

August 31, 2021

Mr. John Bell
Public Utility Rate Analyst
Rhode Island Division of Public Utilities and Carriers
89 Jefferson Boulevard
Warwick, Rhode Island 02888

Subject: Docket 4237; National Grid August 18, 2021 Contact Voltage Annual Report

Dear John:

I have reviewed National Grid's *2021 Contact Voltage Annual Report* dated August 18, 2021. This letter outlines my review, comments, and recommendations. On September 18, 2012 I prepared and filed testimony concerning Docket 4237, on December 19, 2013, I filed a memorandum with the Division in which I commented and provided recommendations concerning the National Grid *Stray and Contact Voltage Compliance Report* dated August 29, 2013. I have also provided letters containing comments and recommendations concerning each of the National Grid Contact Voltage Annual Reports from 2014 through 2020. My testimony and recommendations associated with the National Grid FY 2018 ISR Plan filing included an adjustment to the Contact Voltage Program due to the trend in changing ownership of streetlights to the municipalities. The Division recommended, and the PUC subsequently approved, moving from completing a 100% area survey to a 20% survey of the Designated Contact Voltage Risk Areas ("DCVRAs"). I recommend continuing the 20 percent survey of the DCVRA and the process of municipal contractors shadowing the field-testing vendor.

I found that National Grid's August 18, 2021 *Contact Voltage Annual Report* meets the requirements set forth in R.I. General Laws §39-2-25(b)(6)¹, while also incorporating all previous recommendations of the Division and multiple Commission Orders incorporating program additions and enhancements. Specifically, the Company complied with the PUC directive to complete surveys in 20% of DCVRAs and located in Providence.²

The Company explained in detail the contact voltage survey process, and the findings and actions taken. It compared the FY 2021 results to the FY 2020 mobile surveys. I had a short conference call with the Company on August 30, 2021 in order to obtain an explanation regarding a few discrepancies and the technology changes and impacts. There are some unexplained quantity discrepancies between Tables 1 and 2. The Company will be re-filing a new Table 1 and Table 2 with corrections based on my identification of some slight differences in category quantities. The Company's report indicates a significant increase in mobile events recorded in excess of 1 volt (2021 was 21, and 2020 was 1). The total mobile events by DCVRA in 2021 was 26, while in 2020 it was 18 with most of the

¹ §39-2-25(b)(6)- Annually report on contact voltage findings, including, but not limited to, the number and type of energized objects on both company-owned and customer-owned assets, voltage level, corrective action taken, shocks that occur to members of the public or to pets owned by members of the public, and any other information that the commission deems appropriate.

² Docket 4237 PUC Written Order (23270) issued September 4, 2018; page 6.

2020 events being less than 1 volt. The Company explained that when it went to the field to make repairs, it found many of the locations actually had no contact voltage. It further explained that this occurred with Osmose in New York as well. The Company is addressing this with Osmose to determine if Osmose needs to adjust its methods for obtaining the shunt readings for verification. The Company expects this problem to be resolved in the future.

The majority of FY 2020 and FY 2021 events were associated with Streetlights (Table 2). In 2021 the majority of the events were associated with Company-owned streetlight assets. Newport and Woonsocket are the only municipalities in the DCVRAs in which the Company owns the streetlights. In 2020 the majority of the events were associated with customer-owned assets, because they were predominately streetlight events and the municipalities owned all the streetlights in the survey area. Since Streetlights continue to account for the majority of mobile events detected, as expected, the Company should notify the municipalities which have taken ownership of streetlight assets of this continuing trend and the findings.

Table 3
Comparison of Number of Mobile Events FY 2020 to FY 2021

Type of Mobile Events	FY 2020 Number of Events	FY 2021 Number of Events
Readings less than 1 volt	17	5
Readings greater than 1 volt but less than 4.5 Volts	0	13
Readings greater than 4.5 volts	1	8
Total	18	26

The comparison provided in Table 3 is for a 20% survey each year. It is important to note that for 2021, there were 21 events greater than 1 volt versus years 2015 through 2020, which ranged from a low of 0 to a high of 26. For 2019 there were 0 events greater than 1 volt, and for 2020 there was only one event in excess of 1 volt. Now this quantity has increased to 21 events in excess of 1 volt. There are three questions to be addressed as a result of this new upward trend: (1) Are the previous mobile events recorded below 1 volt now becoming more serious events? (the answer is NO); (2) Is the Osmose mobile survey equipment superior to the TRC mobile survey equipment, and thus detecting missed events which were not being missed by the vendor prior to TRC? (the answer is NO due to Osmose shunt reading issues); and (3) Should the previously detected events below 1 volt be revisited to determine if they were or are now in fact dangerous conditions not accurately assessed originally? (the answer is NO since the Company's repair efforts have shown many events were "ghost events", meaning they actually did not exist).

The Company utilized THD readings for contact voltages between 1 and 4.5 volts to evaluate the usability of these readings in determining actionable contact voltage events. This pilot practice should be continued. The Company has also incorporated a Shock Line, on which it received no calls in 2021 and only one call in 2020. While the Shock Line has

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had only one call in two years, it remains a worthwhile additional tool in the effort to identify and mitigate hazardous contact voltage conditions.

The Company has used the mobile survey vendor TRC (formerly Willbros Engineering, LLC) from FY 2016 through FY 2020 with a relatively low level of recorded events in excess of 1 volt. Prior to using TRC, there were significantly more mobile events recorded over 1 volt and now, with Osmose the number of events over 1 volt is 21. Following the next three years of the Osmose contract for testing will be informative, particularly as it relates to testing equipment sensitivity and accuracy. While one year is insufficient to draw a conclusion, the 2021 results combined with 2015 and 2016 point to a potential need for the Company to be more engaged in the technology utilization and the equipment's accuracy.

The repair of identified events on municipal owned streetlights has transitioned to municipal contractors. National Grid executed an agreement with the City of Providence which shifts the costs of repair and/or mitigation work to the City's contractors. Under this agreement, the Company was not responsible for repairs, and incurred no repair costs in FY 2019 and 2020. The municipal contractors are shadowing the Company and its testing vendor in order to be available to make immediate repairs. The Company expended \$5,000 in 2021 repairing its own assets associated with the elevated voltage levels.


National Grid proposes to complete a survey of 20% of the DCVRA areas in prospective years. I anticipate that the Company will schedule upcoming surveys in Providence under the municipal agreement, since 10 of the 14 identified DCVRAs are located in the City. The Company also proposes continuation of post-mitigation annual testing and the use of THD testing.

Lastly, the Company has also recognized that the Institute of Electrical and Electronics Engineers ("IEEE") Standard P1695, *Guide to Understanding, Diagnosing and Mitigating Stray and Contact Voltage*, is a valuable standard upon which to rely, and it will continue to follow its final approval process for revision. The Company should continue its present process. The Company should continue to monitor IEEE committee activities and developments, and bring any standards changes to the attention of the PUC for future consideration.

The program is mature and the remediation benefits have become evident. I support the Company's recommendations contained in Section 9 of its report, including continuing a 20% DCVRA survey each year. I do recommend that the Company continue to pursue with Osmose why its shunt reading process is not determining the false event readings which the Company is finding upon its return for repairs, which are ultimately not necessary.

If you have any questions or would like additional clarification, please contact me.

Sincerely,



Gregory L. Booth, PE

President

glb/sk