

Qualifications of Stephen R. Eckberg

My name is Stephen R. Eckberg. I am employed as a Utility Analyst with the Sustainable Energy Division of the New Hampshire Public Utilities Commission where I have worked since 2014. My business address is 21 S. Fruit Street, Suite 10, Concord, New Hampshire 03301.

I earned a B.S. in Meteorology from the State University of New York at Oswego and an M.S. in Statistics from the University of Southern Maine.

After receiving my M.S. degree, I was employed as an analyst in the Boston office of Hagler Bailly, Inc, a consulting firm working with regulated utilities to perform evaluations of energy efficiency and demand-side management programs. From 2000 through 2003, I was employed at the NH Governor's Office of Energy and Community Services (now the Office of Strategic Initiatives) as the Director of the Weatherization Assistance Program. Following that, I was employed at Belknap Merrimack Community Action Agency as the Statewide Program Administrator of the NH Electric Assistance Program (EAP). In that capacity, I presented testimony before the NH Public Utilities Commission in dockets related to the design, implementation and management of the EAP. I have also testified before Committees of the New Hampshire General Court on issues related to energy efficiency and low income electric assistance. From 2007 – 2014 I was employed as a Utility Analyst with the New Hampshire Office of the Consumer Advocate (OCA). During my tenure with the OCA, I attended rate making and regulatory training at New Mexico State University's Center for Public Utilities.

In my position with the OCA, I entered pre-filed testimony jointly with Kenneth E. Traum, former Assistant Consumer Advocate, in the following dockets:

- DG 08-048 Unitil Corporation and Northem Utilities, Inc. Joint Petition for Approval of Stock Acquisition
- DW 08-070 Lakes Region Water Company Financing & Step Increase

- DW 08-098 Aquarion Water Company of New Hampshire
- DE 09-035 Public Service of New Hampshire Distribution Service Rate Case

I have also entered (non-joint) pre-filed testimony in the following dockets:

- DT 07-027 Kearsarge Telephone Company, Wilton Telephone Company, Hollis Telephone Company & Merrimack County Telephone Company Petition for Alternative Form of Regulation. Phase II & Phase III.
- DW 08-073 Pennichuck Water Works, Inc. Petition for Rate Increase
- DW 08-070 Lakes Region Water Company Third Step Increase.
- DW 08-065 Hampstead Area Water Company Petition for Rate Increase.
- DE 09-170 2010 CORE Energy Efficiency Programs.
- DW 10-090 Pittsfield Aqueduct Company Petition for Rate Increase.
- DW 10-091 Pennichuck Water Works Petition for Rate Increase.
- DW 10-141 Lakes Region Water Petition for Rate Increase.
- DE 10-188 2011-2012 CORE and Natural Gas Energy Efficiency Programs.
- DE 11-250 PSNH Installation of a Wet Flue-Gas Desulphurization Scrubber
- DE 12-262 2013-2014 CORE and Natural Gas Energy Efficiency Programs.
- DE 12-292 PSNH 2013 Energy Service Rate.
- DE 12-262 2014 CORE Energy Efficiency Programs Update Filing
- DE 13-108 PSNH 2012 Energy Service Reconciliation
- DG 14-091 Liberty Utilities Special Contract and Lease Agreement with Innovative Natural Gas, LLC dba iNATGAS

	Class I Thermal REC Value				
	\$/MWH	\$/Dth			
	\$25.97	\$7.61	This is the 2019 TREC ACP Value		
	\$25.00	\$7.33			
	\$24.00	\$7.03			
	\$23.00	\$6.74			
	\$22.00	\$6.45			
	\$21.00	\$6.15			
	\$20.00	\$5.86			
	\$19.00	\$5.57			
	\$18.00	\$5.28			
	\$17.00	\$4.98			
	\$16.00	\$4.69			
	\$15.00	\$4.40			
	\$14.00	\$4.10			
	\$13.00	\$3.81			
	\$12.00	\$3.52			
	\$11.00	\$3.22			
	\$10.00	\$2.93			
	\$9.00	\$2.64			
	\$8.00	\$2.34			
	\$7.00	\$2.05			
	\$6.00	\$1.76			
	\$5.00	\$1.47			
	\$4.00	\$1.17			
	\$3.00	\$0.88			
	\$2.00	\$0.59			
	\$1.00	\$0.29			

Decompression Bid
contingency
Sub-Total
Internal Labor
Eng Review
Total

(1) No Landfill Expansion
(2) Last ten year average

Rate Base model	CapEx		Ratio	Rate	Weighted Rate	PreTax
Purchase Price	\$ 14,500,000	Long Term Debt	49.85%	4.42%	2.20%	2.20%
Decompression (Broken Bridge)	\$ 804,368	Short Term Debt	0.95%	2.49%	0.02%	0.02%
Total Cost	\$ 15,304,368	Common Equity	49.21%	9.30%	4.58%	6.32%
Required Return (pre tax)	8.55%				6.80%	8.55%
Depreciation	765,218					
OpEx	\$ 10,000					

Year	MACRS Rates	MACRS Table	Book Depr	Delta	Tax Rate	DIT	ADIT	Rate Base	Return Required	O&M - Ins 1.7% escalator (2)	Revenue Requirement	Dth (1)	\$/Dth	Rudarpa Fee 1.7% escalator (2)	Delivered COG	TREC Estimate	COG W/TREC
								\$15,304,368									
1	3.75%	\$ 573,914	\$ 765,218	\$ 191,305	27.48%	\$ 52,571	\$ 52,571	\$14,591,720	\$1,277,802	\$ 10,000.00	\$2,053,020	490,000	\$4.19	\$6.11	\$10.30	1st five	\$ 4.50 \$5.80 1st five
2	7.22%	\$ 1,104,822	\$ 765,218	\$ (339,604)	27.48%	\$ (93,323)	\$ (40,753)	\$13,733,179	\$1,210,647	\$ 10,170.00	\$1,986,036	490,000	\$4.05	\$6.21	\$10.27	levelized	\$ 4.50 \$5.77 levelized
3	6.68%	\$ 1,021,873	\$ 765,218	\$ (256,654)	27.48%	\$ (70,529)	\$ (111,281)	\$12,897,432	\$1,138,231	\$ 10,342.89	\$1,913,792	490,000	\$3.91	\$6.32	\$10.23	\$10.23	\$ 4.50 \$5.73 \$5.73
4	6.18%	\$ 945,351	\$ 765,218	\$ (180,132)	27.48%	\$ (49,500)	\$ (160,782)	\$12,082,713	\$1,067,687	\$ 10,518.72	\$1,843,425	490,000	\$3.76	\$6.43	\$10.19	\$ 4.50 \$5.69	
5	5.71%	\$ 874,339	\$ 765,218	\$ (109,120)	27.48%	\$ (29,986)	\$ (190,768)	\$11,287,508	\$998,877	\$ 10,697.54	\$1,774,793	490,000	\$3.62	\$6.54	\$10.16	\$ 4.50 \$5.66	
6	5.29%	\$ 808,836	\$ 765,218	\$ (43,617)	27.48%	\$ (11,986)	\$ (202,754)	\$10,510,304	\$931,670	\$ 10,879.40	\$1,707,768	375,000	\$4.55	\$6.65	\$11.20	2nd five	\$ 4.50 \$6.70 2nd five
7	4.89%	\$ 748,078	\$ 765,218	\$ 17,141	27.48%	\$ 4,710	\$ (198,044)	\$9,749,796	\$865,946	\$ 11,064.35	\$1,642,229	375,000	\$4.38	\$6.76	\$11.14	levelized	\$ 4.50 \$6.64 levelized
8	4.52%	\$ 692,064	\$ 765,218	\$ 73,155	27.48%	\$ 20,103	\$ (177,941)	\$9,004,680	\$801,593	\$ 11,252.44	\$1,578,064	375,000	\$4.21	\$6.88	\$11.08	\$11.09	\$ 4.50 \$6.58 \$6.59
9	4.46%	\$ 682,881	\$ 765,218	\$ 82,337	27.48%	\$ 22,626	\$ (155,314)	\$8,262,088	\$738,007	\$ 11,443.73	\$1,514,669	375,000	\$4.04	\$6.99	\$11.03	\$ 4.50 \$6.53	
10	4.46%	\$ 682,728	\$ 765,218	\$ 82,491	27.48%	\$ 22,668	\$ (132,646)	\$7,519,538	\$674,530	\$ 11,638.27	\$1,451,386	375,000	\$3.87	\$7.11	\$10.98	\$ 4.50 \$6.48	
11	4.46%	\$ 682,881	\$ 765,218	\$ 82,337	27.48%	\$ 22,626	\$ (110,020)	\$6,776,946	\$611,052	\$ 11,836.12	\$1,388,107	270,000	\$5.14	\$7.23	\$12.37	last seven	\$ 4.50 \$7.87 next 7
12	4.46%	\$ 682,728	\$ 765,218	\$ 82,491	27.48%	\$ 22,668	\$ (87,351)	\$6,034,396	\$547,575	\$ 12,037.34	\$1,324,831	270,000	\$4.91	\$7.35	\$12.26	levelized	\$ 4.50 \$7.76 levelized
13	4.46%	\$ 682,881	\$ 765,218	\$ 82,337	27.48%	\$ 22,626	\$ (64,725)	\$5,291,804	\$484,098	\$ 12,241.97	\$1,261,559	270,000	\$4.67	\$7.48	\$12.15	\$12.05	\$ 4.50 \$7.65 \$7.55
14	4.46%	\$ 682,728	\$ 765,218	\$ 82,491	27.48%	\$ 22,668	\$ (42,056)	\$4,549,254	\$420,621	\$ 12,450.09	\$1,198,290	270,000	\$4.44	\$7.61	\$12.05	\$ 4.50 \$7.55	
15	4.46%	\$ 682,881	\$ 765,218	\$ 82,337	27.48%	\$ 22,626	\$ (19,430)	\$3,806,662	\$357,144	\$ 12,661.74	\$1,135,024	270,000	\$4.20	\$7.74	\$11.94	\$ 4.50 \$7.44	
16	4.46%	\$ 682,728	\$ 765,218	\$ 82,491	27.48%	\$ 22,668	\$ 3,238	\$3,064,112	\$293,667	\$ 12,876.99	\$1,071,762	270,000	\$3.97	\$7.87	\$11.84	\$ 4.50 \$7.34	
17	4.46%	\$ 682,881	\$ 765,218	\$ 82,337	27.48%	\$ 22,626	\$ 25,865	\$2,321,520	\$230,190	\$ 13,095.90	\$1,008,504	270,000	\$3.74	\$8.00	\$11.74	\$ 4.50 \$7.24	
18	4.46%	\$ 682,728	\$ 765,218	\$ 82,491	27.48%	\$ 22,668	\$ 48,533	\$1,578,970	\$166,713	\$ 13,318.53	\$945,249	270,000	\$3.50	\$8.14	\$11.64	\$ 4.50 \$7.14	
19	4.46%	\$ 682,881	\$ 765,218	\$ 82,337	27.48%	\$ 22,626	\$ 71,159	\$836,378	\$103,235	\$ 13,544.94	\$881,999	270,000	\$3.27	\$8.28	\$11.54	\$ 4.50 \$7.04	
20	4.46%	\$ 682,728	\$ 765,218	\$ 82,491	27.48%	\$ 22,668	\$ 93,828	\$93,828	\$39,758	\$ 13,775.21	\$818,752	270,000	\$3.03	\$8.42	\$11.45	\$ 4.50 \$6.95	
21	2.23%	\$ 341,440															

(1) Minimum Annual Supply Quantity
 (2) Last ten year average

Year	Liberty RNG Proposal Project Year	RPS Energy	ACP Price	RPS Class IT Obligation	Total Obligation	Existing Tech	Liberty RNG Project	Dartmouth Biomass Heat	Estimated Total RECs in Market	RPS Obligation Balance (Mkt Slack)	RPS RECs available
2017		10,529,851	\$25.46	1.00%	105,299	30,000	0.00	0.00	30,000	75,299	28%
2018		10,635,150	\$25.86	1.20%	127,622	59,552	0.00	0.00	59,552	68,070	47%
2019	1	10,741,501	\$26.27	1.40%	150,381	68,552	50,000.00	0.00	118,552	31,829	79%
2020	2	10,848,916	\$26.68	1.60%	173,583	77,552	100,527.00	0.00	178,079	-4,496	103%
2021	3	10,957,405	\$27.10	1.80%	197,233	86,552	100,527.00	0.00	187,079	10,155	95%
2022	4	11,066,979	\$27.52	2.00%	221,340	95,552	100,527.00	0.00	196,079	25,261	89%
2023	5	11,177,649	\$27.95	2.20%	245,908	104,552	100,527.00	0.00	205,079	40,830	83%
2024	6	11,289,426	\$28.39	2.20%	248,367	113,552	76,912.00	0.00	190,464	57,904	77%
2025	7	11,402,320	\$28.84	2.20%	250,851	122,552	76,912.00	50,000.00	249,464	1,387	99%
2026	8	11,516,343	\$29.29	2.20%	253,360	131,552	76,912.00	101,000.00	309,464	-56,104	122%
2027	9	11,631,506	\$29.75	2.20%	255,893	140,552	76,912.00	101,000.00	318,464	-62,571	124%
2028	10	11,747,821	\$30.22	2.20%	258,452	149,552	76,912.00	101,000.00	327,464	-69,012	127%