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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Incremental Production Cost Summary - LNG Peaker Unit

Line No.	Description	Company Total	Explanation
	Cost of Production-related Distribution System Reinforcement		
1	Cost of Incremental Production Capacity (2013$)		
2	Cost of Incremental LNG Capactity	$ 6,292,000	Att WP-JDS-MCS-1 Page 1 , Line12
3	Incremental Capacity	10,000	Att WP-JDS-MCS-1 Page 1 Line 13
4	Unit Cost of Incremental Production Capacity	$629.20	Line 2 / Line 3
5	Year of System Pressure Support Analysis	2013	
6	Base year of MCS study	2013	
7	Years Before production-related Pressure Support	0	Line 6 - Line 5
8	Discount (Inflation) rate	1.79%	Att JDS-MCS-7 Page 1 Line 18
9	Present Worth of Capacity Cost	$ 629.20	Line 4 x ((1 + Line 8)^ Line 7))
10	Percentage Related to Pressure Support	13.1%	Att JDS-MCS-1 Page 2 Line 11
11	Production Plant for Distribution Function (Pressure Support)	$82.58	Line 9 x Line 10
12	Production Plant for Production Function (Gas Supply)	$546.62	Line 9 x (1 - Line 10)

Liberty Utilities (EnergyNorth Natural Gas) Corp. MCS Study
Distribution-related Production Plant Investment

Local Production Facilities

Line No.	Plant Name	Location	Type	Rating, mscfg	Heat Rate	Hours per Day	Design Day Dth	Explanation
1								
2	38 Bridge St	Nashua	LP-Air	450	1,250	20	11,000	WP-JDS-MCS-1 Page 2 , Line 1
3	130 Elm St	Manchester	LP-Air	900	1,250	24	21,600	WP-JDS-MCS-1 Page 2 , Line 2
4	130 Elm St	Manchester	LNG	250	1,050	24	4,200	WP-JDS-MCS-1 Page 2 , Line 3
5	Broken Bridge	Concord	LNG	200	1,050	24	4,200	WP-JDS-MCS-1 Page 2 , Line 4
6	Tilton Plant	Tilton	LP-Air	80	1,250	24	2,000	WP-JDS-MCS-1 Page 2 , Line 5
7	Tilton Plant	Tilton	LNG	350	1,050	24	4,200	WP-JDS-MCS-1 Page 2 , Line 6
8	Total			2,230			47,200	Σ line 2 to Line 7

Production Requirements in lieu of Distribution investments
Output Required for Pressure Support - 2013

Line No.	Plant Name	Location	Type	Rating, mscfg	Heat Rate	Hours per Day	Design Day Dth	
9	Tilton Plant	Tilton	LNG	295	1,050	20	6,195	Line 7
10	Total			295			6,195	

11	Production Allocated to Pressure Support Function	13.1%	Line 10 / Line 8
12	Production Allocated to Supply Function	86.9%	1 - Line 11

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of Capacity Related Investment - Distribution Reinforcement

Line No.	Year	Design demand, Dth	Reinforcement Cost Current $	Reinforcement Cost 2013 $	Cumulative Total	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)
		WP JDS-MCS-1 Page 3, Col (C) Lines 2 to 8		WP JDS-MCS-1 Page 3, Col (D) Lines 2 to 8		
1	Reinforcement Plant Additions					
2	2014	151,350		$ 150,000	$ 150,000	Company analysis
3	2015	154,979		$ 150,000	$ 300,000	Company analysis
4	2016	157,199		$ 200,000	$ 500,000	Company analysis
5	2017	160,990		$ 250,000	$ 750,000	Company analysis
6	2018	163,789		$ 650,000	$ 1,400,000	Company analysis
7	2019	167,058		$ 200,000	$ 1,600,000	Company analysis
8	2020 - 2024	174,272		$ 2,000,000	$ 3,600,000	Company analysis
9	Total Reinforcement Cost	22,923	$0	$ 3,450,000		Σ Line 3 to Line 8
10	**REGRESSION RESULTS**					Explanation
11	Cumulative cost vs Design Demand	**Slope**	**Y Intercept**	**Adjusted R Square**	**t Value**	
12	Period of Analysis: 2014-2024	146.06	(22,385,440)	90.55%	6.9	Accepted
13	Structural Shift: 2018-2020	220.96	(35,004,384)	98.20%	3.6	Rejected: size of slope coefficient implausable; estimate of Slope coefficient affected by period of analysis - last data point.
14	Incremental Average Cost	$ 150.51				Line 9 Col (D) / Col (B)
15	Unit Costs For Reinforcement					
16	**Marginal cost of Reinforcement per Dth**	**$146.06**				Line 12

Note: The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study

Distribution Main Extension Marginal Cost

Line No.	Year	Mains Extension Additions to Plant	Cost Index	Main Extension (2013 $)	Cumulative Main Extension (2013 $)	Design Day Demand
		(A)	(B)	(C)	(D)	(E)
		Company Data	WP-H-W Cost_Index, Col (B)	Col (B) x Col (C)	Σ[Col (D) Year (1989) to Col (D) Year(n)]	WP-Forecasted Design Day, Col (B) Lines 1 to 24
1	1988					
2	1989	2,102,827	2.006	4,218,050	4,218,050	92,038
3	1990	1,724,250	1.957	3,373,609	7,591,659	94,799
4	1991	1,341,529	1.906	2,556,803	10,148,462	95,896
5	1992	1,489,922	1.873	2,790,193	12,938,655	98,274
6	1993	1,018,848	1.824	1,858,435	14,797,090	101,510
7	1994	975,268	1.774	1,729,787	16,526,877	102,395
8	1995	667,884	1.721	1,149,564	17,676,441	105,007
9	1996	1,138,184	1.701	1,936,544	19,612,985	107,684
10	1997	4,396,282	1.665	7,318,356	26,931,341	112,869
11	1998	1,792,794	1.622	2,908,659	29,840,000	119,052
12	1999	2,415,815	1.601	3,867,693	33,707,693	120,233
13	2000	3,440,754	1.564	5,380,703	39,088,396	128,617
14	2001	8,588,507	1.458	12,523,242	51,611,638	124,000
15	2002	5,787,927	1.490	8,623,907	60,235,545	122,483
16	2003	6,335,289	1.456	9,221,852	69,457,396	116,027
17	2004	2,804,933	1.367	3,834,986	73,292,383	128,044
18	2005	1,761,281	1.271	2,237,794	75,530,176	136,000
19	2006	1,531,679	1.142	1,749,473	77,279,649	138,746
20	2007	2,092,072	1.142	2,388,805	79,668,454	142,000
21	2008	1,779,635	0.974	1,733,547	81,402,001	146,900
22	2009	5,177,230	1.024	5,299,752	86,701,753	146,824
23	2010	1,853,067	1.023	1,895,967	88,597,720	143,764
24	2011	1,419,065	1.040	1,475,249	90,072,969	146,768
25	2012	3,379,136	1.011	3,417,062	93,490,030	141,928
26	2013	2,245,707	1.000	2,245,707	95,735,737	145,562

27	**Distribution Main Extension Regression Analysis**					Explanation
28		Coefficient: Design Day Demand	Intercept	Adjusted R Square	t Statistic (Design Day Demand)	
	Period of Analysis					
29	1989 to 2013	240.3182	(40,491,828)	95.79%	0.9409	Rejected: Slope coefficient not statistically significant

30	**Distribution Main Extension Average Cost Analysis**				
	Period of Analysis	Source: Col (D) Lines 2 to 21	Source: Col (E) Lines 2 to 21	Col (D) / Col (E)	
31	1989 to 2013	$91,517,688	53,524	$ 1,709.84	Line 26 to Line 2
32	2001 to 2013	$44,124,100	$21,562	$2,046	Line 26 to Line 14
33	2003 to 2013	$26,278,341	$29,535	$890	Line 26 to Line 16

Note: The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Summary of Estimates for Mains-related Distribution Capacity Marginal Cost

Line No.	Description			Explanation
	(A)	(B)	(C)	(D)
1	**Reinforcement Analysis - Forecast Data**			
2	Company Distribution System Stoner Analysis			
3	Reinforcement Additions to Plant, 2014 to 2024	$3,450,000		Att JDS-MCS-1 Page 3, Col (D) Line 9
4	Forecast Additional Design Day Demand, 2014 to 2024	22,923		Att JDS-MCS-1 Page 3, Col (B) Line 9
5	Average Forecast Reinforcement Cost per Dth		$150.51	Line 3 / Line 4
6	Regression estimate of Forecast Reinforcement Costs per Dth		**$146.06**	Att JDS-MCS-1 Page 3, Line 16
7				
8	**Main Extension Analysis - Historical Data**			
9				
10				
11	1989 to 2013		$ 1,709.84	Att JDS-MCS-1 Page 4&5, Line 31
12	2001 to 2013		$ 2,046.36	Att JDS-MCS-1 Page 4&5, Line 32
13	2003 to 2013		$ 889.73	Att JDS-MCS-1 Page 4&5, Line 33
14	**Mains-related Distribution Capacity Marginal Cost**			
15	Reinforcement Component		$146.06	Line 6
16	Extension Component		$ 889.73	Line 13
17	Total Mains-related Distribution Capacity Marginal Cost		$1,035.79	Line 15 + Line 16

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Services and Meters Plant

Line No.	Description	R-1	R-3 R-4	G-41	G-42	G-43	G-51	G-52	G-53	G-54	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
1	**Service Costs**										
2	Representative Cost	$2,808.10	$2,808.10	$3,468.83	$8,235.85	$9,380.49	$3,468.83	$8,235.85	$9,380.49	$18,153.76	2010 MCS per Company
3	Customers per Service	1.32	1.32	1.32	1.00	1.00	1.32	1.00	1.00	1.00	2010 MCS per Company
4	Average Service Cost per Customer	$2,134	$2,134	$2,636	$8,236	$9,380	$2,636	$8,236	$9,380	$18,154	Line 2 * Line 3
5	**Meter Costs**										
6	Current Unit Cost for Metering	$229.58	$229.58	$343.80	$1,318.67	$2,774.63	$343.80	$1,318.67	$2,774.63	$12,506.03	2010 MCS per Company
7	Meters per Customer	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	From Company
8	Average Meter Cost per Customer	$230	$230	$344	$1,319	$2,775	$344	$1,319	$2,775	$12,506	Line 6 * Line 7
9	Total	$2,364	$2,364	$2,980	$9,555	$12,155	$2,980	$9,555	$12,155	$30,660	Line 4 + Line 8

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of Capacity Related Production (Pressure Support) Expense

Line No.	Year	Total Capacity Related Expenses	Cost Index	Expense 2013 Dollars	Design Day Sendout, Dth	Average Cost per Design Day Dth
	(A)	(B)	(C)	(D)	(E)	(F)
		WP WP-JDS-MCS-3 Page 1&2, Line 11 Col (E) to (AB)	WP-GDP_IPI, Line 28 Col n	Col (B) x Col (C)	WP-Forecasted Design Day, Col (B) Lines 1 to 24	Col (D) / Col (E)
1	1989	715,386	1.6536	$1,182,928	92,038	$12.85
2	1990	835,263	1.5946	$1,331,872	94,799	$14.05
3	1991	729,836	1.5432	$1,126,291	95,896	$11.74
4	1992	636,334	1.5088	$960,104	98,274	$9.77
5	1993	669,158	1.4737	$986,163	101,510	$9.71
6	1994	769,726	1.4430	$1,110,723	102,395	$10.85
7	1995	744,765	1.4135	$1,052,741	105,007	$10.03
8	1996	796,685	1.3882	$1,105,936	107,684	$10.27
9	1997	814,444	1.3648	$1,111,580	112,869	$9.85
10	1998	770,390	1.3502	$1,040,159	119,052	$8.74
11	1999	727,651	1.3312	$968,626	120,233	$8.06
12	2000	341,597	1.3016	$444,617	128,617	$3.46
13	2001	420,954	1.2724	$535,643	124,000	$4.32
14	2002	556,957	1.2532	$697,968	122,483	$5.70
15	2003	453,628	1.2286	$557,338	116,027	$4.80
16	2004	477,344	1.1958	$570,829	128,044	$4.46
17	2005	589,292	1.1587	$682,800	136,000	$5.02
18	2006	493,007	1.1241	$554,205	138,746	$3.99
19	2007	501,463	1.0951	$549,134	142,000	$3.87
20	2008	513,967	1.0741	$552,045	146,900	$3.76
21	2009	441,329	1.0659	$470,404	146,824	$3.20
22	2010	347,937	1.0531	$366,422	143,764	$2.55
23	2011	336,030	1.0328	$347,065	146,768	$2.36
24	2012	489,978	1.0151	$497,379	141,928	$3.50

Note: 2013 data was not available by system of accounts that was used prior to 2013

25	**REGRESSION RESULTS**					Explanation
26	Expense vs Demand	**Slope**	**Y Intercept**	**Adjusted R Square**	**t Value**	
27	Period of Analysis: 1989-2012	-14.4884	2,541,295	78.40%	-8.9372	Rejected: inappropriate sign for
28	Structural Shift: 2000-2012	-4.7043	1,162,719	91.37%	0.2271	slope coefficient; coefficient not statistically significant
29	**MARGINAL COST ESTIMATES**					
30	Slope Coefficient	-$14.49				
31	**Average Cost Per Design Day Dth**					
32	1989-2012			$6.95		Avg (Col (F) Lines 1 to 24)
33	2000-2012			$3.92		Avg (Col (F) Lines 12 to 24)
34	**2002-2012**			**$3.93**		Avg (Col (F) Lines 14 to 24)
35	Marginal Cost			$3.93		Col (F) Line 34
36	Percentage Related to Distribution Function			13.1%		Att JDS-MCS-1 Page 1, Line 10
37	Distribution Related O&M Expense			$0.52		Line 35 x Line 36

Notes:

2013 data was not available by system of accounts that was used prior to 2013

Note: The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Capacity Related Distribution Expense

Line No.	Year	Capacity Related Expenses	Cost Index	Expense 2013 Dollars	Design Day Demand	Avg Cost Per Design Day Dth
	(A)	(B)	(C)	(D)	(E)	(F)
		Att WP-Operations Expense Data T&D, Line 25	Source: GDP Implicit Price Deflator.	Col (B) x Col (C)	WP-Forecasted Design Day, Col (B) Lines 1 to 24	Col (D) / Col (E)
1	1989	$1,945,026	1.6536	$3,216,202	92,038	$34.94
2	1990	$1,893,462	1.5946	3,019,228	94,799	31.85
3	1991	$1,918,550	1.5432	2,960,726	95,896	30.87
4	1992	$2,040,158	1.5088	3,078,201	98,274	31.32
5	1993	$2,151,230	1.4737	3,170,346	101,510	31.23
6	1994	$2,529,506	1.4430	3,650,104	102,395	35.65
7	1995	$2,598,141	1.4135	3,672,528	105,007	34.97
8	1996	$2,558,264	1.3882	3,551,310	107,684	32.98
9	1997	$2,645,969	1.3648	3,611,306	112,869	32.00
10	1998	$2,768,391	1.3502	3,737,805	119,052	31.40
11	1999	$2,626,392	1.3312	3,496,170	120,233	29.08
12	2000	$2,781,957	1.3016	3,620,951	128,617	28.15
13	2001	$2,518,609	1.2724	3,204,803	124,000	25.85
14	2002	$2,241,570	1.2532	2,809,091	122,483	22.93
15	2003	$3,479,902	1.2286	4,275,490	116,027	36.85
16	2004	$3,370,059	1.1958	4,030,067	128,044	31.47
17	2005	$3,675,620	1.1587	4,258,863	136,000	31.32
18	2006	$4,093,085	1.1241	4,601,170	138,746	33.16
19	2007	$4,154,511	1.0951	4,549,454	142,000	32.04
20	2008	$4,431,308	1.0741	4,759,606	146,900	32.40
21	2009	$4,882,340	1.0659	5,203,989	146,824	35.44
22	2010	$5,316,649	1.0531	5,599,105	143,764	38.95
23	2011	$4,976,899	1.0328	5,140,337	146,768	35.02
24	2012	$3,277,420	1.0151	3,326,924	141,928	23.44

Note: 2013 data was not available by system of accounts that was used prior to 2013

25	**REGRESSION RESULTS**					
	Expense vs Demand	**Slope**	**Intercept**	**Adjusted R Square**	**t Statistic**	**Explanation**
26	Period of Analysis: 1989-2012	31.9340	(18,476)	58.39%	5.5561	Accepted
27	**MARGINAL COST ESTIMATES**					
28	Slope Coefficient			$31.93		Line 26
29	**Average Cost Per Design Day Dth**					
30	1989-2012				$31.80	Avg (Col (F) Lines 1 to 24)
31	1999-2012				$31.15	Avg (Col (F) Lines 11 to 24)
32	2002-2012				$32.09	Avg (Col (F) Lines 14 to 24)
33	**Marginal Cost**				**$31.93**	Line 28

Note: 2013 data was not available by system of accounts that was used prior to 2013

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Customer-Related Plant Expense

Line No.	Year	Customer Related Expense (Services and Meters O&M)	Cost Index	Expense 2013 Dollars	Annual Customers	Average Cost per Customer
	(A)	(B)	(C)	(D)	(E)	(F)
		Att WP-Operations Expense Data T&D, Line 24	Source: GDP Implicit Price Deflator	Col (B) x Col (C)	WP-Annual Accounting Data, Line 93	Col (D) / Col (E)
1	1989	1,435,602	1.6536	2,373,844	58,809	$40.37
2	1990	1,387,538	1.5946	2,212,504	60,216	$36.74
3	1991	1,440,488	1.5432	2,222,976	60,958	$36.47
4	1992	1,489,908	1.5088	2,247,981	61,725	$36.42
5	1993	1,487,109	1.4737	2,191,607	62,566	$35.03
6	1994	1,454,460	1.4430	2,098,802	64,044	$32.77
7	1995	1,497,008	1.4135	2,116,053	65,385	$32.36
8	1996	1,358,797	1.3882	1,886,243	66,464	$28.38
9	1997	1,440,005	1.3648	1,965,366	67,928	$28.93
10	1998	1,477,929	1.3502	1,995,459	69,588	$28.68
11	1999	1,585,104	1.3312	2,110,041	71,291	$29.60
12	2000	1,439,225	1.3016	1,873,272	73,106	$25.62
13	2001	2,498,183	1.2724	3,178,812	74,959	$42.41
14	2002	1,923,624	1.2532	2,410,647	77,003	$31.31
15	2003	1,995,278	1.2286	2,451,446	77,630	$31.58
16	2004	2,202,449	1.1958	2,633,787	77,630	$33.93
17	2005	2,592,719	1.1587	3,004,128	83,873	$35.82
18	2006	2,631,743	1.1241	2,958,429	84,066	$35.19
19	2007	2,981,134	1.0951	3,264,531	84,396	$38.68
20	2008	3,357,186	1.0741	3,605,907	87,440	$41.24
21	2009	3,706,884	1.0659	3,951,094	86,008	$45.94
22	2010	4,277,835	1.0531	4,505,102	86,008	$52.38
23	2011	4,027,652	1.0328	4,159,918	86,956	$47.84
24	2012	3,157,557	1.0151	3,205,250	86,827	$36.92

Note: 2013 data was not available by system of accounts that was used prior to 2013

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Customer-Related Plant Expense

25						
26	**REGRESSION RESULTS**					
	Expense vs Customers	**Slope**	**Y Intercept**	**Adjusted R Square**	**t Value**	Explanation
27	Period of Analysis: 1989-2012	53.97	(1,283,666)	74.1%	3.31	Rejected: slope coefficient not consistent with average cost results
28	Structural Shift: 2002-2012	139.74	(8,373,557)	77.8%	3.50	Rejected: slope coefficient not consistent with average cost results
29						
30						
31	**MARIGNAL COST ESTIMATES**					
32	Slope Coefficient	53.97				Line 27
33	**Average Cost Per Customer**					
34	1989-2012		$36.02			Avg (Col (F) Lines 1 to 24)
35	1999-2012		$37.75			Avg (Col (F) Lines 11 to 24)
36	2002-2012		$39.16			Avg (Col (F) Lines 14 to 24)
37	**Marginal Cost**		**$39.16**			Line 36

Notes:
2013 data was not available by system of accounts that was used prior to 2013
Note: The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Class Weighted Customer Plant Related Expense

Customer Weightings					Customer Weightings		
Line No.	Customer Groups	Test Year Number of Customers	Service and Meter Plant per customer	Total Cost	Relative Weight Per Customer	System Average Marginal Cost per Customer	Weighted Marginal Cost Per Customer
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
		WP-JDS-MCS-5 Page 7, Col (E) Lines 16 to 26	JDS-MCS-2 Page 1, Line 9	Col (B) x Col (C)	Col (C) Line n / Line 11	Col (G) Line 10	Col (E) x (F)
1	R-1	3,657	$2,364	8,643,476	0.909	$39.16	$35.59
2	R-3, R-4	71,922	$2,364	170,005,331	0.909	$39.16	$35.59
3	G-41	7,803	$2,980	23,252,557	1.146	$39.16	$44.87
4	G-42	1,567	$9,555	14,969,961	3.673	$39.16	$143.87
5	G-43	44	$12,155	539,781	4.673	$39.16	$183.03
6	G-51	1,294	$2,980	3,856,683	1.146	$39.16	$44.87
7	G-52	312	$9,555	2,983,342	3.673	$39.16	$143.87
8	G-53	38	$12,155	465,161	4.673	$39.16	$183.03
9	G-54	22	$30,660	688,041	11.788	$39.16	$461.66
10	Total	86,660		225,404,335			$39.16
11	Avg Cost per Customer		$2,601.03				

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Customer Accounting and Marketing Expense

Line No.	Year	Customer Accounting Expenses (Excl. Uncollectibles)	Marketing Services Expenses 1786-1788	Total Customer Related Expenses	Cost Index	Expense in 2013 Dollars	Annual Customers	Average Cost per Customer
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
		WP WP-Annual Accounting Data, Line 64	WP WP-Annual Accounting Data, Line 69	Col (B) + Col (C)	Source: GDP Implict Price Deflator	Col (D) * Col (E)	Att JDS-MCS-5 Page 1&2, Col (E)	Col (F) / Col (G)
1	1989	2,358,716	505,676	2,864,392	1.6536	4,736,423	58,809	80.54
2	1990	2,708,206	733,906	3,442,112	1.5946	5,488,635	60,216	91.15
3	1991	2,779,210	785,847	3,565,057	1.5432	5,501,633	60,958	90.25
4	1992	2,906,732	833,935	3,740,667	1.5088	5,643,936	61,725	91.44
5	1993	2,943,968	1,088,668	4,032,636	1.4737	5,943,043	62,566	94.99
6	1994	2,886,335	1,049,296	3,935,631	1.4430	5,679,158	64,044	88.68
7	1995	2,823,394	854,466	3,677,860	1.4135	5,198,734	65,385	79.51
8	1996	2,730,030	965,699	3,695,729	1.3882	5,130,307	66,464	77.19
9	1997	2,414,940	975,279	3,390,219	1.3648	4,627,083	67,928	68.12
10	1998	2,337,755	1,039,833	3,377,588	1.3502	4,560,326	69,588	65.53
11	1999	2,235,895	1,084,002	3,319,897	1.3312	4,419,343	71,291	61.99
12	2000	2,088,686	954,001	3,042,687	1.3016	3,960,312	73,106	54.17
13	2001	855,662	462,788	1,318,450	1.2724	1,677,661	74,959	22.38
14	2002	1,060,725	54,167	1,114,892	1.2532	1,397,161	77,003	18.14
15	2003	1,966,563	374,418	2,340,981	1.2286	2,876,184	77,630	37.05
16	2004	1,980,273	1,191,064	3,171,337	1.1958	3,792,425	77,630	48.85
17	2005	2,139,209	1,064,874	3,204,083	1.1587	3,712,502	83,873	44.26
18	2006	2,472,634	1,658,193	4,130,827	1.1241	4,643,597	84,066	55.24
19	2007	2,655,901	1,334,932	3,990,833	1.0951	4,370,215	84,396	51.78
20	2008	2,621,436	1,306,196	3,927,632	1.0741	4,218,615	87,440	48.25
21	2009	3,375,908	941,625	4,317,533	1.0659	4,601,972	86,008	53.51
22	2010	3,617,775	1,198,358	4,816,133	1.0531	5,071,998	86,008	58.97
23	2011	5,977,757	1,578,810	7,556,567	1.0328	7,804,721	86,956	89.75
24	2012	9,522,702	125,263	9,647,965	1.0151	9,793,692	86,827	112.80

Note: 2013 data was not available by system of accounts that was used prior to 2013

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Customer Accounting and Marketing Expense

25	**REGRESSION RESULTS**					Explanation
26	Expense vs Customers	**Slope**	**Y Intercept**	**Adjusted R Square**	**t value**	
27	Period of Analysis: 1989-2012	1.52	4,672,967	0.008%	0.0419	Rejected: Poor goodness of fit, presence of autocorrelation
28	Structural Shift: 2001-2012	380.16	(26,955,058)	55.984%	4.2397	Rejected: slope coefficient implausible, not consistent with average cost results
29	**MARGINAL COST ESTIMATES**					
30	Slope coefficient		1.52			Line 27
31	Average Cost Per Customer:		Source: Col (G)			
32	1989-2012		$66.02			Line 24 to Line 1
33	1999-2012		$54.08			Line 24 to Line 11
34	2002-2012		$56.24			Line 24 to Line 14
35						
36						
37	Marginal Cost		**$56.24**			Line 34

Notes:
2013 data was not available by system of accounts that was used prior to 2013
The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Class Weighted Customer Accounting & Marketing Expense

Line No.	Customer Groups	Number of Customers	% of total Customers	Relative Weight Per Customer	Marginal Unit Cost	Marginal Cost Per Customer
	(A)	(B)	(C)	(D)	(E)	(F)
		Att JDS-MCS-5 Page 3, Col (B)	Col (B) Line (n) / Col (B) Line 10		Att JDS-MCS-5 Page 4 and 5, Line 37	Col (E) x Col (D)
1	R-1	3,657	4.22%	1.000	$56.24	$56.24
2	R-3, R-4	71,922	82.99%	1.000	$56.24	$56.24
3	G-41	7,803	9.00%	1.000	$56.24	$56.24
4	G-42	1,567	1.81%	1.000	$56.24	$56.24
5	G-43	44	0.05%	1.000	$56.24	$56.24
6	G-51	1,294	1.49%	1.000	$56.24	$56.24
7	G-52	312	0.36%	1.000	$56.24	$56.24
8	G-53	38	0.04%	1.000	$56.24	$56.24
9	G-54	22	0.03%	1.000	$56.24	$56.24
10	Total	86,660			$56.24	

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Class Weighted Bad Debt Accounts Expense

Line No.	Rate Class	Gross Bad Debt Expense	Percent of Total	Adjusted Bad Debt Accounts Expense	Total Normalized Distribution Revenues	Bad Debt Expense Percentage
	(A)	(B) Company Data, 2010 Rate Case	(C) Col (B) line (n) / Col (B) Line 10	(D) Col (C) line(n) x Col (D) Line 10	(E) WP-JDS-MCS-5 Page 7, Col (N)	(F) Col (E) / Col (D)
1	R-1	116,643	1.93%	$30,740	$688,745	4.46%
2	R-3, R-4	5,287,468	87.55%	$1,393,454	$30,066,701	4.63%
3	G-41	355,009	5.88%	$93,559	$8,485,770	1.10%
4	G-42	5,539	0.09%	$1,460	$9,697,385	0.02%
5	G-43	0	0.00%	$0	$1,904,068	0.00%
6	G-51	186,869	3.09%	$49,247	$1,145,342	4.30%
7	G-52	87,510	1.45%	$23,062	$1,362,209	1.69%
8	G-53	0	0.00%	$0	$1,144,163	0.00%
9	G-54	0	0.00%	$0	$713,678	0.00%
10	Total	6,039,038	100.00%	1,591,522	55,208,061	2.88%

11 Adjusted Pro forma Bad Debt Expense rate 2.88%

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of A & G Loading Factors

Line No.	Year	Plant A&G	Total Utility Plant	Plant-related A&G / Utility Plant	Non-Plant A&G	Adjusted O&M	Non-Plant A&G / Adjusted O&M
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
		WP-JDS-MCS-6 Page 1&2, Line 17	WP-JDS-MCS-6 Page 1&2, Line 23	Col (B) / Col (C)	WP-JDS-MCS-6 Page 1&2, Line 11	WP-JDS-MCS-6 Page 1&2, Line 19	Col (E) / Col (F)
1	1989	1,364,240	90,119,098	0.0151	4,688,656	10,604,454	0.4421
2	1990	1,429,254	99,467,339	0.0144	4,648,295	11,525,784	0.4033
3	1991	1,427,802	106,202,255	0.0134	5,048,920	11,587,219	0.4357
4	1992	1,435,822	112,423,806	0.0128	5,159,323	11,850,450	0.4354
5	1993	1,445,997	118,656,821	0.0122	5,202,870	12,424,389	0.4188
6	1994	1,342,813	124,120,097	0.0108	5,310,712	13,150,168	0.4039
7	1995	1,200,572	129,472,654	0.0093	4,445,789	12,609,283	0.3526
8	1996	1,405,850	135,806,318	0.0104	4,492,265	12,467,597	0.3603
9	1997	1,422,193	145,866,429	0.0097	4,291,563	12,375,290	0.3468
10	1998	1,311,090	156,424,246	0.0084	4,408,707	12,463,871	0.3537
11	1999	1,624,095	166,682,099	0.0097	4,889,542	11,869,517	0.4119
12	2000	2,209,040	174,018,261	0.0127	4,653,554	10,734,412	0.4335
13	2001	1,000,753	189,363,169	0.0053	11,088,012	8,843,331	1.2538
14	2002	1,127,386	202,252,941	0.0056	4,904,823	8,413,769	0.5830
15	2003	413,762	227,692,187	0.0018	4,376,775	10,311,527	0.4245
16	2004	401,446	239,474,276	0.0017	5,713,357	11,145,574	0.5126
17	2005	686,615	242,115,491	0.0028	4,218,671	15,427,721	0.2734
18	2006	696,565	263,405,595	0.0026	5,464,787	14,251,758	0.3834
19	2007	705,896	280,967,870	0.0025	5,829,666	15,753,732	0.3700
20	2008	734,523	298,931,548	0.0025	7,666,805	13,573,314	0.5648
21	2009	756,942	318,900,861	0.0024	7,997,073	17,572,371	0.4551
22	2010	1,218,997	328,222,369	0.0037	9,072,506	15,052,404	0.6027
23	2011	388,947	338,986,146	0.0011	6,668,773	18,391,503	0.3626
24	2012	689,718	339,610,905	0.0020	14,901,222	16,874,091	0.8831

Note: 2013 data was not available by system of accounts that was used prior to 2013

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of A & G Loading Factors

25	**REGRESSION RESULTS**						Explanation
26			Slope	Intercept	Adjusted R Square	slope coeff t stat	
27	**Plant A&G vs Plant**						
28	Period of Analysis:	1989-2012	-0.0038	1,861,526	48.42%	-4.5446	Rejected: inappropriate coefficient sign
29	Structural Shift:	2000 - 2012	-0.0039	1,876,980	51.23%	-1.0065	Rejected: inappropriate coefficient sign; slope coefficient not statistically significant
30	**Non-Plant A&G vs Adjusted O&M**						
31	Period of Analysis:	1989-2012	0.35022	1,534,560	12.58%	1.7790	Rejected: Poor goodness of fit
32	Structural Shift:	2001 - 2012	0.19906	4,577,969	29.73%	0.1715	Rejected: Poor goodness of fit
33	**Analysis of Averages**						
			Plant A&G			Non-Plant A&G	
34	1989-2012		0.72%			47.78%	Line 1 to Line 24
35	1999-2012		0.40%			53.68%	Line 11 to Line 24
36	2002-2012		0.26%			49.23%	Line 14 to Line 24
37	**Marginal Loading Factor**		**0.26%**			**49.23%**	

Notes:
2013 data was not available by system of accounts that was used prior to 2013
The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of Miscellaneous Loading Factors

		M&S and Prepayments Analysis			General Plant Analysis		
Line No.	Year	M&S and Prepayments	Total Utility Plant	M&S & Prepay / Utility Plant	General Plant	Total Utility Plant	General Plant / Total Utility Plant
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
		WP-JDS-MCS-6 Page 3&4, Line 6	WP-JDS-MCS-6 Page 3&4, Line 13	Col (B) / Col (C)	WP-JDS-MCS-6 Page 3&4, Line 12	WP-JDS-MCS-6 Page 3&4, Line 13	Col (E) / Col (F)
1	1989	3,629,263	90,119,098	4.03%	5,933,582	90,119,098	6.58%
2	1990	2,814,685	99,467,339	2.83%	6,503,724	99,467,339	6.54%
3	1991	2,978,851	106,202,255	2.80%	6,849,445	106,202,255	6.45%
4	1992	2,903,000	112,423,806	2.58%	7,659,250	112,423,806	6.81%
5	1993	2,911,222	118,656,821	2.45%	7,970,207	118,656,821	6.72%
6	1994	2,603,364	124,120,097	2.10%	8,384,740	124,120,097	6.76%
7	1995	2,653,717	129,472,654	2.05%	8,221,795	129,472,654	6.35%
8	1996	2,551,060	135,806,318	1.88%	8,870,155	135,806,318	6.53%
9	1997	2,737,535	145,866,429	1.88%	9,203,222	145,866,429	6.31%
10	1998	2,351,916	156,424,246	1.50%	9,478,301	156,424,246	6.06%
11	1999	2,472,925	166,682,099	1.48%	11,244,509	166,682,099	6.75%
12	2000	1,694,816	174,018,261	0.97%	7,255,965	174,018,261	4.17%
13	2001	1,423,213	189,363,169	0.75%	8,348,042	189,363,169	4.41%
14	2002	688,197	202,252,941	0.34%	11,173,887	202,252,941	5.52%
15	2003	12,491	227,692,187	0.01%	11,582,178	227,692,187	5.09%
16	2004	89,880	239,474,276	0.04%	10,499,392	239,474,276	4.38%
17	2005	464,721	242,115,491	0.19%	10,220,042	242,115,491	4.22%
18	2006	570,708	263,405,595	0.22%	11,333,343	263,405,595	4.30%
19	2007	556,729	280,967,870	0.20%	12,089,175	280,967,870	4.30%
20	2008	338,049	298,931,548	0.11%	15,097,758	298,931,548	5.05%
21	2009	356,896	318,900,861	0.11%	16,049,203	318,900,861	5.03%
22	2010	46,167	328,222,369	0.01%	16,060,707	328,222,369	4.89%
23	2011	2,715,050	338,986,146	0.80%	16,195,189	338,986,146	4.78%
24	2012	3,479,465	339,610,905	1.02%	8,811,783	339,610,905	2.59%
25	2013	2,870,074	360,914,157	0.80%	9,473,843	360,914,157	2.62%

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of Miscellaneous Loading Factors

								Explanation
26	**REGRESSION RESULTS**							
27			Slope	Intercept	Adjusted R Square	slope coeff t stat		
28	**M&S vs Plant**							
29	Period of Analysis:	1989-2013	-0.0066	3,214,626	22.53%	-2.5865		Rejected: inappropriate (negative) coefficient sign
30	Structural Shift:	2012 - 2013	-0.0286	13,194,218	63.91%	-0.3237		Rejected: inappropriate (negative) coefficient sign; Slope coefficient not statistically sginificant
31	**General Plant vs Plant**							
32	Period of Analysis:	1989-2013	0.0259	4,793,981	57.45%	5.5729		Rejected: slope coefficient is not consistent with historical averages
33	Structural Shift:	2012 - 2013	0.0311	-1,742,605	87.03%	-0.0690		Rejected: slope coefficient (a) not consistent with historical averages (b) not statistically sginificant
34								
35	**Analysis of Averages**							
36			M&S & Prepay			General Plant		
37	Loading Factors							
38	1989-2013		1.25%			5.33%		Average of Line 1 to Line 25
39	1999-2013		0.47%			4.54%		Average of Line 11 to Line 25
40	2002-2013		0.32%			4.40%		Average of Line 14 to Line 25
41	**Marginal Loading Factor**		**0.32%**			**3.11%**		Line 40; Line 33

Note: The structural shift slope coefficient is the sum of the two estimated slope coefficients; The t value is the test statistic for the period after the structural shift.

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Summary of Levelized Fixed Charge Rates

Line No.	Description	Engineer's Fixed Charge Rate	Economist's Fixed charge Rate	Explanation
	(A)	(B)	(C)	(D)
1	Fixed Charge Rate Results			
			Over	
2	Levelized Cost for:		Book Life	
3	Production Plant	13.49%	11.22%	Att JDS-MCS-7 Page 3, Line 13
4	Mains (Cap-related Dist)	12.73%	9.77%	Att JDS-MCS-7 Page 4, Line 13
5	Services Investment	12.43%	9.96%	Att JDS-MCS-7 Page 5, Line 13
6	Meters Investment	13.34%	10.87%	Att JDS-MCS-7 Page 5, Line 13
7	Cost of Capital			
8	Debt	4.43%	45.00%	WP-JDS-MCS-7 Page 1, Line 1
9	Preferred	0.00%	0.00%	WP-JDS-MCS-7 Page 1, Line 2
10	Common	10.25%	55.00%	WP-JDS-MCS-7 Page 1, Line 3
11	Other	0.00%	0.00%	WP-JDS-MCS-7 Page 1, Line 4
12	Weighted Cost of Capital		7.631%	
13	After Tax Cost of New Capital		6.84%	WP-JDS-MCS-7 Page 1, Line 10
14	Incremental Tax Rate		39.61%	WP-JDS-MCS-7 Page 1, Line 6
15	Tax Effected Cost of Capital		11.33%	WP-JDS-MCS-7 Page 1, Line 5
16	Property Tax Rate		2.81%	WP-JDS-MCS-7 Page 1, Line 9
17	Gross Receipts Tax Rate		0.00%	WP-JDS-MCS-7 Page 1, Line 11
18	Inflation Rate		1.79%	WP-JDS-MCS-7 Page 1, Line 12
19	Property Tax Escalation Rate		2.50%	WP-JDS-MCS-7 Page 1, Line 13

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Levelized Fixed Charge Analysis, Input Data

Line No.	Variable	Peaking Plant	Capacity - Related Distribution	Services	Meters	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)
1	Plant Data					
2						
3	Capitalized Cost	$1,000	$1,000	$1,000	$1,000	
4	Book Life	30	59	40	35	Att JDS-MCS-7 Page 8, Col (D)
5	Salvage Value	0%	-15%	-60%	0	Att JDS-MCS-7 Page 8, Col (E)
6	MACRS Life	20	20	20	20	
7	Capital Structure					
8						
9	Debt Ratio	45.00%	45.00%	45.00%	45.00%	Att JDS-MCS-7 Page 1, Col (C), Line 8
10	Preferred Ratio	0.00%	0.00%	0.00%	0.00%	Att JDS-MCS-7 Page 1, Col (C), Line 9
11	Common Ratio	55.00%	55.00%	55.00%	55.00%	Att JDS-MCS-7 Page 1, Col (C), Line 10
12	Other	0.00%	0.00%	0.00%	0.00%	Att JDS-MCS-7 Page 1, Col (C), Line 11
13	Cost of Capital					
14	Debt Cost	4.43%	4.43%	4.43%	4.43%	Att JDS-MCS-7 Page 1, Col (B), Line 8
15	Preferred Cost	0.00%	0.00%	0.00%	0.00%	Att JDS-MCS-7 Page 1, Col (B), Line 9
16	Common Cost	10.25%	10.25%	10.25%	10.25%	Att JDS-MCS-7 Page 1, Col (B), Line 10
17	Other	0.00%	0.00%	0.00%	0.00%	Att JDS-MCS-7 Page 1, Col (B), Line 11
18	Wtd Cost Of Capital	7.63100%	7.63%	7.63%	7.63%	(Line 9 xLine 14) + (Line 10 xLine 15) + (Line 11xLine 16) + (Line 12xLine 17)
19	After Tax Cost of Capital	6.84%	6.84%	6.84%	6.84%	Att JDS-MCS-7 Page 1, Col (C), Line 13
20	Tax Data					
21	Tax Rate	39.61%	39.61%	39.61%	39.61%	Att JDS-MCS-7 Page 1, Col (C), Line 14
22	ITC Rate	0.00%	0.00%	0.00%	0.00%	
23	Revenue Tax Rate	0.00%	0.00%	0.00%	0.00%	
24	Property Tax Rate	2.81%	2.81%	2.81%	2.81%	Att JDS-MCS-7 Page 1, Col (C), Line 16
25	Property Insurance	0.05%	0.05%	0.05%	0.05%	WP-JDS-MCS-7 Page 2, Line 3
26	Property Tax Basis	Dep Bal	Dep Bal	Dep Bal	Dep Bal	
27						
28						
29	Misc. Data					
30	Inflation Rate	1.79%	1.79%	1.79%	1.79%	Att JDS-MCS-7 Page 1, Col (C), Line 18
31	Prop Tax Escalation Rate	2.50%	2.50%	2.50%	2.50%	Att JDS-MCS-7 Page 1, Col (C), Line 19
32	Return on Rate Base calculation	EOY	EOY	EOY	EOY	
33						
34						
35						

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Levelized Fixed Charge Analysis
Peaker Plant

		-- Current Dollars -- (Engineer's FCR)		-- Constant Dollars -- (Economist's FCR)	
Line No.	Item	Current Levelized Dollars	Percent Of Capital Investment	Constant Levelized Dollars	Percent Of Capital Investment
	(A)	(B) Att JDS-MCS-7 Page 7A	(C) Col (B) x 0.001	(D) Att JDS-MCS-7 Page 7A	(E) Col (D) x 0.001
1	Interest On Debt	$11.46	1.15%	$9.53	0.95%
2	Return On Preferred	$0.00	0.00%	$0.00	0.00%
3	Return On Common	$32.40	3.24%	$26.94	2.69%
4	Return	$43.86	4.39%	$36.47	3.65%
5	Depreciation	$33.33	3.33%	$27.71	2.77%
6	Income Tax	$17.16	1.72%	$14.27	1.43%
7	Deferred Taxes	$4.09	0.41%	$3.40	0.34%
8	Income Tax	$21.25	2.13%	$17.67	1.77%
9	Revenue Tax	$0.00	0.00%	$0.00	0.00%
10	Property Tax	$35.92	3.59%	$29.86	2.99%
11	Property Insurance	$0.57	0.06%	$0.47	0.05%
12	Other	$36.48	3.65%	$30.33	3.03%
13	Total Revenue Required	$134.93	13.49%	$112.18	11.22%

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Levelized Fixed Charge Analysis
Capacity Related Distribution

		Current Dollars (Engineer's FCR)		Constant Dollars (Economist's FCR)	
Line No.	Item	Current Levelized Dollars	Percent Of Capital Investment	Constant Levelized Dollars	Percent Of Capital Investment
	(A)	(B) Att JDS-MCS-7 Page 7B	(C) Col (B) x 0.001	(D) Att JDS-MCS-7 Page 7B	(E) Col (D) x 0.001
1	Interest On Debt	$11.99	1.20%	$9.20	0.92%
2	Return On Preferred	$0.00	0.00%	$0.00	0.00%
3	Return On Common	$33.90	3.39%	$26.02	2.60%
4	Return	$45.89	4.59%	$35.22	3.52%
5	Depreciation	$19.42	1.94%	$14.91	1.49%
6	Income Tax	$14.62	1.46%	$11.22	1.12%
7	Deferred Taxes	$7.61	0.76%	$5.84	0.58%
8	Income Tax	$22.24	2.22%	$17.07	1.71%
9	Revenue Tax	$0.00	0.00%	$0.00	0.00%
10	Property Tax	$39.74	3.97%	$30.50	3.05%
11	Property Insurance	$0.00	0.00%	$0.00	0.00%
12	Other	$39.74	3.97%	$30.50	3.05%
13	Total Revenue Required	$127.29	12.73%	$97.70	9.77%

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Levelized Fixed Charge Analysis
Services Investment

		Current Dollars (Engineer's FCR)		Constant Dollars (Economist's FCR)	
Line No.	Item	Current Levelized Dollars	Percent Of Capital Investment	Constant Levelized Dollars	Percent Of Capital Investment
	(A)	(B) Att JDS-MCS-7 Page 7C	(C) Col (B) x 0.001	(D) Att JDS-MCS-7 Page 7C	(E) Col (D) x 0.001
1	Interest On Debt	$9.46	0.95%	$7.58	0.76%
2	Return On Preferred	$0.00	0.00%	$0.00	0.00%
3	Return On Common	$26.76	2.68%	$21.45	2.14%
4	Return	$36.22	3.62%	$29.03	2.90%
5	Depreciation	$40.00	4.00%	$32.06	3.21%
6	Income Tax	$16.10	1.61%	$12.91	1.29%
7	Deferred Taxes	$1.45	0.15%	$1.16	0.12%
8	Income Tax	$17.55	1.76%	$14.07	1.41%
9	Revenue Tax	$0.00	0.00%	$0.00	0.00%
10	Property Tax	$30.05	3.00%	$24.08	2.41%
11	Property Insurance	$0.48	0.05%	$0.38	0.04%
12	Other	$30.53	3.05%	$24.47	2.45%
13	Total Revenue Required	$124.30	12.43%	$99.63	9.96%

Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Levelized Fixed Charge Analysis
Metering Equipment

		Current Dollars (Engineer's FCR)		Constant Dollars (Economist's FCR)	
Line No.	Item	Current Levelized Dollars	Percent Of Capital Investment	Constant Levelized Dollars	Percent Of Capital Investment
	(A)	(B)	(C)	(D)	(E)
		Att JDS-MCS-7 Page 7D	Col (B) x 0.001	Att JDS-MCS-7 Page 7D	Col (D) x 0.001
1	Interest On Debt	$11.56	1.16%	$9.43	0.94%
2	Return On Preferred	$0.00	0.00%	$0.00	0.00%
3	Return On Common	$32.70	3.27%	$26.65	2.67%
4	Return	$44.26	4.43%	$36.08	3.61%
5	Depreciation	$29.45	2.95%	$24.01	2.40%
6	Income Tax	$16.56	1.66%	$13.50	1.35%
7	Deferred Taxes	$4.88	0.49%	$3.98	0.40%
8	Income Tax	$21.45	2.14%	$17.48	1.75%
9	Revenue Tax	$0.00	0.00%	$0.00	0.00%
10	Property Tax	$37.63	3.76%	$30.67	3.07%
11	Property Insurance	$0.59	0.06%	$0.48	0.05%
12	Other	$38.21	3.82%	$31.15	3.11%
13	Total Revenue Required	$133.37	13.34%	$108.72	10.87%

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream

Peaker Plant

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Taxes	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
	1000.00						0.00	0.00								
1	965.02	19.24	0.00	54.40	37.50	3.7500%	33.33	1.65	85.92	34.03		28.10	0.48	171.24	17.12%	160.27
2	916.29	18.27	0.00	51.66	72.19	7.219%	33.33	15.39	46.68	18.49		28.80	0.49	166.43	16.64%	145.80
3	869.71	17.34	0.00	49.03	66.77	6.677%	33.33	13.24	47.75	18.91		29.52	0.50	161.88	16.19%	132.73
4	825.12	16.45	0.00	46.52	61.77	6.177%	33.33	11.26	48.59	19.25		30.26	0.51	157.57	15.76%	120.93
5	782.36	15.60	0.00	44.11	57.13	5.713%	33.33	9.43	49.24	19.50		31.02	0.51	153.50	15.35%	110.25
6	741.29	14.78	0.00	41.79	52.85	5.285%	33.33	7.73	49.68	19.68		31.79	0.52	149.63	14.96%	100.60
7	701.80	13.99	0.00	39.56	48.88	4.888%	33.33	6.16	49.97	19.79		32.59	0.53	145.96	14.60%	91.84
8	663.76	13.23	0.00	37.42	45.22	4.522%	33.33	4.71	50.08	19.84		33.40	0.54	142.47	14.25%	83.91
9	625.96	12.48	0.00	35.29	44.62	4.462%	33.33	4.47	47.15	18.68		34.24	0.55	139.04	13.90%	76.64
10	588.16	11.72	0.00	33.16	44.61	4.461%	33.33	4.47	43.63	17.28		35.09	0.56	135.62	13.56%	69.97
11	550.35	10.97	0.00	31.03	44.62	4.462%	33.33	4.47	40.09	15.88		35.97	0.57	132.22	13.22%	63.85
12	512.55	10.22	0.00	28.90	44.61	4.461%	33.33	4.47	36.57	14.49		36.87	0.58	128.85	12.89%	58.24
13	474.75	9.46	0.00	26.76	44.62	4.462%	33.33	4.47	33.03	13.08		37.79	0.59	125.50	12.55%	53.09
14	436.95	8.71	0.00	24.63	44.61	4.461%	33.33	4.47	29.51	11.69		38.74	0.60	122.17	12.22%	48.38
15	399.15	7.96	0.00	22.50	44.62	4.462%	33.33	4.47	25.97	10.29		39.70	0.61	118.87	11.89%	44.05
16	361.34	7.20	0.00	20.37	44.61	4.461%	33.33	4.47	22.46	8.89		40.70	0.63	115.59	11.56%	40.10
17	323.54	6.45	0.00	18.24	44.62	4.462%	33.33	4.47	18.92	7.49		41.71	0.64	112.34	11.23%	36.47
18	285.74	5.70	0.00	16.11	44.61	4.461%	33.33	4.47	15.40	6.10		42.76	0.65	109.11	10.91%	33.16
19	247.94	4.94	0.00	13.98	44.62	4.462%	33.33	4.47	11.86	4.70		43.83	0.66	105.91	10.59%	30.12
20	210.14	4.19	0.00	11.85	44.61	4.461%	33.33	4.47	8.34	3.30		44.92	0.67	102.73	10.27%	27.35
21	181.17	3.61	0.00	10.21	22.31	2.231%	33.33	(4.37)	27.94	11.07		46.05	0.68	100.59	10.06%	25.06
22	161.04	3.21	0.00	9.08	0.00		33.33	(13.20)	48.37	19.16		47.20	0.70	99.47	9.95%	23.20
23	140.91	2.81	0.00	7.94	0.00		33.33	(13.20)	46.49	18.41		48.38	0.71	98.38	9.84%	21.47
24	120.78	2.41	0.00	6.81	0.00		33.33	(13.20)	44.61	17.67		49.59	0.72	97.32	9.73%	19.88
25	100.65	2.01	0.00	5.67	0.00		33.33	(13.20)	42.73	16.93		50.83	0.73	96.29	9.63%	18.41
26	80.52	1.61	0.00	4.54	0.00		33.33	(13.20)	40.85	16.18		52.10	0.75	95.30	9.53%	17.06
27	60.39	1.20	0.00	3.40	0.00		33.33	(13.20)	38.97	15.44		53.40	0.76	94.33	9.43%	15.80
28	40.26	0.80	0.00	2.27	0.00		33.33	(13.20)	37.09	14.69		54.73	0.77	93.40	9.34%	14.64
29	20.13	0.40	0.00	1.13	0.00		33.33	(13.20)	35.21	13.95		56.10	0.79	92.50	9.25%	13.57
30	(0.00)	(0.00)	0.00	(0.00)	0.00		33.33	(13.20)	33.33	13.20		0.00	0.00	33.33	3.33%	4.58
31	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
32	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
33	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
34	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
35	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
36	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
37	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
38	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream

Peaker Plant

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Taxes	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
39	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
40	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
41	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
42	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
43	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
44	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
45	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
46	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
47	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
48	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
49	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
50	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
51	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
52	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
53	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
54	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
55	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
56	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
57	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
58	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
59	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
60	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
61	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
62	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
63	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
64	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
65	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
Total		$ 246.95	$ -	$ 698.36	$ 1,000.00	$ 1.00	$ 1,000.00	$ (0.00)	$ 1,156.42	$ 458.06	$ -	$ 1,176.16	$ 18.01	$ 3,597.54	359.75%	$ 1,701.43
Present Worth		$144.48	$ -	$ 408.59	$ 550.49	$ 0.55	$ 420.31	$ 51.56	$ 546.41	$ 216.43	$ -	$ 452.89	$ 7.16	$ 1,701.43	170.14%	$ 1,013.06
Levelized Payment Current		$11.46	$ -	$ 32.40	$ 43.66	$ 0.04	$ 33.33	$ 4.09	$ 43.33	$ 17.16	$ -	$ 35.92	$ 0.57	$ 134.93	13.49%	
Levelized Payment Constant		$ 9.53	$ -	$ 26.94	$ 36.30	$ 0.04	$ 27.71	$ 3.40	$ 36.03	$ 14.27	$ -	$ 29.86	$ 0.47	$ 112.18	11.22%	

0393

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream

Capacity Related Distribution

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Taxes	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
	1000.00						0.00	0.00								
1	973.42	19.41	0.00	54.88	37.50	3.750%	19.42	7.16	72.79	28.83		28.10	0.48	158.27	15.83%	148.14
2	933.10	18.60	0.00	52.60	72.19	7.219%	19.42	20.90	34.34	13.60		28.80	0.49	154.42	15.44%	135.27
3	894.92	17.84	0.00	50.45	66.77	6.677%	19.42	18.76	36.19	14.34		29.52	0.50	150.82	15.08%	123.66
4	858.73	17.12	0.00	48.41	61.77	6.177%	19.42	16.78	37.81	14.98		30.26	0.51	147.47	14.75%	113.17
5	824.37	16.43	0.00	46.47	57.13	5.713%	19.42	14.94	39.25	15.55		31.02	0.51	144.34	14.43%	103.68
6	791.71	15.78	0.00	44.63	52.85	5.285%	19.42	13.24	40.48	16.03		31.79	0.52	141.43	14.14%	95.08
7	760.62	15.16	0.00	42.88	48.88	4.888%	19.42	11.67	41.54	16.46		32.59	0.53	138.71	13.87%	87.28
8	730.98	14.57	0.00	41.21	45.22	4.522%	19.42	10.22	42.44	16.81		33.40	0.54	136.17	13.62%	80.20
9	701.58	13.99	0.00	39.55	44.62	4.462%	19.42	9.98	40.29	15.96		34.24	0.55	133.69	13.37%	73.70
10	672.18	13.40	0.00	37.89	44.61	4.461%	19.42	9.98	37.56	14.88		35.09	0.56	131.22	13.12%	67.70
11	642.78	12.81	0.00	36.24	44.62	4.462%	19.42	9.98	34.80	13.79		35.97	0.57	128.78	12.88%	62.19
12	613.39	12.23	0.00	34.58	44.61	4.461%	19.42	9.98	32.07	12.70		36.87	0.58	126.36	12.64%	57.11
13	583.98	11.64	0.00	32.92	44.62	4.462%	19.42	9.98	29.32	11.61		37.79	0.59	123.96	12.40%	52.44
14	554.59	11.06	0.00	31.26	44.61	4.461%	19.42	9.98	26.58	10.53		38.74	0.60	121.59	12.16%	48.14
15	525.19	10.47	0.00	29.61	44.62	4.462%	19.42	9.98	23.83	9.44		39.70	0.61	119.23	11.92%	44.19
16	495.79	9.88	0.00	27.95	44.61	4.461%	19.42	9.98	21.09	8.35		40.70	0.63	116.91	11.69%	40.55
17	466.39	9.30	0.00	26.29	44.62	4.462%	19.42	9.98	18.34	7.26		41.71	0.64	114.61	11.46%	37.21
18	436.99	8.71	0.00	24.64	44.61	4.461%	19.42	9.98	15.60	6.18		42.76	0.65	112.33	11.23%	34.13
19	407.59	8.13	0.00	22.98	44.62	4.462%	19.42	9.98	12.85	5.09		43.83	0.66	110.08	11.01%	31.31
20	378.19	7.54	0.00	21.32	44.61	4.461%	19.42	9.98	10.11	4.01		44.92	0.67	107.86	10.79%	28.71
21	357.63	7.13	0.00	20.16	22.31	2.231%	19.42	1.15	30.49	12.08		46.05	0.68	106.66	10.67%	26.58
22	345.90	6.90	0.00	19.50	0.00		19.42	(7.69)	51.71	20.48		47.20	0.70	106.50	10.65%	24.84
23	334.17	6.66	0.00	18.84	0.00		19.42	(7.69)	50.61	20.05		48.38	0.71	106.36	10.64%	23.22
24	322.45	6.43	0.00	18.18	0.00		19.42	(7.69)	49.52	19.61		49.59	0.72	106.25	10.63%	21.71
25	310.72	6.19	0.00	17.52	0.00		19.42	(7.69)	48.43	19.18		50.83	0.73	106.18	10.62%	20.30
26	298.99	5.96	0.00	16.86	0.00		19.42	(7.69)	47.33	18.75		52.10	0.75	106.13	10.61%	18.99
27	287.26	5.73	0.00	16.19	0.00		19.42	(7.69)	46.24	18.31		53.40	0.76	106.12	10.61%	17.78
28	275.54	5.49	0.00	15.53	0.00		19.42	(7.69)	45.14	17.88		54.73	0.77	106.14	10.61%	16.64
29	263.81	5.26	0.00	14.87	0.00		19.42	(7.69)	44.05	17.45		56.10	0.79	106.19	10.62%	15.58
30	252.08	5.03	0.00	14.21	0.00		19.42	(7.69)	42.95	17.01		57.50	0.80	106.28	10.63%	14.60
31	240.35	4.79	0.00	13.55	0.00		19.42	(7.69)	41.86	16.58		58.94	0.82	106.41	10.64%	13.68
32	228.63	4.56	0.00	12.89	0.00		19.42	(7.69)	40.76	16.15		60.42	0.83	106.57	10.66%	12.82
33	216.90	4.32	0.00	12.23	0.00		19.42	(7.69)	39.67	15.71		61.93	0.85	106.76	10.68%	12.02
34	205.17	4.09	0.00	11.57	0.00		19.42	(7.69)	38.57	15.28		63.47	0.86	107.00	10.70%	11.28
35	193.45	3.86	0.00	10.91	0.00		19.42	(7.69)	37.48	14.84		65.06	0.88	107.27	10.73%	10.58
36	181.72	3.62	0.00	10.24	0.00		19.42	(7.69)	36.38	14.41		66.69	0.89	107.58	10.76%	9.93
37	169.99	3.39	0.00	9.58	0.00		19.42	(7.69)	35.29	13.98		68.35	0.91	107.94	10.79%	9.33
38	158.26	3.15	0.00	8.92	0.00		19.42	(7.69)	34.19	13.54		70.06	0.92	108.34	10.83%	8.76

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream

Capacity Related Distribution

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Taxes	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
39	146.54	2.92	0.00	8.26	0.00		19.42	(7.69)	33.10	13.11		71.81	0.94	108.77	10.88%	8.24
40	134.81	2.69	0.00	7.60	0.00		19.42	(7.69)	32.00	12.68		73.61	0.96	109.26	10.93%	7.74
41	123.08	2.45	0.00	6.94	0.00		19.42	(7.69)	30.91	12.24		75.45	0.97	109.79	10.98%	7.28
42	111.35	2.22	0.00	6.28	0.00		19.42	(7.69)	29.81	11.81		77.34	0.99	110.36	11.04%	6.85
43	99.63	1.99	0.00	5.62	0.00		19.42	(7.69)	28.72	11.38		79.27	1.01	110.99	11.10%	6.45
44	87.90	1.75	0.00	4.96	0.00		19.42	(7.69)	27.62	10.94		81.25	1.03	111.66	11.17%	6.07
45	76.17	1.52	0.00	4.29	0.00		19.42	(7.69)	26.53	10.51		83.28	1.05	112.38	11.24%	5.72
46	64.45	1.28	0.00	3.63	0.00		19.42	(7.69)	25.44	10.07		85.37	1.06	113.15	11.31%	5.39
47	52.72	1.05	0.00	2.97	0.00		19.42	(7.69)	24.34	9.64		87.50	1.08	113.97	11.40%	5.08
48	40.99	0.82	0.00	2.31	0.00		19.42	(7.69)	23.25	9.21		89.69	1.10	114.85	11.49%	4.79
49	29.26	0.58	0.00	1.65	0.00		19.42	(7.69)	22.15	8.77		91.93	1.12	115.79	11.58%	4.52
50	17.54	0.35	0.00	0.99	0.00		19.42	(7.69)	21.06	8.34		94.23	1.14	116.78	11.68%	4.27
51	5.81	0.12	0.00	0.33	0.00		19.42	(7.69)	19.96	7.91		96.58	1.16	117.82	11.78%	4.03
52	(5.92)	(0.12)	0.00	(0.33)	0.00		19.42	(7.69)	18.87	7.47		0.00	0.00	18.75	1.87%	0.60
53	(17.65)	(0.35)	0.00	(0.99)	0.00		19.42	(7.69)	17.77	7.04		0.00	0.00	17.42	1.74%	0.52
54	(29.37)	(0.59)	0.00	(1.66)	0.00		19.42	(7.69)	16.68	6.61		0.00	0.00	16.09	1.61%	0.45
55	(41.10)	(0.82)	0.00	(2.32)	0.00		19.42	(7.69)	15.58	6.17		0.00	0.00	14.76	1.48%	0.39
56	(52.83)	(1.05)	0.00	(2.98)	0.00		19.42	(7.69)	14.49	5.74		0.00	0.00	13.43	1.34%	0.33
57	(64.55)	(1.29)	0.00	(3.64)	0.00		19.42	(7.69)	13.39	5.30		0.00	0.00	12.11	1.21%	0.28
58	(76.28)	(1.52)	0.00	(4.30)	0.00		19.42	(7.69)	12.30	4.87		0.00	0.00	10.78	1.08%	0.23
59	(145.73)	(2.91)	0.00	(8.22)	145.73		19.42	50.03	(139.92)	(55.42)		0.00	0.00	2.91	0.29%	0.06
60	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
61	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
62	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
63	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
64	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
65	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
Total		$ 367.73	$ -	$1,039.91	$ 1,145.73	$ 1.00	$ 1,145.73	$ 0.00	$1,721.99	$ 682.08	$ -	$ 2,835.89	$ -	$ 6,110.74	611.07%	$1,831.82
Present Worth		$171.71	$ -	$ 485.58	$ 553.43	$ 0.55	$ 278.13	$109.05	$ 528.78	$ 209.45	$ -	$ 569.23	$ -	$ 1,831.82	183.18%	$ 980.76
Levelized Payment Current		$11.99	$ -	$ 33.90	$ 38.64	$ 0.04	$ 19.42	$ 7.61	$ 36.92	$ 14.62	$ -	$ 39.74	$ -	$ 127.90	12.79%	
Levelized Payment Constant		$ 9.20	$ -	$ 26.02	$ 29.66	$ 0.03	$ 14.91	$ 5.84	$ 28.34	$ 11.22	$ -	$ 30.50	$ -	$ 98.17	9.82%	

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream
Services Investment

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Taxes	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
	1000.00						0.00	0.00								
1	960.99	19.16	0.00	54.18	37.50	3.750%	40.00	(0.99)	92.21	36.52		28.10	0.48	177.45	17.74%	166.08
2	908.24	18.11	0.00	51.20	72.19	7.219%	40.00	12.75	52.60	20.83		28.80	0.49	172.18	17.22%	150.84
3	857.64	17.10	0.00	48.35	66.77	6.677%	40.00	10.60	53.29	21.11		29.52	0.50	167.18	16.72%	137.08
4	809.01	16.13	0.00	45.61	61.77	6.177%	40.00	8.62	53.75	21.29		30.26	0.51	162.42	16.24%	124.64
5	762.23	15.20	0.00	42.97	57.13	5.713%	40.00	6.79	54.03	21.40		31.02	0.51	157.88	15.79%	113.41
6	717.14	14.30	0.00	40.43	52.85	5.285%	40.00	5.09	54.10	21.43		31.79	0.52	153.56	15.36%	103.24
7	673.62	13.43	0.00	37.98	48.88	4.888%	40.00	3.52	54.00	21.39		32.59	0.53	149.43	14.94%	94.03
8	631.55	12.59	0.00	35.60	45.22	4.522%	40.00	2.07	53.74	21.29		33.40	0.54	145.49	14.55%	85.69
9	589.72	11.76	0.00	33.25	44.62	4.462%	40.00	1.83	50.43	19.98		34.24	0.55	141.60	14.16%	78.05
10	547.90	10.92	0.00	30.89	44.61	4.461%	40.00	1.83	46.54	18.43		35.09	0.56	137.72	13.77%	71.06
11	506.07	10.09	0.00	28.53	44.62	4.462%	40.00	1.83	42.62	16.88		35.97	0.57	133.87	13.39%	64.65
12	464.24	9.25	0.00	26.17	44.61	4.461%	40.00	1.83	38.73	15.34		36.87	0.58	130.04	13.00%	58.78
13	422.41	8.42	0.00	23.81	44.62	4.462%	40.00	1.83	34.81	13.79		37.79	0.59	126.24	12.62%	53.40
14	380.59	7.59	0.00	21.46	44.61	4.461%	40.00	1.83	30.92	12.25		38.74	0.60	122.45	12.25%	48.49
15	338.76	6.75	0.00	19.10	44.62	4.462%	40.00	1.83	27.00	10.70		39.70	0.61	118.70	11.87%	43.99
16	296.93	5.92	0.00	16.74	44.61	4.461%	40.00	1.83	23.11	9.15		40.70	0.63	114.96	11.50%	39.88
17	255.10	5.09	0.00	14.38	44.62	4.462%	40.00	1.83	19.19	7.60		41.71	0.64	111.25	11.13%	36.12
18	213.27	4.25	0.00	12.02	44.61	4.461%	40.00	1.83	15.30	6.06		42.76	0.65	107.57	10.76%	32.69
19	171.44	3.42	0.00	9.67	44.62	4.462%	40.00	1.83	11.38	4.51		43.83	0.66	103.91	10.39%	29.55
20	129.62	2.58	0.00	7.31	44.61	4.461%	40.00	1.83	7.49	2.97		44.92	0.67	100.28	10.03%	26.69
21	96.62	1.93	0.00	5.45	22.31	2.231%	40.00	(7.01)	26.71	10.58		46.05	0.68	97.67	9.77%	24.34
22	72.47	1.44	0.00	4.09	0.00		40.00	(15.84)	46.77	18.52		47.20	0.70	96.10	9.61%	22.41
23	48.31	0.96	0.00	2.72	0.00		40.00	(15.84)	44.51	17.63		48.38	0.71	94.56	9.46%	20.64
24	24.16	0.48	0.00	1.36	0.00		40.00	(15.84)	42.26	16.74		49.59	0.72	93.04	9.30%	19.01
25	(0.00)	(0.00)	0.00	(0.00)	0.00		40.00	(15.84)	40.00	15.84		0.00	0.00	40.00	4.00%	7.65
26	(24.16)	(0.48)	0.00	(1.36)	0.00		40.00	(15.84)	37.75	14.95		0.00	0.00	37.26	3.73%	6.67
27	(48.31)	(0.96)	0.00	(2.72)	0.00		40.00	(15.84)	35.49	14.06		0.00	0.00	34.53	3.45%	5.78
28	(72.47)	(1.44)	0.00	(4.09)	0.00		40.00	(15.84)	33.24	13.16		0.00	0.00	31.79	3.18%	4.98
29	(96.62)	(1.93)	0.00	(5.45)	0.00		40.00	(15.84)	30.98	12.27		0.00	0.00	29.05	2.91%	4.26
30	(120.78)	(2.41)	0.00	(6.81)	0.00		40.00	(15.84)	28.73	11.38		0.00	0.00	26.32	2.63%	3.61
31	(144.94)	(2.89)	0.00	(8.17)	0.00		40.00	(15.84)	26.47	10.48		0.00	0.00	23.58	2.36%	3.03
32	(169.09)	(3.37)	0.00	(9.53)	0.00		40.00	(15.84)	24.22	9.59		0.00	0.00	20.84	2.08%	2.51
33	(193.25)	(3.85)	0.00	(10.89)	0.00		40.00	(15.84)	21.96	8.70		0.00	0.00	18.11	1.81%	2.04
34	(217.40)	(4.33)	0.00	(12.26)	0.00		40.00	(15.84)	19.71	7.81		0.00	0.00	15.37	1.54%	1.62
35	(241.56)	(4.82)	0.00	(13.62)	0.00		40.00	(15.84)	17.45	6.91		0.00	0.00	12.63	1.26%	1.25
36	(265.72)	(5.30)	0.00	(14.98)	0.00		40.00	(15.84)	15.20	6.02		0.00	0.00	9.90	0.99%	0.91
37	(289.87)	(5.78)	0.00	(16.34)	0.00		40.00	(15.84)	12.94	5.13		0.00	0.00	7.16	0.72%	0.62
38	(314.03)	(6.26)	0.00	(17.70)	0.00		40.00	(15.84)	10.69	4.23		0.00	0.00	4.42	0.44%	0.36

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream
Services Investment

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Taxes	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
39	(338.18)	(6.74)	0.00	(19.07)	0.00		40.00	(15.84)	8.43	3.34		0.00	0.00	1.69	0.17%	0.13
40	(600.00)	(11.96)	0.00	(33.83)	600.00		40.00	221.82	(616.01)	(244.00)		0.00	0.00	(27.97)	-2.80%	(1.98)
41	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
42	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
43	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
44	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
45	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
46	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
47	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
48	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
49	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
50	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
51	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
52	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
53	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
54	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
55	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
56	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
57	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
58	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
59	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
60	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
61	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
62	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
63	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
64	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
65	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
Total		$ 154.33	$ -	$ 436.43	$ 1,600.00	$ 1.00	$ 1,600.00	$ 0.00	$ 722.69	$ 286.26	$ -	$ 909.01	$ 14.21	$ 3,400.24	340.02%	$1,688.19
Present Worth		$128.52	$ -	$ 363.44	$ 593.01	$ 0.55	$ 543.25	$ 19.71	$552.05	$ 218.67	$ -	$ 408.09	$ 6.52	$ 1,688.19	168.82%	$1,029.17
Levelized Payment Current		$9.46	$ -	$ 26.76	$ 43.66	$ 0.04	$ 40.00	$ 1.45	$ 40.65	$ 16.10	$ -	$ 30.05	$ 0.48	$ 124.30	12.43%	
Levelized Payment Constant		$ 7.58	$ -	$ 21.45	$ 35.00	$ 0.03	$ 32.06	$ 1.16	$ 32.58	$ 12.91	$ -	$ 24.08	$ 0.38	$ 99.63	9.96%	

0397

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream

Metering Equipment

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Tax	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
	1000.00						0.00	0.00								
1	967.89	19.29	0.00	54.56	37.50	3.750%	28.57	3.54	81.43	32.25		28.10	0.48	166.80	16.68%	156.12
2	922.04	18.38	0.00	51.98	72.19	7.219%	28.57	17.28	42.46	16.82		28.80	0.49	162.32	16.23%	142.20
3	878.34	17.51	0.00	49.52	66.77	6.677%	28.57	15.13	43.80	17.35		29.52	0.50	158.09	15.81%	129.63
4	836.62	16.68	0.00	47.16	61.77	6.177%	28.57	13.15	44.90	17.79		30.26	0.51	154.12	15.41%	118.27
5	796.74	15.88	0.00	44.92	57.13	5.713%	28.57	11.31	45.82	18.15		31.02	0.51	150.36	15.04%	108.00
6	758.55	15.12	0.00	42.76	52.85	5.285%	28.57	9.62	46.53	18.43		31.79	0.52	146.82	14.68%	98.71
7	721.93	14.39	0.00	40.70	48.88	4.888%	28.57	8.04	47.08	18.65		32.59	0.53	143.48	14.35%	90.28
8	686.77	13.69	0.00	38.72	45.22	4.522%	28.57	6.59	47.46	18.80		33.40	0.54	140.32	14.03%	82.64
9	651.84	12.99	0.00	36.75	44.62	4.462%	28.57	6.36	44.80	17.75		34.24	0.55	137.21	13.72%	75.63
10	616.91	12.30	0.00	34.78	44.61	4.461%	28.57	6.35	41.55	16.46		35.09	0.56	134.11	13.41%	69.20
11	581.99	11.60	0.00	32.81	44.62	4.462%	28.57	6.36	38.28	15.16		35.97	0.57	131.05	13.10%	63.28
12	547.06	10.91	0.00	30.84	44.61	4.461%	28.57	6.35	35.03	13.88		36.87	0.58	128.00	12.80%	57.85
13	512.13	10.21	0.00	28.87	44.62	4.462%	28.57	6.36	31.76	12.58		37.79	0.59	124.97	12.50%	52.87
14	477.21	9.51	0.00	26.90	44.61	4.461%	28.57	6.35	28.51	11.29		38.74	0.60	121.97	12.20%	48.30
15	442.28	8.82	0.00	24.93	44.62	4.462%	28.57	6.36	25.24	10.00		39.70	0.61	118.99	11.90%	44.10
16	407.36	8.12	0.00	22.96	44.61	4.461%	28.57	6.35	21.99	8.71		40.70	0.63	116.04	11.60%	40.25
17	372.43	7.42	0.00	21.00	44.62	4.462%	28.57	6.36	18.72	7.41		41.71	0.64	113.11	11.31%	36.72
18	337.50	6.73	0.00	19.03	44.61	4.461%	28.57	6.35	15.47	6.13		42.76	0.65	110.21	11.02%	33.49
19	302.58	6.03	0.00	17.06	44.62	4.462%	28.57	6.36	12.20	4.83		43.83	0.66	107.33	10.73%	30.53
20	267.65	5.34	0.00	15.09	44.61	4.461%	28.57	6.35	8.95	3.54		44.92	0.67	104.49	10.45%	27.81
21	241.56	4.82	0.00	13.62	22.31	2.231%	28.57	(2.48)	28.81	11.41		46.05	0.68	102.67	10.27%	25.58
22	224.31	4.47	0.00	12.65	0.00		28.57	(11.32)	49.51	19.61		47.20	0.70	101.87	10.19%	23.76
23	207.05	4.13	0.00	11.67	0.00		28.57	(11.32)	47.90	18.97		48.38	0.71	101.11	10.11%	22.07
24	189.80	3.78	0.00	10.70	0.00		28.57	(11.32)	46.29	18.34		49.59	0.72	100.38	10.04%	20.51
25	172.54	3.44	0.00	9.73	0.00		28.57	(11.32)	44.68	17.70		50.83	0.73	99.68	9.97%	19.06
26	155.29	3.10	0.00	8.75	0.00		28.57	(11.32)	43.07	17.06		52.10	0.75	99.01	9.90%	17.72
27	138.03	2.75	0.00	7.78	0.00		28.57	(11.32)	41.46	16.42		53.40	0.76	98.37	9.84%	16.48
28	120.78	2.41	0.00	6.81	0.00		28.57	(11.32)	39.85	15.78		54.73	0.77	97.76	9.78%	15.33
29	103.53	2.06	0.00	5.84	0.00		28.57	(11.32)	38.24	15.15		56.10	0.79	97.19	9.72%	14.26
30	86.27	1.72	0.00	4.86	0.00		28.57	(11.32)	36.63	14.51		57.50	0.80	96.65	9.67%	13.27
31	69.02	1.38	0.00	3.89	0.00		28.57	(11.32)	35.01	13.87		58.94	0.82	96.15	9.61%	12.36
32	51.76	1.03	0.00	2.92	0.00		28.57	(11.32)	33.40	13.23		60.42	0.83	95.68	9.57%	11.51
33	34.51	0.69	0.00	1.95	0.00		28.57	(11.32)	31.79	12.59		61.93	0.85	95.25	9.53%	10.73
34	17.25	0.34	0.00	0.97	0.00		28.57	(11.32)	30.18	11.96		63.47	0.86	94.86	9.49%	10.00
35	0.00	0.00	0.00	0.00	0.00		28.57	(11.32)	28.57	11.32		65.06	0.88	94.51	9.45%	9.32
36	(17.25)	(0.34)	0.00	(0.97)	0.00		28.57	(11.32)	26.96	10.68		0.00	0.00	26.62	2.66%	2.46
37	(34.51)	(0.69)	0.00	(1.95)	0.00		28.57	(11.32)	25.35	10.04		0.00	0.00	24.66	2.47%	2.13
38	(51.76)	(1.03)	0.00	(2.92)	0.00		28.57	(11.32)	23.74	9.40		0.00	0.00	22.71	2.27%	1.84

Liberty Utilities (EnergyNorth Natural Gas) Corp. - Development of Revenue Requirements Stream

Metering Equipment

Year No.	Rate Base	Interest On Debt	Return On Preferred	Return On Common	Tax Depreciation	Tax Depreciation Rate	Book Depreciation	Deferred Tax	Taxable Income	Income Tax Payable	Revenue Tax	Property Tax	Property Insurance	Annual Revenue Requirements	% of Original Investment Revenue	Present Worth Of Revenue
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
39	(69.02)	(1.38)	0.00	(3.89)	0.00		28.57	(11.32)	22.13	8.77		0.00	0.00	20.75	2.08%	1.57
40	(86.27)	(1.72)	0.00	(4.86)	0.00		28.57	(11.32)	20.52	8.13		0.00	0.00	18.80	1.88%	1.33
41	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
42	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
43	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
44	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
45	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
46	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
47	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
48	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
49	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
50	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
51	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
52	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
53	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
54	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
55	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
56	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
57	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
58	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
59	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
60	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
61	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
62	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
63	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
64	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
65	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00%	0.00
Total		$ 271.89	$ -	$ 768.88	$ 1,000.00	$ 1.00	$ 1,142.86	$(56.59)	$1,416.05	$ 560.90	$ -	$ 1,543.48	$ 23.04	$ 4,254.46	425.45%	$1,757.17
Present Worth		$152.33	$ -	$ 430.79	$ 550.49	$ 0.55	$ 388.03	$ 64.35	$ 550.89	$ 218.21	$ -	$ 495.72	$ 7.74	$ 1,757.17	175.72%	$1,004.99
Levelized Payment Current $		$11.56	$ -	$ 32.70	$ 41.78	$ 0.04	$ 29.45	$ 4.88	$ 41.81	$ 16.56	$ -	$ 37.63	$ 0.59	$ 133.37	13.34%	
Levelized Payment Constant $		$ 9.43	$ -	$ 26.65	$ 34.06	$ 0.03	$ 24.01	$ 3.98	$ 34.08	$ 13.50	$ -	$ 30.67	$ 0.48	$ 108.72	10.87%	

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Development of Weighted Plant Book Lives and Salvage

Line No.	Description	2013 Plant Balance	2013 % Plant Balance	Average Service Life	Net Salvage Value
	(A)	(B) WP-JDS-MCS-7 Page 8, Col (C)	(C) Col (B) line(n) / Col (B) Line 8	(D) WP-JDS-MCS-7 Page 8, Col (D)	(E) WP-JDS-MCS-7 Page 8, Col (E)
1	**Hypothetical Production Plant**				
2	Structures & Improvements	$2,268,920	17.98%	30	0%
3	Other Power Equipment	$10,349,982	82.02%	30	0%
4	L.P. Gas Equipment	$0	0.00%	30	0%
5	Gas Mixing Equipment	$0	0.00%	30	0%
6	Other Equipment	$0	0.00%	30	0%
7	L.N.G. Equipment	$0	0.00%	30	0%
8	Total Production Plant	12,618,902	100.00%	30	0%
9	**Distribution Investment (excluding Customer Equipment)**				
10					
11	1308.6 Distribution Plant Structures	$623,659		30	0%
12	1356 Mains	$188,406,611		60	-15%
13	1358 Pumping & Regulating Equipment	$4,891,029		30	0%
14	Total Distribution Capacity-Related	$193,921,299		59	-15%
15	1359 Services	$118,100,974		40	-60%
16	1360 Customer Meters & Installations	$24,680,716		35	0

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Summary of Marginal Capacity Costs

Line No.	Description	Production in lieu of Reinforcement	Mains Reinforcement	Mains Extension	Total Distribution	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)
	Plant Investment					
1	Long-Run Unit Costs - $/Design Day Dth	$82.58	$146.06	$889.73	$1,118.38	JDS/MCS-1 Page 1 Line 11, JDS/MCS-1 Page 5 Line 6, and JDS/MCS-1 Page 5 Line 13
2	General Plant Loading Factor	3.11%	3.11%	3.11%		Att JDS-MCS-6 Page 3&4, Line 41
3	Unit Costs + Loading Factor	85.15	150.60	917.38	$1,153.13	Line 1 + (Line 1 x Line 2)
4	Fixed Charge Rate	11.22%	9.82%	9.82%		JDS/MCS-7 Page 7A and 7B, Levelized Payment Constant $
5	A & G Exp Plant-Related Loading Factor	0.26%	0.26%	0.26%		Att JDS-MCS-6 Page 1&2, Line 37
6	Total Rate	11.48%	10.08%	10.08%		Line 4 + Line 5
7	Annualized Cost	$9.77	$15.18	$92.46	$117.41	Line 3 x Line 6
8	**Operating Expenses**					
9	Production capacity costs	$0.52			$0.52	Att JDSMCS-3 Page 1&2, Line 37
10	Distribution capacity costs			$31.93	$31.93	Att JDS-MCS-4 Page 1&2, Line 33
11	A&G Exp Non-Plant Loading Factor	49.23%	49.23%	49.23%		Att JDS-MCS-6 Page 1&2, Line 37
12	Total O&M Expense	$0.77	$0.00	$47.66	$48.42	(Line 9 + Line 10) x (1 + Line 11)
13	**Working Capital**					
14	Materials & Supplies + Prepayments Rate	0.32%	0.32%	0.32%		Att JDS-MCS-6 Page 3&4, Line 41
15	M&S Cost	0.27	0.48	2.94	$ 3.70	Line 3 x Line 14
16	Working Cash O&M Allowance	$1.30	$1.87	$17.27	$ 20.45	Based on 45 days net lag
17	12.33%					
18	Total Working Capital	$1.57	$2.35	$20.22	$24.14	Line 15 + Line 16
19						
20	Working Capital Rev Req	$0.18	$0.27	$2.29	$2.74	Line 18 x Line 21
21	11.33%					Att JDS-MCS-7 Page 1, Line 15
22	System Seasonal Capacity Related Cost					
23	$/Design Day Dth	$10.72	$15.45	$142.40	$168.57	Line 7 + Line 12 + Line 20
24	Gross up for Sendout/Sales Factor	0.983	0.983	0.983	0.983	WP-JDS-MCS-6 Page 3&4, Line 18
25	Inflation Adjustment	3.61%	3.61%	3.61%	3.61%	((1 + Att JDS-MCS-7 Page 1, Line 18)^2)-1
26	**Seasonal Capacity Cost**	$11.29	$16.27	$150.00	$177.56	(Line 23 x (1- Line 24) + Line 23) x (1 + Line 25)

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Summary of Marginal Customer Costs

Line No.	Description	R-1	R-3, R-4	G-41	G-42	G-43	G-51	G-52	G-53	G-54	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
	Plant Investment										
1	Meters and Regulators	$ 229.58	$ 229.58	$ 343.80	$ 1,318.67	$ 2,774.63	$ 343.80	$ 1,318.67	$ 2,774.63	$ 12,506.03	Att JDS-MCS-2 Page 1, Line 8
2	General Plant Loading Factor	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	Att JDS-MCS-6 Page 3&4, Line 41
3	Unit Costs + Loading Factor	$ 236.72	$ 236.72	$ 354.48	$ 1,359.65	$ 2,860.86	$ 354.48	$ 1,359.65	$ 2,860.86	$ 12,894.69	Line 1 + (Line 1 x Line 2)
4	Fixed Charge Rate	10.87%	10.87%	10.87%	10.87%	10.87%	10.87%	10.87%	10.87%	10.87%	Att JDS-MCS-7 Page 1, Line 6
5	Meter Carrying Costs	$ 25.74	$ 25.74	$ 38.54	$ 147.82	$ 311.03	$ 38.54	$ 147.82	$ 311.03	$ 1,401.89	Line 3 x Line 4
6	Services	2,134.15	2,134.15	2,636.31	8,235.85	9,380.49	2,636.31	8,235.85	9,380.49	18,153.76	Att JDS-MCS-2 Page 1, Line 4
7	General Plant Loading Factor	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	3.11%	Att JDS-MCS-6 Page 3&4, Line 41
8	Unit Costs and Loading Factor	2,200.48	2,200.48	2,718.24	8,491.80	9,672.02	2,718.24	8,491.80	9,672.02	18,717.94	Line 6 + (Line 6 x Line 7)
9	Fixed Charge Rate	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%	Att JDS-MCS-7 Page 1, Line 5
10	Services Carrying Costs	219.24	219.24	270.83	846.06	963.65	270.83	846.06	963.65	1,864.92	Line 8 x Line 9
11	Total Plant Carrying Costs	$ 244.98	$ 244.98	$ 309.36	$ 993.88	$ 1,274.68	$ 309.36	$ 993.88	$ 1,274.68	$ 3,266.81	Line 5 + Line 10
12											
13	A&G Exp Plant-Related Loading Factor	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	Att JDS-MCS-6 Page 1&2, Line 37
14	Annualized Cost	$ 245.62	$ 245.62	$ 310.17	$ 996.48	$ 1,278.01	$ 310.17	$ 996.48	$ 1,278.01	$ 3,275.36	(1 + Line 13) x Line 11
15	**Operating Expenses**										
16	Plant Related O&M $/Customer	35.59	35.59	44.87	143.87	183.03	44.87	143.87	183.03	461.66	Att JDS-MCS-5 Page 3, Col (G)
17	Customer Acctg & Mkg Expenses	56.24	56.24	56.24	56.24	56.24	56.24	56.24	56.24	56.24	Att JDS-MCS-5 Page 6, Col (F)
18	A&G Exp Non-Plant Loading Factor	49.23%	49.23%	49.23%	49.23%	49.23%	49.23%	49.23%	49.23%	49.23%	Att JDS-MCS-6 Page 1&2, Line 37
19	Total O&M Expense	137.04	137.04	150.89	298.62	357.05	150.89	298.62	357.05	772.86	Line 16 + Line 17 + ((Line 16 + Line 17) x Line 18)
20	**Working Capital- $/Customer**										
21	Materials & Supplies + Prepayments Rate	0.32%	0.32%	0.32%	0.32%	0.32%	0.32%	0.32%	0.32%	0.32%	Att JDS-MCS-6 Page 3&4, Line 41
22	M&S Cost	7.82	7.82	9.86	31.61	40.21	9.86	31.61	40.21	101.42	Line 21 x (Line 3 x Line 8)
23	Working Cash O&M Allowance	47.18	47.18	56.84	159.67	201.58	56.84	159.67	201.58	499.09	(Line 14 + Line 19) x (Att JDS-MCS-8 Page 1, Line 17)
24	Total Working Capital	55.00	55.00	66.70	191.27	241.79	66.70	191.27	241.79	600.51	Line 22 + Line 23
25	Working Capital Rev. Requirement	6.23	6.23	7.56	21.67	27.39	7.56	21.67	27.39	68.03	Line 24 x (Att JDS-MCS-7 Page 1, Line 15)
26	Annual Customer Related Cost $/Customer	$ 388.88	$ 388.88	$ 468.62	$ 1,316.76	$ 1,662.45	$ 468.62	$ 1,316.76	$ 1,662.45	$ 4,116.24	Line 14 + Line 19 + Line 25
27											
28	Inflation Adjustment	3.61%	3.61%	3.61%	3.61%	3.61%	3.61%	3.61%	3.61%	3.61%	((1 + Att JDS-MCS-7 Page 1, Line 18)^2)-1
29	**Annual Customer Related Cost**	$402.93	$402.93	$485.54	$1,364.33	$1,722.50	$485.54	$1,364.33	$1,722.50	$4,264.93	Line 26 x (1 + Line 28)

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study
Summary of Marginal Cost Estimates

Line No.	Description	R-1	R-3, R-4	G-41	G-42	G-43	G-51	G-52	G-53	G-54	Total Company	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
1	Uncollectible Factor	4.46%	4.63%	1.10%	0.02%	0.00%	4.30%	1.69%	0.00%	0.00%		
2												
3	Customer Charge $'s per month											
4	Monthly Customer Charge w/o Uncollectibles	$ 33.58	$ 33.58	$ 40.46	$ 113.69	$ 143.54	$ 40.46	$ 113.69	$ 143.54	$ 355.41		(Att JDS-MCS-9 Page 1, Line 29)/12
5	Adjustment for Uncollectibles	1.50	1.56	0.45	0.02	0.00	1.74	1.92	0.00	0.00		Line 1 x Line 4
6	Monthly Customer Charge Incl. Uncollectibles	$35.08	$35.13	$40.91	$113.71	$143.54	$42.20	$115.62	$143.54	$355.41		Line 4 + Line 5
7	Capacity-related: Winter Charges											
8	Distribution Demand Charge- Pressure Support	11.29	11.29	11.29	11.29	11.29	11.29	11.29	11.29	11.29		Att JDS-MCS-8 Page 1, Col (B)
9	Distribution Demand Charge- Reinforcemer	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.27		Att JDS-MCS-8 Page 1, Col (C)
10	Distribution Demand Charge- Main Extensions	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00		Att JDS-MCS-8 Page 1, Col (D)
11	Adjustment for Uncollectibles	$7.92	$8.23	$1.96	$0.03	$0.00	$7.63	$3.01	$0.00	$0.00		(Line 8 + Line 9 + Line 10) x Line 1)
12	Winter Charges Incl. Uncollectibles	$185.48	$185.79	$179.52	$177.59	$177.56	$185.19	$180.57	$177.56	$177.56		Σ line 8 to Line 11
13	Summer Charges											
14	Capacity-related: Distribution Demand Charge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15	Adjustment for Uncollectibles	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		Line 1 x Line 14
16	Summer Charges Incl. Uncollectibles	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		Line 14 + Line 15
17	Calendar Month Billing Determinants (2013)											
18	Customers	3,657	71,922	7,803	1,567	44	1,294	312	38	22	86,659.77	Att JDS-MCS-11 Page 1, Line 16
19	Design Day Dth -Sales and Transportation	808	61,511	23,384	32,712	8,441	2,609	3,918	4,139	4,980	142,503.03	Att JDS-MCS-11 Page 1, Line 17
20	Winter Dth -Sales and Transportation	71,639	4,705,002	1,676,691	2,505,889	754,637	264,522	463,492	559,883	906,001	11,907,752.82	Att JDS-MCS-11 Page 1, Line 18
21	Summer Dth -Sales and Transportation	27,044	972,475	248,847	563,181	228,788	126,263	265,013	368,014	824,145	3,623,769.37	Att JDS-MCS-11 Page 1, Line 19
22												
23	**Total Marginal Costs**											
24	Total Customer-related	$1,539,149	$30,322,612	$3,830,258	$2,137,939	$76,492	$655,379	$433,215	$65,918	$95,710	$39,156,672	Line 6 x Line 18 x 12
25	Capacity-related: Winter											
26	Winter Distribution Pressure Support	9,537	726,926	267,017	369,525	95,340	30,735	45,006	46,744	56,252	1,647,082.98	(1 + Line 1) x Line 8 x Line 19
27	Winter Distribution Reinforcements	13,737	1,047,071	384,614	532,267	137,329	44,271	64,828	67,330	81,026	2,372,471.50	(1 + Line 1) x Line 9 x Line 19
28	Winter Distribution Main Ext.	126,654	9,653,952	3,546,125	4,907,477	1,266,168	408,180	597,707	620,782	747,052	21,874,096.34	(1 + Line 1) x Line 10 x Line 19
29	Total Capacity-related: Winter	$ 149,928	$ 11,427,949	$ 4,197,756	$ 5,809,269	$ 1,498,837	$ 483,186	$ 707,541	$ 734,856	$ 884,330	$ 25,893,651	Σ line 26 to Line 28
30	Capacity-related: Summer											
31	Distribution Demand Charge	-	-	-	-	-	-	-	-	-	-	(1 + Line 1) x Line 14 x Line 21
32	Total Capacity-related:Summer	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	Line 31
33	Customer Subtotal	$1,539,149	$30,322,612	$3,830,258	$2,137,939	$76,492	$655,379	$433,215	$65,918	$95,710	$39,156,672	Line 24
34	Distribution Subtotal	149,928	$11,427,949	$4,197,756	$5,809,269	$1,498,837	$483,186	$707,541	$734,856	$884,330	$25,893,651	Line 26 + Line 27 + Line 28 + Line 31
35	**Total Annual Marginal Cost**	$ 1,689,077	$ 41,750,561	$ 8,028,013	$ 7,947,208	$ 1,575,329	$ 1,138,565	$ 1,140,756	$ 800,774	$ 980,039	$ 65,050,323	Σ line 33 to Line 34
36	**Share of Total Annual Marginal Cost**	2.6%	64.2%	12.3%	12.2%	2.4%	1.8%	1.8%	1.2%	1.5%	100.00%	Col (n) / Col (K)

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Liberty Utilities (EnergyNorth Natural Gas) Corp. Marginal Cost Study

Marginal Unit Costs per Dth

Line No.		R-1	R-3, R-4	G-41	G-42	G-43	G-51	G-52	G-53	G-54	Explanation
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(L)
1	Customer Charge										
2	Customer Charge (w/ Uncoll) $'s per Month	$35.08	$35.13	$40.91	$113.71	$143.54	$42.20	$115.62	$143.54	$355.41	Att JDS-MCS-10 Page 1, Line 6
3	Capacity-related Winter Unit Costs										
4	Winter Distribution Pressure Support	$0.1331	$0.1545	$0.1593	$0.1475	$0.1263	$0.1162	$0.0971	$0.0835	$0.0621	Att JDS-MCS-10 Page 1, Line 26 / Line 18
5	Winter Distribution Reinforcements	$0.1918	$0.2225	$0.2294	$0.2124	$0.1820	$0.1674	$0.1399	$0.1203	$0.0894	Att JDS-MCS-10 Page 1, Line 27 / Line 18
6	Winter Distribution Main Ext.	$1.7680	$2.0518	$2.1150	$1.9584	$1.6779	$1.5431	$1.2896	$1.1088	$0.8246	Att JDS-MCS-10 Page 1, Line 28 / Line 18
7	Capacity-related Summer Unit Cost										
8	Distribution Demand	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	Att JDS-MCS-10 Page 1, Line 30 / Line 19
9	**Total Unit Cost Summary**										
10	Distribution										
11	Customer	$35.08	$35.134	$40.908	$113.711	$143.542	$42.202	$115.619	$143.542	$355.410	Line 2
12	Winter, $/Dth	$2.0928	$2.4289	$2.5036	$2.3182	$1.9862	$1.8266	$1.5265	$1.3125	$0.9761	Line 4 + Line 5 + Line 6
13	Summer, $/Dth	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	$0.0000	Line 8
14	Annual Avg, $/Dth	$1.5193	$2.0129	$2.1800	$1.8928	$1.5241	$1.2364	$0.9712	$0.7920	$0.5111	Att JDS-MCS-10 Page 1, Line 36 / Line 20
15	Test Year Calendar Month Billing Determinants - Sales And Transportation Loads (All Firm Loads)										
16	Customers Annual	3,657	71,922	7,803	1,567	44	1,294	312	38	22	WP-JDS-MCS-5 Page 7, Col (E) Lines 16 to 26
17	Design Day Dths	808	61,511	23,384	32,712	8,441	2,609	3,918	4,139	4,980	(WP-Billing Determinants, Line 2) /10
18	Winter Dths	71,639	4,705,002	1,676,691	2,505,889	754,637	264,522	463,492	559,883	906,001	(WP-JDS-MCS-5 Page 7, Col (B), Lines 16 to 26) /10
19	Summer Dths	27,044	972,475	248,847	563,181	228,788	126,263	265,013	368,014	824,145	(WP-JDS-MCS-5 Page 7, Col (C), Lines 16 to 26) /10
20	Total Annual Dths	98,682	5,677,477	1,925,538	3,069,070	983,425	390,785	728,504	927,896	1,730,145	Σ line 18 to Line 19

Note: The design day demand data, annual delivery data, and seasonal delivery data in this attachment are provided for all firm customers, including firm Zero Capacity Customers."

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