

**Appendix 1 - O&M Expenses**

Line	(a) CY 2016 Budgeted Expenses	(b) CY 2016 Actual Expenses	(c) Reference	(d) CY 2016 Comments
1	<b>VMP O&amp;M</b>			
2	\$ 110,500	\$ 202,075	Appendix 4	Includes \$38,933 CY2015 charges paid in CY2016, additional per diem work planners based on original plan to trim 216 miles
3	\$ 12,500	\$ 14,103	Appendix 4	
4	\$ 12,500	\$ 40,268	Appendix 4	Higher volume of unplanned trouble response
5	\$ 702,000	\$ 755,402	Appendix 4	Includes a portion of CY2015 charges paid in CY2016
6	\$ 182,500	\$ 172,956	Appendix 4	Town of Pelham relaxed detail requirement & deferral of 7L2
7	\$ 220,500	\$ 330,381	Appendix 4	Increased volume of prioritized tree removals from work planning.
8	\$ 12,500	\$ 3,672	Appendix 4	
9	\$ 5,000	\$ 5,360	Appendix 4	
10	\$ -	\$ -	Appendix 4	
11	\$ 90,000	\$ 106,121	Appendix 4	Additional spend necessary to complete the project based on original estimate from vendor
12	\$ -	\$ 3,558		
13	\$ 350,000			
14	<u>\$ 1,698,000</u>	<u>\$ 1,633,896</u>		
15	\$ 350,000	\$ 350,000		
16	<u>\$ 1,348,000</u>	<u>\$ 1,283,896</u>		
17	<u>\$ 1,348,000</u>	<u>\$ 1,283,896</u>		

[1] Program budget reviewed with Staff pursuant to Section 3a of the Settlement Agreement in Docket No. DE 13-063. 2016 Budget included \$250,000 to change from five-year to four-year cycle. That change did not occur in 2016, so the adjusted budget amount is \$1,698,000.

**Appendix 2 - REP Capital Investments - Summary**

Line	Projects	(a) 2016 Goal	(b) CY 2016 Capital Investment Budget(*)	(c) CY 2016 Actual Capital Investment	(d) CY 2015 Capital Carryover Investment	Reference
1	Bare Conductor Replacement	2 mi.	\$ 1,200,000	\$ 552,799	\$ 66,544	Appendix 3, lines 1,2,13
2	Single Phase Reclosing Installations	3 Locations	\$ 200,000	\$ 113,038		(691) Appendix 3, lines 3-5, 14-16
3	Single Phase Trip Saver Installations	12 Units	\$ 50,000	\$ 85,933		Appendix 3, lines 6-12, 17-24
4	Totals		\$ 1,450,000	\$ 751,769		
5	Previous CY Carryover		\$ 100,000		\$ 97,621	Appendix 3, lines 1-12
6	Totals		\$ 1,550,000	\$ 751,769	\$ 97,621	
7			(*)		\$ 849,390	

(\*) From CY 2016 Plan submitted to Staff on November 14, 2016.

**Appendix 3 - Reliability Enhancement Program Capital Costs**

Line	(a) Activities	(b) Project Description	Funding Project Number	Work Order	(c) CY 2016 Budgeted Capital Investment (107)	(d) CY 2016 Capital Investment Closed to Plant (101/106/108)	(e) CY 2016 Capital Investment Closed to Plant from CY2015 carryover	(f) CY 2016 Total	(g) Estimated Capital Investment to be Booked in CY 2017 (107)
1	Bare Conductor Replacement Program Bluff/Lake St 13L2	Replace approximately 1.6 miles of bare conductors along Bluff St and Lake St. Salem with 477 Spacer Cable.	8830- C18603	8830- 18001058	\$ -	\$ -	\$ 35,970	\$ 35,970	
2	Bare Conductor Replacement Program School St 13L3	Replace approximately 0.6 miles of bare conductors along Bluff St and Lake St. Salem with 477 Spacer Cable.	8830- C18603	8830- 18001100	\$ -	\$ -	\$ 30,574	\$ 30,574	
3	Recloser Installations - Connecticut Valley Rd Single Phase Reclosing - 1L2	Install Vyper ST with SEL651R control on Connecticut Valley Rd for single phase tripping.	8830- C24073	8830- 16660619	\$ -	\$ -	\$ -	\$ -	
4	Recloser Installations - Windham Rd Single Phase Reclosing - 14L3	Install Vyper ST with SEL651R control on Windham Rd P43 for single phase tripping.	8830- C24073	8830- 18000157	\$ -	\$ -	\$ (691)	\$ (691)	
5	Recloser Installations - Old Rockingham Rd Single Phase Reclosing - 9L2	Install Vyper ST with SEL651R control on P2 Old Rockingham Rd for single phase tripping.	8830- C24073	8830- 18000158	\$ -	\$ -	\$ -	\$ -	
6	Trip Saver Installations -May St Canaan 7L2	Install 2 single phase trip savers on P1 May St Salem NH	8830- C24073	8830- 18000331	\$ -	\$ -	\$ 3,966	\$ 3,966	
7	Trip Saver Installations -Rudsboro Rd Hanover - 16L1	Install 1 single phase trip saver on P84 Rudsboro Rd	8830- C24073	8830- 18000333	\$ -	\$ -	\$ 1,983	\$ 1,983	
8	Trip Saver Installations -Hanover Center Rd Hanover - 16L1	Install 3 single phase trip saver on P73 Hanover Center Rd	8830- C24073	8830- 18000334	\$ -	\$ -	\$ 5,990	\$ 5,990	
9	Trip Saver Installations -Cove Rd Salem 13L1	Install 1 single phase trip saver on P113 Cove Rd	8830- C24073	8830- 18000339	\$ -	\$ -	\$ 3,966	\$ 3,966	
10	Trip Saver Installations -Stevens Rd Lebanon - 11L1	Install 3 single phase trip savers on P52 Stevens Rd	8830- C24073	8830- 18000340	\$ -	\$ -	\$ 5,949	\$ 5,949	
11	Trip Saver Installations -Plainfield Rd Plainfield - 39L1	Install 2 single phase trip savers on P61-89 Plainfield Rd	8830- C24073	8830- 18000342	\$ -	\$ -	\$ 3,966	\$ 3,966	
12	Trip Saver Installations -Highland Ave Lebanon - 11L1	Install 3 single phase trip savers on P7 Highland Ave.	8830- C24073	8830- 18000343	\$ -	\$ -	\$ 5,949	\$ 5,949	
13	Bare Conductor Replacement Program Bridge St 14L2/14L3	Replace approximately 2 miles of bare conductors along Bridge St. Salem with 477 Spacer Cable.	8830- C18603	8830- 18000311 8830- 18000650	\$ 1,200,000	\$ 552,799		\$ 552,799	
14	Recloser Installations - East Wheelock Rd Single Phase Reclosing - 6L3	Install Vyper ST with SEL651R control on Wheelock Rd P12 for single phase tripping.	8830- C24073	8830- 18001877	\$ 66,667	\$ 12,899		\$ 12,899	
15	Recloser Installations - Etna Rd Single Phase Reclosing - 16L1	Install Vyper ST with SEL651R control on Etna Rd P11 for single phase tripping.	8830- C24073	8830- 18001878	\$ 66,667	\$ 50,400		\$ 50,400	

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Line	(a) Activities	(b) Project Description	Funding Project Number	Work Order	(c) CY 2016 Budgeted Capital Investment (107)	(d) CY 2016 Capital Investment Closed to Plant (101/106/108)	(e) CY 2016 Capital Investment Closed to Plant from CY2015 carryover	(f) CY 2016 Total	(g) Estimated Capital Investment to be Booked in CY 2017 (107)
16	Recloser Installations - Sullivan St Single Phase Reclosing - 8L1	Install Vyper ST with SEL651R control on P2 Sullivan St for single phase tripping.	8830- C24073	8830- 18001879	\$ 66,666	\$ 49,738		\$ 49,738	
17	Trip Saver Installations -Cheshire Tpke 12L1	Install 3 single phase trip savers on P2 Cheshire Tpke	8830- C24073	8830- 18001925	\$ 15,000	\$ 10,120		\$ 10,120	
18	Trip Saver Installations -Old Claremont Rd - 40L1	Install 1 single phase trip saver on P106 Old Claremont Rd	8830- C24073	8830- 18001924	\$ 5,000	\$ 7,744		\$ 7,744	
19	Trip Saver Installations -Slayton Hill Rd - 1L2	Install 1 single phase trip saver on Slayton Hill Rd	8830- C24073	8830- 18001915	\$ 5,000	\$ 4,785		\$ 4,785	
20	Trip Saver Installations -Storrs Hill Rd - 1L2	Install 1 single phase trip saver on Storrs Hill Rd P1	8830- C24073	8830- 18001916	\$ 5,000	\$ 4,182		\$ 4,182	
21	Trip Saver Installations -South Rd - 7L1	Install 1 single phase trip saver on P1 South Rd	8830- C24073	8830- 18001922	\$ 5,000	\$ 6,121		\$ 6,121	
22	Trip Saver Installations -Poverty Lane Rd Lebanon - 39L2	Install 3 single phase trip savers on P19 Poverty Lane Rd	8830- C24073	8830- 18000341	\$ 5,000	\$ 28,548		\$ 28,548	
23	Trip Saver Installations - Shadow Lake Rd - 13L1	Install 1 single phase trip saver on P2 Cheshire Tpke	8830- C24073	8830- 18001926	\$ 5,000	\$ 16,482		\$ 16,482	
24	Trip Saver Installations - Route 4A - 1L2	Install 1 single phase trip saver on P42 Shadow Lake Rd	8830- C24073	8830- 18001923	\$ 5,000	\$ 7,950		\$ 7,950	
25	Capital Investment Carryover from previous CY				\$ 100,000				
26	Totals				\$ 1,550,000	\$ 751,769	\$ 97,621	\$ 849,390	\$ 100,000

**Appendix 4 - Vegetation Management Activities**

CY 2016				
Line	Activities	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	175.58 miles	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	
6	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	
9	Subtransmission Right of Way Clearing	6.3 miles (12.6 miles total - both sides of ROW)/additional as needed from patrols	See Appendix 6 for definitions	
10	Other Police Detail Expenses	As needed	See Appendix 6 for definitions	
11	<b>Substation</b>	<b>Feeder</b>	<b>OH Miles - Distribution</b>	<b>OH Miles - Distribution Completed</b>
12	Craft Hill	11L1	13.64	13.64
13	Enfield	7L1	66.90	66.90
14	Enfield	7L2*	43.20	0.00
15	Hanover	6L2	4.20	4.20
16	Spicket River	13L3	24.12	24.12
17	Pelham	14L2	35.17	35.17
18	Salem Depot	9L1	9.77	9.77
19	Salem Depot	9L2	1.37	1.37
20	Salem Depot	9L3	18.04	18.04
21		<b>Total OH_Miles - Distribution</b>	<b>216.41</b>	<b>173.21</b>
22	<b>Subtransmission</b>		<b>OH Miles - Subtransmission</b>	<b>OH Miles - Subtransmission</b>
23	1303/1304 Line Hanover #6 to Lebanon #1	Floor Work	6.6	6.6
24		<b>Total OH_Miles - Subtransmission</b>	<b>6.6</b>	

\* The Enfield 7L2 feeder was originally brought forward from CY 2017 as part of the planned move to a four year trim cycle. As the four year trim cycle was being discussed during the DE 16-383 rate case, trimming on the Enfield 7L2 feeder was deferred to CY 2017 reducing the CY 2016 anticipated spend by \$250,000.

**Appendix 5 - VMP Spend by Month**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total	
Line														
	<b>Activity</b>													
1	Work Planning	\$31,571	\$15,980	\$27,319	\$21,047	\$27,519	\$22,042	\$21,522	\$28,389	\$3,299	\$3,388	\$0	\$0	\$202,075
2	Spot Tree & CS calls- unplanned	\$0	\$0	\$2,437	\$0	\$222	\$997	\$997	\$2,770	\$554	\$2,880	\$3,247	\$0	\$14,103
3	Trouble Maint Veg Mgmt	\$183	\$9,725	\$3,095	\$2,492	\$1,314	\$1,469	\$3,393	\$11,673	\$2,827	\$1,213	\$1,615	\$1,269	\$40,268
4	Planned Cycle Trimming DOH	\$39,253	\$0	\$0	\$55,991	\$0	\$116,517	\$39,751	-\$23,580	\$280,720	\$160	\$246,591	\$0	\$755,402
5	VM Traffic Control Expenses	\$0	\$9,229	\$66,845	\$20,888	\$11,720	\$28,962	\$0	\$0	\$15,485	\$0	\$19,828	\$0	\$172,956
7	Haz Tree Removal	\$32,624	\$27,781	\$12,669	\$27,799	\$17,328	\$16,439	\$53,439	\$1,018	\$73,983	\$29,962	\$35,875	\$1,464	\$330,381
8	Perf Dist ROW Clearing-Sideline	\$3,558	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,558
9	Perform Interim Trimming	\$0	\$0	\$571	\$0	\$665	\$0	\$0	\$1,329	\$554	\$554	\$0	\$0	\$3,672
10	Perform Tree Planting	\$0	\$0	\$0	\$0	\$0	\$5,360	\$0	\$0	\$0	\$0	\$0	\$0	\$5,360
11	ROW Veg Mgmt-Floor	\$0	\$49,976	\$28,398	\$19,702	\$8,045	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$106,121
12	Grand Total	\$107,189	\$112,692	\$21,047	\$147,919	\$66,812	\$191,785	\$119,102	\$20,269	\$1,329	\$38,157	\$307,709	\$2,734	\$1,633,896

## Appendix 6 VMP Definitions

**Inspection and Maintenance:** The inspection and maintenance component of the REP involves a comprehensive overhead assessment of the Company's equipment and feeders prior to performance of the REP work.

**Augmented Tree-Trimming and Clearing:** This program involves the removal of hazard trees and limbs beyond what is normally included in tree trimming to reduce the risk of interruptions on the overhead distribution system. In addition to removing dead, dying, and damaged limbs from above the conductor, we also increase overhead clearances to fifteen feet outside of residential areas. This additional work is integrated into routine scheduled trimming program to create a more aggressive approach to removing tree hazards and overhang.

**Spot Tree Trimming:** 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:** 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 Police Detail Expenses:** This captures all charges for police detail expenses associated with annual planned cycle trim and tree removals.

**Tree Hazard Removal:** This captures all charges for removal of dead, dying and/or structurally weak trees, limbs and leads.

**Enhanced Hazard Tree Removal –EHTM:** This captures all charges for the hazard tree removal program directed at improving reliability of on and off cycle poor performing circuits based on removing dead, dying and/or structurally weak trees, limbs and leads on the three phase portions of those targeted circuits using a Customer Served approach beyond each major reliability device point including the lockout section or station breaker to the first reliability device.

**Interim Trimming:** 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.

**Other Police Detail Expenses:** This captures charges for all O&M police detail expenses not associated with Planned Cycle Trim.

**Appendix 7 - 5 year rolling averages SAIDI/SAIFI**

<b>CY</b>	Sum of CI	Sum of CMI	Sum of SAIFI	5-Year Avg. SAIFI	Sum of SAIDI	5-Year Avg. SAIDI
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	1.67	119.60	174.48
2012	69,677	5,829,537	1.70	1.62	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 Projection	55,118	5,310,955	1.35	1.28	130.73	128.86

## **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).

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