

STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION

Docket No. DE 21-049

LIBERTY UTILITIES (GRANITE STATE ELECTRIC) CORP.  
d/b/a LIBERTY

**Reliability Enhancement Plan and Vegetation Management Plan**

**Record Request – Exhibit 4**

**REQUEST:**

Please provide the documents demonstrating the reliability benefits for the Bridge Street project at the time this project was first identified by Liberty as being a priority REP project, giving it priority over other REP candidates.

**RESPONSE:**

Attached are the reliability calculator worksheets and the estimates on reliability benefits for the REP projects considered for 2020, including the Bridge Street project, which support the Company's selection of the Bridge Street project. Also attached are the emails conveying this information to Staff.

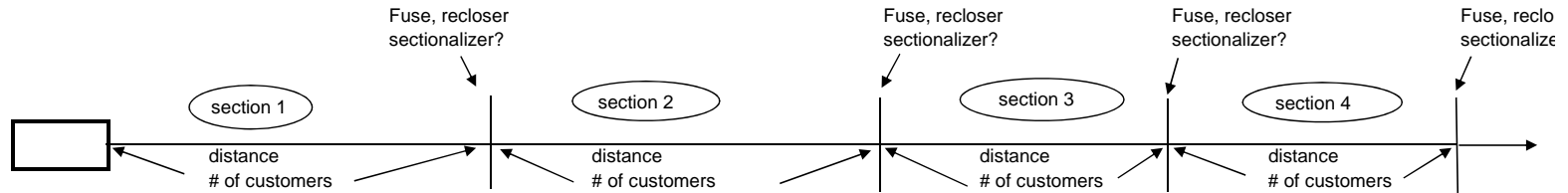
2020 REP BARE WIRE REPLACEMENT RELIABILITY BENEFITS										
1/1/2015 - 12/31/2019										
13L3 - BRIDGE ST SALEM										
PUC CRITERIA										
5 YEAR AVERAGE - FEEDER RELIABILITY					5 YEAR AVERAGE - TREE RELATED					
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI	FEEDER	CI	CMI	CKAIDI	CKAIFI
13L3	2,601	1,739	163,171	62.73	0.67	13L3	1,023	100,851	38.77	0.39
TOTAL CHANGE WITH PROPOSED PROJECTS										
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI	\$	\$/dCI	\$/dCMI		
13L3	2,601	1,266	84,065	32.32	0.49	525,000	415	6.25		
PROJECTED RELIABILITY AVERAGES AFTER PROJECTS										
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI					
13L3	2,601	474	79,106	30.41	0.18					
RELIABILITY IMPACTS - FREQUENCY										
FEEDER	FROM	TO	% REDUCTION							
13L3	0.67	0.18	73%							
RELIABILITY IMPACTS - DURATION										
FEEDER	FROM	TO	% REDUCTION							
13L3	62.73	30.41	52%							

2020 REP BARE WIRE REPLACEMENT RELIABILITY BENEFITS										
1/1/2015 - 12/31/2019										
14L2 NASHUA RD PELHAM										
PUC CRITERIA										
5 YEAR AVERAGE - FEEDER RELIABILITY					5 YEAR AVERAGE - TREE RELATED					
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI	FEEDER	CI	CMI	CKAIDI	CKAIFI
14L2	2,096	2,255	291,726	139.18	1.08	14L2	1,215	136,777	65.26	0.58
TOTAL CHANGE WITH PROPOSED PROJECTS										
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI	\$	\$/dCI	\$/dCMI		
14L2	2,096	666	78,103	37.26	0.32	500,000	751	6.40		
PROJECTED RELIABILITY AVERAGES AFTER PROJECTS										
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI					
14L2	2,096	1,589	213,624	101.92	0.76					
RELIABILITY IMPACTS - FREQUENCY										
FEEDER	FROM	TO	% REDUCTION							
14L2	1.08	0.76	30%							
RELIABILITY IMPACTS - DURATION										
FEEDER	FROM	TO	% REDUCTION							
14L2	139.18	101.92	27%							

2020 REP BARE WIRE REPLACEMENT RELIABILITY BENEFITS										
1/1/2015 - 12/31/2019										
14L2 BURNS RD PELHAM										
PUC CRITERIA										
5 YEAR AVERAGE - FEEDER RELIABILITY					5 YEAR AVERAGE - TREE RELATED					
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI	FEEDER	CI	CMI	CKAIDI	CKAIFI
14L2	2,096	2,255	291,726	139.18	1.08	14L2	1,215	136,777	65.26	0.58
TOTAL CHANGE WITH PROPOSED PROJECTS										
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI	\$	\$/dCI	\$/dCMI		
14L2	2,096	643	80,364	38.34	0.31	600,000	933	7.47		
PROJECTED RELIABILITY AVERAGES AFTER PROJECTS										
FEEDER	Cs	CI	CMI	CKAIDI	CKAIFI					
14L2	2,096	1,612	211,362	100.84	0.77					
RELIABILITY IMPACTS - FREQUENCY										
FEEDER	FROM	TO	% REDUCTION							
14L2	1.08	0.77	29%							
RELIABILITY IMPACTS - DURATION										
FEEDER	FROM	TO	% REDUCTION							
14L2	139.18	100.84	28%							

Circuit # **13L3** Bridge St Salem  
 Substation **Spicket River**  
 Existing average annual CI = **1739**  
 Existing average annual CMI = **163171**  
 Total cost of improvements = **\$525,000**  
 Existing Ave. CI/mile = 712

CONSTRUCTION TYPES	
Type	Description
A	OH distribution line - average
B	OH distribution - spacer cable
C	OH distribution - bare crossarm
D	OH distribution - bare armless
E	OH distribution - covered crossarm
F	OH distribution - covered armless
G	UG distribution cable
X	No section

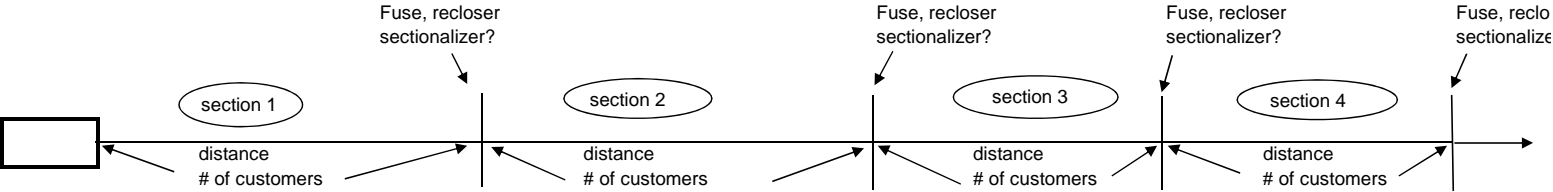


	section 1	section 2	section 3	section 4	section 5	section 6	section 7	section 8	Total
Section type	x	b	x	x	x	x	x	x	
Outage rate/mile	0	0.05	0	0	0	0	0	0	0.03
Average repair time	0	1.5	0	0	0	0	0	0	
Maximum repair time	0	4	0	0	0	0	0	0	
Distance in feet	5600	7300							12900
Customers served	1822	763							2585
Protected? Enter Y if yes.		Y							
<b>Calculated annual CI</b>	0	53	0	0	0	0	0	0	<b>53</b>
<b>Calculated CI/mile</b>		<b>22</b>							
<b>Calculated average CMI</b>	0	4747	0	0	0	0	0	0	<b>4,747</b>
<b>Calculated maximum CMI</b>	0	12659	0	0	0	0	0	0	<b>12,659</b>

RESULTS			NE	NY
Calculated delta CI	1,686	\$/dCI	GO	GO
Calculated delta CMI	158,424	Average restore time: \$/dCMI(Ave.)	GO	GO
Calculated delta CMI	150,512	Maximum restore tim \$/dCMI(least)	GO	GO

Circuit # **14L2** **Nashua Rd**  
 Substation **Pelham**  
 Existing average annual CI = **2255**  
 Existing average annual CMI = **291726**  
 Total cost of improvements = **\$500,000**  
 Existing Ave. CI/mile = 960

CONSTRUCTION TYPES	
Type	Description
A	OH distribution line - average
B	OH distribution - spacer cable
C	OH distribution - bare crossarm
D	OH distribution - bare armless
E	OH distribution - covered crossarm
F	OH distribution - covered armless
G	UG distribution cable
X	No section

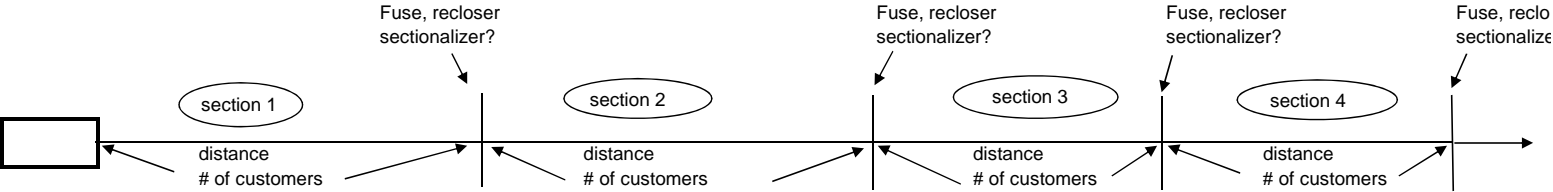


	section 1	section 2	section 3	section 4	section 5	section 6	section 7	section 8	Total
Section type	x	b	x	x	x	x	x	x	
Outage rate/mile	0	0.05	0	0	0	0	0	0	0.03
Average repair time	0	1.5	0	0	0	0	0	0	
Maximum repair time	0	4	0	0	0	0	0	0	
Distance in feet	5400	7000							12400
Customers served	1164	932							2096
Protected? Enter Y if yes.		Y							
<b>Calculated annual CI</b>	0	62	0	0	0	0	0	0	<b>62</b>
<b>Calculated CI/mile</b>		<b>26</b>							
<b>Calculated average CMI</b>	0	5560	0	0	0	0	0	0	<b>5,560</b>
<b>Calculated maximum CMI</b>	0	14827	0	0	0	0	0	0	<b>14,827</b>

RESULTS			NE	NY
Calculated delta CI	2,193	\$/dCI	GO	GO
Calculated delta CMI	286,166	Average restore time: \$/dCMI(Ave.)	GO	GO
Calculated delta CMI	276,899	Maximum restore tim \$/dCMI(least)	GO	GO

Circuit # **14L2** Burns Rd - Mammoth Rd  
 Substation **Pelham**  
 Existing average annual CI = **2255**  
 Existing average annual CMI = **291726**  
 Total cost of improvements = **\$600,000**  
 Existing Ave. CI/mile = 651

CONSTRUCTION TYPES	
Type	Description
A	OH distribution line - average
B	OH distribution - spacer cable
C	OH distribution - bare crossarm
D	OH distribution - bare armless
E	OH distribution - covered crossarm
F	OH distribution - covered armless
G	UG distribution cable
X	No section



	section 1	section 2	section 3	section 4	section 5	section 6	section 7	section 8	Total
Section type	x	b	x	x	x	x	x	x	
Outage rate/mile	0	0.05	0	0	0	0	0	0	0.02
Average repair time	0	1.5	0	0	0	0	0	0	
Maximum repair time	0	4	0	0	0	0	0	0	
Distance in feet	10000	8300							18300
Customers served	1188	908							2096
Protected? Enter Y if yes.		Y							
<b>Calculated annual CI</b>	0	71	0	0	0	0	0	0	<b>71</b>
<b>Calculated CI/mile</b>	<b>21</b>								
<b>Calculated average CMI</b>	0	6423	0	0	0	0	0	0	<b>6,423</b>
<b>Calculated maximum CMI</b>	0	17128	0	0	0	0	0	0	<b>17,128</b>

RESULTS				NE	NY
Calculated delta CI	2,184	\$/dCI	\$275	GO	GO
Calculated delta CMI	285,303	Average restore time: \$/dCMI(Ave.)	\$2.10	GO	GO
Calculated delta CMI	274,598	Maximum restore tim \$/dCMI(least)	\$2.19	GO	GO

<b>RELIABILITY BENEFITS - 2020 REP BARE CONDUCTOR REPLACEMENT PROJECTS</b>				
<b>FEEDER</b>	<b>\$/Dci Theoret.</b>	<b>\$/Dci Historical</b>	<b>\$/dCMI Theoret.</b>	<b>\$/dCMI Historical</b>
14L2 NASHUA RD PELHAM	228	751	1.75	6.40
14L2 BURNS - MAMMOTH RD PELHAM	275	933	2.10	7.47
13L3 - BRIDGE ST SALEM	311	415	3.11	6.25

## Heather Tebbetts

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**From:** Joel Rivera  
**Sent:** Thursday, February 6, 2020 9:36 PM  
**To:** 'Demmer, Kurt'  
**Cc:** Heather Tebbetts  
**Subject:** 2020 REP Reliability Benefits  
**Attachments:** 2020 REP Reliability Benefits.pdf

Hello Kurt

See revised estimates on reliability benefits for the REP projects. I updated the 14L2 customer count. I also aligned the data for both feeders to reflect the period between 1/1/15 and 12/31/19.

Thank you

Joel Rivera, P.E. | [Liberty Utilities \(New Hampshire\)](#) | Manager, GIS and Electric System Planning  
P: 603-952-2920 | C: 603-327-9646 | E: [Joel.Rivera@libertyutilities.com](mailto:Joel.Rivera@libertyutilities.com)  
9 Lowell Road, Salem, NH 03079

## Heather Tebbetts

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**From:** Joel Rivera  
**Sent:** Thursday, February 6, 2020 9:55 PM  
**To:** 'Demmer, Kurt'  
**Cc:** Heather Tebbetts  
**Subject:** RE: 2020 REP Reliability Benefits  
**Attachments:** 14L2 Burns Rd Reliability Calculator\_V2 - Copy.xls; 13L3 Bridge St Reliability calculator\_V2 - Copy.xls; 14L2 Nashua Rd Reliability Calculator\_V2 - Copy.xls

Also here are the reliability calculator worksheets that were developed a long time ago. You should be able to unlock the cells and change the assumptions.

It shows the original NY and NE burdens. Let me know if you find any issues, this calculator is somewhat confusing to set up.

Thank you

Joel Rivera, P.E. | [Liberty Utilities \(New Hampshire\)](#) | Manager, GIS and Electric System Planning  
P: 603-952-2920 | C: 603-327-9646 | E: [Joel.Rivera@libertyutilities.com](mailto:Joel.Rivera@libertyutilities.com)

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**From:** Joel Rivera  
**Sent:** Thursday, February 06, 2020 9:36 PM  
**To:** 'Demmer, Kurt' <Kurt.Demmer@puc.nh.gov>  
**Cc:** Heather Tebbetts <Heather.Tebbetts@libertyutilities.com>  
**Subject:** 2020 REP Reliability Benefits

Hello Kurt

See revised estimates on reliability benefits for the REP projects. I updated the 14L2 customer count. I also aligned the data for both feeders to reflect the period between 1/1/15 and 12/31/19.

Thank you

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