) National Grid, its agents, or employees do not conduct elevated voltage testing of substation fences in the state of Rhode Island.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox

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Commission 2-13

Request:

Referring again to Subsection F of Comm 1-3 (document entitled "NG-USA EOP-G016"), Section II (A), "Company Owned Street Lights", states that testing is performed "during each outage investigation notification and the data will be recorded for each instance". Is the data collected pursuant to this section recorded in the Stray Voltage Report contained in Comm 1-4 Attachment?

Response:

The Company does collect the data but it is not recorded in the Stray Voltage Report contained in Attachment COMM 1-4 because it is stored in a different system. The data is recorded and contained in our MWork Data Warehouse. MWork is a mobile work management system used by field workers and supervisors.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox.

Commission 2-14

Request:

Does Section II of "NG-USA EOP G016" (Comm 1-3) currently require routine elevated voltage testing at regular intervals for any of the following facilities:

a) Streetlights
b) Overhead distribution facilities
c) Underground facilities, with the exception of padmount transformers, switchgears and metallic handhole covers
d) Substation fences

Response:

The responses below provide details on the Company's current practices. National Grid continues to evaluate best practices for detecting stray, elevated and contact voltage.

a) EOP G016 does not require elevated voltage testing for streetlights at regular intervals.

b) EOP G016 requires elevated voltage testing for wood distribution poles with metallic risers. The interval is defined in EOP D004.

c) EOP GO16 requires elevated voltage testing while completing scheduled inspections of underground equipment covered by EOP UG006. Per EOP GO16 testing for elevated voltage shall be completed for underground facilities while completing working inspections as required in EOP UG006.

d) E0P G016 does not require elevated voltage testing for Substation fences at regular intervals for Rhode Island, Massachusetts or New Hampshire. It does require routine elevated voltage testing at regular intervals for Substation fences in New York

Prepared by or under the supervision of: John Gavin, Gerry Convery, Ross Cox.

Commission 2-15

Request:

Please state the frequency with which the facilities referenced in No. 14 are monitored, inspected and/or tested for elevated voltage in the state of Rhode Island, and please cite the specific policy provision and manual, if any, which is the basis of this requirement. In your response, please supplement acronyms with plain language to the extent possible.

Response:

For Overhead distribution facilities in accordance with Electrical Operating Procedure (EOP) D004, testing for elevated voltage is performed in Rhode Island on a six-year frequency. For Underground facilities such as padmount transformers, switchgear and metallic handhole covers, testing for elevated voltage is done on a five-year frequency per Electrical Operating Procedure (EOP) UG006. Testing for elevated voltage on streetlights is performed during each outage investigation.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox.

Commission 2-16

Request:

Do certain facilities pose a greater risk than others for elevated, stray or contact voltage? If so, please list the facilities in order of priority from greatest to least risk of elevated, stray or contact voltage. Please include in your response the facilities listed in No. 14 in addition to any other facilities deemed necessary in your response.

Response:

National Grid does not risk rank its facilities with regard to elevated, stray or contact voltage. However, the Company does inspect all facilities that could be at risk for elevated, stray or contact voltage on a five-year cycle, with the exception of substation fencing (please refer to the Company's Response to Commission 2-9). In addition, the Company inspects all streetlights for elevated voltage during each streetlight outage investigation.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox.

Commission 2-17

Request:

Please provide a breakdown of costs incurred by the Company from all programs relating to stray voltage testing which were implemented in Massachusetts following its Plan for Implementation of the Recommendations Contained in Final consultants' Reports to the Department on Stray Voltage and Manhole Safety (Comm 1-6 Attachment 3).

Response:

Please refer to Attachment COMM 2-17.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox.

Company	Work Order Description	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	Grand Total
Nantucket	Inspection & Maintenance Progr			$56,134.86	$1,594.11			$57,728.97
	I&M - Manhole Inspections Nant		$900.02	$1,179.23	$4,370.16		$2,243.83	$8,693.24
	I&M Padmounted Equip - Nant El		$11,275.21	$1,962.08	$1,335.17			$14,572.46
	I&M Elev Voltage St Light -Nan		$1,795.65	$690.08	$1,335.13			$3,820.86
	I&M Elev Voltage Dist OH- Nant		$900.02	$690.07	$1,335.14	$19.62	$2,910.39	$5,855.24
	I&M Administrative Exp - Nant		$4,074.86	$4,548.98	$3,033.69	$36.74		$11,694.27
	I&M Elevated Voltage - UG Nant		$8,342.45					$8,342.45
	Distribution OH Inspections -						$6,941.84	$6,941.84
Nantucket Total		**$0.00**	**$27,288.21**	**$65,205.30**	**$13,003.40**	**$56.36**	**$12,096.06**	**$117,649.33**
Massachusetts	UG Manhole Inspections - South			$122,088.12	$4,157.33			$126,245.45
	Underground Inspection Report			$5,662.76				$5,662.76
	Manhole Inspections (North Shore)						$448,311.36	$448,311.36
	I&M - Manhole Inspections Mass		$424,505.51	$740,200.64	$222,020.57	$188,764.41	$201,820.97	$1,777,312.10
	I&M- Padmounted Equip - Mass E	$3,725.90	$49,572.94	$52,760.39	$36,628.05	$32,025.67	$25,004.04	$199,716.99
	I&M Elev Voltage St Light -Mass		$139,615.72	$41,496.92	$14,508.90	$ (7,245.76)		$188,375.78
	I&M- Elevated Voltage-UG Mass		$28,390.94	$24,677.40	$24,165.98	$37,197.56	$37,271.40	$151,703.28
	I&M- ElevVoltage - Dist OH Mass	$1,526.20	$61,888.52	$188,041.46	$123,561.97	$447,090.69	$399,115.14	$1,221,223.98
	I&M Administrative Exp - Mass		$167,396.51	$202,896.94	$317,979.29	$249,813.76	$187,966.22	$1,126,052.72
	UG Maint.&Repair due to inspec			$2,039.43	$4,808.37	$936.94	$197,870.46	$205,655.20
	Distribution OH Inspections -				$180,052.82	$814,202.63	$766,116.09	$1,760,371.54
Massachusetts Total		**$5,252.10**	**$871,370.14**	**$1,379,864.06**	**$927,883.28**	**$1,762,785.90**	**$2,263,475.68**	**$7,210,631.16**
Grand Total		**$5,252.10**	**$898,658.35**	**$1,445,069.36**	**$940,886.68**	**$1,762,842.26**	**$2,275,571.74**	**$7,328,280.49**

Commission 2-18

Request:

What would be the approximate cost to the Company of implementing regular monitoring and/or elevated voltage testing of the types of facilities referenced in No. 14?

Response:

The following estimates are based on conducting elevated voltage testing on Handole, Manhole, Pad (Transformer and Switchgear), Street light and Vault structures (approximately 29,842 in Rhode Island) via three different scenarios. The three different scenarios are: all mobile testing, all manual testing, and combination of mobile and manual testing of all structures. The cost for manual testing is based on estimates received from Premier and the costs for mobile testing are based on Premier and Power Survey estimates.

The Power survey estimates were based on actual costs sustained during the 2009 and 2010 New York mobile tests. The New York mobile tests occurred in Buffalo, Niagara Falls, Albany, Schenectady, Syracuse and Utica in 2009 and in Buffalo, Niagara Falls and Albany in 2010. There was no consistency associated with the mobile tests and pricing varied from city to city and from year to year. Due to the pricing inconsistency and similar size in structures tested in Buffalo (average of 28,122) and that which would be required in Rhode Island (29,842), Buffalo estimates were used as a model.

Scenario I-A: Solely Mobile Testing
Mobile testing of all Rhode Island structures utilizing NARDA[1] unit by Premier:
Total: $130k (based on $2.96 per structure and cost for NARDA unit)

Scenario I-B: Solely Mobile Testing
Mobile testing of all Rhode Island structures utilizing the services of Power Survey:
Low Estimate: $1.3M (based on $43 per structure in 2010)
Medium Estimate: $1.8M (based on $60 per structure for average[2] cost 2009-2010)
High Estimate: $2.8M (based on $94 per structure for in 2009)

[1] NARDA Model 8950 Stray Voltage Detection System complete with vehicle mounting and software: $40,000 (1 unit) used for Premiere mobile testing
[2] There were two separate tests in Buffalo in 2010 resulting in an average of $60 per structure for 2009-2010

Commission 2-18 (continued)

Scenario II: Solely Manual Testing
Manual testing of all Rhode Island structures by Premier:
Total: $75k (based on $2.50 per structure)

Scenario III: Utilizing Mobile and Manual testing
Mobile Scan utilizing Power Survey for the cities[3] of Cranston, East Providence, Newport, Pawtucket, Providence, Warwick and Woonsocket:
Low Estimate: $480k
Medium Estimate: $670k
High Estimate: $1.050M

Manual Testing for remaining 31 Rhode Island cities by Premier: $40K

Final Low Estimate: $520k
Final Medium Estimate: $710k
Final High Estimate: $1.090M

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox.

[3] Rhode Island cities chosen for Power Survey mobile test were based on similar New York criteria. New York originally chose cities for the mobile scan based on population size (> 50,000). The final criteria chosen for Rhode Island cities were cities greater than 20,000 or containing a high density of structures that would require testing solely for Scenario III.

Commission 2-19

Request:

Please provide a copy of any studies or estimates prepared by the Company of the incremental costs related to the development and implementation of the safety standards imposed by the New York Public Service Commission in Case 04-M-0159.

Response:

See Attachment COMM 2-19 for the budget estimate prepared by the Company for costs related to development and implementation of Safety Order 04-M-0159. Mobile Testing is not included in this estimate since Mobile Testing was not ordered by the New York Public Service Commission until December 2008.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox

National Grid USA
FY2007 Budget
Work Unit 88600 - Maintenance Assessment & Inspection

		Total Labor Resources Available	
		88600	
		FTE	Budget $
	Labor		
	Represented Employees		
	Available for EV Testing & Inspections		
1	Dist OH	18.00	$ 1,096.2
2	Trans OH	8.00	487.2
3	URD/UCD	7.00	426.3
4	UG Conventional	4.00	243.6
5	Stray Voltage	1.00	60.9
6	Other	2.00	121.8
7	***Total Available for EV Testing & Inspections***	**40.00**	**2,436.0**
	Management & Clerical Employees		
8	Supv. & QA & Analyst	6.00	491.4
9	Clerical	1.50	80.0
10	Analyst	1.00	81.9
11	Project Manager	1.00	97.8
12	**Total Management & Clerical Employees**	**9.50**	**751.2**
13	**Total Labor**	**49.50**	**3,187.2**

		Total Resources Required					
		Total Expenses		Deferrable Expenses		Net Expenses	
		88600		88600		88600	
		Budget $		Budget $		Budget $	Budget $
	Elevated Voltage Testing						
14	Street Lights - EV Testing	$ 190.0		$ 190.0		$ -	
15	Substation Fences	2.0		2.0		-	
16	OH Distribution Facilities	1,587.6		1,587.6		-	
17	OH Subtransmission & Transmission Facilities	315.6		315.6		-	
18	UG Transmission & Distribution Facilities	61.7		61.7		-	
19	Walking Padmount EV Testing	-				-	
20	Daily Work Areas	-		-		-	
21	Total Elevated Voltage Testing	**2,157.0**		**2,157.0**		**-**	
	Inspections						
22	Street Lights - Inspections	170.3		170.3		-	
23	Substation Facilities	-		-		-	
24	OH Distribution Facilities (foot patrols)	1,096.2		-		1,096.2	
				-		-	
	OH Subtransmission & Transmission Facilities			-		-	
25	Walking Inspection - Five-Year Cycle	487.2		-		487.2	
26	Stenciling	10.0		-		10.0	
27	Helicopter - Annual Patrol	-		-		-	
28	Transmission Tower - 20 Year Cycle	-		-		-	
29	Transmission Wood Pole - 10 Year Cycle	-		-		-	
30	Helicopter - Infrared Patrol	-		-		-	
31	Comprehensive Helicopter Patrol upon Request	-		-		-	
32	Tower Painting - 20 Year Basis	-		-		-	
				-		-	
33	UG Transmission & Distribution Facilities	243.6		243.6		-	
34	Walking Padmount Inspection	426.3		426.3		-	
35	Other	109.8		-		109.8	
36	**Total Inspections**	**2,543.4**		**840.2**		**1,703.2**	
37	**Internal Labor Cost by Program**	**4,700.4**		**2,997.2**		**1,703.2**	
38	***Total Labor Available***	2,436.0		732.8		1,703.2	
39	**Balance from Contractors**	**2,264.4**		**2,264.4**		**-**	
	Non-Labor						
40	Contractors	2,264.4		2,264.4		-	
41	Employee Expenses	50.0		31.9		18.1	
42	Material	100.0		63.8		36.2	
43	Hardware & Software	100.0		50.0		50.0	
44	Transportation	450.0		90.0		360.0	
45	**Total Non Labor**	**2,964.4**		**2,500.0**		**464.4**	
46	**Inspection & Testing Labor**	**2,436.0**		**62.9**		**2,373.1**	
47	*Management & Clerical Labor*						
48	Supv. & QA & Analyst	491.4		122.9		368.6	
49	Clerical	80.0		20.0		60.0	
50	Analyst	81.9		61.4		20.5	
51	Project Manager	97.8		73.4		24.5	
52	***Total Management & Clerical Labor***	**751.2**		**277.6**		**473.5**	
46+52	**Total Labor**	**3,187.2**		**340.5**		**2,846.6**	
45+46+52	**Total FY2007 Budget**	**$ 6,151.5**		**$ 2,840.6**		**$ 3,311.0**	

Budget Recap

	New York
Labor	$ 3,187.2
Non-Labor	2,964.4
	$ 6,151.5

National Grid USA
FY2007 Budget ($000)
NY Maintenance Assessment & Inspection

	New York		
	FY2007 Estimate	**Internal Labor**	**Contractors**
	$ 190.0	$ -	$ 190.0
Elevated Voltage Testing	2.0	2.0	-
Street Lights - EV Testing	1,587.6	-	1,587.6
Substation Fences	315.6	60.9	254.7
OH Distribution Facilities	61.7	-	61.7
OH Subtransmission & Transmission Facilities	-	-	-
UG Transmission & Distribution Facilities	-	-	-
Walking Padmount EV Testing	2,157.0	62.9	2,094.1
Daily Work Areas			
Total Elevated Voltage Testing	170.3	-	170.3
Inspections	-	-	-
Street Lights - Inspections	1,096.2	1,096.2	-
Substation Facilities			
OH Distribution Facilities (foot patrols)			
	487.2	487.2	-
OH Subtransmission & Transmission Facilities	10.0	10.0	-
Walking Inspection - Five-Year Cycle	Trans Line Svcs	Trans Line Svcs	Trans Line Svcs
Stenciling	Trans Line Svcs	Trans Line Svcs	Trans Line Svcs
Helicopter - Annual Patrol	Trans Line Svcs	Trans Line Svcs	Trans Line Svcs
Transmission Tower - 20 Year Cycle	Trans Line Svcs	Trans Line Svcs	Trans Line Svcs
Transmission Wood Pole - 10 Year Cycle	Trans Line Svcs	Trans Line Svcs	Trans Line Svcs
Helicopter - Infrared Patrol	Trans Line Svcs	Trans Line Svcs	Trans Line Svcs
Comprehensive Helicopter Patrol upon Request			
Tower Painting - 20 Year Basis	243.6	243.6	-
	426.3	426.3	-
UG Transmission & Distribution Facilities	109.8	109.8	-
Walking Padmount Inspection	2,543.4	2,373.1	170.3
Other	**$ 4,700.4**	**$ 2,436.0**	**$ 2,264.4**
Total Inspections			
Total Costs by Program			

Commission 2-20

Request:

Please provide an estimate of the incremental cost that would be incurred if the Company were to implement in Rhode Island a program similar to what:

a. The consultant recommended in Massachusetts
b. Was implemented in New York.

Response:

a. Massachusetts:

Incremental costs incurred in implementing the Massachusetts programs in Rhode Island are negligible based on the similarities of the existing programs in both states as outlined in National Grid Electric Operating procedures Underground Inspection and Maintenance (NG-USA EOP UG006), Distribution Line Patrol and Maintenance (NG-EOP D004) and Equipment Elevated Voltage Testing. NG-EOP G016

b. New York:

Elevated voltage testing on 100% of the following assets on an annual basis:

Street Lights: an increase of $16K per year
National Grid Substation Fences: an increase of $3k per year
Transmission equipment: an increase of $40k per year
UG Equipment: an increase of $2k per year

Total: an increase of $61k per year

Mobile elevated voltage testing: Please see the Company's Response to Commission 2-18 regarding the estimated costs associated with mobile elevated voltage testing.

Prepared by or under the supervision of: John Gavin, Gerry Convery and Ross Cox