

DG 19-054  
Liberty Utilities (Energy/North Natural Gas) Corp.  
Fiscal Year 2019 Cast Iron/Bare Steel Replacement Program Including 5% Carrover Costs  
Computation of Revenue Requirement

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	
	Actual	July 1, 2009 through March 31, 2010 9 Months FY10	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	
	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	
<b>Incremental Investment</b>													
1	CIBS Program Actual Spend-Mains	1,736,153	4,049,995	3,391,069	1,570,208	2,174,813	2,781,140	3,006,856	3,304,532	5,204,619	8,858,559	8,865,300	-
2	CIBS Program Actual Spend-Service	729,463	798,555	668,631	352,005	161,352	370,655	776,086	705,984	1,209,322	1,389,222	1,147,142	-
3	CIBS Program Estimated Spend-Mains	-	-	-	-	-	-	-	-	-	-	-	16,302,661
4	CIBS Program Estimated Spend-Service	-	-	-	-	-	-	-	-	-	-	-	2,876,940
5	Base Spending Amount	500,000	482,110	500,000	500,000	500,000	500,000	506,240	514,244	520,965	527,275	533,119	533,119
6	Incremental Amount	1,965,616	4,366,440	3,559,700	1,422,213	1,836,165	2,651,795	3,276,702	3,496,272	5,892,976	9,720,506	9,479,323	18,646,482
7	Cumulative CIBS Program Spend Since July 1, 2009	-	4,366,440	7,926,140	9,348,353	11,184,518	13,836,312	17,113,015	20,609,287	26,502,263	36,222,769	45,702,091	64,348,573
<b>Deferred Tax Calculation</b>													
10	Annual Tax Depreciation	1,031,948	4,366,440	3,559,700	1,422,213	1,836,165	2,651,795	3,276,702	3,496,272	5,892,976	9,720,506	9,479,323	18,646,482
11	Cumulative Tax Depreciation Since July 1, 2009	-	4,366,440	7,926,140	9,348,353	11,184,518	13,836,312	17,113,015	20,609,287	26,502,263	36,222,769	45,702,091	64,348,573
13	Annual Book Depreciation	49,836	98,794	179,335	212,059	249,951	307,352	384,247	464,177	600,433	814,476	949,041	1,429,777
14	Cumulative Book Depreciation Since July 1, 2009	-	98,794	278,129	490,188	740,138	1,047,490	1,431,737	1,895,914	2,496,347	3,310,822	4,259,863	5,689,640
16	Annual Book/Tax Timer	982,112	4,267,646	3,380,365	1,210,154	1,586,214	2,344,443	2,892,456	3,032,095	5,292,543	8,906,031	8,530,282	17,216,705
17	Cumulative Book/Tax Timer	982,112	4,267,646	7,648,011	8,858,165	10,444,379	12,788,822	15,681,278	18,713,373	24,005,916	32,911,947	41,442,229	58,658,934
18	Statutory Tax Rate	40.53%	40.53%	40.53%	40.53%	40.53%	39.61%	39.61%	39.61%	39.61%	27.24%	27.08%	27.08%
20	Deferred Tax Reserve	398,001	1,729,677	3,099,739	3,590,214	4,233,107	5,161,741	6,211,354	7,412,367	9,508,743	11,934,746	11,275,215	13,627,498
<b>Rate Base Calculation</b>													
23	Plant In Service	1,965,616	4,366,440	7,926,140	9,348,353	11,184,518	13,836,312	17,113,015	20,609,287	26,502,263	36,222,769	45,702,091	64,348,573
24	Accumulated Depreciation	(49,836)	(98,794)	(278,129)	(490,188)	(740,138)	(1,047,490)	(1,431,737)	(1,895,914)	(2,496,347)	(3,310,822)	(4,259,863)	(5,689,640)
25	Net Plant in Service	1,915,780	4,267,646	7,648,011	8,858,166	10,444,379	12,788,822	15,681,278	18,713,373	24,005,916	32,911,946	41,442,228	58,658,934
26	Deferred Tax Reserve	(398,001)	(1,729,677)	(3,099,739)	(3,590,214)	(4,233,107)	(5,161,741)	(6,211,354)	(7,412,367)	(9,508,743)	(11,934,746)	(11,275,215)	(13,627,498)
27	Year End Rate Base	1,517,779	2,537,969	4,548,272	5,267,951	6,211,273	7,627,082	9,469,924	11,301,006	14,497,173	20,977,200	30,167,014	45,031,436
<b>Revenue Requirement Calculation</b>													
29	Year End Rate Base	1,517,779	2,537,969	4,548,272	5,267,951	6,211,273	7,627,082	9,469,924	11,301,006	14,497,173	20,977,200	30,167,014	45,031,436
31	Pre-Tax ROR	11.53%	11.53%	11.63%	11.63%	11.63%	11.50%	10.22%	9.87%	9.87%	8.51%	8.50%	8.50%
32	Return and Taxes	175,003	292,628	528,964	612,663	722,371	877,114	967,826	1,115,409	1,430,871	1,785,160	2,564,196	3,827,672
33	Book Depreciation	49,836	98,794	179,335	212,059	249,951	307,352	384,247	464,177	600,433	814,476	949,041	1,429,777
34	Property Taxes	37,347	88,340	194,259	231,198	241,265	359,366	503,369	490,290	727,379	921,535	1,036,056	1,466,473
35	Annual Revenue Requirement	262,185	479,762	902,558	1,055,920	1,213,587	1,543,832	1,855,442	2,069,876	2,758,683	3,521,171	4,549,293	6,723,922
37	Prior Year Annual Revenue Requirement	-	-	479,762	902,558	1,055,920	1,213,587	1,543,832	1,855,442	2,069,876	2,758,683	3,521,171	4,549,293
39	Low Income Revenue Correction From FY 2018	-	-	-	-	-	-	-	-	-	-	(7,290)	-
41	Incremental Annual Rate Adjustment Since July 1, 2009	262,185	479,762	422,796	153,362	157,667	330,245	311,610	214,434	688,807	762,488	1,020,832	2,174,629
<b>Actual Capital Structure/ROR</b>													
	Ratio	Rate	(current federal tax rate of 21% and state rate of 7.7%)										
50	Long Term Debt	49.85%	4.42%	Pre-Tax 2.200%									
52	Short Term Debt	0.95%	2.49%	0.02%									
53	Common Equity	49.20%	9.30%	6.280%									
55		100.00%	8.500%										

41(k) includes a low income revenue correction from FY 18 of (\$7,290) = (\$6,911 plus interest)

DG 19-054  
Liberty Utilities (Energy/North Natural Gas) Corp.  
Fiscal Year 2019 Cast Iron/Bare Steel Replacement Program Including 5% Carrover Costs  
Vintage Year Book Depreciation Schedule

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	
	Actual	July 1, 2009 thru March 31, 2010 9 Months	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Estimate	
	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	
<b>Book Depreciation Schedule-Mains</b>													
1	Actual CIBS spending	1,736,153	4,049,995	3,391,069	1,570,208	2,174,813	2,781,140	3,006,856	3,304,532	5,204,619	8,858,559	8,865,300	16,302,661
2	Base spending	(352,073)	(402,707)	(417,650)	(408,438)	(465,466)	(441,199)	(402,383)	(423,720)	(422,739)	(455,796)	(472,039)	(472,039)
3	Incremental CIBS spending	1,384,080	3,647,288	2,973,419	1,161,770	1,709,346	2,339,940	2,604,473	2,880,812	4,781,880	8,402,763	8,393,261	15,830,622
4													
5	Book Depreciation Rate:												
6	Year 1	2.54%	35,065	0	0	0	0	0	0	0	0	0	0
7	Year 1 beginning in FY10	1.92%		70,028	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333	303,948
8	Year 2	1.92%			70,028	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,151
9	Year 3	1.92%				70,028	57,090	22,306	32,819	44,927	50,006	55,312	161,333
10	Year 4	1.92%					70,028	57,090	22,306	32,819	44,927	50,006	91,812
11	Year 5	1.92%						70,028	57,090	22,306	32,819	44,927	55,312
12	Year 6	1.92%							70,028	57,090	22,306	32,819	50,006
13	Year 7	1.92%								70,028	57,090	22,306	44,927
14	Year 8	1.92%									70,028	57,090	32,819
15	Year 9	1.92%										70,028	22,306
16	Year 10	1.92%											57,090
17	Year 11	1.92%											70,028
18	Book Depreciation Expense-Mains	35,065	70,028	127,118	149,424	182,243	227,170	277,176	332,487	424,299	585,632	676,755	1,050,731
19													
20	Accumulated Depreciation Mains-Beginning of Year	-	-	70,028	197,146	346,570	528,813	755,982	1,033,158	1,365,646	1,789,945	2,375,577	3,052,333
21	Accumulated Depreciation Mains-End of Year	35,065	70,028	197,146	346,570	528,813	755,982	1,033,158	1,365,646	1,789,945	2,375,577	3,052,333	4,103,064
22													
23													
24	<b>Book Depreciation Schedule-Services</b>												
25													
26	Actual CIBS spending	729,463	798,555	668,631	352,005	161,352	370,655	776,086	705,984	1,209,322	1,389,222	1,147,142	2,876,940
27	Base spending	(147,927)	(79,403)	(82,350)	(91,562)	(34,534)	(58,801)	(103,857)	(90,524)	(98,226)	(71,479)	(61,080)	(61,080)
28	Incremental CIBS spending	581,536	719,152	586,281	260,443	126,818	311,854	672,229	615,460	1,111,096	1,317,743	1,086,062	2,815,860
29													
30	Book Depreciation Rate:												
31	Year 1	2.54%	14,771	0	0	0	0	0	0	0	0	0	0
32	Year 1 beginning in FY10	4.00%		28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710	112,634
33	Year 2	4.00%			28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444	43,442
34	Year 3	4.00%				28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444
35	Year 4	4.00%					28,766	23,451	10,418	5,073	12,474	26,889	44,444
36	Year 5	4.00%						28,766	23,451	10,418	5,073	12,474	24,618
37	Year 6	4.00%							28,766	23,451	10,418	5,073	26,889
38	Year 7	4.00%								28,766	23,451	10,418	12,474
39	Year 8	4.00%									28,766	23,451	5,073
40	Year 9	4.00%										28,766	10,418
41	Year 10	3.55%											20,813
42	Year 11	3.55%											25,530
43	Book Depreciation Expense-Services	14,771	28,766	52,217	62,635	67,708	80,182	107,071	131,690	176,133	228,843	272,286	379,045
44													
45	Accumulated Depreciation Services-Beginning of Year	-	-	28,766	80,983	143,618	211,326	291,508	398,579	530,268	706,402	935,245	1,207,530
46	Accumulated Depreciation Services-End of Year	14,771	28,766	80,983	143,618	211,326	291,508	398,579	530,268	706,402	935,245	1,207,530	1,586,576
47													
48													
49													
50	Total Mains & Services Depreciation Expense	49,836	98,794	179,335	212,059	249,951	307,352	384,247	464,177	600,433	814,476	949,041	1,429,777
51													
52	Total Mains & Services Accumulated Depreciation	49,836	98,794	278,129	490,188	740,138	1,047,490	1,431,737	1,895,914	2,496,347	3,310,822	4,259,863	5,689,640

6(a) & 31(a) FY 2009 filing used the composite depreciation rate for both mains and services.

DG 19-054  
Liberty Utilities (EnergyNorth Natural Gas) Corp.  
Fiscal Year 2019 Cast Iron/Bare Steel Replacement Program Including 5% Carrover Costs  
Municipal Taxes as a Percentage of Net Plant

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
	12/31/2005	12/31/2006	12/31/2007	12/31/2008	12/31/2009	12/31/2010	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018
1 Plant in Service	258,573	272,678	289,379	305,221	319,737	332,049	344,966	356,165	381,214	419,215	451,950	494,511	539,666	595,016
2 Depreciation and Amortization Reserve	(82,363)	(88,564)	(94,562)	(102,587)	(108,270)	(114,294)	(119,973)	(121,047)	(129,209)	(137,656)	(149,943)	(163,209)	(171,469)	(134,742)
3 Net Plant	176,209	184,114	194,817	202,634	211,467	217,756	224,993	235,118	252,006	281,559	302,007	331,302	368,198	460,274
4														
5 Average Net Plant														
6 Plant in Service		265,625	281,028	297,300	312,479	325,893	338,508	350,565	368,690	400,214	435,582	456,863	495,808	567,341
7 Depreciation Reserve		(85,463)	(91,563)	(98,575)	(105,429)	(111,282)	(117,133)	(120,510)	(125,128)	(133,432)	(143,799)	(150,432)	(160,706)	(153,105)
8 Net Plant		180,162	189,465	198,726	207,051	214,611	221,375	230,056	243,562	266,782	291,783	306,431	335,102	414,236
9														
10 Municipal Taxes		3,534	3,641	3,771	4,294	5,459	5,776	5,321	6,835	8,560	7,644	9,596	9,380	10,361
11														
12 % Municipal Taxes to Net Plant		1.96%	1.92%	1.90%	2.07%	2.54%	2.61%	2.31%	2.81%	3.21%	2.62%	3.13%	2.80%	2.50%

Note: Source of above data is the December 31 PUC Annual Report to be consistent with data previously provided to the Commission.

DG 19-054  
Liberty Utilities (Energy/North Natural Gas) Corp.  
Fiscal Year 2019 Cast Iron/Bare Steel Replacement Program Including 5% Carryover Costs  
Bill Impacts due to Cast Iron and Bare Steel Replacement Program

	(a) FY2009	(b) FY2010	(c) FY2011	(d) FY2012	(e) FY2013	(f) FY2014	(g) FY2015	(h) FY2016	(i) FY2017	(j) FY2018	(k) FY2019	(l) Estimate FY2020
1 Annual Increase due to Cast Iron Bare Steel program	262,185	479,762	\$21,590	(44,226)	157,667	330,245	311,610	214,434	688,807	762,488	1,020,832	2,174,629
2												
3 Annual Throughput (see Winter COG filing - schedule 10B)	154,702,063	150,828,182	154,648,622	163,588,592	158,062,349	160,018,819	166,523,068	172,103,158	186,909,214	182,370,287	183,203,513	183,203,513
4												
5 Increase Factor	\$0.0017	\$0.0032	\$0.0034	(\$0.0003)	\$0.0010	\$0.0021	\$0.0019	\$0.0012	\$0.0037	\$0.0042	\$0.0056	\$0.0119
6												
7 Annual Calendar Year Gross Revenues (Annual Report - Page 11) <sup>3</sup>	\$176,520,000	\$151,224,178	\$132,475,941	\$146,365,316	\$119,363,340	\$137,617,008	\$119,363,341	\$156,933,825	\$120,053,649	\$139,890,158	\$157,495,294	\$157,495,294
8												
9 Annual Percent Increase	0.15%	0.32%	0.39%	-0.03%	0.13%	0.24%	0.26%	0.14%	0.57%	0.55%	0.65%	1.38%
10												
11 Miles of Cast Iron/Bare Steel Main Replaced Annually through CIBS	2.96	3.98	2.79	1.56	1.65	3.51	5.00	5.05	10.26	11.58	9.91	13.38
12 Cumulative Miles of Main Replaced through CIBS	2.96	6.94	9.73	11.29	12.94	16.45	21.45	26.50	36.76	48.34	58.25	71.63
13 Total Miles of Cast Iron/Bare Steel Main Remaining <sup>1</sup>	149.8	142.0	137.4	132.1	126.30	120.88	113.96	106.46	93.18	78.63	68.74	55.36
14												
15 Services Replaced Annually <sup>2</sup>	101	127	282	81	84	174	316	291	572	584	270	399
16 Cumulative Number of Services Replaced	101	228	510	591	675	849	1,165	1,456	2,028	2,612	2,882	3,281
17												
18 Typical Residential bill	\$1,292	\$1,107	\$1,118	\$1,059	\$1,020	\$1,123	\$1,309	\$1,309	\$1,078	\$1,171	\$1,170	\$1,170
19												
20 Typical Usage	800	800	800	800	800	800	800	800	763	779	778	778
21												
22 Annual Increase for Residential Heating customer	\$1.36	\$2.54	\$2.70	(\$0.22)	\$0.80	\$1.65	\$1.50	\$1.00	\$2.81	\$3.26	\$4.33	\$9.23
23												
24 Percent Bill Increase	0.10%	0.23%	0.24%	-0.02%	0.08%	0.15%	0.11%	0.08%	0.26%	0.28%	0.37%	0.79%
25												
26												
27 Typical G-41	\$3,375	\$2,939	\$2,842	\$2,696	\$2,654	\$2,926	\$3,499	\$3,499	\$2,651	\$3,031	\$3,213	\$3,213
28												
29 Typical Usage	2,167	2,167	2,167	2,167	2,167	2,167	2,167	2,167	2,029	2,180	2,260	2,260
30												
31 Annual Increase for G-41 customer	\$3.67	\$6.89	\$7.31	(\$0.59)	\$2.16	\$4.47	\$4.06	\$2.70	\$7.48	\$9.11	\$12.59	\$26.82
32												
33 Percent Bill Increase	0.11%	0.23%	0.26%	-0.02%	0.08%	0.15%	0.12%	0.08%	0.28%	0.30%	0.39%	0.83%
34												
35												
36 Typical G-42	\$22,595	\$18,926	\$18,432	\$17,516	\$16,884	\$18,853	\$22,486	\$22,486	\$16,284	\$18,916	\$21,784	\$21,784
37												
38 Typical Usage	15,567	15,567	15,567	15,567	15,567	15,567	15,567	15,567	14,720	15,883	18,073	18,073
39												
40 Annual Increase for G-42 customer	\$26.38	\$49.52	\$52.50	(\$4.21)	\$15.53	\$32.13	\$29.13	\$19.40	\$54.25	\$66.41	\$100.70	\$214.53
41												
42 Percent Bill Increase	0.12%	0.26%	0.28%	-0.02%	0.09%	0.17%	0.13%	0.09%	0.33%	0.35%	0.46%	0.98%
43												
44												
45 Typical G-52	\$21,973	\$16,707	\$16,605	\$16,025	\$14,629	\$16,555	\$18,667	\$18,667	\$14,087	\$15,714	\$17,730	\$17,730
46												
47 Typical Usage	15,687	15,687	15,687	15,687	15,687	15,687	15,687	15,687	14,566	15,645	17,935	17,935
48												
49 Annual Increase for G-52 customer	\$26.59	\$49.90	\$52.91	(\$4.24)	\$15.65	\$32.37	\$29.35	\$19.55	\$53.68	\$65.41	\$99.93	\$212.89
50												
51 Percent Bill Increase	0.12%	0.30%	0.32%	-0.03%	0.11%	0.20%	0.16%	0.10%	0.38%	0.42%	0.56%	1.20%

Line / Column Notes:  
1(b)-16(b) Amounts are cumulative from July 1, 2009

<sup>1</sup>Mileage includes Cast Iron/Bare Steel replaced through the CIBS Program as well as City/State Construction.  
<sup>2</sup>These figures include all service replacements and inserts, including bare steel, coated steel and plastic services.  
<sup>3</sup>These figures include both ENNG and Koenig beginning in FY 2019