



Christine Clancy, P.E.
City Engineer

TO: Eileen Donoghue, City Manager *EMD*

FROM: Christine Clancy, P.E., City Engineer

DATE: December 13, 2018

RE: 6/26/2018 Motion C. Leahy - Req. City Mgr. have National Grid Identify Trouble Spots Concerning Electricity Throughout the City and Their Plan to Remedy Them (Specifically RE: Luce Street)

A motion response (attached for reference) was prepared on September 20, 2018 and presented to the City Council. Additional information regarding the reliability of electrical infrastructure on Luce Street was requested.

Over the past five years (2014-2018), the electrical feeder that services Luce Street and the Belvidere area experienced 42 outages. The extents and duration of each outage varies. Below is a breakdown of the cause of the outages. The primary causes of the outages are related to fallen trees or tree limbs and animal contact.

Animal	10
Deterioration	4
Device Failed	2
Feeder Overload	1
Lightning	1
Tree - Broken Limb	8
Tree Fell	4
Unknown	7
Vehicle	1
(blank)	2
Construction by Company Contractor	1
Improper installation	1
Grand Total	42

National Grid performed an analysis of Luce Street and the Belvidere section of Lowell. The analysis shows that the service quality of the electric grid in this area meets the standards regulated by the Massachusetts Department of Public Utilities. All electric companies in Massachusetts must file a Service Quality Annual Report (SQAR) each year in compliance with D.T.E. 04-116. National Grid's report dated March 1, 2018, File number: 18-SQ-11, indicates that National Grid's electric network was significantly hampered by an excessive number of



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storms in the Fall and Winter of 2017 and 2018, which impacted the average of the total number and length of outages.

The primary sources of the outages were a result of fallen trees and branches and animal contact. As noted in the September 20, 2018 motion response, National Grid conducted tree pruning throughout this past year to maintain a minimum of 10' clearance around National Grid's main electrical distribution infrastructure. Luce Street and other streets in the Belvidere area have been pruned in an attempt to reduce the risk of tree branches impacting the reliability of the overhead electrical infrastructure.

National Grid recognizes that some residents may feel differently about what constitutes an acceptable service quality standard. If there are specific addresses that experience frequent outages or if they have purchased generators to shore up their electric reliability, the City can coordinate with National Grid to investigate the call activity and number of outages at those specific addresses to confirm that there isn't degradation of a service line or other less obvious cause.

Please feel free to contact me if you have any questions regarding this motion response.

Thank you

Cc: Jim Donison, DPW Commissioner

Attachment: September 20, 2018 Motion Response Reliability of Electrical Infrastructure



Christine Clancy, P.E.
City Engineer

Date: September 20, 2018
TO: Eileen Donoghue, City Manager *EMD*
FROM: Christine Clancy, P.E., City Engineer and Jim Donison, P.E., DPW
Commissioner

SUBJECT: 6/26/2018 Motion 11.2 C. Leahy- Req. City Mgr. Have National Grid Identify Trouble Spots Concerning Electricity Throughout the City and Their Plan to Remedy Them

I am writing in response to the above motion made by Councilor Leahy. DPW/Engineering has coordinated with National Grid to investigate the performance of National Grid's distribution system in the City of Lowell and provides the following response.

Factoring in the reality of 13 significant storms in Massachusetts during the winter of 2017/2018, National Grid reported that the majority of Lowell is performing well and in line with our reliability standards.

Reliability is scrutinized each month by assessing feeder (circuit) performance, number of outages, length of outages, 5-year tree trim cycle, storm activity and storm-hardiness of existing equipment. If a particular street or neighborhood is determined to be under-performing, National Grid engineers will create a Work Request to spot trim trees or replace assets such as, circuit breakers, utility poles or switchgear. Larger areas that are under-performing are directed to our Capital Investment Program, spanning multiple years, and involving upgrades to substations, feeders and transformers.

There are several areas of the City that do warrant improvement. National Grid has put forth and intends to put forth the following City of Lowell projects in its Capital Investment Program:

1. In 2017 and 2018, National Grid invested \$35M in the Meadowbrook Substation, which services various neighborhoods in the southern area of Lowell. This project initiated at National Grid's substation near CrossPoint Towers and extended across the city past MACOM and ending at Prince Street near the Markley Data Center. The project involved the replacement of 500 utility poles and associated assets; the reconductoring of major circuits; and the addition of new feeders to increase capacity and enhance reliability during storms.



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2. In 2018 and 2019, National Grid intends to invest \$5.3M for property improvements at its Perry Street Substation with a goal of improving aesthetics in the surrounding neighborhood.
3. In 2019 and 2020, National Grid intends to invest \$3.0 – 6.0M to replace and upgrade the Boulevard Street Substation. This substation powers numerous critical facilities including all of the Pawtucketville area, D'Youville, Lowell General Hospital and Lowell Technical High School.
4. In 2020 and 2021, National Grid intends to invest \$2.7M to upgrade aging equipment at the Concord Road Substation with a goal of enhancing reliability to the area and increasing operational flexibility. This substation is located in Chelmsford but services the City of Lowell.

This Capital Investment Program, totaling approximately \$50M, involves significant investment by National Grid and coordination with the City of Lowell and is designed to improve asset condition and enhance service reliability for National Grid customers.

In closing, it is important to note that the reliability of National Grid's electrical distribution system depends heavily on the maintenance of vegetation around National Grid electrical equipment, including overhead wires. Each year, too many customers are inconvenienced by power outages from trees hitting wires or squirrels jumping from trees and triggering National Grid's circuit breakers. National Grid conducts tree pruning throughout the year in an effort to maintain a minimum of 10' clearance around National Grid's main electrical distribution infrastructure. It should be noted that vegetation that is within close proximity to overhead services between the main and buildings, and on private property, shall be maintained and trimmed as necessary by the property owner and not by National Grid.

Please feel free to contact me if you have any questions regarding this motion response.

Thank you