

Appendix 1 - O&M Expenses

Line	(a)+ CY2018 Budgeted Expenses	(b) CY2018 Actual Expenses	(c) Variance	(d) Reference	(f) CY2018 Variance Actual vs. Budget
1 <u>VMP O&M</u>					
2 Work Planners for Veg Plan	\$ 227,000	\$ 203,159	\$ (23,841)	Appendix 5	We held back potential projects and work to manage additional spending of tree removal budget. Also work planners work planned large capital construction projects and performed post storm damage assessments.
3 Spot Tree Trimming	\$ 30,000	\$ 34,812	\$ 4,812	Appendix 4 & 5	Includes a higher volume of unplanned spot work and customer concerns.
4 Trouble and Restoration Maintenance	\$ 30,000	\$ 32,078	\$ 2,078	Appendix 4 & 5	Includes a higher volume of unplanned trouble response/line department support
5 Planned Cycle Trimming	\$ 1,120,086	\$ 1,166,655	\$ 46,569	Appendix 4 & 5	Difference between 2017 YE accrual and actual invoices paid in 2018.
6 Police Detail Expenses - Cycle Trimming & Other	\$ 290,000	\$ 402,083	* \$ 112,083	Appendix 4 & 5	Includes a higher than anticipated cost for traffic control.
7 Hazard Tree Removal	\$ 400,000	\$ 535,490	\$ 135,490	Appendix 4 & 5	Includes removals from CY 2016 and CY2017 tree removals that were in excess of previous budget allocations.
8 Interim Trimming	\$ 30,000	\$ 29,679	\$ (321)	Appendix 4 & 5	
9 Tree Planting	\$ 5,000	\$ 4,345	\$ (655)	Appendix 4 & 5	-
10 Sub-Transmission Right of Way Clearing	\$ -	\$ -	\$ -	Appendix 4 & 5	-
11 Sub-Transmission Right of Way Sideline	\$ 25,000	\$ 14,142	\$ (10,858)	Appendix 4 & 5	Experienced a low volume of Sub-Transmission spot work needs and diverted funding goals relative to the overspend of tree removals.
12 Total VMP O&M Expenses	\$ 2,157,086	\$ 2,422,443	\$ 265,357	Appendix 5	
13 Less: Reimbursements from Consolidated	\$ 480,000	\$ 478,142			
14 VMP O&M Expenses Net of Consolidated Credits	\$ 1,677,086	\$ 1,944,301	\$ 265,357		

15 +CY2018 Budget represents a requested 9.9% reduction in cost from 2017 (total of \$2,390,000 or \$1,851,000 net after Consolidated credit of \$539,000). This budget is different than the one recently referenced by PUC staff.

16 * Includes an anticipated credit for \$50,170 for correction of invoice error.

Appendix 2 - REP Capital Investments - Summary

Line	Projects	(a) 2018 Goal	(b) CY 2018 Capital Investment Budget(*)	(c) CY 2018 Actual Capital Investment	(d) CY 2017 Capital Carryover Investment	Reference
1	Bare Conductor Replacement	3.65 mi	\$ 1,450,000	\$ 939,309	\$ 422,420	Appendix 3, lines 1-3, 6-7
2	Single Phase Reclosing Installations	1 Location	\$ 50,000	\$ 5,528	\$ -	Appendix 3, line 8
3	* Includes an anticipated credit for \$50,170 for correction of invoice error.	0 Units	\$ -	\$ -	\$ 10,870	Appendix 3, lines 4-5
5	Previous CY Carryover		\$ 1,500,000	\$ 944,837	\$ 433,290	Appendix 3, lines 1-5
6	Totals		\$ 1,600,000	\$ 944,837	\$ 433,290	
7					\$ 1,378,127	

(*) From CY 2018 Plan submitted to Staff on November 15, 2017.

Appendix 3 - Reliability Enhancement Program Capital Costs

Line	(a) Activities	(b) Project Description	(c) CY 2018 Budgeted Capital Investment (107)	(d) CY 2018 Capital Investment Closed to Plant (101/106/108)	(e) CY 2018 Capital Investment Closed to Plant from CY2017 carryover	(f) CY 2018 Spend
1	Bare Conductor Replacement Project - Lowell Rd	Replace approximately 1,600ft of bare conductors along Lowell Rd with 477 Spacer Cable.			\$ 38,701	\$ 38,701
2	Bare Conductor Replacement Project - 12L1 Route 123	Replace approximately 2.75 miles of bare conductors along Route 123 Walpole with 477 Spacer Cable.			\$ 52,666	\$ 52,666
3	Bare Conductor Replacement Project - 14L2 Mammoth Rd	Replace approximately 5,000ft of bare conductors along Mammoth Rd with 477 Spacer Cable.			\$ 331,053	\$ 331,053
4	Trip Saver Installations -Dutton Rd - 14L1	Install 1 single phase trip saver on Dutton Rd Pelham P47			\$ 2,415	\$ 2,415
5	Trip Saver Installations -Dutton Rd - 14L1	Install 1 single phase trip saver on Dutton Rd Pelham P53			\$ 8,455	\$ 8,455
6	1L2 Bare Conductor Replacement Project - Meriden Rd	Replace approximately 1 mile of bare conductors along Meriden Rd with 477 Spacer Cable.	\$ 400,000	\$ 654,126		\$ 654,126
7*	12L2 Bare Conductor Replacement Project - Route 12	Replace approximately 1.5 miles of bare conductors along Route 12 Walpole with 477 Spacer Cable.	\$ 1,050,000			\$ 285,183
8*	14L1 Single Phase recloser installation - Dutton Rd - 14L1	Install single phase tripping recloser at Dutton Rd Pelham NH	\$ 50,000			\$ 5,528
9	Capital Investment Carryover from previous CY		\$ 100,000			
10	Totals		\$ 1,600,000	\$ 654,126	\$ 433,290	\$ 1,378,127

Columns (d) + (e) \$ 1,087,416

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* The cost of the projects will be included in the 2019 reconciliation for reasons described in the Report.

Appendix 4

CY 2018 Vegetation Management Activities

Line	Activities	CY 2018 Program Plan (*)	Reference	
1	Spot Tree Trimming	As needed	See Appendix 6 for definitions	
2	Trouble and Restoration Maintenance	As needed	See Appendix 6 for definitions	
3	Planned Cycle Trimming	227.83	See Appendix 6 for definitions	
4	Cycle Trimming Police Detail Expenses	As needed	See Appendix 6 for definitions	
5	* Hazard Tree Removal	As needed	See Appendix 6 for definitions	
	Enhanced Hazard Tree Removal	As needed	See Appendix 6 for definitions	
7	Interim Trimming	As needed	See Appendix 6 for definitions	
8	Tree Planting	As needed	See Appendix 6 for definitions	
10	Other Police Detail Expenses	As needed	See Appendix 6 for definitions	
11	Substation	Feeder	OH Miles - Distribution - Planned	OH Miles - Distribution Completed
12	Lebanon #11	11L2	4.73	4.73
13	Lebanon #1	1L3	16.85	16.85
15	Enfield #7	7L2	43.2	43.2
16	Hanover #6	6L4	0.95	0.95
17	Barron Ave. #10	10L1	9.74	9.74
18	Barron Ave. #10	10L2	7.3	7.3
20	Olde Trolley #18	18L1	0	0
22	Olde Trolley #18	18L4	13.24	13.24
23	Vilas Bridge #12	12L1	123.53	123.53
24	Charlestown #8	8L2	0	0
25		Total OH Miles - Distribution	219.54	219.54
26	Sub transmission		OH Miles - Sub transmission	OH Miles - Sub transmission
27		Total OH Miles - Sub transmission	0 mi/88.84 acres	0 mi/0 acres

Appendix 5 - VMP Spend by Month

	GL Posting Month														Revised
Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total	Adjustments*	Total
Work Planning	\$ 16,083.93	\$ 14,127.76	\$ 14,548.96	\$ 16,815.78	\$ 14,772.80	\$ 45,020.19	\$ 15,063.59	\$ 12,220.31	\$ 15,229.53	\$ 20,559.36	\$ 17,051.19	\$ 1,665.27	\$ 203,158.67		\$ 203,158.67
Spot Tree Trimming		2,619.47		3,522.14		5,361.97	1,476.19	1,025.01	8,671.10	209.80	4,049.79	7,876.27	34,811.74		34,811.74
Trouble and Restoration Maintenance		2,163.01		2,430.65	512.35	9,107.23	2,840.05	3,615.86	11,007.01	(1,387.85)	1,542.73	246.83	32,077.87		32,077.87
Planned Cycle Trimming		174,888.49		174,847.04	119,426.20	240,340.33	119,000.00	35,593.53	109,162.43	97,976.73	7,076.86	46,169.17	1,124,480.78	42,174.55	1,166,655.33
Police Detail Expenses		49,431.00	198,869.83	(145,097.08)	36,427.59	127,720.00	233.50	20,307.00	25,995.00	48,248.50	52,776.00	37,881.00	452,792.34	(50,709.50)	402,082.84
Hazard Tree Removal		55,001.93	6,507.63	139,308.34	136,634.84	276,608.50	14,600.24	(10,000.00)	540.00			(83,711.29)	535,490.19		535,490.19
ROW Veg Mgt		6,126.00				5,851.58	2,164.86						14,142.44		14,142.44
Interim Trimming						1,653.83			1,025.01	26,999.82			29,678.66		29,678.66
Tree Planting									4,345.00				4,345.00		4,345.00
Grand Total	\$ 16,083.93	\$ 304,357.66	\$ 219,926.42		\$ 307,773.78	\$ 711,663.63	\$ 155,378.43	\$ 62,761.71	\$ 175,975.08	\$ 192,606.36	\$ 82,496.57	\$ 10,127.25	\$ 2,430,977.69	\$ (8,534.95)	\$ 2,422,442.74

*
 *Planned Cycle Trimming: Anticipated spend for \$42,175.00 for work completed in 2018.
 *Police Detail: Anticipated credit for \$50,170 for correction of invoice error.

VMP Definitions

Work Planning: Work planning process is a systematic approach to prescribing vegetation maintenance work around power lines. It involves the patrol and inspection of the power line corridor on a span-by-span basis. Work planning begins with an experienced (and typically degreed) forester working as an inspector (work planner). The clearances and tree selection parameters are pre-determined by the utility. The prescribed work is executed by the line clearance contractor.

Spot Tree Trimming: (Unplanned Work)

This captures all charges for field follow up, review and execution of corrective action required, if any, to mitigate vegetation management concerns requested or reported by a customer.

Trouble and Restoration Maintenance: (Unplanned Work)

This captures all charges for response and corrective action to mitigate isolated tree related trouble, overhead line requests to mitigate tree related trouble and storm responses not covered by a storm specific charge number.

Planned Cycle Trimming:

This captures all charges for annual fiscal year planned cycle pruning activities but does not include police detail expenses.

Cycle Trimming/Other Traffic Control Expenses:

This captures all charges for traffic control expenses associated with annual planned cycle trim, tree removals, spot trimming and other unplanned work requiring traffic control.

Hazard Tree Removal:

This captures all charges for removal of dead, dying and/or structurally weak trees, limbs and leads.

Interim Trimming: (Unplanned work)

This captures all charges for mitigation of tree conditions that threaten reliability of one or more sections of primary conductor on a circuit or circuits not contained in the current fiscal year's annual plan of work.

Tree Planting:

This captures all charges for tree replacements in exchange for tree removals of full clearance, tree replacement to remediate property owner complaints, trees planted for Arbor Day events.

Sub-transmission Right of Way Clearing:

This captures all charges for activities related to cutting, clearing, herbicide application and danger tree removal on substation supply lines up to 46 kV.

Appendix 7 - 5 year rolling averages SAIDI/SAIFI

CY	Sum of CI	Sum of CMI	Sum of SAIFI (right)	5-Year Avg. SAIFI (right)	Sum of SAIDI (left)	5-Year Avg. SAIDI (left)
2000	75,896	4,079,729	2.00		107.76	
2001	85,017	8,219,366	2.22		214.39	
2002	65,099	6,042,438	1.68		155.28	
2003	56,341	3,971,111	1.43		100.86	
2004	67,956	8,313,277	1.71	1.81	207.53	157.16
2005	84,188	12,085,278	2.08	1.82	301.25	195.86
2006	106,935	10,363,197	2.70	1.92	263.83	205.75
2007	79,070	9,196,797	1.96	1.98	228.36	220.37
2008	93,197	8,609,475	2.30	2.15	212.05	242.60
2009	47,270	4,763,099	1.17	2.04	115.94	224.29
2010	72,089	8,156,936	1.74	1.97	196.44	203.32
2011	49,176	4,997,759	1.17		119.60	174.48
2012	69,677	5,829,537	1.70	*	140.06	156.82
2013	68,033	6,792,013	1.64	1.48	162.28	146.86
2014	63,878	7,145,798	1.54	1.56	172.12	158.10
2015	24,893	2,618,074	0.58	1.33	61.05	131.02
2016	56,784	5,124,815	1.31	1.35	118.14	130.73
2017	39,831	5,156,572	0.91	1.19	117.74	126.27
2018	32,681	5,406,674	0.74	1.01	121.79	118.17
2019 Projection	43,613	5,090,387	1.01	0.91	118.17	107.38

Appendix 8

Liberty Utilities (Granite State Electric) Corp. Reliability Enhancement Program and Vegetation Management Program Docket No. DE 13-063

I. REP and VMP Commitment

Beginning April 1, 2014 and until the conclusion of Liberty's next distribution rate case, Liberty will continue its Reliability Enhancement Program ("REP") and a Vegetation Management Program ("VMP") (collectively, the "Program"), as set forth below.

II. Definitions of REP and VMP Activities

- a. Activities included in the REP are the following:
 - i. Spacer Cable Expansion/Bare Conductor Replacement
 - ii. Single Phase Recloser Replacement/Expansion
 - iii. Trip Saver Applications
- b. Activities and expenses included in the VMP are set forth below:
 - i. Spot Tree Trimming;
 - ii. Trouble & Restoration Maintenance;
 - iii. Planned Cycle Trimming;
 - iv. Cycle Trimming Police Details Expenses;
 - v. Hazard Tree Removal;
 - vi. Interim Trimming;
 - vii. Tree Planting;
 - viii. Subtransmission Right of Way Clearing; and
 - ix. Other Police Detail Expenses.

III. REP and VMP for FY 2014 and Thereafter

- a. Beginning with November 15, 2014, Liberty will provide its REP and VMP plan (the "Plan") to Staff for the following calendar year for Staff's review. Liberty will meet with Staff in technical sessions to discuss the Plan, obtain comments, and answer any questions regarding the plan to be implemented for the subsequent calendar year. After review by Staff, Liberty will take all reasonable steps it deems appropriate to carry out and implement the Plan, taking into account the comments of Staff. Review by Staff of the Plan does not relieve Liberty of its obligation to operate its business and maintain safe, reliable service through expenditures and other capital investments in the ordinary course of business that are not set forth in the Plan, nor does it bind Staff to a particular position regarding the adequacy and/or effectiveness of the Plan.
- b. The Plan shall provide a description of the activities along with targeted expenditures and investments of the proposed Plan to be implemented during the

following calendar year. The Plan will itemize the proposed activities by general category and provide budgets for both operation and maintenance ("O&M") expenses and capital investments expected from implementation of the Plan. The O&M budget will be \$1,360,000 (the "Base Plan O&M") for the calendar year ("Base Plan O&M Budget"). Liberty may also provide for consideration an alternative Plan with O&M budgets that exceed the O&M Base Amount for the calendar year. Liberty will reconcile actual expenditures and investments with the Base Plan O&M amount of \$1,360,000 and shall be subject to the REP/VMP Adjustment Provision, as set forth in Section IV below. All of the combined expenses will be counted against the Base Plan O&M amount, along with any REP-related O&M that does not relate to a VMP category.

IV. REP/VMP Adjustment Provision

- a. During each calendar year, Liberty shall track all O&M expenses incurred in implementing the components of the REP and VMP Plan. By March 15 of each year, Liberty will make a reconciliation filing with the Commission. To the extent that Liberty, in implementing the Plan, incurs expenses in an amount less than the Base Plan O&M amount, the difference between the Base Plan O&M amount and the amount of expenses actually incurred shall be refunded to customers or credited to customers for future REP/VMP program O&M expenditures, as the Commission determines is appropriate, with interest accruing at the customer deposit rate.
- b. To the extent the Plan submitted for review prior to the calendar year includes a budget higher than the Base Plan O&M Budget and Liberty incurs expenses over the Base Plan O&M amount (consistent with the alternative budget reviewed by Staff), the incremental expense above the Base Plan O&M amount shall be included in rates, subject to Commission approval, through a uniform adjustment factor on a per kilowatt-hour basis and recovered over a twelve month period, commencing for usage on and after May 1, with interest accruing at the customer deposit rate. Any over or under-recoveries at the end of the twelve month period shall be taken into account in the next REP/VMP Adjustment Provision reconciliation period.

V. REP Capital Investment Allowance

The REP capital investment target shall be \$1 million annually. Liberty shall track all capital investments made in accordance with the REP for each calendar year. At the same time that Liberty makes its reconciliation filing for the REP/VMP Adjustment reconciliation, Granite State shall file a report detailing the actual amount of capital investments made in accordance with implementing the REP during the prior calendar year. The report shall include a calculation of the revenue requirement for adding these additional capital investments into rate base, using Liberty's current Commission approved capital structure and debt and equity. Provided that the investments were made in accordance with the REP, Liberty will be allowed, subject to Commission approval, a permanent increase in its base distribution rates to recover the annual revenue requirement for those investments. This permanent REP Capital Investment Allowance

will take effect for usage on and after May 1, at the same time as any REP/VMP Adjustments are implemented for the preceding calendar year as discussed in Section IV above.

VI. Procedure for Adjusting Base Distribution Rates for the REP Capital Investment Allowance

Base distribution rates shall be increased by the ratio of: (i) the incremental revenue requirement associated with the REP capital investment; and (ii) forecasted base distribution revenue for the prospective year.

VII. Annual Report, Plan Deviations, and SAIDI/SAIFI Results

- a. At the same time Liberty makes its reconciliation and rate adjustment filing (by March 15 of each year), Liberty will file an annual report on the prior calendar year's activities. In implementing the Plans, the circumstances encountered during the year may require reasonable deviations from the original Plans reviewed by Staff. In such cases, Liberty would include an explanation of any deviations in the report. For cost recovery purposes, Liberty has the burden to show that any deviations were due to circumstances out of its reasonable control or, if within its control, were reasonable and prudent. Included in the annual report, Liberty will report its SAIDI and SAIFI results for the prior calendar year.
- b. Liberty shall also report SAIDI/SAIFI results:
 - i. Inclusive of all events identified in items ii, iv and v below;
 - ii. Using the criteria for major storm exclusions set forth by the Commission and IEEE Standard 1366.
 - iii. On a rolling five-year average for each metric in order to minimize the impact of uncontrollable factors;
 - iv. Excluding the effect on performance by supply assets owned by others given the potential impact of transmission on Liberty's reliability performance;
 - v. Excluding planned and notified outages from its calculation of SAIDI and SAIFI, and;
 - vi. Consistent with the Puc 300 rules.
- c. The Commission's definition of a major storm qualifying for exclusion from SAIDI and SAIFI reporting is 30 concurrent troubles and 15% of customers interrupted, or 45 concurrent troubles. (Troubles are defined as interruption events occurring on either primary or secondary lines).