Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities

Reliability Enhancement Plan (REP) and Vegetation Management Plan (VMP) Report for Calendar Year 2016

March 15, 2017

Submitted by:

Liberty Utilities

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INTRODUCTION

Liberty Utilities (Granite State Electric) Corp. ("Liberty" or the "Company") hereby submits the results of the Reliability Enhancement Plan ("REP") and Vegetation Management Plan ("VMP") for the calendar year 2016 ("Calendar Year 2016 Plan"). These results for the Calendar Year 2016 Plan are submitted consistent with the requirements in Attachment F to the Settlement Agreement in Docket No. DE 13-063 (the "Settlement Agreement") that was approved by the Commission in Order No. 25,638 (March 17, 2014). For ease of reference, a copy of Attachment F is included as Appendix 8 to this report. This report contains the following information:

1) A comparison of actual to budgeted spending on operating and maintenance ("O&M") activities related to the VMP in CY 2016. Appendix 1, line 16, column (b), shows that total actual spending for this period was $1,283,896 or $64,104 less than the budgeted amount of $1,348,000.

2) A comparison of actual investment to budgeted spending on capital projects for REP in CY 2016. Appendix 2, line 7, column (d) shows that the total capital investment recorded on Granite State's books in CY 2016 was $849,390[1]. This actual investment is $700,610 less than the budgeted amount of $1,550,000.

3) The total spending for CY 2016 was $1,633,896, of which, $350,000 is being credited to customers for FairPoint's share of the tree trimming costs, for a net

1 This investment includes $97,621 associated with CY 2015 capital projects that was not booked until 2016 and is being included in the 2017 REP-VMP rate adjustment.

amount of $1,283,896. The base amount currently in rates is $1,360,000. The total carryover from CY 2015 was $92,335 as discussed in Section 1 of this report. Included in those costs are only VMP O&M costs, as the Company does not have O&M related to capital expenditure costs.

4) A request to recover $120,019 of the revenue requirement associated with a total of $849,390 in capital investment, broken down between two program years CY 2015 and CY 2016. The total carryover from CY 2015 was $97,621 as discussed in Section 2 of this report, and the total capital investment for 2016 was $751,769; and

5) A summary of reliability performance for CY 2016; and distribution feeder reliability performance for those that are part of the REP/VMP Plan.

The Company is submitting the joint testimony of Christian Brouillard and Jeffrey Carney, which provides further information regarding the Company's actual O&M cost and capital investment made during CY 2016. In addition, the testimony of Heather Tebbetts addresses the Company's request for a net decrease in distribution rates associated with the REP/VMP Adjustment Provision and the REP Capital Investment Allowance described above, and includes a proposed rate design and typical bill impacts.

Section 1: CY 2016 O&M Budget vs. Actual O&M Expenses for VMP

The proposed operating and maintenance ("O&M") budgets for VMP activities for 2016 are shown in Appendix 1, line 14, column (a). For calendar year 2016, Liberty initially proposed to spend $1,948,000, which included $350,000 that Liberty would bill to

FairPoint for its share of the planned vegetation maintenance work. Commission Staff subsequently expressed its support for the budget. 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. The adjusted CY 2016 anticipated spend is $1,698,000 for O&M expenses related to VMP activities. The VMP O&M spending included $350,000 that Liberty would bill to FairPoint for its share of the planned vegetation maintenance work (Appendix 1, line 15). As shown on Appendix 1, line 15, column (a), those reimbursements were excluded from the total amount of VMP O&M expenses to be recovered, resulting in an adjusted total of VMP O&M expenses of $1,283,896 (Appendix 1, line 16, column (b)). The agreement the Company has with FairPoint allows for invoicing in July for work completed January through June, and invoicing for work completed July through December in January of the following year. The Company invoiced FairPoint and received $70,374 in July of CY 2016. The balance of $279,626 was invoiced in January of 2017, but has been included in the total of $350,000 (Appendix 1, line 15 column (b)) used in calculating the REP/VMP Adjustment Factor.

As shown in Appendix 1, line 16, column (b), the Company's actual total net spending level for CY 2016 was $1,283,896 for O&M activities related to the VMP. Budget variances related to the total CY 2016 VMP O&M spending are described below. In addition to Appendix 1, which shows total O&M expenses, Appendix 5 shows the actual

VMP O&M expenses by month, while Appendix 4 contains the work plan of completed VMP O&M activities by feeder.

With the exception of the Enfield 7L2 feeder described above, the Company completed all of the vegetation management work contained in its CY 2016 plan. The spending variances are the result of the following factors:

- The Company spent $91,575 more on work planning than anticipated. The work planning spend includes $38,933 of CY 2015 cost paid in CY 2016. Additional work planners were necessary to complete the CY 2016 work planning based on the original 216 mile work plan.
- The Trouble and Restoration budget is for unplanned work based on actual occurrence. Spend exceeded budget by $27,767 due to an increase in unplanned non-storm related trouble call volume. The actual cycle pruning spend includes $53,402 of the CY 2015 costs paid in CY 2016.
- The Company spent significantly less than anticipated for traffic control because the 7L2 feeder was deferred and the Town of Pelham relaxed its traffic control requirement to only roads with a double yellow line in the center.
- The Company spent significantly more on hazard tree removals because additional risk trees with a higher probability of failure resulting in a negative reliability impact were identified during the work planning process. The removals that were completed were the highest risk ranked trees with the highest potential to impact a large number of

customers. These removals are generally larger mature trees which are more costly to remove.

- The Company spent more than anticipated on clearing right-of-way floor. The budget was based on an estimate from the contractor which was insufficient to complete the planned work.

Section 2: CY 2016 Capital Budget vs. Actual Capital Investment for REP

The proposed Capital Investment budget for REP activities for 2016 is shown in Appendix 2, line 6, column (b). For the calendar year 2016, Liberty proposed to spend $1,550,000 on capital investments related to REP activities. The CY 2016 REP capital investment budget included $100,000 from previous CY 2015 carryover (Appendix 2, line 5, column (b)). As discussed with Commission Staff, the Company budgeted this amount to install three single phase reclosers, twelve units of trip savers, and replace two miles of bare primary conductors. Details of the REP Capital Investment projects and costs are included in Appendix 3. Consistent with Section III.b. of the Settlement Agreement, Liberty submitted this alternative budget for Staff's consideration as it exceeded the $1,000,000 target of REP capital investment by $550,000. Commission Staff subsequently expressed its support for the budget.

Single phase reclosers and "Trip Saver" cutouts target circuit segments that would realize reliability benefits from single phase tripping and reclosing and from isolating faults down to the smallest single phase segment possible. These devices are designed to interrupt circuit segments following a transient or temporary fault condition, and then automatically

restore the segment after a short period to allow the fault to clear. These devices not only improve reliability of service, but also avoid the cost of dispatching a trouble shooter or line crew to replace the fuse.

A significant portion of this budget was targeted towards the re-conductoring of two miles of bare mainline primary conductor with spacer cable in tree outage prone areas where it is too costly to rely on vegetation management practices alone to mitigate feeder lockouts. The application of spacer cable, a covered conductor resistant to tree related outages, significantly improves mainline circuit performance during windy and stormy conditions as well as affording protection against incidental tree-conductor contact at the end of the trim cycle and contact resulting from branches falling from above the trim zone.

In Appendix 2, the Company provides the carryover capital investment from 2015 and the actual capital investment for 2016. The Company's actual total carryover from CY 2015 was $97,621 (Appendix 2, line 5, column (d)) for Capital activities related to the REP, or $2,379 less than the filed budgeted amount of $100,000. A key factor contributing to this carryover from CY 2015 are timing differences due to budgeted amounts from CY 2015 being placed into service in CY 2016 which can typically occur as capital work is performed, completed, invoiced to vendors, and processed through the accounting system. The Company has taken a number of steps to improve the timing of the accounting treatment of these jobs, including establishing and using an account 106 as well as holding monthly meetings between Accounting and Operations personnel a to review the status of pending capital projects.

As shown on line 4, column c of Appendix 2, the Company's total spending for CY 2016 was $751,769 for capital activities related to REP, or $698,231 less than the filed budgeted amount of $1,450,000.

Additional details of the variance in each of the CY 2016 REP projects are provided below:

Single Phase and "Trip Saver" Reclosing Applications: As shown in Appendix 2, lines 2-3, column (c), CY 2016 capital expenditures incurred for Single Phase and "Trip Saver" Reclosing applications amounted to $189,970 or $51,030 less than the proposed budget of $250,000. The variance in this program was mainly due to trip saver and recloser material costs not being charged to the project in calendar year 2016.

Trip Saver projects shown in Appendix 3, lines 17-21 and 23 did not have a trip saver unit charged in 2016. This results in approximately $23,712 of trip saver material cost that was not charged in 2016 and that is expected to carry over into 2017.

Recloser project shown in Appendix 3, line 14 did not have recloser unit charged in 2016. This results in approximately $21,585 of recloser material cost that was not charged in 2016 and that is expected to carry over into 2017.

Total material costs for trip saver and recloser installations combined that were not charged in 2016 add to $45,297. The remaining underspend for this program can be attributed to a reduction in overhead and labor charges as compared to budget.

Bare Conductor Replacement: As shown in Appendix 2, line 1, column (c), CY 2016 capital expenditures incurred for Bare Conductor Replacement amounted to $552,799 or $647,201 less than the proposed budget of $1,200,000. The variance in the Bare Conductor Replacement Program was driven primarily by bid prices being much lower than expected which resulted in a lower than forecasted investment. In addition, estimates for the replacement of bare conductor were not adjusted until recently after Liberty gathered four years' worth of financial data. Between 2013 and 2015, the cost for bare wire replacement under the REP program ranged between $632,000 and $313,000 per mile. In 2016, a more conservative estimate of $600,000 per mile was used. This resulted in underspending since the actual cost to replace bare conductors in 2016 resulted in approximately $320,000 per mile. The REP Plan for 2017 was adjusted to reflect lower bid prices and lower estimates.

Section 3: Reliability Results – Calendar Year 2016

Consistent with Section VII.b of the Settlement Agreement, reliability metrics for CY 2016 are presented in the table below based on both the PUC Standard[2] for excluding major weather events and the IEEE Standard 1366[3] method for excluding major event days. The metrics presented on the next page also exclude transmission supply outages, planned or notified outages, and all other applicable exclusions[4]. The metrics include customers interrupted ("CI"), customer minutes interrupted ("CMI"), system average interruption

[2] PUC Major Storm: [(CI >= 15 % of Customers Served and 30 concurrent events) or (45 concurrent events)], Using PUC criteria, three days were excluded in Calendar Year 2015: July 23-25, 2016.
[3] IEEE Major Event Days: Using IEEE criteria, one day was excluded in Calendar Year 2016: July 23 2016.
[4] Events that are excluded are those involving loss of supply from another utility, customer-owned facilities, fire or police emergency requests, load shedding, planned maintenance, events whose duration was 5 minutes or less and/or events which involving only one customer.

frequency index (“SAIFI”), system average interruption duration index (“SAIDI”), customer average interruption duration index (CAIDI), and customers interrupted per interruption index (CIII).

Calendar Year 2016 Reliability Results

No Exclusions

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	705	75,367	7,030,235	43,400	1.7400	162.060	93.28	106.90

Excludes Only IEEE Major Events

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	675	72,163	6,025,889	43,400	1.6700	138.870	83.50	106.91

Excludes Only PUC Major Events

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	655	71,921	5,911,268	43,400	1.6600	136.220	82.19	109.80

Excludes Only Loss of Supply by Other Utility or Transmission Outage

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	693	62,807	6,475,660	43,400	1.4500	149.310	103.10	90.63

Excludes Only Planned Maintenance

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	638	74,675	6,947,487	43,400	1.7200	160.150	93.04	117.05

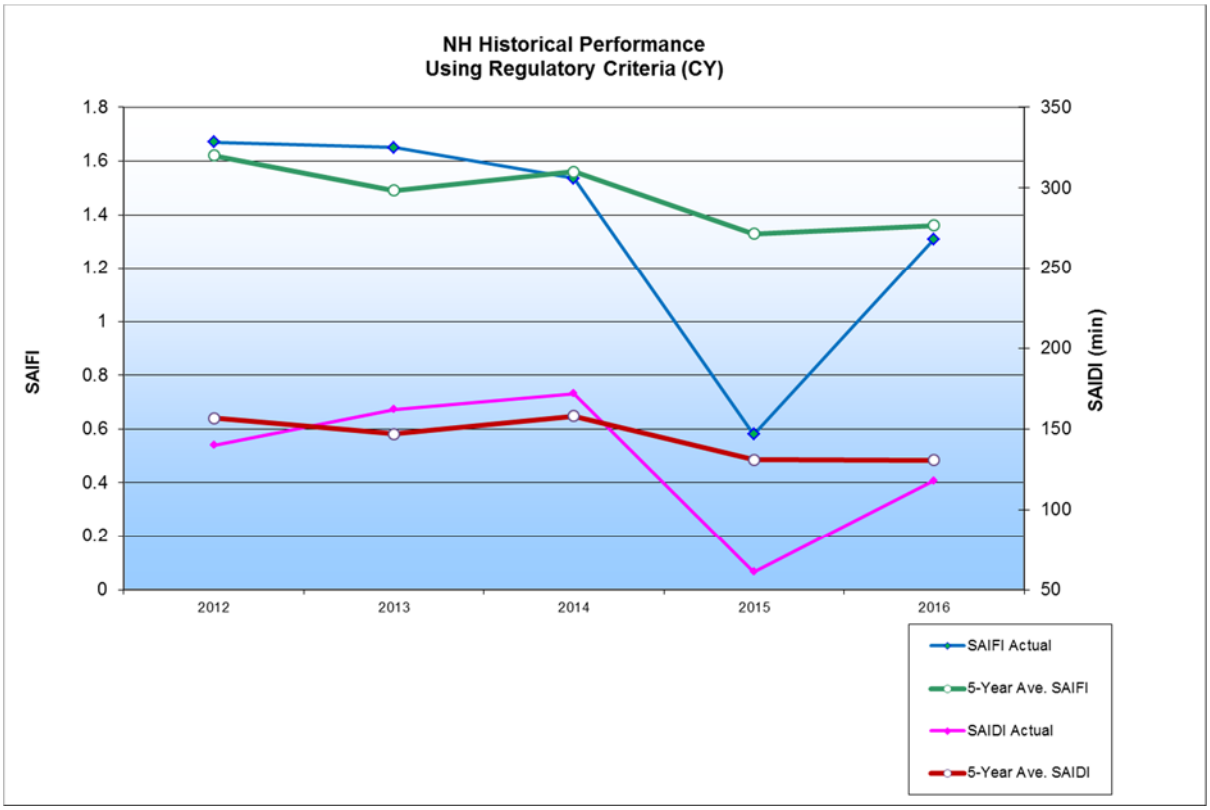
All Exclusions: IEEE Major Events, loss of supply, transmission, planned maintenance, Load Shedding, Single Customer Outages, Fire/Police Request

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	450	57,026	5,239,436	43,400	1.3200	120.7900	91.88	126.72

All Exclusions: PUC MEDs, loss of supply, transmission, planned maintenance, Load Shedding, Single Customer Outages, Fire/Police Request

Year	Events	Customers Interrupted	Customer Minutes Interrupted	Customers Served	SAIFI	SAIDI	CAIDI	CIII
2016	430	56,784	5,124,815	43,400	1.3100	118.140	90.25	132.06

Calendar Year Historical Reliability Performance



As shown on the Calendar Year Historical Reliability Performance graph above, the SAIFI performance of 1.31 and the SAIDI performance of 118.14 for CY 2016 continue on an improving, downward trend, with the 2016 performance slightly better than that of 2012, 2013 and 2014. Calendar year 2015 was an exceptionally favorable year and the Company would not expect to consistently achieve that level of performance. For 2016, there were recurring events, greater than five minutes in duration that impacted our SAIDI and SAIFI performance. A total of seven feeder outages were due to issues with automatic transfer schemes at substations. These made up 13% of our SAIDI and 20% of our SAIFI performance indices. The top three events for CY 2016 made up 14% of our SAIDI and

8% of performance indices. The top two events were due to pole hits from motor vehicle accidents. Mitigation measures, both inside and outside of the REP, were implemented in 2016 to improve our reliability performance, specifically addressing issues to automatic transfer schemes at substations and reconfiguring areas of feeder 13L2 to limit risk of a feeder lockout. Every automatic transfer scheme was tested, and where necessary, maintained, to ensure proper operation. Other reliability improvement measures included addressing pockets of poor performance and underperforming feeders.

In summary, the Company met its SAIFI and SAIDI targets of 1.33 and 131.02 minutes respectively, which are based on a five-year rolling average and are shown on Appendix 7. Some level of variability is to be expected in the year to year metrics, typically rooted in weather pattern changes. We expect this overall positive performance in SAIFI and SAIDI to continue at more historical levels, as we experience further positive impact from our reliability initiatives.

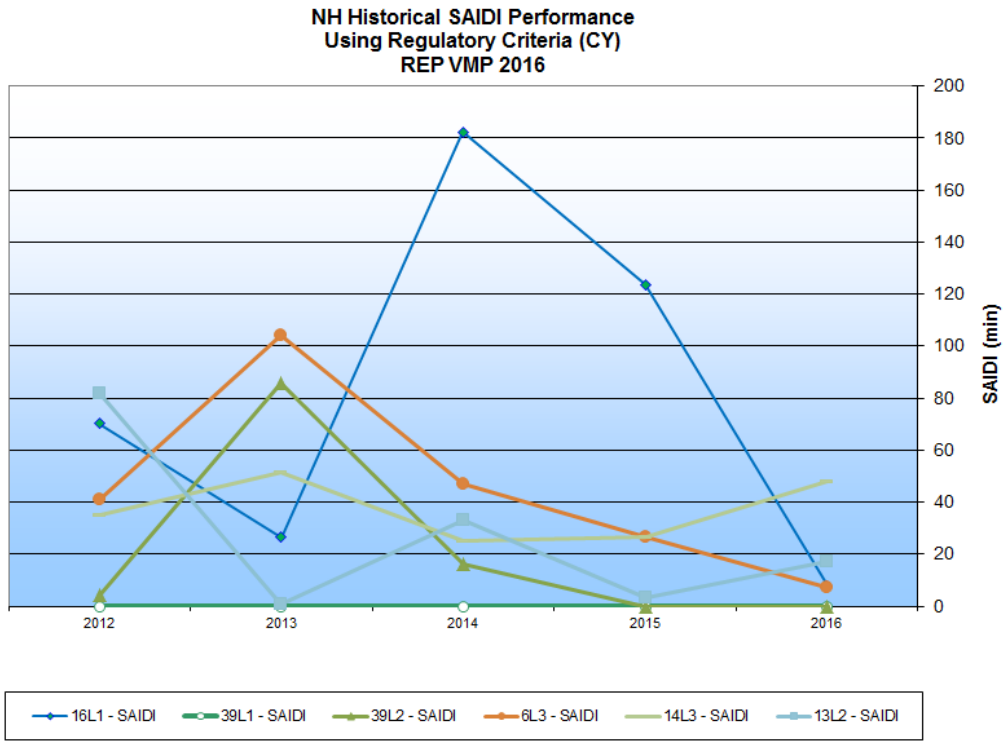
Below is a summary of historical reliability performance for distribution feeders that are part of the 2016 REP/VMP Plan:

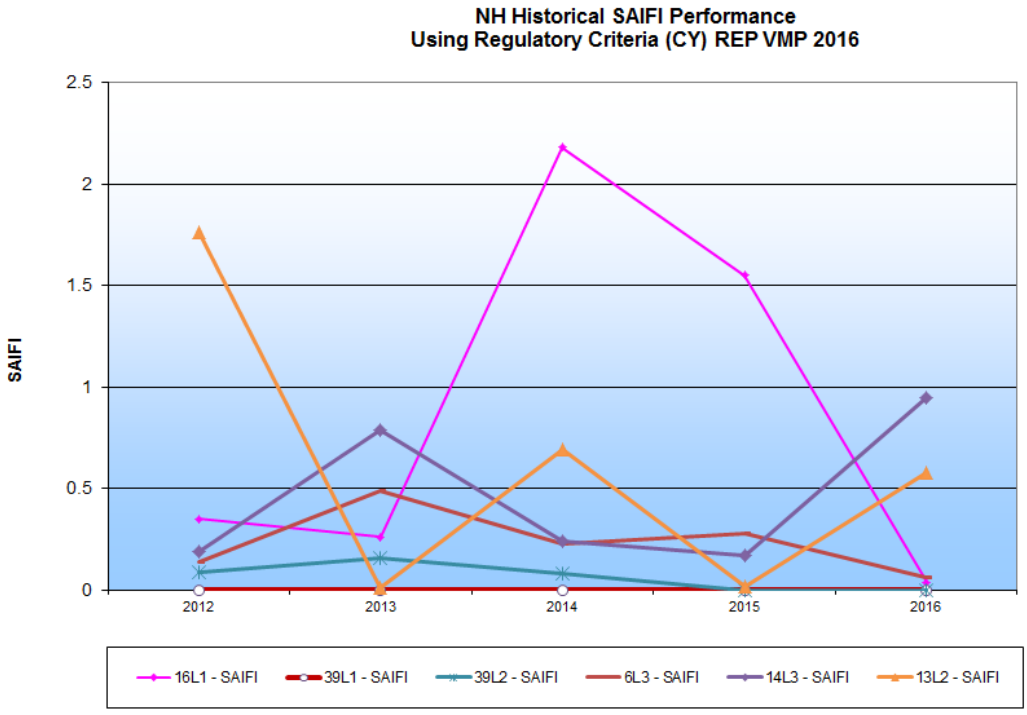
Calendar Year Historical Reliability Performance – REP/VMP Program 2016

REP VMP Program	Year	SAIDI	SAIFI
41-16L1	2012	70.26	0.35
	2013	26.38	0.26
	2014	182.41	2.18
	2015	123.75	1.55
	2016	7.84	0.04
41-39L1	2012	0.00	0.00
	2013	0.00	0.00
	2014	0.00	0.00
	2015	0.00	0.00
	2016	0.00	0.00
41-39L2	2012	4.19	0.09
	2013	86.00	0.16
	2014	16.31	0.08
	2015	0.00	0.00
	2016	0.00	0.00
41-6L3	2012	41.14	0.14
	2013	104.02	0.49
	2014	46.95	0.23
	2015	26.83	0.28
	2016	6.99	0.06
42-13L2	2012	82.03	1.76
	2013	0.71	0.01
	2014	33.10	0.69
	2015	3.31	0.02
	2016	17.15	0.58
42-14L3	2012	34.94	0.19
	2013	51.71	0.79
	2014	25.17	0.24
	2015	26.44	0.17
	2016	47.84	0.95
Grand Total		1,065.47	11.28

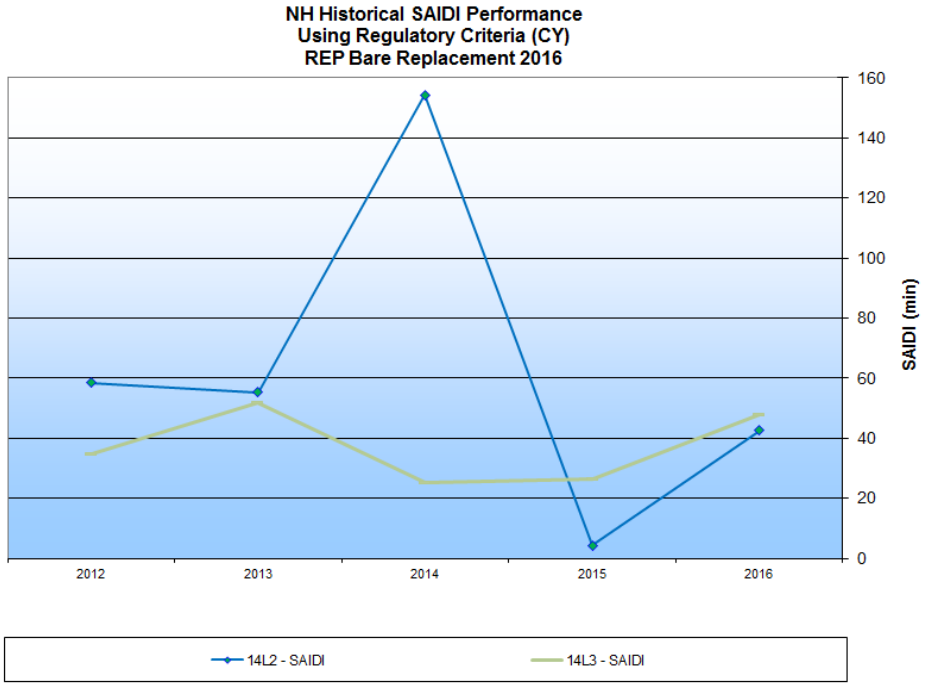
REP Bare Replacement	Year	SAIDI	SAIFI
42-14L2	2012	58.56	1.03
	2013	55.29	0.69
	2014	154.38	1.92
	2015	4.33	0.03
	2016	42.57	0.27
42-14L3	2012	34.94	0.19
	2013	51.71	0.79
	2014	25.17	0.24
	2015	26.44	0.17
	2016	47.84	0.95
Grand Total		501.24	6.28

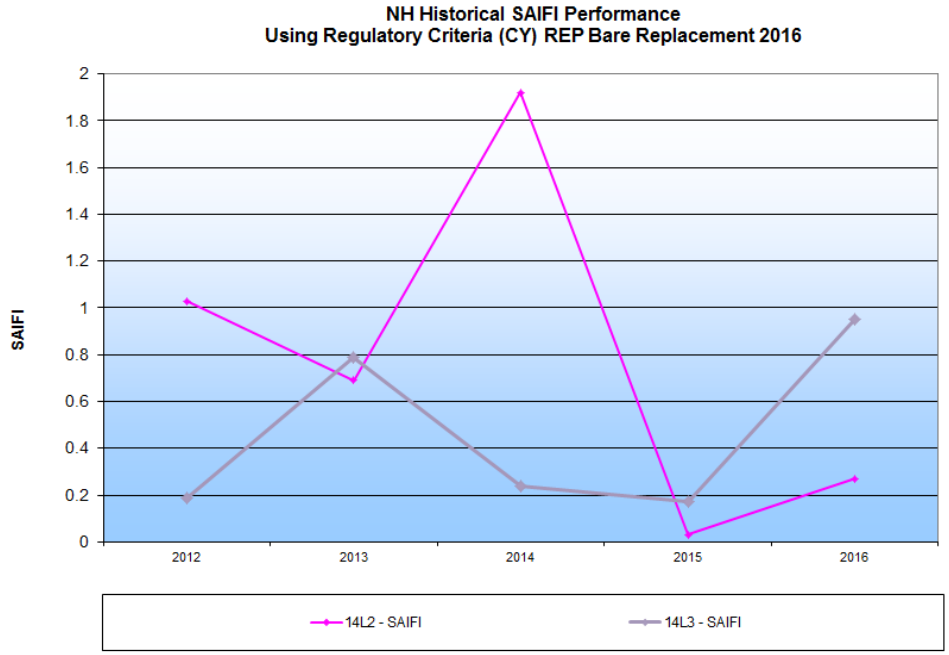
Calendar Year Historical Reliability Performance – VMP Program 2016





Calendar Year Historical Reliability Performance – Bare Replacement Program 2016





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