KEOUGH & SWEENEY, LTD.

ATTORNEYS AND COUNSELORS AT LAW
41 MENDON AVENUE
PAWTUCKET, RHODE ISLAND 02861
TELEPHONE (401) 724-3600
FACSIMILE (401) 724-9909
www.keoughsweeney.com

JOSEPH A. KEOUGH JR.*
JEROME V. SWEENEY III*

SEAN P. KEOUGH*
STACI L. KOLB

JEROME V. SWEENEY II
OF COUNSEL

*ADMITTED TO PRACTICE IN
RHODE ISLAND & MASSACHUSETTS

RAYNHAM OFFICE:
90 NEW STATE HIGHWAY
RAYNHAM, MA 02109
TEL. (508) 822-2813
FAX (508) 822-2832

BOSTON OFFICE:
171 MILK STREET
SUITE 30
BOSTON, MA 02109
TEL. (617) 574-0054
FAX (617) 451-1914

September 7, 2012

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

In Re: ***Docket 4237***

Dear Ms. Massaro:

Enclosed please find an original and ten (10) copies of the following:

1. Direct Testimony of W. Alan Homyk, PE, CHP on behalf of Capital Advocacy, LLC d/b/a Contact Voltage Information Center.

Please note that an electronic copy of this filing has been provided to the service list.

Sincerely,

Joseph A. Keough Jr.

JAK/kf
Enclosures
cc: Service List (via electronic mail)

RHODE ISLAND PUBLIC UTILITIES COMMISSION

DOCKET 4237

PREFILED TESTIMONY

OF

W. ALAN HOMYK, PE, CHP
HOMYK CONSULTING, LLC

ON BEHALF OF

CAPITAL ADVOCACY, LLC
D/B/A CONTACT VOLTAGE INFORMATION CENTER

SEPTEMBER 7, 2012

I. INTRODUCTION

Q. Please state your name and business address.

A. W. Alan Homyk, PE, CHP, 13994 Bridgewater Crossings Blvd. Windermere, FL 34786

Q. By whom are you employed and in what capacity.

A. I am the President of Homyk Consulting, LLC, a consulting firm specializing in the areas of electric utility and radiological safety.

Q. Please describe your educational background and any licenses or certifications you hold.

A. I obtained a BS in Nuclear Engineering from Rensselaer Polytechnic Institute and a MBA from Eastern Michigan University. I am a Licensed Professional Engineer in the State of New York (#59487-1) and a Certified Health Physicist – Comprehensive & Power Reactor Specialty. This is a nationally recognized certification awarded by the American Board of Health Physics for radiation safety.

Q. Please describe your work history in the utility industry.

A. During my career, I served as a senior level utility executive with key strengths in the areas of electrical quality assurance, environmental health and safety, engineering, process innovation, and regulatory relations. From 1981 to 2011, I worked at the Consolidated Edison Company of New York ("Con Edison"). Con Edison provides electric service to approximately 3.3 million customers and gas service to approximately 1.1 million customers in New York City and Westchester County, New York.

My work at Con Edison included the formation of new company organizations for managing electric operations quality assurance, training, central streetlight operations, overhead planning, and Environmental Health and Safety ("EHS") compliance. I managed the environmental due diligence evaluations for a number of Con Edison's acquisitions and divestitures, and served as the overall Corporate EHS Compliance Director. Some of my engineering innovations include the development of patents for radiation shielding, equipment for safely tapping streetlights for temporary power, and a device to obtain two-phase 240 volt service from a single-phase 120 volt supply in the field. In addition, I developed and implemented a program for the use of isolation transformers that eliminates the risk of contact voltage from metallic streetlights.

Q. The Rhode Island Public Utilities Commission initiated this Docket to establish a contact voltage detection and repair program for electric distribution companies as defined in the authorizing legislation. Can you please describe your experience in the area of contact voltage?

A. Yes. From August 2004 to December 2011, I served as the Director, Quality Assurance and Operations Services, in the Engineering and Planning Department at Con Edison. In this position, I lead the Quality Assurance and Training Programs for the 4,400 person Electric Distribution Department. This organization was formed in response to the Jodie Lane tragedy in New York City. On January 16, 2004, Jodie Lane, a thirty year-old doctoral candidate at Columbia University, was electrocuted while walking her dogs on East 11th Street in Manhattan after stepping onto an electrified area where exposed electrical wires reacted with snow and other chemicals used to melt snow and ice. The root cause of her death was poor workmanship by a Con Edison work crew that failed to properly insulate electrical connections in an electrical service box, causing contact voltage.

I also directed all aspects of Con Edison's streetlight, traffic signal, and overhead telecommunications infrastructure programs for the five boroughs of New York City and Westchester County. Streetlights and traffic signals typically represented about 50% of all contact voltage incidents.

From October 2002 to August 2004, I served as the General Manager, Environment, Health & Safety and Operations Services, Bronx/Westchester Electric Operations for Con Edison. During my tenure in this position, I was responsible for the initial development of Con Edison's Contact Voltage and Streetlight Repair Projects.

I also authored two presentations on contact voltage (otherwise referred to as "stray voltage").

- "Technological Solutions to Stray Voltage Mitigation", W. Alan Homyk and Don Lucia, EPRI National Conference for Stray Voltage Detection, Mitigation, and Prevention, June 6, 2007.

- "What is Being Done to Stop Stray Voltage on Streetlights", W. Alan Homyk and John Mazzani, EPRI Event: 2006 Jodie Lane National Conference for Stray Voltage Detection, Mitigation, and Prevention, June 7-8, 2006.

Q. Have you previously testified before any regulatory agencies?

A. Yes, I prepared written testimony for Con Edison in rate cases before the New York State Public Service Commission.

Q Please describe your role in this proceeding?

A. I reviewed National Grid's Proposed Electric Contact Voltage Program ("Program") on behalf of Capital Advocacy, LLC d/b/a Contact Voltage Information Center, and I am providing recommendations for improvements to the Program.

Q. Can you please provide a summary of the findings from your review?

A. Yes. While National Grid's Program offers a good start, there are several improvements that can, and should, be made. Specifically, improvements should be made in the following areas of the Program:

1. Wherever practical, mobile automated scanning should be performed at a threshold testing voltage level of 1 volt.
2. The contract voltage areas should be expanded.
3. Testing findings should be made public in an easily accessible database.
4. Net mobile testing cost savings should be recognized.
5. Manual testing equipment should detect voltage at the levels set by the Commission.
6. Wooden poles with metal objects should be included.
7. The scan schedule should be more rigorous.

II. CONTACT VOLTAGE - BACKGROUND

Q. What is contact voltage?

A. Contact voltage is defined by the Institute of Electrical and Electronics Engineers ("IEEE"), Draft Standard IEEE-P-1695, as:

> "voltage resulting from abnormal power system conditions that may be present between two conductive surfaces that can be simultaneously contacted by members of the general public and/or their animals. Contact voltage is caused by power system fault current as it flows through the impedance of available fault current pathways. Contact voltage is not related to normal system operation and can exist at levels that may be hazardous. Note: "Conductive surfaces" as used in this definition are intended to include the earth and/or extensions of the earth such as concrete sidewalks and metal floor drains."

Contact voltage is dangerous as it can be a source of shocks and electrocutions.

Q. Where does contact voltage occur, and what are its causes?

A. Contact voltage can occur any place where the electric system breaks down from mechanical, thermal, chemical or electrical stress. Experience has shown that any conductive structure in the vicinity of an electrical fault may become energized and pose a hazard to the public.

According to Draft Standard IEEE-P-1695, the root cause of contact failure can be attributed to a number of factors:

> "a) Infrastructure Decay – As an installation ages, electrical insulation on cables and connectors tends to become brittle and may begin to crack, exposing energized components. Corrosion also reduces the strength of conduits, supports, cable jackets, and mechanical connections, all of which can initiate damage to insulation or neutral return paths. This effect is accelerated by the presence of moisture and other contaminants (road salt, for example) and by exposure to freeze/thaw cycles, especially around the edges of cable supports or duct edges.
>
> b) Inadequate Design – Damaged wires can occur due to insufficient protection, mechanical support, insulation, or weatherproofing. There may also be inadequate grounding and bonding. Components installed in below-grade enclosures that can fill with water or ice may also not be rated accordingly, leading to damaged wires and connections.
>
> c) Improper Installation – Poor workmanship can directly result in a hazard to the public. Specific examples include substandard installation of hand taped insulation, reversed polarity, and insufficient mechanical protection of wires around stress points. Any component must be installed in accordance with the manufacturer's instructions. Such components are tested and qualified based on the assumption that they are installed properly; meaning that if they are not the product is not guaranteed to perform as designed.
>
> d) Accidental Damage – Third parties may dig-in to a cable without knowing it, or compromise the integrity of a structure when working nearby. For example, concrete work on a sidewalk can leak into adjacent below grade hand wells, leading to damaged cables. Outdoor construction without a "dig safe" survey can lead to direct contact with electrical infrastructure by fence posts, road signs, guy wire supports, etc. Vibration and mechanical stress from traffic, ice heaving, and tree root penetration also cause inadvertent damage to underground infrastructure over time.

e) Rodent Damage – Rodents such as squirrels, mice and raccoons have been known to chew through wire or connector insulation.

f) Vandalism/Copper Theft/Theft of Power – Vandals can damage or remove access covers, resulting in exposed wires and the introduction of debris into electrical structures or streetlight bases. Thieves create hazards by removing neutral and ground conductors. Unauthorized connections to supply circuits may be made using unapproved components or work practices.

g) Workmanship – Insulation can be damaged during normal maintenance; pinched wires, loosened connections, reversed polarity have all been documented. Workers may pierce or remove insulation to test for voltage on an underground supply cable. If not properly re-insulated, this can leave a path for current leakage to cable supports, duct work, and other normally non-energized surfaces.

h) Temporary Connections – Temporary power connected for emergency restoration or seasonal lighting can, if not adequately safeguarded from the elements and from unauthorized access, create electrical hazards.

Compromised conductor insulation results in a high-impedance fault which can go unnoticed by a member of the public or identified through some kind of testing process. "

Q. Why is it important for a utility such as National Grid to have a contact voltage detection program?

A. It is important to have a program in place to detect and repair degraded insulation and conductors to prevent harm to workers, the public and animals. In metropolitan areas, contact voltage issues have become a major concern. Many of these areas have large numbers of aging underground and above ground electrical distribution equipment in crowded public spaces. Even a low rate of insulation failure or current leakage can result in hazardous exposure to the general public. Con Edison had numerous incidents of contact voltage in New York City, including the electrocution death of Jodie Lane in 2004. Contact voltage has caused harm, including death, to children and animals in other areas of the United States and Canada as well.

III. NATIONAL GRID CONTACT VOLTAGE PROGRAM – RECOMMENDED IMPROVEMENTS

1. Threshold Testing Voltage Level

Q. What is your recommendation for improvements to National Grid's Contact Voltage Program regarding threshold testing voltage levels?

A. Wherever practical, mobile automated scanning should be performed at a level of 1 volt confirmed with a multimeter equipped with a 500 ohm shunt resistor. Although National Grid is correct when they mention thresholds for perception by people and animals, they do not address the fact that a confirmed 1 volt measurement is indicative of degraded equipment that will only get worse with time.

A 1 volt measurement can rapidly degrade to the point where an individual could be exposed to full line voltage due to changes in environmental conditions such as moisture, temperature, or road salt. This becomes especially significant when coupled with a scan frequency where the next scheduled assessment could be more than four years in the future. Con Edison has used a 1 volt threshold since pioneering the use of mobile scanning and has found through experience that it provides an additional safety margin for finding and fixing degraded conditions quicker, before any harm occurs. Mobile scanning is also nine times more efficient than pen scanning in finding energized objects based on Con Edison's experience in New York City. In addition, mobile scanning will find any energized object in the scanned area, not just the ones listed in a utility asset database.

2. Contact Voltage Areas

Q. What is your recommendation regarding the contact voltage areas in National Grid's Program?

A. The proposed contact voltage areas are generally comprehensive with one exception. Premises served by underground residential distribution systems should be included. Many of these systems are constructed using direct buried aluminum wiring that is particularly susceptible to contact voltage when the neutral and/or phase conductors fail due to corrosion and insulation degradation. Adding these areas should not significantly expand the program cost or scope, and is a sound practice based on my experience at Con Edison.

3. Testing Findings

Q. What do you recommend National Grid do with its testing findings?

A. National Grid has agreed to submit an annual report to the Rhode Island Public Utilities Commission. In addition, the test program data should be published and shared in an easily accessible and searchable database. This would provide for greater transparency and enable interested parties to gain additional program insights. An example of this is the easily accessible website created by the Jodie S. Lane Public Safety Foundation that includes maps showing thousands of reported contact voltage locations in New York City (http://strayvoltagenyc.org/).

4. Mobile Testing Cost Savings

Q. Do you have any recommendations regarding mobile testing cost savings?

A. National Grid already conducts a manual test program for contact voltage that is recovered in rates. For areas covered by mobile automated scanning equipment, there will be no need to continue manual testing. The savings from the avoided manual testing should be netted out against the cost of the automated testing. Con Edison's practice in New York is to only include actual incremental costs associated with work performed.

5. Manual Testing Equipment

Q. What recommendations do you have regarding Manual Testing Equipment?

A. As previously mentioned, automated scanning to a level of 1 volt should be performed and confirmed with a voltmeter. Pen detectors capable of measuring from 5 volts to 600 volts should only be used in areas not capable of being scanned with an automated mobile detector. Any indication with a pen detector should be confirmed with a multimeter and 500 ohm shunt resistor. This confirmation will also pick up voltages lower than 5 volts and is the standard practice followed by Con Edison and many other utilities.

6. Wooden Poles With Metal Objects

Q. Do you have any recommendations for testing wooden poles with metal objects?

A. Metal objects embedded or connected to wood poles may manifest contact voltage. This is typically caused by degraded primary insulators. These metal objects should be included in the test program. This is the practice followed by Con Edison.

7. Scan Schedule

Q. What recommendations do you have regarding National Grid's scan schedule?

A. At a minimum, all areas should be scanned at least once per year preferably by mobile automated scanning equipment. It is my understanding that National Grid is in the process of soliciting bids for this type of equipment. In areas where use of this equipment is not practical due to the presence of overhead conductors or accessibility, annual manual measurements should be performed with pen detectors supplemented by multimeters. If National Grid's testing discovers contact voltage in a particular area, it should adjust its automated scan schedule based on the number of energized objects detected during each successive scan. Con Edison determined their scanning schedule by performing them more frequently in areas where it detected contact voltage until the number of energized objects trended down.

IV. CONCLUSION

Does this conclude your testimony?

Yes.

CERTIFICATION

I hereby certify that on September 7, 2012, I sent a copy of the within to all parties set forth on the attached Service List by electronic mail and copies to Luly Massaro, Commission Clerk, by electronic mail and regular mail.

Name	E-mail Distribution List	Phone
Thomas Teehan, Esq. Celia B. O'Brien, Esq. National Grid 280 Melrose Street Providence, RI 02907-1438	Thomas.teehan@us.ngrid.com Celia.obrien@us.ngrid.com Joanne.scanlon@us.ngrid.com	401-784-7667
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
William L. Bernstein, Esq. 627 Putnam Pike Greenville, RI 02828	wlblaw@verizon.net	401-949-2228
Michael McElroy, Esq. 21 Dryden Lane PO Box 6721 Providence, RI 02940-6721	Michael@McElroyLawOffice.com	401-351-4100
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 Sscialabba@ripuc.state.ri.us Dstearns@ripuc.state.ri.us Acontente@ripuc.state.ri.us Tkogut@ripuc.state.ri.us dmacrae@riag.ri.gov	401-222-2424 ext. 2299
Original & 10 copies file w/: Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Boulevard Warwick, RI 02888	Lmassaro@puc.state.ri.us Cwilson@puc.state.ri.us Adalessandro@puc.state.ri.us dshah@puc.state.ri.us anault@puc.state.ri.us nucci@puc.state.ri.us	401-780-2107

Christopher Kearns, Governor's Policy Office	Christopher.Kearns@governor.ri.gov	

Joseph A. Keough, Jr., Esquire # 4925
KEOUGH & SWEENEY, LTD.
41 Mendon Avenue
Pawtucket, RI 02861
(401) 724-3600 (phone)
(401) 724-9909 (fax)
jkeoughjr@keoughsweeney.com