

May 14, 2013

**VIA HAND DELIVERY & ELECTRONIC MAIL**

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

**RE: Docket 4237 - Commission Investigation relating to Stray and Contact Voltage Occurring in Narragansett Electric Company Territories**  
**Total Harmonic Distortion Pilot Program**

Dear Ms. Massaro:

In its response to Record Request No. 4 from the September 24, 2012 hearing in Docket No. 4237, National Grid<sup>1</sup> agreed to implement a total harmonic distortion (“THD”) pilot program designed to gather additional information that would help to determine the appropriate mitigation of elevated voltage as part of its overall Contact Voltage Program.<sup>2</sup> The Company further agreed to provide the results of this THD pilot program to the Division and the Commission within 45 days of completion of the testing. On March 30, 2013, the Company completed the surveying and testing of all Designated Contact Voltage Areas in the state utilizing the THD pilot program. This filing provides the results and findings of the THD pilot.

Contact voltage surveying and testing, including the THD pilot program, was performed from March 18, 2013 to March 30, 2013. Under the THD pilot program, during contact voltage testing any voltage measuring greater than 1 volt and less than 4.5 volts that had a total harmonic distortion of less than 10 percent would be considered contact voltage and treated accordingly. That is, these areas would be safeguarded from the public and permanent repairs made. However, if the total harmonic distortion was found to be greater than 10 percent and no visual defects are found, then no further action would be required. THD was determined by the use of a Fluke power quality clamp meter or a Fluke scope meter both of which have the ability to measure THD.

The results of the THD pilot indicate a total of seven readings between 1 volt and 4.5 volts. Of that total five were below the distortion level of 10 percent, and thus were considered as contact voltage. In each of these occurrences the Company took the appropriate remedial actions. Specifically, four of the contact voltage findings were on Company owned streetlights on Narragansett Avenue in Newport. The first two street lights, 5-1 and 6-1, had a shunt voltage reading of 2.56 and 2.89 volts respectively and both had a THD reading of 8.5 percent. The Company identified deteriorated connections on both streetlights. The Company remade all connections on both lights and mitigated the voltage down to one volt on both streetlights. The third and fourth streetlights, 7-1 and 8-1, had a shunt voltage reading of 3.7 and 4.27 volts

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<sup>1</sup> The Narragansett Electric Company d/b/a National Grid (“National Grid” or the “Company”).

<sup>2</sup> The Commission approved the THD pilot program in Order No. 20871 at pages 28, 31.

respectively and both had a THD reading of less than 7 percent. The Company decided that both the wiring and the lamps should be replaced and this mitigated the voltage readings to 1.7 and 1.6 volts, respectively. No further actions were taken for these two streetlights, and the voltage readings do not present a safety hazard at these locations. The fifth asset was a streetlight on Smith Hill in Providence, which had a shunt voltage reading of 1.28 and a THD of 6.4 percent. The Company replaced the connections in the street light standard and this mitigated the voltage to 0.06 volts.

In addition, two readings were above the distortion level of 10 percent. The two contact voltage detections were visually examined and determined that no hazard was present. The first asset was a Company owned streetlight on Benefit St. in Providence. The shunt voltage reading was 1.64 volts with a THD of 11.4 percent. While there was no hazard present, the Company did replace the streetlight head and the wiring mitigating the voltage to a reading of 0.20V. The second asset was a traffic standard on Fountain Street in downtown Providence owned by the City of Providence. The shunt voltage reading was 1.8 volts with a THD of 27.8 percent. The Company notified Tony Doddio in the City of Providence Traffic Engineering department on March 21, 2013.

As noted above, given that the majority of the instances of voltages between 1.0 and 4.5 volts found during testing were on Company-owned streetlights and these were able to be addressed with relatively simple and low cost mitigation solutions, and absent a final decision by the Institute of Electrical and Electronics Engineers ("IEEE") Working Group on a Trial Use Guide for Assessing Voltages at Publicly and Privately Accessible Locations, the Company plans to continue to use THD testing as part of its contact voltage surveying and testing in FY 2014. The Company will incorporate a lesson learned from this year's pilot into future testing. Namely, an additional THD test will be required and documented for any final mitigation efforts where the voltage remains greater than one volt, but less than 4.5 volts.

The Company will be providing full detail on all of its contact voltage testing in its August 1, 2013 Annual Contact Voltage Report.

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,



Thomas R. Teehan

Enclosure

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

**Certificate of Service**

I hereby certify that a copy of the cover letter and/or any materials accompanying this certificate were electronically submitted to the individuals listed below. The Commission received hard copies of this transmittal.

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Joanne M. Scanlon

May 14, 2013

Date

**Docket No. 4237 – Commission’s Proceeding Relating to Stray and Contact Voltage Pursuant to Enacted Legislation  
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