

April 15, 2018

Debra Howland Executive Director and Secretary  
New Hampshire Public Utilities Commission  
21 S. Fruit Street, Suite 10  
Concord New Hampshire 03301

RE: DG 17-198 Granite Bridge Pipeline and LNG liquefaction and storage facility  
Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities

Thank you for accepting my comments and questions on the Granite Bridge pipeline project and associated LNG facility to be sited in Epping, NH.

I attended the pre-hearing conference on March 9, 2018 and have submitted one comment relative to transparency and one questioning the need for the pipeline capacity. I have several questions after reading the filing documents, transcript, testimony in other relevant dockets, and Liberty's annual reports. Since I only have access to publicly available documents, I hope that those who are authorized to receive answers to my questions or correct my comments will kindly check into issues where my information may be incomplete.

**Is the size of the LNG facility justified?**

From page 56 of 104 of [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198\\_2017-12-22\\_ENGI\\_PDTESTIMONY\\_KILLEEN\\_STEPHENS.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198_2017-12-22_ENGI_PDTESTIMONY_KILLEEN_STEPHENS.PDF)

**Table 6: EnergyNorth Design Day Resource Portfolio**

<b>Gas Supply</b>	<b>Contract MDQ (Dth/day)</b>	<b>% of Total Resources</b>
Canadian Supply	8,122	5%
Dracut	50,000	32%
Long-line	21,596	14%
Storage	28,115	18%
<b>Total Firm Transportation</b>	<b>107,833</b>	<b>70%</b>
LNG Daily Operational Capacity	12,600	8%
Propane Daily Deliverability	34,600	22%
<b>TOTAL DESIGN DAY RESOURCES</b>	<b>155,033</b>	<b>100%</b>

Breaking out the 30% of LNG/LPG by facility,

**Table 5: EnergyNorth Supplemental Peaking Resources<sup>61</sup>**

Location	LNG or Propane	Design Vaporization	Storage Capacity
Concord	LNG	4,800	4,200
Manchester	LNG	8,400	4,200
Tilton	LNG	9,600	4,200
<b>Total LNG Facilities</b>		<b>22,800</b>	<b>12,600</b>
Amherst	Propane	n/a	26,088
Manchester	Propane	21,600	51,219
Nashua	Propane	11,000	25,968
Tilton	Propane	2,000	5,122
<b>Total Propane Facilities</b>		<b>34,600</b>	<b>108,397</b>

On page 59 of 104, Table 7, Killeen & Stephens project a nearly 2% CAGR over the next 20 years in Design Day Demand and list the significant shortfalls in resources to meet those needs according to their estimates and assumptions, [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198\\_2017-12-22\\_ENGI\\_PDTESTIMONY\\_KILLEEN\\_STEPHENS.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198_2017-12-22_ENGI_PDTESTIMONY_KILLEEN_STEPHENS.PDF)

A key finding in a February 6, 2018 report on the EIA Annual Energy Outlook 2018 states, **“Increases in energy efficiency temper growth in energy demand throughout the Reference case projection.** Energy consumption grows about 0.4% per year on average in the Reference case from 2017 to 2050, which is less than the rate of expected population growth (0.6% per year). Annual real gross domestic product (GDP) growth is expected to average 2.0% through 2050 in the Reference case.” <https://www.eia.gov/todayinenergy/detail.php?id=34833>

Killeen & Stephens analyze a scenario which would convert all the propane facilities to LNG/CNG which would remove 34,600 DTH or 22% from available peaking resources with the theoretical impact on shortfalls listed in the column headed, “Reserve/(Deficiency) excluding propane.” Excluding the propane peaking plants results in an immediate shortfall, starting in 2017/2018.

According to Table 7, the system would experience a shortfall of 109,000 DTH in 20 years without propane and 74,557 DTH if the propane facilities are still in use.

If a CAGR of 0.4% is applied to the initial 156,822 DTH, the Design Day Demand for 2037/2038 would be 169,856.14 DTH rather than the 229,590 DTH listed in Table 7. This would result in a shortage of 14,823 DTH with the existing propane facilities and 49,423 DTH if they are excluded.

**Table 7: EnergyNorth Design Day Resource Shortfall (Dth)<sup>63</sup>**

Split-Year (Nov-Oct)	Design Day Demand	Design Day Resources, including Propane	Reserve / (Deficiency) including Propane	Reserve / (Deficiency) excluding Propane
2017/18	156,822	162,033	5,211	(29,389)
2018/19	160,989	155,033	(5,956)	(40,556)
2019/20	164,640	155,033	(9,607)	(44,207)
2020/21	168,934	155,033	(13,901)	(48,501)
2021/22	173,917	155,033	(18,884)	(53,484)
2022/23	179,382	155,033	(24,349)	(58,949)
2023/24	184,432	155,033	(29,399)	(63,999)
2024/25	188,856	155,033	(33,823)	(68,423)
2025/26	192,933	155,033	(37,900)	(72,500)
2026/27	196,785	155,033	(41,752)	(76,352)
2027/28	199,954	155,033	(44,921)	(79,521)
2028/29	203,491	155,033	(48,458)	(83,058)
2029/30	206,790	155,033	(51,757)	(86,357)
2030/31	210,016	155,033	(54,983)	(89,583)
2031/32	212,972	155,033	(57,939)	(92,539)
2032/33	215,843	155,033	(60,810)	(95,410)
2033/34	218,828	155,033	(63,795)	(98,395)
2034/35	221,631	155,033	(66,598)	(101,198)
2035/36	224,148	155,033	(69,115)	(103,715)
2036/37	226,863	155,033	(71,830)	(106,430)
2037/38	229,590	155,033	(74,557)	(109,157)

The following table was synthesized from Liberty’s Annual Reports between 2013 and 2016. It shows that out of a potential 57,400 DTH of supplemental peaking resources listed in Table 5 (above), the maximum Peak Day Sendout was 35,883 DTH in 2013 and has declined every year since. Any contributions from the Amherst facility are not included in the Annual Reports. (1 MMBTU = 1 DTH)

<b>Nashua LPG</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Annual Propane Sendout Vol (MMBTU)	8985	36,062	19,539	26,577
Peak Day Propane (MMBTU)	4805	8,372	9051	8,978
<b>Manchester LPG</b>				
Annual Propane Sendout (MMBTU)	44,048	61,309	42,625	21,768
Peak Day Propane (MMBTU)	15,112	9,921	8,178	5,907
<b>Tilton LPG</b>				
Annual Propane Sendout (MMBTU)	248	1,159	4,926	1,526
Peak Day Propane (MMBTU)	103	976	882	861
<b>Concord LNG</b>				
Annual LNG Sendout (MMBTU)	5,641	13,158	6,950	10,754
Peak Day LNG Sendout (MMBTU)	2,272	3,014	1,861	1,938
<b>Manchester LNG</b>				
Annual LNG Sendout (MMBTU)	21,239	43,274	11,808	21,815
Peak Day LNG Sendout (MMBTU)	2,142	3,715	1,321	3,496
<b>Tilton LNG</b>				
Annual LNG Sendout (MMBTU)	76062	103,996	194,921	120,980
Peak Day LNG Sendout (MMBTU)	11,449	3,006	543*	4,703
<b>Total Annual Sendout (MMBTU)</b>	<b>156,223</b>	<b>258,958</b>	<b>280,769</b>	<b>203,420</b>
<b>Total Peak Day Sendout (MMBTU)</b>	<b>35,883</b>	<b>29,004</b>	<b>26,723</b>	<b>25,883</b>
*Used 5430 (suspected data error)				

The value of each plant and its annual and peak day sendouts are taken from Annual Reports. The following pages show data from the 2016 Annual Report as an example for each of the years in the table above.

On page 49 of the Annual Report for 2016, Liberty notes that it owns and operates three (3) Peak Shaving LNG facilities (Concord, Manchester, Tilton) able to deliver for 122 days at 18,000 DTH/Day and worth a combined \$14,986,360. <https://www.puc.nh.gov/Gas-Steam/Annual%20Reports/2016/Liberty%20ENNG%202016%20Annual%20Report.pdf>

Liquefied Natural Gas (LNG) PEAKING FACILITIES						
1. Report below auxiliary facilities of the respondent for meeting seasonal peak demands on the respondent's system, such as underground storage projects, liquefied petroleum gas installations, gas liquefaction plant, oil gas sets, etc.		daily delivery capacities.				
2. For column (c), for underground storage projects, report the delivery capacity on February 1 of the heating season overlapping the year-end for which this report is submitted. For other facilities, report the maximum		3. For column (d), include or exclude (as appropriate) the cost of any plant used jointly with another facility on the basis of predominant use, unless the auxiliary peaking facility is a separate plant as contemplated by general instruction 12 of the Uniform System of Accounts.				
Line No.	Location of Facility (a)	LNG Facility Number of Days of Peakshaving Operation (b)	Maximum Daily Delivery Capacity of Facility, MMBtu at 14.73 psia at 60 (c)	Cost of Facility (in dollars) (d)	Sendout Volumes MMBtu Units	
					Peak Day (e)	Annual (f)
1	Concord LNG Station	7	6,000	\$ 3,640,694	1,938	10,754
2	20 Broken Bridge Road					
3	Concord, NH 03301					
4						
5	Manchester LNG Station	19	6,000	\$ 7,906,154	3,496	21,815
6	130 Elm Street					
7	Manchester, NH 03101					
8						
9	Tilton LNG Station	96	6,000	\$ 3,439,513	4,703	120,980
10	30 Tilton Road					
11	Tilton, NH 03276					
12						
13						
14						

Why is there such a big difference in the number of days of Peakshaving Operation?

On page 47 of the 2016 Annual report, the LPG facilities are reported to be worth \$5,506,574

LIQUEFIED PETROLEUM GAS OPERATIONS					
1. Report the information called for below concerning plants which produce gas from liquefied gas (LPG).		which is only an adjunct of a manufactured gas plant, may include or exclude (as appropriate) the plant cost and expenses of any plant used jointly with the manufactured plant facilities on the basis of predominant use. Indicate in a footnote how the plant cost and expense for the liquefied petroleum plant described above are reported.			
2. For columns (b) and (c), the plant cost and operation and maintenance expenses of any liquefied petroleum gas installation					
Line No.	Identification of Plant and Year Installed (a)	Cost of Plant (Land, struc, equip.) (b)	Operations & Maintenance, Rents Expense (c)	LPG Facility Number of Days of Peakshaving Operations (d)	
2	38 Bridge Street				
3	Nashua, NH 03060				
4					
5	Manchester Propane Station Year Installed: 1948	\$ 1,987,619	\$ 77,605	17	
6	130 Elm Street				
7	Manchester, NH 03101				
8					
9	Tilton Propane Station Year Installed: 1972	\$ 226,888	\$ 25,868	6	
10	30 Tilton Road				
11	Tilton, NH 03276				
12					
13					
14					

Page 48 of the 2016 Annual Report lists the capacity of the LPG facilities as 964,200 gallons which equates to 92,801 DTH

LIQUEFIED PETROLEUM GAS OPERATIONS (continued)				
3. (continued) Designate any plant held under a title other than full ownership and in a footnote state name of owner or co-owner, nature of respondent's title and percent ownership if jointly owned.		5. If any plant was not operated during the past year, give details in a footnote, and state whether the book cost of plant or any portion thereof, has been retired in the books of account or what disposition of the plant and its book cost is contemplated.		
4. For column (g) report the Mcf that is mixed with natural gas or which is substituted for deliveries normally made from natural gas. Natural gas means either natural gas unmixed or any mixture of natural and manufactured gas or mixture of natural gas and gasified LPG.		6. Report pressure base of gas at 14.73 psia at 60 F. Indicate the Btu content in a footnote.		
Gallons of LPG Used  (e)	Sendout Volumes		LPG Storage Capacity Gallons  (h)	Maximum Daily Delivery Capacity of Facility, MMBtu at 14.73 psia at 60  (i)
	Peak Day Propane MMBTU  (f)	Annual Propane MMBtu MMBTU  (g)		
Nashua 303,450	8,978	26,577	304,200	12,000
Manchester 231,057	5,907	21,768	600,000	21,600
Tilton 15,586	861	1,526	60,000	2,400

The combined value of the LPG and LNG gas operations is \$20,492,934. The Amherst LPG storage facility is not mentioned in the 2016 Annual Report.

Synthesizing the data from the 2016 Annual Report with Table 5 from Killeen and Stephens [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198\\_2017-12-22\\_ENGI\\_PDTESTIMONY\\_KILLEEN\\_STEPHENS.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198_2017-12-22_ENGI_PDTESTIMONY_KILLEEN_STEPHENS.PDF) results in the following two charts:

The first chart shows the actual usage of all the existing LNG and LPG storage facilities for 2016 from the 2016 Annual Report (1 MMBTU = 1 DTH). Note the total sendout for supplemental peaking is 203,420 DTH or approximately 8 Peak Days for 2016. It is also less than two times the total storage listed in Table 5.

Plant type and Location 2016	MMBTU Sendout 2016	Peak Day 2016
Amherst LPG		
Nashua LPG	26,577	8,978
Manchester LPG	21,768	5,907
Tilton LPG	1,526	861
Concord LNG	10,754	1,938
Manchester LNG	21,815	3,496
Tilton LNG	120,980	4,703
<b>Total</b>	<b>203,420</b>	<b>25,883</b>

The second chart compares the capacities, design vaporization, and cost/value for the current LNG and LPG facilities with the proposed Granite Bridge LNG and liquefaction facility.

Facility	Current Combined LPG/LNG	Granite Bridge LNG	% Increase
Storage Capacity	120,997 DTH	2,000,000 DTH	1653%
Design Vaporization	57,400 DTH/Day	150,000 DTH/Day	261%
Value of facilities	\$20,492,934	\$220,000,000	1074%

### Reasonableness of Proposed Storage Capacity and Design Vaporization

New England, with a population of approximately 15 Million, uses LNG as a major component in delivering natural gas. “In 2017, according to NGA, the LNG storage capacity in New England among the local distribution companies (LDCs) was 16.1 Bcf (which does not include the storage at the Distrigas terminal). Vaporization capacity for daily sendout by New England gas LDCs was approximately 1.4 Bcf/day; and liquefaction capability by the LDCs was 43,500 MMBtu/day.”

[http://www.northeastgas.org/about\\_lng.php](http://www.northeastgas.org/about_lng.php)

How does the proposal for a 2 Bcf storage facility compare with Liberty’s share of the New England LDC market? In 2014, EnergyNorth (dba Liberty) in NH was 3.1% of the natural gas market in New England. Page 6 of <https://www.iso-ne.com/static-assets/documents/2016/12/iso-ne-ldc-demand-forecast-03-oct-2016.pdf> Out of 16.1 Bcf of total New England LDC storage, Liberty’s share would be 500,000 DTH, which is four times more than the current storage capacity, but only ¼ of the proposed LNG facility. On the other hand, Liberty’s share of vaporization sendout capacity would be only 43,400 DTH/Day, which is less than the current 57,400 DTH/Day and only a third of the design vaporization proposed in the Granite Bridge LNG project.

In New York State, with a population of 20 Million, “LNG in New York is obtained by liquefaction of pipeline gas. Two LDCs maintain LNG peak-shaving plants. The facilities provide service area system reliability as well as assist in meeting peak day requirements. These facilities have storage capacity of approximately 3.2 Bcf, liquefaction capability of 16,800 Mcf/day, and a vaporization rate of approximately 26,100 Mcf/hr.” (26,100 Mcf/hr is approximately .6 Bcf/Day)

[http://www.northeastgas.org/about\\_lng.php](http://www.northeastgas.org/about_lng.php)

New Jersey has a population of approximately 9 Million people, “LNG is utilized by several LDCs in New Jersey, with total state storage capacity of about 4 Bcf. One utility added liquefaction capability in 2016.” [http://www.northeastgas.org/about\\_lng.php](http://www.northeastgas.org/about_lng.php) New Jersey is probably more comparable to New England than New York, since most of the LNG is contracted rather than produced by liquefaction of pipeline gas. Again, using New Hampshire’s population of 1.3 Million compared with New Jersey’s 9 Million, NH’s share of 4 Bcf would be .57 Bcf. Liberty has 66% of the NH market. Therefore, a comparable amount of storage would be less than .4 Bcf or 20% of the proposed Granite Bridge LNG facility.

Although Liberty maintains that this entire project is only for the benefit of New Hampshire Liberty customers, the oversizing of the LNG facility and selection of ENGIE for contracts for the next few years raise immediate concerns, “Distrigas is a subsidiary of ENGIE (formerly named GDF SUEZ). Its Everett, MA facility has been in operation since 1971. It has storage of 3.4 billion cubic feet (Bcf). The terminal's maximum installed vaporization capacity is about one billion cubic feet per day; on a sustainable basis,

the vaporization capacity is approximately 700 million cubic feet per day. Distrigas also has sendout capability of 100,000 MMBtu/day by truck, which supports local storage refills for local gas utilities throughout the region. The terminal is directly connected to the interstate pipeline network and to National Grid's local distribution system in the Boston area. In 2003, a nearby power plant with two units, with total nameplate capacity of about 1,500 megawatts, entered service, fueled by LNG from the Distrigas facility. Distrigas has received over 1,000 cargoes. In March 2018, Exelon Generation announced an agreement to purchase ENGIE North America's LNG import terminal "to ensure the continued reliable supply of fuel to Mystic Units 8 and 9 while they remain operating. The transaction is expected to close at the end of 2018." [http://www.northeastgas.org/about\\_lng.php](http://www.northeastgas.org/about_lng.php)

Is Exelon looking at Epping as another supply source for natural gas fired electricity generation in New Hampshire?

Another concern is the question of the purchase of the ENGIE LNG import terminal by Exelon and Liberty's reliance on ENGIE as described in the Killeen & Stephens testimony on page 9 of 104 ,

"Q. Given the lead time required to develop the Granite Bridge Project, is there a need for certain interim gas supply resources?

A. Yes. Given the lead time required to develop and construct the Granite Bridge Project, EnergyNorth developed an interim gas supply strategy to meet the Company's incremental demand requirements in the near-term (i.e., 2018/19 through 2021/22). Specifically, EnergyNorth has contracted with ENGIE for incremental natural gas supply delivered to the EnergyNorth city-gates or to its existing LNG facilities, which will assist the Company with meeting near-term demand requirements and liquid refill needs. The ENGIE contract, which is the only available resource option in the near-term that can be delivered, on a firm basis, to the EnergyNorth city-gates, will provide the Company with a cost-effective solution to meet its near-term incremental demand requirements while the Granite Bridge LNG facility and Granite Bridge Pipeline are being developed."

**Are the proposed costs for the Granite Bridge LNG facility reasonable and would they be included in the rate base?**

From page 37 of the transcript from the Granite Bridge Pre-hearing Conference [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/TRANSCRIPTS-OFFICIAL%20EXHIBITS-CLERKS%20REPORT/17-198\\_2018-03-26\\_TRANSCRIPT\\_03-09-18.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/TRANSCRIPTS-OFFICIAL%20EXHIBITS-CLERKS%20REPORT/17-198_2018-03-26_TRANSCRIPT_03-09-18.PDF) D. Maurice Kreis, OCA, "This is a proceeding in which this Company is proposing to more than double the size of its rate base."

In the 2016 Annual Report, page 19, the Gas Plant In Service total is \$453,568,528. Net Utility Plant minus depreciation is \$369,074,986 online ref <https://www.puc.nh.gov/Gas-Steam/Annual%20Reports/2016/Liberty%20ENNG%202016%20Annual%20Report.pdf>

On page 68 of the transcript, Mr. Ritchie of Liberty Utilities responds, "Just quickly, just a point of facts with respect to a point that was made by Mr. Kreis earlier, where he mentioned that this Project would result in a doubling of the Company's rate base. The Company concedes that this is a large project for EnergyNorth. However, only the Granite Bridge pipeline will be in distribution rate base, and the LNG facility will be in the cost of gas. So, there is no doubling of rate base precipitated by this filing."

However, on page 5 of the attachments there is an AFDUC calculated for both the pipeline and the LNG facility. [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/TESTIMONY/17-198\\_2018-04-](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-198/TESTIMONY/17-198_2018-04-)

### Summary of Levelized Cost Analysis

Levelized Cost Analysis	Granite Bridge Pipeline		Granite Bridge LNG Facility
	Cost	Unit Cost	Cost
Levelized Annual Costs	\$ 12,847,444	\$ 0.47	\$ 28,036,091
<b>Facility Costs</b>			
Investment	\$ 109,993,165		\$ 201,706,990
Add: AFUDC	\$ 7,546,427		\$ 20,942,839
Total Facility Cost	\$ 117,539,592		\$ 222,649,828
O&M Expenses	\$ 567,515		\$ 3,092,000
ACQ (Dth, MCF)		27,375,000	

Also in [http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198\\_2017-12-22\\_ENGI\\_PDTESTIMONY\\_FLECK\\_DAFONTE.PDF](http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-198/INITIAL%20FILING%20-%20PETITION/17-198_2017-12-22_ENGI_PDTESTIMONY_FLECK_DAFONTE.PDF)

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**“9 Q. Would the Granite Bridge Project fall under the jurisdiction of the NHPUC?**

10 A. Yes, it would. As structured, the Company would construct and operate the Granite Bridge  
 11 Pipeline and Granite Bridge LNG facility, making the project subject to the jurisdiction of  
 12 the Commission. Specifically, the Commission would regulate the Granite Bridge Project  
 13 from an economic perspective, as the Company would treat the facilities as distribution  
 14 (pipeline) and supply (LNG facility) rate base and request cost recovery of the investment.  
 15 In addition, various other state agencies will review and assess other aspects of the project,  
 16 including the SEC, Department of Environmental Services, and other New Hampshire state  
 17 agencies.”

**Will the LDCs soon participate in Demand Response programs which would reduce the need for supplemental peaking resources?**

Senator Sheldon Whitehouse recently introduced legislation calling on the Department of Energy to study natural gas Demand Response, “A summary of the bill points to [Brattle Group research](#) that modeled the implementation of a hypothetical gas demand response program in New England for space heating, concluding it could save 40 million cubic feet of gas on a peak day — equivalent to 5% of the average power sector demand for gas during the winter months.”

<https://www.utilitydive.com/news/updated-whitehouse-unveils-bill-directing-study-pilot-program-for-natural/520875/>

Thank you very much for accepting my comments and questions.

Patricia A Martin  
 17 Farrar Road  
 Rindge, NH 03461