

Memorandum



Date: December 19, 2014

To: Honorable Chairwoman Rebeca Sosa
and Members, Board of County Commissioners

From: Carlos A. Gimenez
Mayor

A handwritten signature in black ink, appearing to read "Carlos A. Gimenez", written over a light blue horizontal line.

Subject: Report on the Advisability and Feasibility of Entering into Agreements for the Provision of Contact Voltage Testing on a Countywide Basis – Directive 132323

On December 3, 2013, the Board of County Commissioner's (Board) passed Resolution R-1001-13 requesting a report regarding the feasibility of entering into an agreement with a private vendor to conduct contact voltage testing on a countywide basis.

The Institute of Electrical and Electronics Engineers (IEEE) has defined contact voltage as voltage resulting from unusual power system conditions that may be present between two (2) conductive surfaces which can be simultaneously contacted by the general public or their animals. The IEEE has defined stray voltage as voltage resulting from the normal delivery or use of electricity (usually smaller than 10 volts) that may be present between two (2) conductive surfaces that can be simultaneously contacted by the general public or their animals. While contact voltage and stray voltage are technically different, the terms have been used interchangeably throughout the Country. For purposes of this report, contact voltage shall be the general term describing an occurrence of unwanted excess electricity or unwanted voltage leakage. This condition is usually caused by damaged insulation, improper contact of conductors with a conductive surface, or induced by large transmission lines. Over the past decade, a number of states, counties, municipalities, and utilities in the northern United States have instituted requirements and programs to address contact voltage issues.

The most critical element to a Contact Voltage Program is establishing parameters and standards. This has proven to be an ongoing challenge nationwide, as industry, regulatory or special interest groups disagree on these standards. IEEE has been working for several years to develop guidance related to contact voltage, but has yet to draft or adopt any standards. Although there is no official nationally accepted standard, most standard-making organizations- including the Occupational Safety and Health Administration (OSHA), National Fire Protection Association, American National Standards Institute, Underwriters Laboratories and IEEE- provide a basic safety level of 50 volts (v) for determining whether a shock will prove fatal to a human, making 50 v the generally used benchmark by OSHA. It should be noted that there are no documented cases of a fatal electrocution of a human exposed to 50 volts or less. However, a large number of public safety action groups advocate for the repair of any accessible object found to be 1 volt or greater. A proper balance should be reached. Setting the actionable voltage level too low increases the number of inspections and repairs, and thereby increases costs without preventing injury, while setting the actionable voltage level too high increases risk of injury when other factors common to Miami-Dade County are present (e.g., weather, humidity, standing water). The Public Works and Waste Management Department (PWWM) has found that most agencies have ultimately established a middle ground. For example, in New York State, any contact voltage finding of 4.5 volts or lower has been classified as low voltage, requiring no immediate action. In 2012, 4 million facilities throughout New York State were tested and 1,893 stray voltage findings were identified, of which 462 (0.0115%) were at voltage levels of 4.5 volts or higher. In Seattle, Washington, the Seattle City Light contact voltage testing program established a reporting threshold of 3 volts, with all instances 30 volts or above requiring immediate de-energizing and repair. Seattle City Light's contact voltage program yielded the following:

- In 2012, 52 total events were detected, of which seven (7) events consisted of 30 volts or more.
- In 2011, 61 events were detected, of which two (2) events consisted of 30 volts or more.
- In 2010, 158 events were detected, of which 56 events consisted of 30 volts or more.

In most cases, agencies with a Contact Voltage Program have established action levels for incidents of voltage findings; low voltage requiring no action, high voltage requiring immediate de-energizing and repair, and a level between low and high requiring an investigation and repairs within a time period from immediate to two (2) years, depending on the findings.

PWWM's Traffic Signals and Signs Division is responsible for the operation and maintenance of approximately 37,000 electrified assets which are easily accessible to the public (e.g., traffic signal mast arms, pedestrian poles, street lights, flashing signals). PWWM has researched the issue of contact voltage and met with the Power Survey Company (PSC) and Premier Utility Services. Both vendors provide contact voltage testing services throughout the United States. In 2013, PSC conducted a limited survey within Miami-Dade County and provided PWWM with the results. In December 2013, PWWM staff and the County's Street Lighting Maintenance Contractors investigated the 183 voltage findings reported by PSC. It was found that of the 183 findings reported only eight (8) could be verified in the follow-up inspections;

- Two (2) findings attributed to a street sign that clipped a shallow underground streetlight conduit in an area near SE 4 Street and Miami Avenue creating a contact voltage situation (46 volts). The street sign post was relocated and the streetlight maintenance contractor repaired the damaged conduit.
- Six (6) findings were attributed to a problem with the street light circuit along SW 112 Street. The identified street lighting system is an old system with an outdated but operational grounding system. Electricians found that at one (1) of the poles, the equipment ground had been incorrectly connected to the system's neutral creating the contact voltage situation (43 volts). The entire lighting circuit was de-energized until corrective action was completed. This streetlight system is now operating properly, without any contact voltages found upon re-inspection.

In both instances, the contact voltage found was less than OSHA's aforementioned adopted safety level of 50 volts for human contact.

PWWM staff agrees that a contact voltage testing program would be a good tool for evaluating the electrical safety of approximately 37,000 electrified assets which are easily accessible to the public. It should be noted that there have been no incidents of electrical shock reported in Miami-Dade County since 2008, when a horse was fatally injured when it came into contact with an electrified streetlight pull box for a streetlight circuit maintained by Florida Power and Light. The last reported incident of electrical injury to a person in Miami-Dade County resulting from the County's infrastructure dates back to 2000. Since that time, the County has taken proactive steps to improve the electrical grounding and bonding systems of electrified equipment, and instituted proactive maintenance of our streetlight network. Over the last decade, the County has increased the construction standards for street lighting, carried out projects to improve the grounding systems throughout the County, and carried out projects to retrofit older lighting systems to current electrical standards. However, once clear industry standards are established, a structured program for contact voltage testing and repair would be an efficient tool for monitoring and diagnosing any deficiencies within the County's infrastructure and assets as they age and are impacted by the South Florida climate.

A contact voltage testing and repair program would strictly be a safety program and will not offer the County any cost savings. The County's electrical costs associated with electrified assets are based on an established fee, and any voltage leakage does not impact that fee. Based on the information available to PWWM, the preliminary estimate for a single sweep of contact voltage testing for the entire County is approximately \$700,000.00. The cost of electrical repairs would be based on any issues found and has been estimated at \$300,000.00. These costs would vary each year, with higher costs anticipated in the initial year(s) and findings trending downward in the future. A number of jurisdictions with Contact Voltage programs have, after several years, extended the testing cycle from surveying each asset once a year to surveying each asset at least once every five (5) years.

As noted above, the County has taken measures to improve the safety of our electrical assets and have implemented proactive street light maintenance contracts. Contact voltage programs have been successful in many jurisdictions preventing injuries to the public. It is recommended that the process for the budgeting and planning of Secondary Gas Tax Funds begin, to including a contact voltage program as part of the continual maintenance of the County's Proactive Street Light Maintenance program.

- c: Honorable Harvey Ruvin, Clerk of the Board
R. A. Cuevas, Jr., County Attorney
Alina T. Hudak, Deputy Mayor and Interim Director of Public Works and Waste Management
Christopher Agrippa, Clerk of the Board
Antonio Cotarelo, P.E., County Engineer, Public Works and Waste Management

MEMORANDUM

Agenda Item No. 11(A)(1)

TO: Honorable Chairwoman Rebeca Sosa
and Members, Board of County Commissioners

DATE: December 3, 2013

FROM: R. A. Cuevas, Jr.
County Attorney

SUBJECT: Resolution directing Mayor to
report to the Board on the
advisability and feasibility of
entering into agreements for the
provision of contact voltage
testing on a County-wide basis
Resolution No. R-1001-13

This item was amended at the Infrastructure & Capital Improvements Committee on November 12, 2013 to require a report to the Board within 60 days of the effective date of the resolution on the advisability and feasibility of conducting contact voltage testing on a County-wide basis. The item previously required a contact voltage testing pilot program to be conducted within 180 days of the effective date of the resolution.

The accompanying resolution was prepared and placed on the agenda at the request of Prime Sponsor Commissioner Bruno A. Barreiro.



R. A. Cuevas, Jr.
County Attorney

RAC/smm



MEMORANDUM
(Revised)

TO: Honorable Chairwoman Rebeca Sosa
and Members, Board of County Commissioners

DATE: December 3, 2013

FROM: 
R. A. Cuevas, Jr.
County Attorney

SUBJECT: Agenda Item No. 11(A)(1)

Please note any items checked.

- "3-Day Rule" for committees applicable if raised
- 6 weeks required between first reading and public hearing
- 4 weeks notification to municipal officials required prior to public hearing
- Decreases revenues or increases expenditures without balancing budget
- Budget required
- Statement of fiscal impact required
- Ordinance creating a new board requires detailed County Mayor's report for public hearing
- No committee review
- Applicable legislation requires more than a majority vote (i.e., 2/3's ____, 3/5's ____, unanimous ____) to approve
- Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 11(A)(1)
12-3-13

RESOLUTION NO. R-1001-13

RESOLUTION DIRECTING MAYOR OR MAYOR'S
DESIGNEE TO REPORT TO THE BOARD ON THE
ADVISABILITY AND FEASIBILITY OF ENTERING INTO
AGREEMENTS FOR THE PROVISION OF CONTACT
VOLTAGE TESTING ON A COUNTY-WIDE BASIS

WHEREAS, contact voltage are dangerous and wasteful leaks in electric systems; and

WHEREAS, all conductive surfaces, such as sidewalks, pedestrian crossings, manhole covers, fences, street lights, and bus shelters in the public right-of-way can become electrified by contact voltage; and

WHEREAS, pedestrians and pets can be and have been shocked and killed by coming into contact with energized street lighting installations and related conductive surfaces; and

WHEREAS, contact voltage can also cause unnecessary energy losses which damage our environment and increase our dependency on foreign energy sources; and

WHEREAS, most safety actions with respect to contact voltage are not taken until after a tragedy has occurred; and

WHEREAS, the United States Conference of Mayors and the National Black Caucus of State Legislators have recently passed resolutions urging municipalities to perform contact voltage testing to ensure pedestrian safety; and

WHEREAS, proactive contact voltage testing dramatically increases the level of safety for street lighting installation and may eliminate electrocutions due to metal poles becoming accidentally energized; and

WHEREAS, the County is committed to ensuring safe and efficient energy distribution and the public safety of all residents of, workers in, and visitors to our communities,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board directs the Mayor or Mayor's designee to ~~[[conduct a pilot program on contact voltage testing within County maintained rights-of-way and]]~~¹ report to the Board within ~~[[180]]~~^{>>60<<} days of the effective date of this resolution on the advisability and feasibility of entering into agreements for the provision of ~~[[these services]]~~^{>>contact voltage testing<<} on a County-wide basis.

The Prime Sponsor of the foregoing resolution is Commissioner Bruno A. Barreiro. It was offered by Commissioner **Lynda Bell**, who moved its adoption. The motion was seconded by Commissioner **Esteban L. Bovo, Jr.** and upon being put to a vote, the vote was as follows:

	Rebeca Sosa, Chairwoman	aye	
	Lynda Bell, Vice Chair	aye	
Bruno A. Barreiro	aye	Esteban L. Bovo, Jr.	aye
Jose "Pepe" Diaz	absent	Audrey M. Edmonson	aye
Sally A. Heyman	aye	Barbara J. Jordan	absent
Jean Monestime	aye	Dennis C. Moss	absent
Sen. Javier D. Souto	aye	Xavier L. Suarez	aye
Juan C. Zapata	aye		

¹ Committee amendments are indicated as follows: Words stricken through and/or [[double bracketed]] are deleted, words underscored and/or >>double arrowed<< are added.

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The Chairperson thereupon declared the resolution duly passed and adopted this 3rd day of December, 2013. This resolution shall become effective ten (10) days after the date of its adoption unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK



By: **Christopher Agrippa**
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.

A handwritten signature in dark ink, appearing to read "Jorge", is written over a horizontal line.

Jorge Martinez-Esteve