

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

LIBERTY UTILITIES (GRANITE STATE ELECTRIC) CORP.

d/b/a

LIBERTY UTILITIES

NHSAVES EE PROGRAMS - 2018 YEAR-END REPORT

NHPUC Docket No. DE 17-136

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TABLE OF CONTENTS

Summary of 2018 Program Activity.....	2
Table 1a - Program Cost Effectiveness - 2018 Plan.....	3
Table 1b - Program Cost Effectiveness - 2018 Actual	3
Table 1c - Percent of Plan Program Cost Effectiveness Targets Achieved	3
Table 2a - Present Value Benefits - 2018 Plan.....	4
Table 2b - Present Value Benefits - 2018 Actual.....	4
Table 2c - Percent of Plan Present Value Benefits Achieved.....	4
Table 3a- Performance Incentive Calculation – 2018 Planned versus Actual.....	5
Table 3b - Achieved Benefit / Cost Ratio by Sector - 2018 Planned versus Actual.....	6
Table 3c - Actual Lifetime Energy Savings by Sector & Program 2018 Planned versus Actual.....	7
Table 4 - Program Expenditures by Category – 2018 Actual.....	8
Table 5 - Granite State Electric Company Energy Efficiency Revenue/Expense Balance.....	9
Table 6 - RGGI RFP – Retail & Large Business Energy Reduction Partners Program Performance Incentive Calculation – 2018.....	10
Table 7a - Lost Base Revenue – 2018 Forecast.....	11
Table 7b - Lost Base Revenue – 2018 Actual.....	12
Table 8 - Calculation of Average Distribution Rates.....	13

SUMMARY OF 2018 PROGRAM ACTIVITY

This report presents the results of Liberty Utilities (Granite State Electric) Corp.'s d/b/a Liberty Utilities ("Liberty Utilities" or "Company") residential and commercial & industrial energy efficiency programs for calendar year 2018.

Table 1a, Table 1b and Table 1c show the 2018 year-end performance for the commercial & industrial and residential programs and the annual goals and spending targets. Overall, the Company achieved 103% and 103% of its goals for annual and lifetime energy savings respectively. The Company achieved 120% and 89% of its goals for winter and summer demand savings. The Company achieved 108% of its planned participation while spending 82% of its planned budget in 2018. In addition, 84% of the annual, and 75% of the lifetime, total energy savings generated were for electricity.

Table 2a, Table 2b and Table 2c document the value created by the 2018 energy efficiency programs. Overall, efforts in 2018 created over \$10.0 million of value through achieved energy, demand and other resource savings.

Table 3a documents the Company's earned 2018 year-end performance incentive of \$161,008. As specified by the Commission, the performance incentive for 2018 has been documented using assumptions that are consistent with assumptions used to develop program-year goals. Table 3a summarizes the performance incentive calculation by component (commercial & industrial and residential). As specified by the Commission, results for all programs have been included in the performance incentive calculation.

Table 3b provides the actual Total Resource Cost (TRC) benefit/cost ratio for each program, by sector (commercial & industrial and residential), and for the entire portfolio of energy efficiency programs implemented in 2018. The overall benefit/cost ratio for energy efficiency efforts in 2018 for residential was 2.11 and for commercial & industrial was 2.37.

Table 3c documents the Company's savings by sector and program. Overall, the Company achieved 91,008 megawatt hours of lifetime energy savings.

Table 4 documents the Company's expenses by Program. Overall, the Company had a total of \$2,557,092 of expenses in 2018, including \$37,642 in ISO-NE FCM expenses.

Table 5 provides the 2018 year-end energy efficiency fund balance. The table reflects revenues collected in support of energy efficiency efforts, 2018 spending levels, and the 2018 incentive. Table 5 summarizes the 2018 year-end energy efficiency fund balances for both the residential and commercial & industrial sectors.

Table 6 documents the Company's earned 2018 year-end RGGI RFP – Retail & Large Business Energy Reduction Partners Program performance incentive of \$3,874.

Table 7a documents the Company's forecasted annualized kWh savings by month and the total lost base revenue calculation.

Table 7b documents the actual annualized kWh savings by month and the associated lost base revenue calculation. There was a total program actual annualized savings by month of 7,545,277 kWh and a total lost base revenue of \$288,654 for 2018.

Table 8 details the calculation of average distribution rates, excluding customer, meter and luminaire charges calculation.

Table 1a. Program Cost-Effectiveness - 2018 PLAN

	Total Resource Benefit/Cost Ratio	Present Value				Performance Incentive (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)									
Residential Programs													
ENERGY STAR Homes	1.96	\$ 410	\$ 162	\$ 47		68	1,505	6	15	47	533	12,621	
Home Performance with ENERGY STAR	2.01	\$ 690	\$ 210	\$ 132		44	729	5	8	42	1,530	32,009	
ENERGY STAR Products ¹	1.70	\$ 512	\$ 228	\$ 72		688	4,547	182	83	7,579	127	1,833	
Home Energy Assistance	1.44	\$ 771	\$ 537	\$ -		74	1,082	8	12	48	1,513	33,195	
Home Energy Reports	1.01	\$ 148	\$ 147	\$ -		760	2,000	87	63	12,000	-	-	
ISO NE FCM - Residential	0.00	\$ -	\$ 20	\$ -		-	-	-	-	-	-	-	
Subtotal Residential	1.63	\$ 2,531	\$ 1,304	\$ 252	\$ 72	1,634	9,863	287	181	19,717	3,704	79,658	
Commercial & Industrial Programs													
Large Business	2.38	\$ 4,210	\$ 913	\$ 853		3,363	46,386	306	367	28	-	-	
Small Business	1.73	\$ 2,615	\$ 696	\$ 816		2,059	27,945	185	247	74	-	-	
C&I Education	0.00	\$ -	\$ 33	\$ -		-	-	-	-	-	-	-	
Municipal	1.72	\$ 438	\$ 168	\$ 87		304	4,380	30	39	29	40	989	
ISO NE FCM - C&I	0.00	\$ -	\$ 46	\$ -		-	-	-	-	-	-	-	
Subtotal Commercial & Industrial	2.01	\$ 7,264	\$ 1,855	\$ 1,756	\$ 102	5,726	78,710	521	653	132	40	989	
Total	1.90	\$ 9,795	\$ 3,159	\$ 2,008	\$ 174	7,359	88,573	809	834	19,848	3,744	80,647	

Note 1: Plan includes 7,579 customers purchasing a total of 27,807 ENERGY STAR lighting products (estimated at 4/customer) and 627 ENERGY STAR appliances.

Annual kWh Savings	7,359,496	87% kWh > 55%	Lifetime kWh Savings	88,572,551	79% kWh > 55%
Annual MMBTU Savings (in kWh)	1,097,179	13%	Lifetime MMBTU Savings (in kWh)	23,636,244	21%
	8,456,675	100%		112,208,795	100%

Table 1b. Program Cost-Effectiveness - 2018 ACTUAL

	Total Resource Benefit/Cost Ratio	Present Value				Performance Incentive (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)									
Residential Programs													
ENERGY STAR Homes	5.81	\$ 944	\$ 142	\$ 21		63	1,235	6	12	29	2,084	43,473	
Home Performance with ENERGY STAR	2.31	\$ 812	\$ 198	\$ 153		57	1,145	6	14	46	1,710	36,692	
ENERGY STAR Products	1.75	\$ 594	\$ 243	\$ 96		782	5,128	207	105	9,098	110	1,557	
Home Energy Assistance	1.44	\$ 461	\$ 320	\$ -		83	1,022	9	12	124	999	18,665	
Home Energy Reports	1.17	\$ 193	\$ 165	\$ -		1,002	2,605	114	83	12,000	-	-	
ISO-NE FCM	0.00	\$ -	\$ 16	\$ -		-	-	-	-	-	-	-	
	2.22												
Subtotal Residential	2.11	\$ 3,003	\$ 1,084	\$ 270	\$ 71	1,987	11,135	341	227	21,297	4,903	100,387	
Commercial & Industrial Programs													
Large Business	2.73	\$ 3,802	\$ 740	\$ 652		2,945	44,148	260	253	40	-	-	
Small Business	2.23	\$ 2,593	\$ 552	\$ 611		2,126,374	28,900	282	220	70	-	-	
C&I Education	0.00	\$ -	\$ 12	\$ -		-	-	-	-	-	-	-	
Municipal	2.22	\$ 617	\$ 168	\$ 110		486	6,826	86	39	21	95	2,363	
ISO-NE FCM	0.00	\$ -	\$ 21	\$ -		-	-	-	-	-	-	-	
	2.45												
Subtotal Commercial & Industrial	2.37	\$ 7,013	\$ 1,493	\$ 1,373	\$ 90	5,558	79,874	627	512	131	95	2,363	
Total	2.29	\$ 10,016	\$ 2,577	\$ 1,643	\$ 161	7,545	91,008	969	739	21,428	4,997	102,749	

Annual kWh Savings	7,545,278	84% kWh > 55%	Lifetime kWh Savings	91,008,499	75% kWh > 55%
Annual MMBTU Savings (in kWh)	1,464,541	16%	Lifetime MMBTU Savings (in kWh)	30,114,023	25%
Total Energy Savings	9,009,819	100%	Total Energy Savings	121,122,523	100%

Table 1c. Percent of Plan Program Cost-Effectiveness Targets Achieved

	Total Resource Benefit/Cost Ratio	Present Value				Performance Incentive (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)									
Residential Programs	130%	119%	83%	107%	99%	122%	113%	119%	125%	108%	132%	126%	
Commercial & Industrial Programs	118%	97%	81%	78%	88%	97%	101%	120%	78%	100%	239%	239%	
Total	121%	102%	82%	82%	93%	103%	103%	120%	89%	108%	133%	127%	

Table 2a. Present Value Benefits - 2018 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Electric DRIPE	Gas Benefits	Gas DRIPE	Other Fuels Benefits	Water Benefits	Other Non-Resource Benefits
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak						
Residential Programs															
ENERGY STAR Homes	\$410	\$42	\$0	\$5	\$22	\$28	\$36	\$13	\$15	\$1	\$0	\$0	\$210	\$2	\$37
Home Performance w/Energy Star	\$690	\$18	\$0	\$2	\$10	\$14	\$17	\$6	\$7	\$0	\$0	\$0	\$552	\$0	\$63
ENERGY STAR Products	\$512	\$54	\$0	\$11	\$43	\$112	\$73	\$50	\$30	\$4	\$4	\$0	\$23	\$67	\$40
Home Energy Assistance	\$771	\$25	\$0	\$3	\$14	\$21	\$24	\$9	\$10	\$0	\$0	\$0	\$592	\$0	\$70
Home Energy Reports	\$148	\$10	\$0	\$3	\$13	\$44	\$35	\$15	\$12	\$3	\$0	\$0	\$0	\$0	\$13
Subtotal Residential	\$2,531	\$150	\$0	\$25	\$103	\$219	\$185	\$93	\$74	\$8	\$4	\$0	\$1,377	\$68	\$224
Commercial & Industrial Programs															
Large Business	\$4,210	\$541	\$0	\$85	\$345	\$1,107	\$886	\$484	\$357	\$22	\$0	\$0	\$0	\$0	\$383
Small Business	\$2,615	\$366	\$0	\$58	\$233	\$676	\$494	\$320	\$216	\$14	\$0	\$0	\$0	\$0	\$238
C&I Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Municipal	\$438	\$62	\$0	\$9	\$38	\$111	\$77	\$50	\$32	\$2	\$0	\$0	\$17	\$0	\$40
Subtotal Commercial & Industrial	\$7,264	\$968	\$0	\$152	\$617	\$1,894	\$1,457	\$854	\$605	\$38	\$0	\$0	\$17	\$0	\$660
Total	\$9,795	\$1,119	\$0	\$178	\$720	\$2,113	\$1,642	\$947	\$678	\$46	\$4	\$0	\$1,394	\$68	\$884

Table 2b. Present Value Benefits - 2018 ACTUAL

	Total Benefits (\$000)	CAPACITY				ENERGY				Electric DRIPE	Gas Benefits	Gas DRIPE	Other Fuels Benefits	Water Benefits	Other Non-Resource Benefits
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak						
Residential Programs															
ENERGY STAR Homes	\$944	\$34	\$0	\$4	\$18	\$23	\$29	\$11	\$12	\$0	\$0	\$0	\$724	\$3	\$86
Home Performance w/Energy Star	\$812	\$33	\$0	\$4	\$18	\$21	\$27	\$10	\$11	\$0	\$0	\$0	\$614	\$0	\$74
ENERGY STAR Products	\$594	\$75	\$0	\$14	\$58	\$123	\$73	\$63	\$39	\$4	\$4	\$0	\$19	\$75	\$47
Home Energy Assistance	\$461	\$22	\$0	\$3	\$13	\$21	\$22	\$9	\$9	\$1	\$7	\$0	\$311	\$0	\$42
Home Energy Reports	\$193	\$13	\$0	\$4	\$17	\$57	\$45	\$19	\$15	\$4	\$0	\$0	\$0	\$0	\$18
Subtotal Residential	\$3,003	\$176	\$0	\$30	\$124	\$244	\$197	\$112	\$86	\$10	\$11	\$0	\$1,668	\$79	\$266
Commercial & Industrial Programs															
Large Business	\$3,802	\$414	\$0	\$63	\$254	\$1,065	\$789	\$506	\$346	\$20	\$0	\$0	\$0	\$0	\$346
Small Business	\$2,593	\$323	\$0	\$51	\$206	\$687	\$550	\$299	\$227	\$14	\$0	\$0	\$0	\$0	\$236
C&I Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Municipal	\$617	\$57	\$0	\$9	\$36	\$158	\$146	\$58	\$54	\$3	\$0	\$0	\$39	\$0	\$56
Subtotal Commercial & Industrial	\$7,013	\$794	\$0	\$123	\$497	\$1,909	\$1,486	\$863	\$626	\$37	\$0	\$0	\$39	\$0	\$638
Total	\$10,016	\$971	\$0	\$153	\$621	\$2,153	\$1,683	\$975	\$713	\$47	\$11	\$0	\$1,707	\$79	\$903

Table 2c. Percent of Plan Present Value Benefits Achieved

	Total Benefits (\$000)	CAPACITY				ENERGY				Electric DRIPE	Gas Benefits	Gas DRIPE	Other Fuels Benefits	Water Benefits	Other Non-Resource Benefits
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak						
Residential Programs	119%	117%	0%	120%	120%	111%	107%	120%	117%	119%	261%	245%	121%	115%	119%
Commercial & Industrial Programs	97%	82%	0%	81%	81%	101%	102%	101%	104%	98%	0%	0%	229%	0%	97%
Total	102%	87%	0%	86%	86%	102%	102%	103%	105%	102%	261%	245%	122%	115%	102%

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NHSaves Energy Efficiency Programs 2018 Year End Report
NHPUC Docket No. DE 17-136

Table 3a. Performance Incentive Calculation - 2018

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial Incentive		
1. Benefit/Cost Ratio	2.01	2.37
2. Threshold Benefit / Cost Ratio ¹	1.00	1.00
3. Lifetime kWh Savings	78,710,032	79,873,556
4. Threshold Lifetime kWh Savings (65%) ²	51,161,521	51,161,521
5. Budget	\$ 1,854,712	\$ 1,493,348
6. Benefit / Cost Percentage of Budget	2.75%	
7. Lifetime kWh Percentage of Budget	2.75%	
8. Commercial & Industrial Incentive	\$ 102,009	\$ 90,106
9. Cap (10%)	\$ 127,511	\$ 127,511
Residential Incentive		
10. Benefit / Cost Ratio	1.63	2.11
11. Threshold Benefit / Cost Ratio ¹	1.00	1.00
12. Lifetime kWh Savings	9,862,520	11,134,944
13. Threshold Lifetime kWh Savings (65%) ²	6,410,638	6,410,638
14. Budget	\$ 1,304,218	\$ 1,083,744
15. Benefit / Cost Percentage of Budget	2.75%	
16. Lifetime kWh Percentage of Budget	2.75%	
17. Residential Incentive	\$ 71,732	\$ 70,902
18. Cap (10%)	\$ 89,665	\$ 89,665
19. TOTAL INCENTIVE EARNED	\$ 173,741	\$ 161,008

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
NHSaves Energy Efficiency Programs 2018 Year End Report
NHPUC Docket No. DE 17-136

Table 3b. Planned Versus Actual Benefit / Cost Ratio by Sector - 2018

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 7,264	\$ 7,013
2. Implementation Expenses	\$ 1,855	\$ 1,493
3. Customer Contribution	\$ 1,756	\$ 1,373
4. Performance Incentive	\$ 102	\$ 90
5. Total Costs Including Performance Incentive	\$ 3,713	\$ 2,956
6. Benefit/Cost Ratio - Commercial & Industrial Sector	2.01	2.45
7. Benefit/Cost Ratio - Commercial & Industrial Sector including PI	2.01	2.37
Residential:		
8. Benefits (Value) From Eligible Programs	\$ 2,531	\$ 3,003
9. Implementation Expenses	\$ 1,304	\$ 1,084
10. Customer Contribution	\$ 252	\$ 270
11. Performance Incentive	\$ 72	\$ 71
12. Total Costs Including Performance Incentive	\$ 1,628	\$ 1,425
13. Benefit/Cost Ratio - Residential Sector	1.63	2.22
14. Benefit/Cost Ratio - Residential Sector including PI	1.63	2.11

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
NHSaves Energy Efficiency Programs 2018 Year End Report
NHPUC Docket No. DE 17-136

Table 3c. Actual Lifetime Energy Savings by Sector and Program - 2018

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business	46,385,506	44,147,541
Small Business	27,944,848	28,900,075
C&I Education	0	0
Municipal	4,379,678	6,825,940
Total Commercial & Industrial Included for Incentive Calculation	78,710,032	79,873,556
Residential:		
ENERGY STAR Homes	1,504,887	1,235,450
NH Home Performance with ENERGY STAR	728,513	1,144,503
ENERGY STAR Products	4,546,882	5,128,394
Home Energy Assistance	1,082,238	1,021,609
Home Energy Reports	2,000,000	2,604,987
Total Residential Included for Incentive Calculation	9,862,520	11,134,944
Total	88,572,551	91,008,499

Table 4. Program Expenditures by Category - 2018 ACTUAL

	Evaluation	External Administration	Internal Administration	Internal Implementation	Marketing	Rebates-Services	Total
Residential Programs							
ENERGY STAR Homes	\$ 5,430	\$ 74	\$ 7,695	\$ 15,455	\$ 3,378	\$ 109,937	\$ 141,968
Home Performance with ENERGY STAR	\$ 7,039	\$ 96	\$ 3,472	\$ 13,317	\$ 4,871	\$ 169,539	\$ 198,334
ENERGY STAR Products	\$ 26,375	\$ 104	\$ 3,535	\$ 14,024	\$ 11,299	\$ 187,570	\$ 242,908
Home Energy Assistance	\$ 17,970	\$ 244	\$ 12,559	\$ 14,310	\$ 11,646	\$ 262,918	\$ 319,646
Home Energy Reports	\$ 4,939	\$ 67	\$ 4,159	\$ 8,065	\$ 2,472	\$ 145,000	\$ 164,703
ISO-NE FCM	\$ 16,186	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16,186
Subtotal Residential	\$ 77,939	\$ 584	\$ 31,421	\$ 65,171	\$ 33,666	\$ 874,964	\$ 1,083,744
Commercial & Industrial Programs							
C&I Education	\$ 231	\$ 15	\$ 19	\$ 24	\$ 272	\$ 11,549	\$ 12,110
Large Business Energy Solutions	\$ 30,722	\$ 415	\$ 9,616	\$ 91,241	\$ 12,684	\$ 595,088	\$ 739,766
Small Business Energy Solutions	\$ 24,962	\$ 316	\$ 7,958	\$ 61,547	\$ 10,044	\$ 447,204	\$ 552,031
Municipal	\$ 6,079	\$ 76	\$ 1,378	\$ 18,651	\$ 2,331	\$ 139,469	\$ 167,985
ISO-NE FCM	\$ 21,456	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 21,456
Subtotal Commercial & Industrial	\$ 83,451	\$ 822	\$ 18,971	\$ 171,463	\$ 25,331	\$ 1,193,310	\$ 1,493,348
Total	\$ 161,389	\$ 1,405	\$ 50,392	\$ 236,634	\$ 58,998	\$ 2,068,274	\$ 2,577,092

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
NHSaves Energy Efficiency Programs 2018 Year End Report
 NHPUC Docket No. DE 17-136

Table 5. Revenue and Expense Balance
12 Months Actual 2018

			2018
1	Beginning Balance: 1/1/2018	(Over) / Under	\$163,024.45
Revenues			
2	System Benefits Charge		\$2,494,291.60
3	RGGI Funding		\$210,395.47
4	FCM Payments		\$669,230.29
5	Interest		\$44,240.74
			\$3,418,158.10
6	Total Revenues	Sum Lines 2 - 5	\$3,418,158.10
Expenses			
7	Program Expenses		\$2,577,092.02
8	Performance Incentive - 2018	Table 3a	\$161,007.63
			\$2,738,099.65
9	Total Expenses	Sum Lines 7 - 8	\$2,738,099.65
10	Ending Balance: 12/31/2018	Lines 1 + 6 - 9	\$843,082.90

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
NHSaves Energy Efficiency Programs 2018 Year End Report
NHPUC Docket No. DE 17-136

**Table 6. RGGI RFP – Retail & Large Business Energy Reduction Partners
Program Performance Incentive Calculation - 2018**

Total RGGI Grant Expenses 2018	\$51,660
Percentage for PI calculation	7.50%
TOTAL RGGI RFP INCENTIVE EARNED	\$3,874

Table 7a. Lost Base Revenue - 2018 Forecast
Estimated Monthly and Cumulative Savings (kWh) and Lost Base Revenue
January 1, 2018 to December 31, 2018

Line	Description	Carryforward :	Forecast	Cumulative Jan - Dec 2018 Annual Savings												
		12/31/2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018		
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O	
1	Residential Annualized Savings	1,162,032	85,593	85,593	85,593	142,655	142,655	142,655	142,655	142,655	142,655	199,717	199,717	199,717	1,711,862	
2	C&I Annualized Savings	3,966,456	288,995	288,995	288,995	481,659	481,659	481,659	481,659	481,659	481,659	674,322	674,322	674,322	5,779,907	
3	Total		374,588	374,588	374,588	624,314	624,314	624,314	624,314	624,314	624,314	874,040	874,040	874,040	7,491,769	
															110% capped annualized savings	8,240,946
																Cumulative 2017 - 2018 LBR Savings
4	Monthly Residential Savings		7,133	7,133	7,133	11,888	11,888	11,888	11,888	11,888	11,888	16,643	16,643	16,643		
5	Cumulative Residential Savings	96,836	103,969	111,102	118,234	130,122	142,010	153,898	165,786	177,674	189,562	206,205	222,848	239,491	1,960,901	
6	Average Residential Distribution Rate		0.04771	0.04771	0.04771	0.04771	0.04771	0.04771	0.04771	0.04771	0.04771	0.04771	0.04771	0.04771		
7	Lost Residential Revenue		\$ 4,961	\$ 5,301	\$ 5,641	\$ 6,209	\$ 6,776	\$ 7,343	\$ 7,910	\$ 8,477	\$ 9,045	\$ 9,839	\$ 10,633	\$ 11,427	\$ 93,561	
																Cumulative 2017 - 2018 LBR Savings
8	Monthly C&I Savings		24,083	24,083	24,083	40,138	40,138	40,138	40,138	40,138	40,138	56,194	56,194	56,194		
9	Cumulative C&I Savings	330,538	354,621	378,704	402,787	442,925	483,063	523,202	563,340	603,478	643,616	699,810	756,003	812,197	6,663,746	
10	Average C&I Distribution Rate		0.02807	0.02807	0.02807	0.02807	0.02807	0.02807	0.02807	0.02807	0.02807	0.02807	0.02807	0.02807		
11	Lost C&I Revenue		\$ 9,953	\$ 10,628	\$ 11,304	\$ 12,431	\$ 13,557	\$ 14,684	\$ 15,810	\$ 16,937	\$ 18,063	\$ 19,640	\$ 21,218	\$ 22,795	\$ 187,021	
12	Total Lost Revenue		\$ 14,913	\$ 15,930	\$ 16,946	\$ 18,639	\$ 20,333	\$ 22,027	\$ 23,721	\$ 25,414	\$ 27,108	\$ 29,479	\$ 31,850	\$ 34,222	\$ 280,582	

Line 1: Estimated Savings per 2017 Core Filing
 Line 2: Estimated Savings per 2017 Core Filing
 Line 3: Line 1 + Line 2
 Line 4: Line 1 / 12
 Line 5: Prior Month Line 5 + Current Month Line 4
 Line 6: GSE Avg Distribution Rates, Line 4, Col. D
 Line 7: Line 5 x Line 6
 Line 8: Line 2 / 12
 Line 9: Prior Month Line 9 + Current Month Line 8
 Line 10: GSE Avg Distribution Rates, Line 9, Col. D
 Line 11: Line 9 x Line 10
 Line 12: Line 7 + Line 11

Inputs

Savings Achieved by Quarter¹

	Q1	Q2	Q3	Q4
	10%	20%	20%	50%

(1) Liberty 2015 Savings by Quarter

Table 7b. Lost Base Revenue - 2018 Actual
Actual Monthly and Cumulative Savings (kWh) and Lost Base Revenue
January 1, 2018 to December 31, 2018

Line	Description	Carryforward as of	Actual	Cumulative Jan - Dec 2018												
		12/31/2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018		LBR Savings
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O	
1	Residential Annualized Savings	1,251,949	50,129	155,679	201,532	86,967	164,269	180,479	167,769	268,051	209,568	28,683	137,200	337,055	1,987,382	
2	C&I Annualized Savings	4,363,201	742,693	151,800	189,765	245,993	377,652	197,804	393,123	629,776	493,883	75,927	1,135,772	923,708	5,557,896	
3	Total	5,615,150	792,822	307,479	391,297	332,960	541,921	378,283	560,893	897,826	703,451	104,610	1,272,972	1,260,763	7,545,277	
															110% capped annualized savings	8,240,946
																Cumulative 2017 - 2018
4	Monthly Residential Savings	104,329	4,177	12,973	16,794	7,247	13,689	15,040	13,981	22,338	17,464	2,390	11,433	28,088		
5	Cumulative Residential Savings	104,329	108,506	121,480	138,274	145,521	159,210	174,250	188,231	210,569	228,033	230,423	241,856	269,944	2,216,297	
6	Average Residential Distribution Rate		0.04647	0.04647	0.04647	0.04647	0.04647	0.04647	0.04647	0.04647	0.04647	0.04647	0.04647	0.04647		
7	Lost Residential Revenue		\$ 5,042	\$ 5,645	\$ 6,426	\$ 6,762	\$ 7,399	\$ 8,097	\$ 8,747	\$ 9,785	\$ 10,597	\$ 10,708	\$ 11,239	\$ 12,544	\$ 102,991	
																Cumulative 2017 - 2018
8	Monthly C&I Savings	363,600	61,891	12,650	15,814	20,499	31,471	16,484	32,760	52,481	41,157	6,327	94,648	76,976		
9	Cumulative C&I Savings	363,600	425,491	438,141	453,955	474,454	505,925	522,409	555,169	607,651	648,807	655,135	749,782	826,758	6,863,678	
10	Average C&I Distribution Rate		0.02705	0.02705	0.02705	0.02705	0.02705	0.02705	0.02705	0.02705	0.02705	0.02705	0.02705	0.02705		
11	Lost C&I Revenue		\$ 11,510	\$ 11,852	\$ 12,279	\$ 12,834	\$ 13,685	\$ 14,131	\$ 15,017	\$ 16,437	\$ 17,550	\$ 17,721	\$ 20,282	\$ 22,364	\$ 185,663	
12	Total Lost Revenue		\$ 16,552	\$ 17,497	\$ 18,705	\$ 19,596	\$ 21,084	\$ 22,229	\$ 23,764	\$ 26,222	\$ 28,147	\$ 28,429	\$ 31,521	\$ 34,908	\$ 288,654	

Line 1: Actual Annualized Residential Savings
 Line 2: Actual Annualized Commercial Savings
 Line 3: Line 1 + Line 2
 Line 4: Line 1 / 12
 Line 5: Prior Month Line 5 + Current Month Line 4
 Line 6: GSE Avg Distribution Rates, Line 4, Col. D
 Line 7: Line 5 x Line 6
 Line 8: Line 2 / 12
 Line 9: Prior Month Line 9 + Current Month Line 8
 Line 10: GSE Avg Distribution Rates, Line 9, Col. D
 Line 11: Line 9 x Line 10
 Line 12: Line 7 + Line 11

**Table 8. Calculation of Average Distribution Rates Excluding Customer, Meter, and per Luminaire Charges
 Based on 2018 actual in DE 19-064**

Line	Rate Class Col. A	2018		Average \$/kWh Col. D
		Delivery kWh Col. B	Distribution Revenue Excluding Fixed Charges Col. C	
1	Residential Rate D	276,040,281	\$ 13,003,355	
2	Residential D-6	769,373	\$ 31,652	
3	Residential TOU Rate D-10 All kWh	5,629,249	\$ 209,852	
4	Residential Electric Heat Rate T	15,352,073	\$ 593,358	
5	Residential Subtotal (kWh only)	297,790,976	\$ 13,838,217	\$ 0.04647
6	General Service Rate G-1 All kWh	379,184,992	\$ 1,153,820	
7	General Service Rate G-1 Demand Charge (KW)	-	\$ 7,430,215	
8	General Service Rate G-1 Credit for High Voltage (KV)	-	\$ (148,826)	
9	General Service Rate G-2 All kWh	147,993,116	\$ 290,067	
10	General Service Rate G-2 Demand Charge (KW)	-	\$ 4,000,311	
11	General Service Rate G-2 Credit for High Voltage (KV)	-	\$ (819)	
12	General Service Rate G-3 All kWh	88,095,304	\$ 3,913,193	
13	Commercial Electric Heat Rate V All kWh	328,389	\$ 14,998	
14	Commercial and Industrial Subtotal (kWh only)	615,601,801	16,652,959	\$ 0.02705
15	Outdoor Lighting Rate M	-	\$ -	
16	Total Retail	913,392,777	\$ 30,491,176	\$ 0.03338

*Excludes customer charge and street light luminaire charges.