

Benefit/Cost Analysis Granite Ridge

- 1 Year Liberty Assumed Contract
- 2 Total contract charges per year
- 3 Contract split of charges
- 4 Contract split of charges
- 5 Sum of lines 4 + 5
- 6 Page 3 line 25 and page 4 line 25
- 7 Annual O&M costs to inspect the line
- 8 Sum of lines 6 + 7
- 9 Line 5 - line 9
- 10 After-tax discount rate
- 11 Net Present Value calculation of net benefits using discount rate in Line (10) and net benefits (or costs) in line (9)
- 12 Net Present Value calculation of benefits using discount rate in Line (20) and benefits in line (5)
- 13 Net Present Value calculation of costs using discount rate in Line (10) and costs in line (8)

January	February	March	April	May	June	July
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[illegible]

s) Corp. d/b/a Liberty
Lateral

<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty
Benefit/Cost Analysis Granite Ridge
Lateral Revenue Requirement

	Deferred Tax Calculation	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	Distribution Circuit Upgrades	\$5,678,898									
2	Total	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898
3	FEDERAL Vintage Year Tax Depreciat	\$212,959	\$409,960	\$379,180	\$350,786	\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336
4	Annual Tax Depreciation	\$212,959	\$409,960	\$379,180	\$350,786	\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336
5	Cumulative Tax Depreciation	\$212,959	\$622,918	\$1,002,098	\$1,352,884	\$1,677,319	\$1,977,449	\$2,255,034	\$2,511,833	\$2,765,226	\$3,018,561
6	STATE Vintage Year Tax Depreciation:	\$212,959	\$409,960	\$379,180	\$350,786	\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336
7	Annual Tax Depreciation	\$212,959	\$409,960	\$379,180	\$350,786	\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336
8	Cumulative Tax Depreciation	\$212,959	\$622,919	\$1,002,099	\$1,352,885	\$1,677,320	\$1,977,450	\$2,255,035	\$2,511,835	\$2,765,227	\$3,018,563
9	Book Depreciation Rate (a)	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%
10	Book Depreciation	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035
11	Cumulative Book Depreciation	\$109,035	\$218,070	\$327,105	\$436,139	\$545,174	\$654,209	\$763,244	\$872,279	\$981,314	\$1,090,348
12	Book/Tax Timer (Federal)	\$103,924	\$404,849	\$674,994	\$916,744	\$1,132,145	\$1,323,240	\$1,491,790	\$1,639,555	\$1,783,912	\$1,928,213
13	less: Deferred Tax Reserve (State)	\$8,834	\$34,412	\$57,375	\$77,923	\$96,232	\$108,506	\$122,327	\$129,525	\$137,361	\$148,473
14	Net Book/Tax Timer (Federal)	\$95,090	\$370,436	\$617,619	\$838,821	\$1,035,913	\$1,214,734	\$1,369,463	\$1,510,030	\$1,646,551	\$1,779,740
15	Effective Tax Rate (Federal)	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	21.00%	21.00%	21.00%	21.00%
16	Deferred Tax Reserve (Federal)	\$33,282	\$129,653	\$216,167	\$293,587	\$362,569	\$425,157	\$287,587	\$317,106	\$345,776	\$373,745
17	Book/Tax Timer (State)	\$103,924	\$404,849	\$674,994	\$916,746	\$1,132,146	\$1,323,241	\$1,491,791	\$1,639,556	\$1,783,913	\$1,928,215
18	Effective Tax Rate (State)	8.50%	8.50%	8.50%	8.50%	8.50%	8.20%	8.20%	7.90%	7.70%	7.70%
19	Deferred Tax Reserve (State)	\$8,834	\$34,412	\$57,375	\$77,923	\$96,232	\$108,506	\$122,327	\$129,525	\$137,361	\$148,473
20	TOTAL Deferred Tax Reserve	\$42,115	\$164,065	\$273,541	\$371,511	\$458,802	\$533,663	\$409,914	\$446,631	\$483,137	\$522,218
21	Rate Base Calculation										
22	Plant In Service	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898
23	Accumulated Book Depreciation	(\$109,035)	(\$218,070)	(\$327,105)	(\$436,139)	(\$545,174)	(\$654,209)	(\$763,244)	(\$872,279)	(\$981,314)	(\$1,090,348)
24	Deferred Tax Reserve	(\$42,115)	(\$164,065)	(\$273,541)	(\$371,511)	(\$458,802)	(\$533,663)	(\$409,914)	(\$446,631)	(\$483,137)	(\$522,218)
25	Year End Rate Base	\$5,527,748	\$5,296,763	\$5,078,252	\$4,871,248	\$4,674,922	\$4,491,026	\$4,505,740	\$4,359,988	\$4,214,447	\$4,066,331
26	Revenue Requirement Calculation										
27	Year End Rate Base	\$5,527,748	\$5,296,763	\$5,078,252	\$4,871,248	\$4,674,922	\$4,491,026	\$4,505,740	\$4,359,988	\$4,214,447	\$4,066,331
28	Pre-Tax ROR	11.47%	11.47%	11.47%	11.50%	11.47%	11.47%	8.60%	8.60%	8.60%	8.76%
29	Return and Taxes	\$634,197	\$607,696	\$582,627	\$560,059	\$536,353	\$515,254	\$387,686	\$375,145	\$362,622	\$356,116
30	Book Depreciation	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035	\$109,035
31	Property Taxes (b)	\$106,133	\$101,698	\$97,502	\$93,528	\$89,758	\$86,228	\$86,510	\$83,712	\$80,917	\$78,074
32	Annual Revenue Requirement	\$849,365	\$818,429	\$789,164	\$762,622	\$735,146	\$710,517	\$583,231	\$567,892	\$552,575	\$543,225
33	Imputed Capital Structure (c)										
		DG 11-040				DG 14-180				DG 17-(
		Weighted				Weighted					
		Ratio	Rate	Rate	Pre Tax	Ratio	Rate	Rate	Pre Tax	Ratio	Rate
34	Long Term Debt	45.00%	4.43%	1.99%	1.99%	45.00%	5.93%	2.67%	2.67%	50.79%	4.38%
35	Common Equity	55.00%	10.25%	5.64%	9.48%	55.00%	9.55%	5.25%	8.83%	49.21%	9.40%
Notes:											
	(a) Used Liberty Utilities Estimates	100.00%		7.63%	11.47%	100.00%		7.92%	11.50%	100.00%	

Liberty Utilities (EnergyNorth Natural Gas)
Benefit/Cost Analysis Grant
Lateral Revenue Requirement

Deferred Tax Calculation		2022	2023	2024	2025
1	Distribution Circuit Upgrades	\$4,066,331			
2	Total	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331
3	FEDERAL Vintage Year Tax Depreciation	\$253,392	\$409,960	\$379,180	\$350,786
4	Annual Tax Depreciation	\$253,392	\$409,960	\$379,180	\$4,419,142
5	Cumulative Tax Depreciation	\$253,392	\$663,352	\$1,042,532	\$5,461,674
6	STATE Vintage Year Tax Depreciation:	\$253,392	\$253,336	\$253,392	\$253,336
7	Annual Tax Depreciation	\$253,392	\$253,336	\$253,392	\$253,336
8	Cumulative Tax Depreciation	\$253,392	\$506,728	\$760,120	\$1,013,456
9	Book Depreciation Rate (a)	1.92%	1.92%	1.92%	1.92%
10	Book Depreciation	\$78,074	\$78,074	\$78,074	\$78,074
11	Cumulative Book Depreciation	\$78,074	\$156,147	\$234,221	\$312,294
12	Book/Tax Timer (Federal)	\$175,319	\$507,205	\$808,311	\$5,149,380
13	less: Deferred Tax Reserve (State)	\$13,500	\$26,995	\$40,494	\$53,989
14	Net Book/Tax Timer (Federal)	\$161,819	\$480,210	\$767,817	\$5,095,390
15	Effective Tax Rate (Federal)	21.00%	21.00%	21.00%	21.00%
16	Deferred Tax Reserve (Federal)	\$33,982	\$100,844	\$161,242	\$1,070,032
17	Book/Tax Timer (State)	\$175,318	\$350,581	\$525,899	\$701,162
18	Effective Tax Rate (State)	7.70%	7.70%	7.70%	7.70%
19	Deferred Tax Reserve (State)	\$13,500	\$26,995	\$40,494	\$53,989
20	TOTAL Deferred Tax Reserve	\$47,482	\$127,839	\$201,736	\$1,124,021
21	Rate Base Calculation				
22	Plant In Service	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331
23	Accumulated Book Depreciation	(\$78,074)	(\$156,147)	(\$234,221)	(\$312,294)
24	Deferred Tax Reserve	(\$47,482)	(\$127,839)	(\$201,736)	(\$1,124,021)
25	Year End Rate Base	\$3,940,776	\$3,782,345	\$3,630,375	\$2,630,016
26	Revenue Requirement Calculation				
27	Year End Rate Base	\$3,940,776	\$3,782,345	\$3,630,375	\$2,630,016
28	Pre-Tax ROR	8.75%	8.75%	8.75%	8.75%
29	Return and Taxes	\$344,727	\$330,868	\$317,574	\$230,065
30	Book Depreciation	\$78,074	\$78,074	\$78,074	\$78,074
31	Property Taxes (b) 1.92%	\$75,663	\$72,621	\$69,703	\$50,496
32	Annual Revenue Requirement	\$498,463	\$481,562	\$465,350	\$358,635
33	Imputed Capital Structure (c)				
				DG 20-105	
				Weighted	
		Ratio	Rate	Rate	Pre Tax
34	Long Term Debt	48.00%	4.42%	2.12%	2.12%
35	Common Equity	52.00%	9.30%	4.84%	6.63%

Notes:

(a) Used Liberty Utilities Estimates	<u>100.00%</u>	<u>6.96%</u>	<u>8.75%</u>
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**s) Corp. d/b/a Liberty
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<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>	<u>2033</u>
\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331
\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336	\$253,392	\$253,336
\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336	\$253,392	\$253,336
\$5,786,109	\$6,086,239	\$6,363,824	\$6,620,623	\$6,874,016	\$7,127,351	\$7,380,744	\$7,634,079
\$253,336	\$253,392	\$253,336	\$253,392	\$253,336	\$253,392	\$0	\$0
\$253,336	\$253,392	\$253,336	\$253,392	\$253,336	\$253,392	\$0	\$0
\$1,266,792	\$1,520,184	\$1,773,520	\$2,026,912	\$2,280,248	\$2,533,640	\$2,533,640	\$2,533,640
1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%
\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074
\$390,368	\$468,441	\$546,515	\$624,588	\$702,662	\$780,736	\$858,809	\$936,883
\$5,395,742	\$5,617,798	\$5,817,309	\$5,996,035	\$6,171,354	\$6,346,616	\$6,521,935	\$6,697,197
\$67,485	\$80,984	\$94,479	\$107,979	\$121,474	\$134,974	\$128,962	\$122,950
\$5,328,257	\$5,536,814	\$5,722,829	\$5,888,056	\$6,049,880	\$6,211,642	\$6,392,973	\$6,574,246
21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%
\$1,118,934	\$1,162,731	\$1,201,794	\$1,236,492	\$1,270,475	\$1,304,445	\$1,342,524	\$1,380,592
\$876,424	\$1,051,743	\$1,227,005	\$1,402,324	\$1,577,586	\$1,752,904	\$1,674,831	\$1,596,757
7.70%	7.70%	7.70%	7.70%	7.70%	7.70%	7.70%	7.70%
\$67,485	\$80,984	\$94,479	\$107,979	\$121,474	\$134,974	\$128,962	\$122,950
\$1,186,419	\$1,243,715	\$1,296,274	\$1,344,471	\$1,391,949	\$1,439,418	\$1,471,486	\$1,503,542
\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331
(\$390,368)	(\$468,441)	(\$546,515)	(\$624,588)	(\$702,662)	(\$780,736)	(\$858,809)	(\$936,883)
(\$1,186,419)	(\$1,243,715)	(\$1,296,274)	(\$1,344,471)	(\$1,391,949)	(\$1,439,418)	(\$1,471,486)	(\$1,503,542)
\$2,489,545	\$2,354,175	\$2,223,543	\$2,097,272	\$1,971,720	\$1,846,177	\$1,736,036	\$1,625,907
\$2,489,545	\$2,354,175	\$2,223,543	\$2,097,272	\$1,971,720	\$1,846,177	\$1,736,036	\$1,625,907
8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%
\$217,778	\$205,936	\$194,509	\$183,463	\$172,480	\$161,498	\$151,863	\$142,229
\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074
\$47,799	\$45,200	\$42,692	\$40,268	\$37,857	\$35,447	\$33,332	\$31,217
\$343,650	\$329,210	\$315,274	\$301,804	\$288,410	\$275,018	\$263,268	\$251,520

<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>
\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331
\$253,392	\$253,336	\$253,336	\$253,392	\$253,336	\$253,392	\$253,336
\$253,392	\$253,336	\$253,336	\$253,392	\$253,336	\$253,392	\$253,336
\$7,887,472	\$8,140,808	\$8,394,143	\$8,647,536	\$8,900,871	\$9,154,264	\$9,407,599
\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$2,533,640	\$2,533,640	\$2,533,640	\$2,533,640	\$2,533,640	\$2,533,640	\$2,533,640
1.92%	1.92%	1.92%	1.92%	1.92%	1.92%	1.92%
\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074
\$1,014,956	\$1,093,030	\$1,171,103	\$1,249,177	\$1,327,251	\$1,405,324	\$1,483,398
\$6,872,516	\$7,047,778	\$7,223,040	\$7,398,359	\$7,573,621	\$7,748,939	\$7,924,202
\$116,939	\$110,927	\$104,915	\$98,904	\$92,892	\$86,880	\$80,869
\$6,755,577	\$6,936,851	\$7,118,124	\$7,299,455	\$7,480,729	\$7,662,059	\$7,843,333
21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%
\$1,418,671	\$1,456,739	\$1,494,806	\$1,532,886	\$1,570,953	\$1,609,032	\$1,647,100
\$1,518,684	\$1,440,610	\$1,362,537	\$1,284,463	\$1,206,389	\$1,128,316	\$1,050,242
7.70%	7.70%	7.70%	7.70%	7.70%	7.70%	7.70%
\$116,939	\$110,927	\$104,915	\$98,904	\$92,892	\$86,880	\$80,869
\$1,535,610	\$1,567,666	\$1,599,721	\$1,631,789	\$1,663,845	\$1,695,913	\$1,727,969
\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331	\$4,066,331
(\$1,014,956)	(\$1,093,030)	(\$1,171,103)	(\$1,249,177)	(\$1,327,251)	(\$1,405,324)	(\$1,483,398)
(\$1,535,610)	(\$1,567,666)	(\$1,599,721)	(\$1,631,789)	(\$1,663,845)	(\$1,695,913)	(\$1,727,969)
\$1,515,765	\$1,405,636	\$1,295,506	\$1,185,365	\$1,075,236	\$965,094	\$854,965
\$1,515,765	\$1,405,636	\$1,295,506	\$1,185,365	\$1,075,236	\$965,094	\$854,965
8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%
\$132,594	\$122,961	\$113,327	\$103,692	\$94,058	\$84,423	\$74,790
\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074	\$78,074
\$29,103	\$26,988	\$24,874	\$22,759	\$20,645	\$18,530	\$16,415
\$239,771	\$228,022	\$216,274	\$204,525	\$192,776	\$181,027	\$169,279

Liberty Utilities (En
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	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1 <u>Tax Depreciation (Federal)</u>				
2 Plant Additions	\$ 5,678,898			
3 20 Year MACRS Rate	3.750%	7.219%	6.677%	6.177%
4 Federal Tax Depreciation	\$212,959	\$409,960	\$379,180	\$350,786
5 <u>Remaining Tax Depreciation (State)</u>				
6 Plant Additions	\$ 5,678,898	\$5,678,898	\$5,678,898	\$5,678,898
7 20 YR MACRS Tax Depreciation Rates	3.750%	7.219%	6.677%	6.177%
8	\$212,959	\$409,960	\$379,180	\$350,786
9 Federal Tax Depreciation	\$212,959	\$409,960	\$379,180	\$350,786
10 State Tax Depreciation	\$212,959	\$409,960	\$379,180	\$350,786

1 Undepreciated value when Liberty assumed contract

ergyNorth Natural Gas) Corp. d/b/a Liberty
it/Cost Analysis Granite Ridge

Tax Calculation

<u>2016</u> 5	<u>2017</u> 6	<u>2018</u> 7	<u>2019</u> 8	<u>2020</u> 9	<u>2021</u> 10	<u>2022</u> 11	<u>2023</u> 12
5.713%	5.285%	4.888%	4.522%	4.462%	4.461%	4.462%	4.461%
\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336	\$253,392	\$253,336
\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898
5.713%	5.285%	4.888%	4.522%	4.462%	4.461%	4.462%	4.461%
\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336	\$253,392	\$253,336
\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336	\$253,392	\$253,336
\$324,435	\$300,130	\$277,585	\$256,800	\$253,392	\$253,336	\$253,392	\$253,336

<u>2024</u> <u>13</u>	<u>2025</u> <u>14</u>	<u>2026</u> <u>15</u>	<u>2027</u> <u>16</u>	<u>2028</u> <u>17</u>	<u>2029</u> <u>18</u>	<u>2030</u> <u>19</u>	<u>2031</u> <u>20</u>
4.462%	4.461%	4.461%	4.462%	4.461%	4.462%	4.461%	4.462%
\$253,392	\$253,336	\$253,336	\$253,392	\$253,336	\$253,392	\$253,336	\$253,392
\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898	\$5,678,898
4.462%	4.461%	4.461%	4.462%	4.461%	4.462%	4.461%	4.462%
\$253,392	\$253,336	\$253,336	\$253,392	\$253,336	\$253,392	\$253,336	\$253,392
\$253,392	\$253,336	\$253,336	\$253,392	\$253,336	\$253,392	\$253,336	\$253,392
\$253,392	\$253,336	\$253,336	\$253,392	\$253,336	\$253,392	\$253,336	\$253,392

Year	2012	2013	2014	2015	2016
Hours	8	8	8	8	8
Hourly Rate	\$ 46.20	\$ 46.20	\$ 46.20	\$ 46.20	\$ 46.20
Employee Count	2	2	2	2	2
times per year	4	4	4	4	4
total	\$ 2,957	\$ 2,957	\$ 2,957	\$ 2,957	\$ 2,957

Lateral Inspection Cost

2015	\$ 148,680.84
2022	\$ 65,000.00
2029	\$ 74,750.00
2036	\$ 85,962.50

	2017		2018		2019		2020		2021		2022
	8		8		8		8		8		8
\$	46.20	\$	46.20	\$	46.20	\$	46.20	\$	46.20	\$	46.20
	2		2		2		2		2		2
	4		4		4		4		4		4
\$	2,957	\$	2,957	\$	2,957	\$	2,957	\$	2,957	\$	67,957

	2023		2024		2025		2026		2027		2028		2029		2030
	8		8		8		8		8		8		8		8
\$	48.78	\$	50.24	\$	51.75	\$	53.30	\$	54.90	\$	56.55	\$	58.25	\$	59.99
	2		2		2		2		2		2		2		2
	4		4		4		4		4		4		4		4
\$	3,122	\$	3,216	\$	3,312	\$	3,411	\$	3,514	\$	3,619	\$	78,478	\$	3,840

	2031		2032		2033		2034		2035		2036		2037		2038
	8		8		8		8		8		8		8		8
\$	61.79	\$	63.65	\$	65.56	\$	67.52	\$	69.55	\$	71.64	\$	73.78	\$	76.00
	2		2		2		2		2		2		2		2
	4		4		4		4		4		4		4		4
\$	3,955	\$	4,073	\$	4,196	\$	4,321	\$	4,451	\$	90,547	\$	4,722	\$	4,864

	2039		2040
	8		8
\$	78.28	\$	80.63
	2		2
	4		4
\$	5,010	\$	5,160