STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DG 20-XXX

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program Results

JOINT DIRECT TESTIMONY

OF

ROBERT A. MOSTONE
AND
BRIAN R. FROST

April 15, 2020

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I. INTRODUCTION

Mr. Mostone

Q. Please state your name and business address.

A. My Name is Robert A. Mostone. My business address is 130 Elm Street, Manchester, New Hampshire.

Q. By whom are you employed and in what capacity?

A. I am employed by Liberty Utilities Service Corp. as the Director of Gas Operations for Liberty Utilities (EnergyNorth Natural Gas) Corp. ("EnergyNorth" or "the Company").

Q. Mr. Mostone, please state your educational background and professional experience.

A. I am a seasoned professional with more than 35 years of field experience with a solid understanding of Gas Field Operations and Construction & Maintenance. In July 2018, I assumed my current position of Director of Gas Operations where my responsibilities include managerial oversight of all gas operations and construction processes. In 2014, I assumed the position of CMS Manager, Gas Operations for EnergyNorth. My responsibilities included business planning strategic and operations for CMS divisions and managing over 50 employees across three gas divisions. From 2012 to 2014, I was the CMS Supervisor, Gas Operations, selected as the lead to transition the Company and employees through new system implementations by managing all aspects of the project. From 1992

through 2013, I worked for Colonial Gas Company, Eastern Enterprises, Keyspan, and National Grid in various supervisory roles. I have numerous certificates and licenses in the gas industry and years of leadership training and development over my 35 year career.

Q. Have you previously testified before this Commission?

A. No.

Mr. Frost

Q. Please state your full name, business address and position.

A. My name is Brian R. Frost. My business address is 130 Elm Street, Manchester, New Hampshire. I am an Engineer III for Liberty Utilities Service Corp. in New Hampshire and provide engineering services to EnergyNorth.

Q. Please describe your educational background and training.

A. In 2007, I received a Bachelor of Science degree in Mechanical Engineering from Rochester Institute of Technology. In the past I have attended the Appalachian Gas Measurement Short Course, the NGA Gas Operations School, and a multi-day formal training class provided by DNVGL, the manufacturer of the software the Company uses to make gas system planning decisions. On an ongoing basis, I regularly complete various self-study training programs on the mapping computer program the Company utilizes to prioritize and manage replacement for gas mains under its CIBS program.

Q. Please describe your professional background.

A. Since April 2016 I have been responsible for project identification and design related to the Company's CIBS program. I have also designed numerous gas distribution system growth and reinforcement projects. In 2019 and 2020 I have provided support to the Company's gas system planning efforts. From 2008 to 2016, I worked for New York State Electric & Gas Corporation as an Engineer mainly specializing in the writing and maintenance of gas construction standards and operating and maintenance procedures. In 2005 and 2006, I worked as a college intern at Rochester Gas and Electric Corporation in the Gas Engineering department.

Q. Have you previously testified before the Commission?

A. Yes, I testified in Docket Nos. DG 17-063, DG 18-064, and DG 19-054, the 2017 through 2019 Cast Iron/Bare Steel Replacement Program Results dockets.

Q. On whose behalf are you submitting your joint testimony?

A. We are testifying on behalf of EnergyNorth.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to explain the Company's annual program report associated with the CIBS main replacement program for fiscal year 2019–2020, or the twelve months ending March 31, 2020 ("FY 2020").

III. IMPLEMENTATION OF THE CIBS PROGRAM

Q. Please describe the purpose of the CIBS program.

A. The CIBS program was established as part of the National Grid/KeySpan merger settlement agreement approved by the Commission in Order No. 24,777 (July 12, 2007) in Docket No. DG 06-107, and the settlement agreement in Docket No. DG 11-040 approved in Order No. 25,370 (May 30, 2012). The program's goal is to accelerate the replacement of cast iron and bare steel pipes used in the Company's distribution system, which tend to deteriorate over time. These are pipes that have been in ground and exposed to a corrosive environment and earth movement for a long time, in some cases more than one hundred years.

Q. How is the CIBS program implemented?

A. Under the CIBS program, the Company annually submits to Commission Staff for review and comment its plan for the replacement of cast iron and bare steel pipes for the coming fiscal year, which begins in April.[1] The proposed plan sets forth a prioritized list of pipes to be replaced based on the year of installation, condition of the pipe, and other relevant factors. The CIBS program's mandate is to replace pipes that have a demonstrated prior leak and degradation history. Following review by Staff, including technical sessions between Staff, the Company, and the Office of the Consumer Advocate, Liberty implements the CIBS plan over the course of the construction season, subject to reasonable deviations based on

[1] The CIBS fiscal year begins in April and concludes in March of the following year.

circumstances that may arise or additional information that may become available.

The Company is required to spend a base amount each year on the CIBS program, which is increased annually using the Handy-Whitman index; the base capital expenditure amount required under the FY 2020 CIBS program is $549,222 ("CIBS Base Amount"). The Company is allowed a permanent increase in its base distribution delivery rates ("Capital Investment Allowance"), effective July 1 of each year, to recover the annual revenue requirement for investments made in excess of the CIBS Base Amount during the preceding fiscal year. A copy of the CIBS report is included as Attachment RAM/BRF-1 and includes, among other things, an overview of the actual capital expenditures incurred in implementing the FY 2020 CIBS Plan, and an FY 2020 Condition Bare Steel Main Replacement Program – Sample Analysis, which describes the steel pipe and soil samples collected from CIBS projects completed over the course of the FY 2020 construction season. Attachment RAM/BRF-2, referenced within the CIBS report, describes detailed financial figures for the program such as final project actual costs, variances between the initial project estimated costs and, comments on variances.

IV. FY 2020 CIBS PROGRAM

Q. Please describe the FY 2020 CIBS program.

A. The FY 2020 CIBS program was based on a preliminary project plan developed by the Company and submitted to Staff on January 10, 2019, and revised on May 1, 2020. During technical sessions and discussions related to Docket No. DG 19-054, Staff and the Company attempted to reach settlement regarding termination of the CIBS program. In the meantime, the Company commenced construction consistent with the filed FY 2020 CIBS program. Commission Order No. 26,266 (June 28, 2019) directed the Company to file results on the FY 2020 CIBS program by April 15, 2020. The FY 2020 CIBS program, presented in both January and May 2019, consisted of 39 projects that included the replacement or abandonment of approximately 12.68 miles of Cast Iron/Bare Steel Leak Prone Pipe. Twenty-nine of the planned projects were completed in their entirety, and seven completed projects had scope reductions during construction. The completed work in FY 2020 eliminated 11.13 miles of leak prone pipe at a total cost of $21,369,387 (including estimated carryover costs). The program also included the replacement or insertion of 513 associated services, of which 266 were bare steel and 247 were coated steel or plastic. As part of the work performed, 230 services were transferred, 20 new plastic services were installed, and 13 bare steel services were abandoned.

Q. Why were there a number of projects with scope reductions?

A. The Company reduced scope on a number of projects late in the year in order to prepare the gas distribution system for winter operation. When it became apparent that construction crews would not be able to finish the entire CIBS plan, the Company used its resource planning tools to identify which projects were not started and could not be completed before year end. In addition, for projects under construction where progress indicated work through the end of the year, the Company identified construction breakpoints that maintained integrity of the gas distribution system.

Q. Is all of the replacement main installed as part of the FY 2020 CIBS Program used and useful?

A. Yes. All of the main installed and related capital improvements are used and useful and providing service to customers.

Q. Did the Company replace any other leak prone pipe outside of the CIBS program?

A. Yes. In FY 2020, the Company replaced 428 feet of cast iron through the Cast Iron Encroachment Policy and 8,960 feet of cast iron and bare steel through municipal projects, totaling to 1.78 miles of replacement.

Q. How many new gas services were installed as a result of the Company's marketing efforts during the FY 2020 CIBS program?

A. Twenty new gas services, representing approximately 20 new gas customers, were installed in conjunction with FY 2020 CIBS projects constructed during the program year. The Company has continued marketing to customers along CIBS routes, and generally has not shown a decrease in new customer acquisitions along CIBS routes. For reference, new services installed during the FY 2019 and FY 2018 program years were six (6) and sixteen (16), respectively.

V. COSTS OF FY 2020 CIBS PROGRAM

Q. What were the total costs incurred during the FY 2020 CIBS program?

A. As Attachment RAM/BRF-2 shows, total implementation costs for the FY 2020 CIBS program are expected to be $25,589,515. This number includes $18,035,529 spent on FY 2020 projects during the program year, $4,220,128 incurred as carryover costs from the prior year's program (FY 2019), and an estimated future carryover cost of $3,333,858. Of the costs incurred during the FY 2020 program year, $15,434,483 are eligible for recovery under CIBS rates. This figure only includes costs within the scope of the 5% carryover cap detailed in Commission Order No. 26,266 (June 28, 2019). Within the FY 2020 CIBS program, $3,532,033 was incurred for unrecoverable costs such as tie-over of plastic services, or replacement of short lengths of plastic pipe where efficient. Additionally, $3,289,141 was incurred above the 5% carryover cap.

Q. Are there any carry-over costs from FY 2019 CIBS projects that the Company incurred in FY 2020?

A. Yes. As shown on Attachment RAM/BRF-2, line 76, column BE, there was a total of $4,220,128 in carry-over costs from FY 2019 to FY 2020, as compared to $3,593,321 in carry over costs from FY 2018 to FY 2019. All of the carry-over costs are related to final trench restoration work that could not be completed in the planned fiscal year due to city rules regarding minimum temperature requirements, or a requirement that trenches be allowed to settle for one full freeze-thaw cycle before final restoration.

Q. Is the Company requesting recovery in excess of the 5% carryover cap?

A. No, in accordance with Commission Order No. 26,266 (June 28, 2019) recovery for only 5% of incurred carryover costs is being requested under CIBS rates.

Q. What are the unit costs for FY 2020?

A. The total loaded actual cost per foot for the FY 2019 program was $384 (including both carry-over costs and degradation fees) compared to the estimated cost per foot of $299 for completed projects. The average variance between the estimated and actual costs of FY 2020 completed projects was 15%. On a direct costs basis, the variance between actual and estimated costs was 27% overall.

Q. What causes have increased unit and overall costs in FY 2020?

A. A number of costs increased in FY 2020 resulting in an overall unit cost increase for gas main and service installation of approximately 13% as compared to FY

2019 for several reasons. First, during this CIBS program year the Company substantially eliminated CIBS pipe in historically asbestos contaminated areas of Hudson, the extent of which is difficult to estimate and very expensive to address. Second, the Company continued construction on many arterial streets where, together with a general increase in the amount of CIBS pipe replacement, the Company has continued to see an increase in municipal requirements, such as work hour restrictions and traffic control requirements. Finally, during the 2019 calendar year the Company also competitively bid its five-year gas construction blanket contract, which carries higher costs to complete final restoration of started projects. Therefore, increases in construction prices are reflected in future estimated carryover costs which make up part of the overall cost of work.

Q. Please explain why there are fluctuations in the overheads and summarize how they are currently allocated.

A. Overheads are currently spread on a monthly basis, as opposed to a fixed percentage throughout the year. During the busy construction months, the Company will have a larger pool of direct cost over which to spread the overheads, causing a lower percentage of burdens. The current practice of allocating overheads consists of proportionately allocating categories of overhead cost to the direct capital cost incurred during that month. Labor burden, which is comprised of payroll taxes, pension, time not worked (e.g. vacation time), and benefits, is allocated to the direct capital labor charges from Company employees derived from employee timesheets. Back office work consisting of sales and

work package preparation is allocated to the cost of the new services which are constructed. Corporate allocations, insurance, fleet, and telephone/internet are allocated to direct capital costs incurred. Construction supervision, engineering, compliance, and plant accounting is allocated to direct capital costs incurred. This is consistent with the process that has been followed over recent years, but the practice of spreading actual overhead on a monthly basis causes a fluctuation in the percentage of burden applied to jobs.

Q. Have there been any significant variances in the cost of work in the past year? If so, please explain the reasons for the variances.

A. No. On an overall spend basis including projects constructed, incurred carryover during the fiscal year, and future estimated carryover, the Company was able to maintain budget within 8%. For FY 2020 projects constructed, the Company's year-end loaded cost variance was 15%. As noted in discussion on program unit costs, this slightly elevated variance was the result of competitively bidding construction work and hard to quantify construction challenges such as environmental contamination. Similar to what Staff has recognized in prior years, although FY 2020 demonstrated variance volatility on an individual project basis, the Company was able to successfully manage the CIBS program as a whole.

Q. Does this conclude your testimony?

A. Yes.

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Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities

Cast Iron/Bare Steel Replacement Program Results
Fiscal Year 2020

April 15, 2020

Submitted by:

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INTRODUCTION

Pursuant to the settlement agreement approved by the New Hampshire Public Utilities Commission (the "Commission") as part of the National Grid/KeySpan merger in Docket No. DG 06-107 and the settlement agreement as part of the Liberty acquisition of EnergyNorth in Docket No. DG 11-040 (the "Settlement Agreement") approved by Order No. 25,370, Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities ("Liberty" or the "Company") submits the results of the Cast Iron Bare Steel ("CIBS") Replacement Program for fiscal year 2020 (April 1, 2019, to March 31, 2020). As required by the Settlement Agreement, the Company submits the following information in connection with this report, the pre-filed Joint Testimony of Robert A. Mostone and Brian R. Frost, and the Testimony of Catherine A. McNamara: (1) A report detailing the actual amount of capital investments made in accordance with implementing the CIBS program during fiscal year 2020 (Attachment RAM/BRF-2 to Joint Mostone-Frost Testimony); (2) A calculation of the incremental revenue requirement associated with placing the capital investments into rate base above a base spending level of $549,222 (Attachment CAM-1 to McNamara Testimony); (3) A description of variances between actual results and the original plan; and (4) a request for a permanent increase in base distribution delivery rates in the amount of $1,612,633 effective for usage on and after July 1, 2020.

SECTION 1: ACTUAL CAPITAL EXPENDITURES

Actual capital expenditures incurred during implementation of the CIBS program for fiscal year 2020 are detailed in Attachment RAM/BRF-2 to the Mostone/Frost Testimony. Through a series of technical sessions that began in 2008, the Commission Staff and the

Company have agreed that the capital investment amounts to be included for recovery under CIBS may include all prudently incurred direct and indirect[1] costs associated with: (i) replacement or abandonment[2] of cast iron and bare steel mains, including replacement of existing pipe with replacement pipe of the same size,[3] with recovery for the costs of "upsizing" the pipe allowed only when specifically justified;[4] (ii) replacement or abandonment of cast iron or bare steel service lines directly connected to bare steel or cast iron main replacement projects; and (iii) tie over of connected service lines not replaced or abandoned as part of a cast iron bare steel main replacement project.

Categories of costs that may not be included for recovery under CIBS include: (i) replacement or abandonment of plastic main; (ii) replacement or abandonment of coated steel main, regardless of vintage, unless approved by the Safety Division of the Commission; (iii) replacement, abandonment, or reconnecting of plastic or coated steel services that were connected to existing cast iron or bare steel main replacement projects; (iv) the differential in cost to replace existing cast iron or bare steel mains with pipe of a diameter that is greater than the existing main and the cost to replace that main with a pipe that is larger than the existing main, unless specifically justified; (v) relocation of customer meters from inside to outside; (vi) random cast iron or bare steel service replacements not connected to a cast iron or bare steel main replacement project; (vii) carryover costs in aggregate exceeding 5% of the approved

[1] Indirect costs mean overheads such as pension, OPEBs and other fringe benefits, payroll taxes, material handling costs and other general & administrative expenses that are loaded on all labor and material transactions. Categories of costs that may not be included for recovery under the plan include costs related to CIBS planning (other than normal engineering and project planning), reporting and filing.
[2] For purposes of ii and iii, abandonments such as mains that are not servicing a customer via a service will not be allowed. Other abandonments will be considered by Staff on a case by case basis.
[3] 3-inch pipes, which are no longer standard size, will be routinely replaced with 4-inch pipes.
[4] *See* Settlement Agreement in DG 11-040, Attachment J, section (20) n.

estimated total expenditures under the CIBS program for the construction year, unless approved by the Safety Division; and (viii) replacements made under the Cast Iron Encroachment Policy are not eligible for accelerated rate recovery in the Cast Iron/Bare Steel Program unless a special circumstance is approved by the Safety Division.

On January 10, 2019, the Company made its proposed FY 2020 CIBS program filing with the Commission. On May 1, 2019, the filing was revised and filed with Staff. On June 28, 2019, Commission Order No. 26,266 directed the Company to file its FY 2020 CIBS results by April 15, 2020, with the stipulation that recovery of only 5% of carryover costs would be allowed unless approval had first been obtained from the Safety Division prior to submitting the filing.

The FY 2019 carryover costs that were captured within the FY 2020 program that are potentially recoverable under CIBS rates totaled $4,220,128. The estimated total cost associated with completed FY 2019 projects is $18,619,731, resulting in a 5% cap of $930,987. Due to the 5% cap being smaller than the total FY 2019 carry over costs incurred, the total recoverable carryover cost stands at $930,987.

Line 78 column BE of Attachment RAM/BRF-2 shows the actual recoverable expenditures of the FY 2019 projects, totaling $15,434,483 (including carryover costs at the 5% cap). After removing from the actual expenditures the CIBS base amount of $549,222 in accordance with the terms of the Settlement Agreement, the total incremental expenditures to be included in rate base is $14,885,260. Appendix A to this report is the Condition Bare Steel Main Replacement Program – Sample Analysis Report for FY 2020. This report contains

photographs and descriptions of various pipe segments removed and catalogued as part of the FY 2020 CIBS program.

SECTION 2: CALCULATIONS OF INCREMENTAL REVENUE REQUIREMENT

In this filing, Liberty is seeking recovery in rates of the incremental revenue requirement associated with an additional $14,885,260 of CIBS recoverable capital investments. As set forth in Attachment CAM-1, page 1 to the McNamara Testimony, the revenue requirement associated with the CIBS cumulative capital expenditures is $6,161,925 (line 35(l)) with a corresponding revenue deficiency of $1,612,633 (line 41 (l)). Consistent with prior delivery rate increases for the CIBS program, the Company proposes to apply the increase pro rata across all customer classes. Attachment CAM-1, page 4 to the McNamara Testimony also provides the annual bill impacts for an average residential customer and commercial customers in rate classes G-41, G-42, and G-52. Attachment CAM-2 is a computation of the cumulative revenue requirement associated with the CIBS program since its inception in FY 2009.

SECTION 3: DIFFERENCES BETWEEN INITIAL ESTIMATED EXPENDITURES AND FISCAL YEAR-END ESTIMATED EXPENDITURES

The Company's FY 2020 CIBS Plan provided for the replacement or abandonment of 12.68 miles of cast iron and bare steel pipe at an estimated cost of $20,459,276. As shown on Attachment RAM/BRF-2 (line 52 column AJ), the Company eliminated 11.13 miles of cast iron and bare steel at a cost of $21,369,387 (line 51, column BL). A reconciliation of the total costs to the total recoverable costs is shown in the table on the following page:

		Attachment RAM/BRF-2 Reference
Actual Loaded Costs	$21,369,387	line 51, column BL
FY 2019 5% cap carry-over costs	$930,987	line 77, column BE
Less: Expected FY 2020 carry-over costs	-$3,333,858	line 51, column BG
Non-recoverable main costs	-$1,255,977	line 51, column BA
Non-recoverable service costs	-$2,276,056	line 51, column BB
Total Recoverable Costs	$15,434,483	line 78, column BE

Details of the variances between estimated and actual costs by project are shown in Attachment SDF/BRF-2 columns BH through BN. Overall, the actual costs of the CIBS projects completed in FY 2020 were 15% higher than budget.[5]

SECTION 4: STATUS OF THE LITIGATION BETWEEN LIBERTY AND THE CITIES OF CONCORD AND MANCHESTER

In 2010, National Grid filed actions in Hillsborough and Merrimack County Superior Courts against the Cities of Manchester and Concord seeking injunctions against enforcement of regulations concerning street opening permit fees ("degradation fees"), as well as requests for declaratory judgments invalidating such fees. The matters were later consolidated in the Merrimack County Superior Court.

After an appeal of pretrial motions that was resolved in 2012, a trial in 2015, and another appeal, the Supreme Court issued an order in 2017 that upheld both the ordinances and their penalty provisions, effectively making the Company responsible for all past and future degradation fees charged.

[5] Note that the budget-to-actual variance of all costs related to cast iron and bare steel, including the costs within this program, costs excluded from the program, and carryover costs, was 8%. $23,709,475 versus $25,589,515). Attachment RAM-BRF-2, columns BK, BL, and BM, row 79.

For FY 2018 and onward, the Company has included degradation fees in its proposed CIBS rates. Accrued Manchester degradation fees from prior year CIBS filings were included in the most recent distribution rate case, Docket No. DG 17-048. The Company paid the Concord degradation fees while the case was pending, so no adjustment was necessary.

SECTION 5: TAX DEDUCTION FOR REPAIR EXPENSES

In 2009, the Internal Revenue Service issued guidance, under Internal Revenue Code Section 162, regarding the eligibility of certain repair and maintenance expenses for an immediate deduction for income tax purposes, but capitalized by the Company for book purposes. This tax deduction has the effect of increasing deferred taxes and lowering the revenue requirement that customers will pay under the CIBS program. Repairs resulting in the replacement of less than 20 percent of an original unit of property qualify for a repairs tax deduction. A gas company's gas subsystem is considered a "unit of property" for the purposes of the repairs tax deduction. As explained in the McNamara Testimony, projects included in the CIBS program are expected to qualify as repairs; thus, when computing the revenue requirement, the Company reflects a tax deductibility of 100 percent for all CIBS jobs.

SECTION 6: CAST IRON/BARE STEEL REPLACED UNDER MUNICIPAL PROJECTS AND THE CAST IRON ENCROACHMENT POLICY

In FY 2020, the Company replaced approximately 428 feet of cast iron through the Cast Iron Encroachment Policy and approximately 8,960 feet of cast iron and bare steel through municipal projects, totaling to approximately 1.78 miles of replacement. Combined with the 11.13 miles replaced through the CIBS program as discussed above, this amounts to a total of approximately 12.9 miles of cast iron and bare steel replacement in FY 2020. A yearly

summary of cast iron and bare steel replacement through municipal projects and encroachments can be seen below:

	Footage of Cast Iron/Bare Steel Replaced	
Fiscal Year	**Municipal Projects**	**Encroachments**
2008-2009	10,980	171
2009-2010	19,920	28
2010-2011	11,649	62
2011-2012	17,791	40
2012-2013	12,524	53
2013-2014	19,118	55
2014-2015	10,587	169
2015-2016	12,206	248
2016-2017	15,663	30
2017-2018	15,570	30
2018-2019	14,793	458
2019-2020	8,960	428
Total Footage	**169,761**	**1,772**
Total Mileage	**32.15**	**0.34**

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APPENDIX A: FY 2020 CONDITION BARE STEEL MAIN REPLACEMENT PROGRAM – SAMPLE ANALYSIS

Over the course of the FY 2020 construction season, bare steel pipe and soil samples were collected from the CIBS main replacement program. Each sample was sand blasted to expose the pipe down to the bare metal and will be provided for visual representation. Soil samples were taken as close to the pipe samples as possible in an effort to retrieve native soil. Chemical testing was conducted to determine the existing pH, chloride, sulfide, and sulfate levels. Microbiological testing for Acid Producing Bacteria (APB) and Sulfate Reducing Bacteria (SRB) were performed as well. Both chemical and microbiological tests were conducted as soon as possible. The table below shows the threshold of bacteria levels based on the results of bacterial colonies per milliliter.

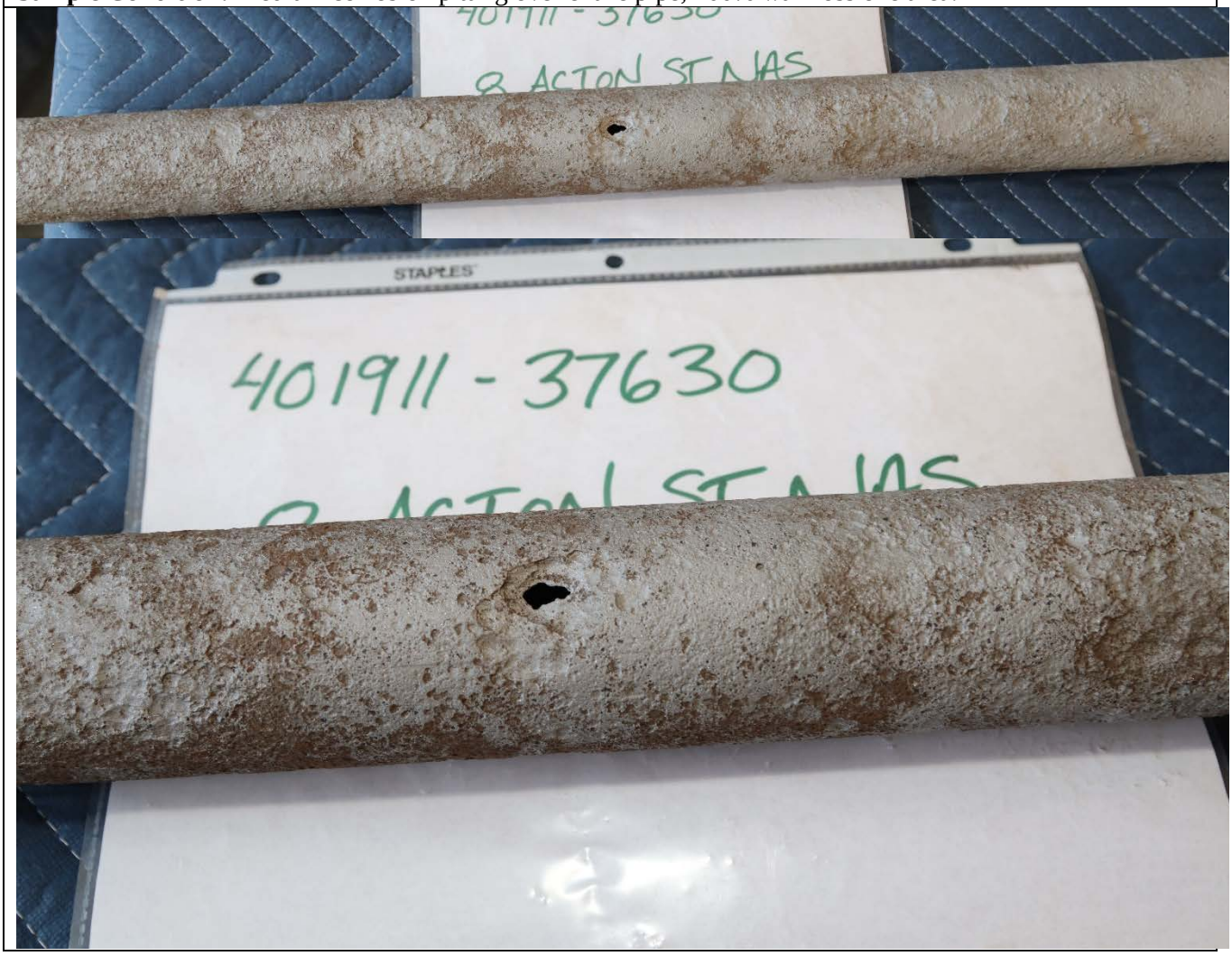
Number of Positive Bottles	Bacteria Colonies/ml	Reporting Value Colonies/ml	Bacteria Level
0	< 1 - 10	< 10	Low
1	10	10	Low
2	10 - 100	100	Medium
3	100 - 1000	1,000	Medium
4	1,000 - 10,000	10,000	High
5	> 10,000 - 100,000	100,000	High

Positive APB and SRB vials with corresponding reporting values.

Details and testing results for the four pipe and soil samples collected are summarized on the following pages:

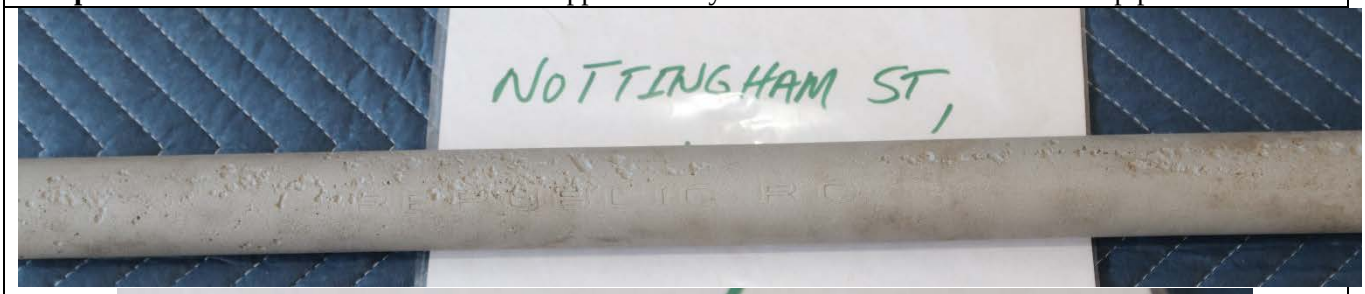
Sample 1

Work Order & Project:	401911-37630 - 1-35 Hunt St, Acton St, and Pine St	
Sample Location:	In Front of 8 Acton St	
Pipe Sample Details:	2" Bare Steel, Standard Wall (0.154"), Low Pressure, Installed in 1950	
Soil Sample Details:	Medium Brown Sandy Soil	
Test Date:	9/25/2019	
Soil Testing Results		
	Quantitative Value	**Qualitative Value**
pH:	7	-
Chloride (mg/l)**:**	0	None
Sulfide (mg/l)**:**	< 5	Not Appreciably Present
Sulfate (mg/l)**:**	400	Medium
APB Level (Colonies/ml)**:**	1,000	Medium
SRB Level (Colonies/ml)**:**	100	Low
Sample Condition: Medium corrosion pitting over entire pipe, 100% wall loss one area.		



Sample 2

Work Order & Project:	401911-37604 - 9-15 Nottingham St	
Sample Location:	Intersection of Nottingham St and Highland St	
Pipe Sample Details:	1.25” Bare Steel, Standard Wall (0.140”), High Pressure, Installed in 1959	
Soil Sample Details:	Light Brown Dry sSandy Soil	
Test Date:	3/16/2020	
Soil Testing Results		
	Quantitative Value	**Qualitative Value**
pH:	6	-
Chloride (mg/l)**:**	0	None
Sulfide (mg/l)**:**	< 5	Not Appreciably Present
Sulfate (mg/l)**:**	Below 200	Low
APB Level (Colonies/ml)**:**	1,000	Medium
SRB Level (Colonies/ml)**:**	100	Medium
Sample Condition: Selective corrosion with approximately 30-50% wall loss on one side of pipe.		



Sample 3

Work Order & Project:	401823-37609 - 1-10 Chandler St, and Salvail Ct	
Sample Location:	Intersection of Salvail Ct and Canal St	
Pipe Sample Details:	2” Bare Steel, Standard Wall (0.154”), Low Pressure, Installed in 1928	
Soil Sample Details:	Dark Brown Sandy Soil	
Test Date:	3/16/2020	
Soil Testing Results		
	Quantitative Value	**Qualitative Value**
pH:	76	-
Chloride (mg/l)**:**	0	None
Sulfide (mg/l)**:**	< 5	Not Appreciably Present
Sulfate (mg/l)**:**	Below 200	Low
APB Level (Colonies/ml)**:**	1,000	Medium
SRB Level (Colonies/ml)**:**	10	Low
Sample Condition: Light corrosion over entire pipe, estimated 10-20% wall loss.		

Sample 4

Work Order & Project:	401911-37603- 1-22 Second St, Ferry St, School St, and Oakwood St	
Sample Location:	Intersection of Second St and Oakwood St	
Pipe Sample Details:	2” Bare Steel, Standard Wall (0.154”), Low Pressure, Installed in 1949	
Soil Sample Details:	Light Brown Dry Sandy Soil	
Test Date:	3/16/2020	
Soil Testing Results		
	Quantitative Value	**Qualitative Value**
pH:	7	-
Chloride (mg/l)**:**	0	None
Sulfide (mg/l)**:**	< 5	Not Appreciably Present
Sulfate (mg/l)**:**	Below 200	Low
APB Level (Colonies/ml)**:**	1,000	Medium
SRB Level (Colonies/ml)**:**	10	Low
Sample Condition: Heavy corrosion pitting over entire pipe, approximately 50% wall loss in pits, open seam.		

FY 2019-2020 Cast Iron/Bare Steel Replacement Program

Liberty Utilities (Energynorth Natural Gas) Corp. d/b/a Liberty Utilities
Docket No. DG 20-XXX
Attachment RAM/BF-2

Attachment A

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DG 20-XXX

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program Results

DIRECT TESTIMONY

OF

CATHERINE A. MCNAMARA

April 15, 2020

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I. INTRODUCTION

Q. Please state your full name and business address.

A. My name is Catherine A. McNamara. My business address is 15 Buttrick Road, Londonderry, New Hampshire.

Q. Please state by whom you are employed?

A. I am employed by Liberty Utilities Service Corp. ("Liberty"), which provides service to Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities ("EnergyNorth" or the "Company").

Q. Please describe your educational background and your business and professional experience.

A. I graduated from the University of Massachusetts, Boston, in 1993 with a Bachelor of Science in Management with a concentration in Accounting. In November 2017, I joined Liberty as an Analyst in Rates and Regulatory Affairs. Prior to my employment at Liberty, I was employed by Eversource as a Senior Analyst in the Investment Planning group from 2015 to 2017. From 2008 to 2015, I was a Supervisor in the Plant Accounting department. Prior to my position in Plant Accounting, I was a Financial Analyst/General Ledger System Administrator within the Accounting group from 2000 to 2008.

Q. Have you previously testified in regulatory proceedings before the New Hampshire Public Utilities Commission (the "Commission")?

A. Yes, I have testified on multiple occasions before the Commission.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to explain the Company's revenue requirement calculation associated with the CIBS main replacement program for the fiscal year starting April 1, 2019, and ending March 31, 2020 ("FY 2020").

III. REVENUE REQUIREMENT CALCULATION

Q. Please describe the revenue requirement calculation and the proposed recovery period.

A. The revenue requirement calculation includes the CIBS program spending through FY 2020. The Company proposes to recover this revenue requirement beginning July 1, 2020, through an increase in its base distribution rates.

Q. What amounts are included in the CIBS revenue requirement?

A. The revenue requirement for FY 2020 is calculated in Attachment CAM-1 and is based on actual spending related to projects set forth in the final FY 2020 CIBS plan submitted to Staff in 2019. Pursuant to a Staff request in a prior year's technical session, the Company has also included Attachment CAM-2, for information purposes only, which provides a calculation of the total revenue requirement associated with the CIBS program from its inception in FY 2009. This calculation includes CIBS investment amounts through June 30, 2009, that became part of the permanent rate base established in the Company's distribution rate case of Docket No. DG 10-017.

Q. Please explain how the CIBS revenue requirement is calculated.

A. As shown in Attachment CAM-1, eligible CIBS investments are split into two categories: mains and services. Recoverable book depreciation expense is calculated based on these investment amounts using the depreciation rates established in the Company's last depreciation study (which was filed in Docket No. DG 17-048). The depreciation expense amount is used to calculate the deferred tax reserve associated with the effects of the timing difference between book and tax depreciation. The deferred tax reserve, along with accumulated book depreciation, reduces the rate base on which the Company is eligible to earn a return. The adjusted rate base is multiplied by the pre-tax rate of return of 8.50 percent (the Company's current ROR of 6.80% adjusted for current federal and state income tax rates of 21% and 7.7%, respectively) to arrive at the return on rate base and taxes. Added to the return and taxes are the actual calculated depreciation expense and property taxes. The property tax rate is calculated annually and is based on prior calendar year municipal property tax expense as a percentage of the average of the prior two calendar year's net plant in service.

Q. What is the CIBS revenue requirement for fiscal year 2020?

A. As shown on Attachment CAM-1, page 1, the cumulative CIBS revenue requirement for FY 2020 is $ 6,161,925 (line 35(l)), which corresponds to a $1,612,633, revenue deficiency, as provided on line 41(l).

Q. Please explain how you calculated the FY 2020 revenue requirement.

A. Page 1 of Attachment CAM-1 provides detail as to how the Company derived the FY 2020 revenue requirement. Lines 1(l) and 2(l) represent the FY 2020 CIBS program

investment related to mains and services, respectively. These current year amounts were added together and reduced by the CIBS Base Amount of $549,222. For FY 2020, the net incremental amount of CIBS additions is $14,885,261, as shown on line 6(l). This amount was then added to the cumulative incremental CIBS program additions from July 1, 2009, to March 31, 2019, of $45,702,092, as shown on line 7(k), to derive the cumulative incremental CIBS program additions through March 31, 2020, of $60,587,352, as reported on line 7(l).

On lines 10(l) through 20(l) of page 1, the Company shows the calculations for book and tax depreciation, and the resulting deferred tax reserve. Because the CIBS program spending is expected to be 100 percent tax deductible, as discussed later in my testimony, the cumulative tax depreciation on line 11(l) is equal to the cumulative incremental CIBS program spending of $60,587,352, from line 7(l). When compared to the accumulated depreciation of $5,512,362, on line 14(l), the resulting timing difference between book and tax depreciation is $55,074,990, as shown on line 17(l). This amount was then multiplied by the Company's current effective tax rate and the deferred tax reserve of $14,914,307 is shown on line 20(l). On lines 23(l) through 27(l), the Company calculated rate base by reducing the amount of cumulative incremental CIBS spending of $60,587,352 by $5,512,362, for accumulated depreciation and $14,914,307, for deferred tax reserves, resulting in a year end rate base of $40,160,683 (line 27(l)). The Company then multiplied the rate base amount times the pre-tax ROR of 8.50 percent, which resulted in the return and taxes amount of $3,413,658, on line 32(l). On lines 33(l) and 34(l), the Company added book depreciation of $1,255,735, and property taxes of

$1,492,532. The resulting FY 2020 cumulative revenue requirement is $6,161,925, as shown on line 35(l). From this amount, the Company deducted the prior year revenue requirement of $4,549,293, as shown on line 37(l), to arrive at a revenue deficiency of $1,612,633 on line 41(l).

Q. Please explain the rate design the Company intends to use to recover the proposed increase in the revenue requirement.

A. The Company will design rates that will result in an increase in annual revenues of $1,612,633. Specifically, the cumulative revenue requirement for fiscal year 2020 amounts to $6,161,925, or $1,612,633, more than the $4,549,293 which is currently being billed, and as shown on Attachment CAM-1, page 1, line 35&36 (k). Consistent with past adjustments, the Company will increase all rate components on an equal percentage basis.

Q. How was the statutory tax rate of 27.08% on Attachment CAM-1, page 1, line 18, column k, calculated?

A. The statutory rate of 27.08% was calculated by using a 21% federal tax rate and an 7.7% tax rate for the State of New Hampshire (.21 + .077 – (.21 x .077) = .2708).

Q. How was the common equity pre-tax rate of 6.280% on Attachment CAM-1, line 53(c) calculated?

A. The common equity pre-tax rate of 6.28% was calculated by dividing the 9.30% rate of return on common equity, approved in Docket No. DG 17-048, by .7292 (1 – .2708

[statutory tax rate – see previous question]) and multiplied by 49.20% (ratio of debt to equity in DG 17-048) [.0930 / .7292 x .4920 = .0628].

Q. Can you explain the repairs tax deduction as it applies to projects completed under the CIBS program?

A. In 2009, the Internal Revenue Service issued guidance under Internal Revenue Code ("IRC") Section 162 regarding the eligibility of certain repair and maintenance expenses for an immediate deduction for income tax purposes, but capitalized by the Company for book purposes. This tax deduction has the effect of increasing deferred taxes and lowering the current revenue requirement that customers will pay under the CIBS program. Based on IRC §263(a) and §162, repairs resulting in the replacement of less than 20 percent of an original unit of property qualify for a repairs tax deduction. A gas company's gas subsystem is considered a "unit of property" for the purposes of the repairs tax deduction. Replacement pipe cannot be more than 2 additional inches in diameter from the original pipe, and to the extent that a length of replacement pipe is longer than the pipe being retired, the increase in length must be no more than 5 percent of the subsystem for it to be eligible for the repairs tax deduction.

Based on these criteria, all of the projects included in the CIBS program are considered repairs by the Company and are expected to be fully deducted from the tax return for the year that they occur. Therefore, in computing the revenue requirement, the Company is currently reflecting tax deductibility of 100 percent for all CIBS jobs. This tax deductibility results in a greater deferred tax reserve which reduces the rate base and resulting revenue requirement charged to customers.

Q. How are book depreciation expense and property tax expense calculated?

A. Book depreciation expense is calculated on page 2 of Attachment CAM-1. The actual spending for mains and services is referenced on page 1, lines 1 and 2, respectively. These amounts are reduced on a pro rata basis by the CIBS Base Amount. The net amounts for mains and services are shown on page 2, lines 3 and 28, and are used to calculate book depreciation expense for each vintage year. Lines 5 through 17 and 30 through 42 show the calculation of book depreciation expense using the depreciation rates set in the Company's last approved depreciation study. FY 2020 book depreciation expense of $937,839 and $317,896 for mains and services are shown on lines 18(l) and 43(l), respectively. These amounts, when combined, equal $1,255,735 as shown on line 50(l), which is carried forward to page 1, line 13(l). Cumulative book depreciation expense of $3,990,172 and $1,522,190 for mains and services are shown on lines 21(l) and 46(l), respectively. Line 52(l) is the sum of these two lines, amounting to $5,512,362, which is then used on page 1, line 14(l).

Property taxes are calculated on page 3 of Attachment CAM-1. Net plant is calculated using plant in service as reported on the Company's Annual Report (Form F-16G) less the reserve for accumulated depreciation and amortization. An average of the most recent two years of net plant is then calculated on lines 6 through 8. Line 10(o) shows the property tax expense for the prior calendar year. The property tax expense rate of 2.71% shown on line 12(o) is calculated by dividing line 10(o) by the average net plant shown on line 8(o). This property tax rate is then carried forward to page 1, line 34 and

is multiplied by net plant in service found on page 1, line 25(l), resulting in the property tax amount of $1,492,532 on page 1, line 34(l).

Q. What is the average bill impact of this year's CIBS revenue requirement?

A. Page 4 of Attachment CAM-1 shows the average bill impacts of the CIBS program. The annual CIBS-related increase for FY 2020 for an average Residential Heating customer using a total of 809 therms per year is $7.03, as shown on line 22(l).

Q. Does this conclude your testimony?

A. Yes it does.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
d/b/a Liberty Utilities
Docket No. DG 20-XXX
Attachment CAM-1
April 15, 2020

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Computation of Revenue Requirement
April 15, 2020

Computation of Revenue Requirement **1**
Vintage Year Book Depreciation Schedule **2**
Municipal Taxes as a Percentage of Net Plant **3**
Bill Impacts due to Cast Iron and Bare Steel Replacement Program **4**

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Computation of Revenue Requirement

		(a)	(b) July 1, 2009 through March 31, 2010	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		Actual FY09	9 Months FY10	Actual FY11	Actual FY12	Actual FY13	Actual FY14	Actual FY15	Actual FY16	Actual FY17	Actual FY18	Actual FY19	Actual FY20
	Incremental Investment												
1	CIBS Progam Actual Spend-Mains	1,736,153	4,049,995	3,391,069	1,570,208	2,174,813	2,781,140	3,006,856	3,304,532	5,204,619	8,858,559	8,865,300	14,099,869
2	CIBS Progam Actual Spend-Service	729,463	798,555	668,631	352,005	161,352	370,655	776,086	705,984	1,209,322	1,389,222	1,147,142	1,334,614
3	CIBS Progam Estimated Spend-Mains					-	-	-	-	-	-	-	
4	CIBS Progam Estimated Spend-Service					-	-	-	-	-	-	-	-
5	Base Spending Amount	500,000	482,110	500,000	500,000	500,000	500,000	506,240	514,244	520,965	527,275	533,119	549,222
6	Incremental Amount	1,965,616	4,366,440	3,559,700	1,422,213	1,836,165	2,651,795	3,276,702	3,496,272	5,892,976	9,720,506	9,479,323	14,885,261
7	Cumulative CIBS Program Spend Since July 1, 2009		4,366,440	7,926,140	9,348,353	11,184,518	13,836,312	17,113,015	20,609,287	26,502,263	36,222,769	45,702,092	60,587,352
8													
9	**Deferred Tax Calculation**												
10	Annual Tax Depreciation	1,031,948	4,366,440	3,559,700	1,422,213	1,836,165	2,651,795	3,276,702	3,496,272	5,892,976	9,720,506	9,479,323	14,885,261
11	Cumulative Tax Depreciation Since July 1, 2009		4,366,440	7,926,140	9,348,353	11,184,518	13,836,312	17,113,015	20,609,287	26,502,263	36,222,769	45,702,092	60,587,352
12													
13	Annual Book Depreciation	49,836	98,794	179,335	212,059	249,951	307,352	384,247	464,177	600,433	814,476	945,805	1,255,735
14	Cumulative Book Depreciation Since July 1, 2009		98,794	278,129	490,188	740,138	1,047,490	1,431,737	1,895,914	2,496,347	3,310,822	4,256,627	5,512,362
15													
16	Annual Book/Tax Timer	982,112	4,267,646	3,380,365	1,210,154	1,586,214	2,344,443	2,892,456	3,032,095	5,292,543	8,906,031	8,533,518	13,629,525
17	Cumulative Book/Tax Timer	982,112	4,267,646	7,648,011	8,858,165	10,444,379	12,788,822	15,681,278	18,713,373	24,005,916	32,911,947	41,445,465	55,074,990
18	Statutory Tax Rate	40.53%	40.53%	40.53%	40.53%	40.53%	39.61%	39.61%	39.61%	39.61%	27.24%	27.08%	27.08%
19													
20	Deferred Tax Reserve	398,001	1,729,677	3,099,739	3,590,214	4,233,107	5,161,741	6,211,354	7,412,367	9,508,743	11,934,746	11,276,091	14,914,307
21													
22	**Rate Base Calculation**												
23	Plant In Service	1,965,616	4,366,440	7,926,140	9,348,353	11,184,518	13,836,312	17,113,015	20,609,287	26,502,263	36,222,769	45,702,092	60,587,352
24	Accumulated Depreciation	(49,836)	(98,794)	(278,129)	(490,188)	(740,138)	(1,047,490)	(1,431,737)	(1,895,914)	(2,496,347)	(3,310,822)	(4,256,627)	(5,512,362)
25	Net Plant in Service	1,915,780	4,267,646	7,648,011	8,858,166	10,444,379	12,788,822	15,681,278	18,713,373	24,005,916	32,911,946	41,445,465	55,074,990
26	Deferred Tax Reserve	(398,001)	(1,729,677)	(3,099,739)	(3,590,214)	(4,233,107)	(5,161,741)	(6,211,354)	(7,412,367)	(9,508,743)	(11,934,746)	(11,276,091)	(14,914,307)
27	Year End Rate Base	1,517,779	2,537,969	4,548,272	5,267,951	6,211,273	7,627,082	9,469,924	11,301,006	14,497,173	20,977,200	30,169,374	40,160,683
28													
29	**Revenue Requirement Calculation**												
30	Year End Rate Base	1,517,779	2,537,969	4,548,272	5,267,951	6,211,273	7,627,082	9,469,924	11,301,006	14,497,173	20,977,200	30,169,374	40,160,683
31	Pre-Tax ROR	11.53%	11.53%	11.63%	11.63%	11.63%	11.50%	10.22%	9.87%	9.87%	8.51%	8.50%	8.50%
32	Return and Taxes	175,003	292,628	528,964	612,663	722,371	877,114	967,826	1,115,409	1,430,871	1,785,160	2,564,397	3,413,658
33	Book Depreciation	49,836	98,794	179,335	212,059	249,951	307,352	384,247	464,177	600,433	814,476	945,805	1,255,735
34	Property Taxes 2.71%	37,347	88,340	194,259	231,198	241,265	359,366	503,369	490,290	727,379	921,535	1,036,137	1,492,532
35	Annual Revenue Requirement	262,185	479,762	902,558	1,055,920	1,213,587	1,543,832	1,855,442	2,069,876	2,758,683	3,521,171	4,546,339	6,161,925
36	Adjustment due to Order No 26,266 in DG 18-054											2,954	
37	Prior Year Annual Revenue Requirement	-	-	479,762	902,558	1,055,920	1,213,587	1,543,832	1,855,442	2,069,876	2,758,683	3,521,171	4,549,293
38													
39	Low Income Revenue Correction From FY 2018											(7,290)	-
40													
41	Incremental Annual Rate Adjustment Since July 1, 2009	262,185	479,762	422,796	153,362	157,667	330,245	311,610	214,434	688,807	762,488	1,020,832	1,612,633
42													
48													
49													

Actual Capital Structure/ROR

			(current federal tax rate of 21% and state rate of 7.7%)
	Ratio	Rate	Pre-Tax
56 Long Term Debt	49.85%	4.42%	2.200%
57 Short Term Debt	0.95%	2.49%	0.02%
58 Common Equity	49.20%	9.30%	6.280%
59			
60	100.00%		8.500%

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

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Vintage Year Book Depreciation Schedule

			(a)	(b) July 1, 2009 thru March 31, 2010	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	Book Depreciation Schedule-Mains		Actual FY09	9 Months FY10	Actual FY11	Actual FY12	Actual FY13	Actual FY14	Actual FY15	Actual FY16	Actual FY17	Actual FY18	Actual FY19	Actual FY20
1	Actual CIBS spending		1,736,153	4,049,995	3,391,069	1,570,208	2,174,813	2,781,140	3,006,856	3,304,532	5,204,619	8,858,559	8,865,300	14,099,869
2	Base spending		(352,073)	(402,707)	(417,650)	(408,438)	(465,466)	(441,199)	(402,383)	(423,720)	(422,739)	(455,796)	(472,039)	(501,731)
3	Incremental CIBS spending		1,384,080	3,647,288	2,973,419	1,161,770	1,709,346	2,339,940	2,604,473	2,880,812	4,781,880	8,402,763	8,393,261	13,598,138
4														
5	Book Depreciation Rate:													
6	Year 1	2.54%	35,065	0	0	0	0	0	0	0	0	0	0	0
7	Year 1 beginning in FY10	1.92%		70,028	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333	161,151	261,084
8	Year 2	1.92%			70,028	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333	161,151
9	Year 3	1.92%				70,028	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333
10	Year 4	1.92%					70,028	57,090	22,306	32,819	44,927	50,006	55,312	91,812
11	Year 5	1.92%						70,028	57,090	22,306	32,819	44,927	50,006	55,312
12	Year 6	1.92%							70,028	57,090	22,306	32,819	44,927	50,006
13	Year 7	1.92%								70,028	57,090	22,306	32,819	44,927
14	Year 8	1.92%									70,028	57,090	22,306	32,819
15	Year 9	1.92%										70,028	57,090	22,306
16	Year 10	1.92%											70,028	57,090
17	Year 11	1.92%												70,028
18	Book Depreciation Expense-Mains		35,065	70,028	127,118	149,424	182,243	227,170	277,176	332,487	424,299	585,632	676,755	937,839
19														
20	Accumulated Depreciation Mains-Beginning of Year		-	-	70,028	197,146	346,570	528,813	755,982	1,033,158	1,365,646	1,789,945	2,375,577	3,052,333
21	Accumulated Depreciation Mains-End of Year		35,065	70,028	197,146	346,570	528,813	755,982	1,033,158	1,365,646	1,789,945	2,375,577	3,052,333	3,990,172
22														
23														
24	**Book Depreciation Schedule-Services**													
25														
26	Actual CIBS spending		729,463	798,555	668,631	352,005	161,352	370,655	776,086	705,984	1,209,322	1,389,222	1,147,142	1,334,614
27	Base spending		(147,927)	(79,403)	(82,350)	(91,562)	(34,534)	(58,801)	(103,857)	(90,524)	(98,226)	(71,479)	(61,080)	(47,491)
28	Incremental CIBS spending		581,536	719,152	586,281	260,443	126,818	311,854	672,229	615,460	1,111,096	1,317,743	1,086,062	1,287,123
29														
30	Book Depreciation Rate:													
31	Year 1	2.54%	14,771	0	0	0	0	0	0	0	0	0	0	0
32	Year 1 beginning in FY10	4.00%		28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710	43,442	51,485
33	Year 2	4.00%			28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710	43,442
34	Year 3	4.00%				28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710
35	Year 4	4.00%					28,766	23,451	10,418	5,073	12,474	26,889	24,618	44,444
36	Year 5	4.00%						28,766	23,451	10,418	5,073	12,474	26,889	24,618
37	Year 6	4.00%							28,766	23,451	10,418	5,073	12,474	26,889
38	Year 7	4.00%								28,766	23,451	10,418	5,073	12,474
39	Year 8	4.00%									28,766	23,451	10,418	5,073
40	Year 9	4.00%										28,766	23,451	10,418
41	Year 10	3.55%											25,530	20,813
42	Year 11	3.55%												25,530
43	Book Depreciation Expense-Services		14,771	28,766	52,217	62,635	67,708	80,182	107,071	131,690	176,133	228,843	269,049	317,896
44														
45	Accumulated Depreciation Services-Beginning of Year		-	-	28,766	80,983	143,618	211,326	291,508	398,579	530,268	706,402	935,245	1,204,294
46	Accumulated Depreciation Services-End of Year		14,771	28,766	80,983	143,618	211,326	291,508	398,579	530,268	706,402	935,245	1,204,294	1,522,190
47														
48														
49														
50	Total Mains & Services Depreciation Expense		49,836	98,794	179,335	212,059	249,951	307,352	384,247	464,177	600,433	814,476	945,805	1,255,735
51														
52	Total Mains & Services Accumulated Depreciation		49,836	98,794	278,129	490,188	740,138	1,047,490	1,431,737	1,895,914	2,496,347	3,310,822	4,256,627	5,512,362

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

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Municipal Taxes as a Percentage of Net Plant

		(a) 12/31/2005	(b) 12/31/2006	(c) 12/31/2007	(d) 12/31/2008	(e) 12/31/2009	(f) 12/31/2010	(g) 12/31/2011	(h) 12/31/2012	(i) 12/31/2013	(j) 12/31/2014	(k) 12/31/2015	(l) 12/31/2016	(m) 12/31/2017	(n) 12/31/2018	(o) 12/31/2019
1	Plant in Service	258,573	272,678	289,379	305,221	319,737	332,049	344,966	356,165	381,214	419,215	451,950	494,511	539,666	595,016	665,855
2	Depreciation and Amortization Reserve	(82,363)	(88,564)	(94,562)	(102,587)	(108,270)	(114,294)	(119,973)	(121,047)	(129,209)	(137,656)	(149,943)	(163,209)	(171,469)	(134,742)	(224,026)
3	Net Plant	176,209	184,114	194,817	202,634	211,467	217,756	224,993	235,118	252,006	281,559	302,007	331,302	368,198	460,274	441,829
4																
5	Average Net Plant															
6	Plant in Service		265,625	281,028	297,300	312,479	325,893	338,508	350,565	368,690	400,214	435,582	456,863	495,808	567,341	630,435
7	Depreciation Reserve		(85,463)	(91,563)	(98,575)	(105,429)	(111,282)	(117,133)	(120,510)	(125,128)	(133,432)	(143,799)	(150,432)	(160,706)	(153,105)	(179,384)
8	Net Plant		180,162	189,465	198,726	207,051	214,611	221,375	230,056	243,562	266,782	291,783	306,431	335,102	414,236	451,051
9																
10	Municipal Taxes		3,534	3,641	3,771	4,294	5,459	5,776	5,321	6,835	8,560	7,644	9,596	9,380	10,361	12,226
11																
12	% Municipal Taxes to Net Plant		1.96%	1.92%	1.90%	2.07%	2.54%	2.61%	2.31%	2.81%	3.21%	2.62%	3.13%	2.80%	2.50%	2.71%

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

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Bill Impacts due to Cast Iron and Bare Steel Replacement Program

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		FY2009	**FY2010**	**FY2011**	**FY2012**	**FY2013**	**FY2014**	**FY2015**	**FY2016**	**FY2017**	**FY2018**	**FY2019**	**FY2020**
1	Annual Increase due to Cast Iron Bare Steel program	262,185	479,762	521,590	(44,226)	157,667	330,245	311,610	214,434	688,807	762,488	1,020,832	1,612,633
2													
3	Annual Throughput (see Winter COG filing - schedule 10B)	154,702,063	150,828,182	154,648,622	163,588,592	158,062,349	160,018,819	166,523,068	172,103,158	186,909,214	182,370,287	183,203,513	185,636,009
4													
5	Increase Factor	$0.0017	$0.0032	$0.0034	($0.0003)	$0.0010	$0.0021	$0.0019	$0.0012	$0.0037	$0.0042	$0.0056	$0.0087
6													
7	Annual Calendar Year Gross Revenues (Annual Report - Page 11)[3]	$176,520,000	$151,224,178	$132,475,941	$146,365,316	$119,363,340	$137,617,008	$119,363,341	$156,933,825	$120,053,649	$139,890,158	$157,495,294	$157,020,559
8													
9	Annual Percent Increase	0.15%	0.32%	0.39%	-0.03%	0.13%	0.24%	0.26%	0.14%	0.57%	0.55%	0.65%	1.03%
10													
11	Miles of Cast Iron/Bare Steel Main Replaced Annually through CIBS	2.96	3.98	2.79	1.56	1.65	3.51	5.00	5.05	10.26	11.58	9.91	11.13
12	Cumulative Miles of Main Replaced through CIBS	2.96	6.94	9.73	11.29	12.94	16.45	21.45	26.50	36.76	48.34	58.25	69.38
13	Total Miles of Cast Iron/Bare Steel Main Remaining[1]	149.8	142.0	137.4	132.1	126.30	120.88	113.96	106.46	93.18	78.65	68.74	55.83
14													
15	Services Replaced Annually[2]	101	127	282	81	84	174	316	291	572	584	270	513
16	Cumulative Number of Services Replaced	101	228	510	591	675	849	1,165	1,456	2,028	2,612	2,882	3,395
17													
18	**Typical Residential bill**	$1,292	$1,107	$1,118	$1,059	$1,020	$1,123	$1,309	$1,309	$1,078	$1,171	$1,170	$1,162
19													
20	Typical Usage	800	800	800	800	800	800	800	800	763	779	778	809
21													
22	Annual Increase for Residential Heating customer	$1.36	$2.54	$2.70	($0.22)	$0.80	$1.65	$1.50	$1.00	$2.81	$3.26	$4.33	$7.03
23													
24	Percent Bill Increase	0.10%	0.23%	0.24%	-0.02%	0.08%	0.15%	0.11%	0.08%	0.26%	0.28%	0.37%	0.60%
25													
26													
27	**Typical G-41**	$3,375	$2,939	$2,842	$2,696	$2,654	$2,926	$3,499	$3,499	$2,651	$3,031	$3,213	$2,943
28													
29	Typical Usage	2,167	2,167	2,167	2,167	2,167	2,167	2,167	2,167	2,029	2,180	2,260	2,260
30													
31	Annual Increase for G-41 customer	$3.67	$6.89	$7.31	($0.59)	$2.16	$4.47	$4.06	$2.70	$7.48	$9.11	$12.59	$19.63
32													
33	Percent Bill Increase	0.11%	0.23%	0.26%	-0.02%	0.08%	0.15%	0.12%	0.08%	0.28%	0.30%	0.39%	0.67%
34													
35													
36	**Typical G-42**	$22,595	$18,926	$18,432	$17,516	$16,884	$18,853	$22,486	$22,486	$16,284	$18,916	$21,784	$19,754
37													
38	Typical Usage	15,567	15,567	15,567	15,567	15,567	15,567	15,567	15,567	14,720	15,883	18,073	18,073
39													
40	Annual Increase for G-42 customer	$26.38	$49.52	$52.50	($4.21)	$15.53	$32.13	$29.13	$19.40	$54.25	$66.41	$100.70	$157.00
41													
42	Percent Bill Increase	0.12%	0.26%	0.28%	-0.02%	0.09%	0.17%	0.13%	0.09%	0.33%	0.35%	0.46%	0.79%
43													
44													
45	**Typical G-52**	$21,973	$16,707	$16,605	$16,025	$14,629	$16,555	$18,667	$18,667	$14,087	$15,714	$17,730	$16,408
46													
47	Typical Usage	15,687	15,687	15,687	15,687	15,687	15,687	15,687	15,687	14,566	15,645	17,935	17,935
48													
49	Annual Increase for G-52 customer	$26.59	$49.90	$52.91	($4.24)	$15.65	$32.37	$29.35	$19.55	$53.68	$65.41	$99.93	$155.80
50													
51	Percent Bill Increase	0.12%	0.30%	0.32%	-0.03%	0.11%	0.20%	0.16%	0.10%	0.38%	0.42%	0.56%	0.95%

Line / Column Notes:
1(b)-16(b)

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

Liberty Utilities (EnergyNorth Natural Gas) Corp.
d/b/a Liberty Utilities
Docket No. DG XX-XXX
Attachment CAM-2
April 15, 2020

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Computation of Revenue Requirement
April 15, 2020

Computation of Revenue Requirement **1**
Vintage Year Book Depreciation Schedule **2**
Municipal Taxes as a Percentage of Net Plant **3**
Bill Impacts due to Cast Iron and Bare Steel Replacement Program **4**

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Computation of Revenue Requirement

RESTATED AS IF RATE CASE WAS NOT FILED. FOR INFORMATIONAL PURPOSES ONLY.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		Actual FY09	12 Months FY10	Actual FY11	Actual FY12	Actual FY13	Actual FY14	Actual FY15	Actual FY16	Actual FY17	Actual FY18	Actual FY19	Actual FY20
	Incremental Investment												
1	CIBS Progam Actual Spend-Mains	1,736,153	4,206,295	3,391,069	1,570,208	2,174,813	2,781,140	3,006,856	3,304,532	5,204,619	8,858,559	8,865,300	14,099,869
2	CIBS Progam Actual Spend-Service	729,463	822,173	668,631	352,005	161,352	370,655	776,086	705,984	1,209,322	1,389,222	1,147,142	1,334,614
3	CIBS Progam Estimated Spend-Mains					-	-	-	-	-	-	-	-
4	CIBS Progam Estimated Spend-Service					-	-	-	-	-	-	-	-
5	Degradation Fees [1]					-	-	-	-	-	1,198,059	-	-
6	Base Spending Amount	500,000	500,000	500,000	500,000	500,000	500,000	506,240	514,244	520,965	527,275	533,119	549,222
7	Incremental Amount	1,965,616	4,528,468	3,559,700	1,422,213	1,836,165	2,651,795	3,276,702	3,496,272	5,892,976	10,918,565	9,479,323	14,885,261
8	Cumulative CIBS Program Spend Since July 1, 2009		6,494,084	10,053,784	11,475,997	13,312,162	15,963,956	19,240,659	22,736,931	28,629,907	39,548,472	49,027,795	63,913,055
9													
10	**Deferred Tax Calculation**												
11	Annual Tax Depreciation	1,031,948	5,462,136	3,559,700	1,422,213	1,836,165	2,651,795	3,276,702	3,496,272	5,892,976	10,918,565	9,479,323	14,885,261
12	Cumulative Tax Depreciation Since July 1, 2009		6,494,084	10,053,784	11,475,997	13,312,162	15,963,956	19,240,659	22,736,931	28,629,907	39,548,472	49,027,795	63,913,055
13													
14	Annual Book Depreciation	49,836	152,184	232,725	265,448	303,340	360,741	437,636	517,566	653,822	867,865	1,069,126	1,306,326
15	Cumulative Book Depreciation Since July 1, 2009		202,019	434,744	700,192	1,003,532	1,364,273	1,801,909	2,319,475	2,973,297	3,841,162	4,910,288	6,216,614
16													
17	Annual Book/Tax Timer	982,112	5,309,953	3,326,975	1,156,765	1,532,825	2,291,054	2,839,067	2,978,706	5,239,154	10,050,701	8,410,197	13,578,935
18	Cumulative Book/Tax Timer	982,112	6,292,065	9,619,040	10,775,805	12,308,630	14,599,684	17,438,751	20,417,457	25,656,611	35,707,312	44,117,509	57,696,444
19	Statutory Tax Rate	40.53%	40.53%	40.53%	40.53%	40.53%	39.61%	39.61%	39.61%	39.61%	27.24%	27.08%	27.08%
20													
21	Deferred Tax Reserve	398,001	2,550,174	3,898,597	4,367,434	4,988,688	5,896,174	6,907,489	8,087,355	10,162,584	12,900,395	12,004,153	15,624,197
22													
23	**Rate Base Calculation**												
24	Plant In Service	1,965,616	6,494,084	10,053,784	11,475,997	13,312,162	15,963,956	19,240,659	22,736,931	28,629,907	39,548,472	49,027,795	63,913,055
25	Accumulated Depreciation	(49,836)	(202,019)	(434,744)	(700,192)	(1,003,532)	(1,364,273)	(1,801,909)	(2,319,475)	(2,973,297)	(3,841,162)	(4,910,288)	(6,216,614)
26	Net Plant in Service	1,915,780	6,292,065	9,619,040	10,775,805	12,308,630	14,599,683	17,438,750	20,417,456	25,656,610	35,707,310	44,117,507	57,696,441
27	Deferred Tax Reserve	(398,001)	(2,550,174)	(3,898,597)	(4,367,434)	(4,988,688)	(5,896,174)	(6,907,489)	(8,087,355)	(10,162,584)	(12,900,395)	(12,004,153)	(15,624,197)
28	Year End Rate Base	1,517,779	3,741,891	5,720,443	6,408,371	7,319,942	8,703,509	10,531,261	12,330,101	15,494,026	22,806,915	32,113,354	42,072,244
29													
30	**Revenue Requirement Calculation**												
31	Year End Rate Base	1,517,779	3,741,891	5,720,443	6,408,371	7,319,942	8,703,509	10,531,261	12,330,101	15,494,026	22,806,915	32,113,354	42,072,244
32	Pre-Tax ROR	11.53%	11.53%	11.63%	11.63%	11.63%	11.50%	10.22%	9.87%	9.87%	8.51%	8.50%	8.50%
33	Return and Taxes	175,003	431,440	665,288	745,294	851,309	1,000,904	1,076,295	1,216,981	1,529,260	1,940,868	2,729,635	3,576,141
34	Book Depreciation	49,836	152,184	232,725	265,448	303,340	360,741	437,636	517,566	653,822	867,865	1,069,126	1,306,326
35	Property Taxes 2.71%	37,347	130,246	244,324	281,249	284,329	410,251	559,784	534,937	777,395	1,015,684	1,225,695	1,563,574
36	Annual Revenue Requirement	262,185	713,870	1,142,337	1,291,991	1,438,978	1,771,896	2,073,715	2,269,484	2,960,477	3,824,417	5,024,456	6,446,041
37	Adjustment due to Order No 26,266 in DG 18-054											2,954	
38	Prior Year Annual Revenue Requirement	-	262,185	713,870	1,142,337	1,291,991	1,438,978	1,771,896	2,073,715	2,269,484	2,960,477	3,824,417	5,027,410
39													
40	Low Income Revenue Correction From FY 2018											(7,290)	
41													
42	Incremental Annual Rate Adjustment Since July 1, 2009	262,185	451,684	428,467	149,654	146,987	332,918	301,819	195,769	690,993	863,940	1,192,749	1,418,631
43													

49				
50				
51	**Actual Capital Structure/ROR**			
52				(current federal
53				tax rate of 21%
54				and state rate
55				of 7.7%)
56		Ratio	Rate	Pre-Tax
57	Long Term Debt	49.85%	4.42%	2.200%
58	Short Term Debt	0.95%	2.49%	0.02%
59	Common Equity	49.20%	9.30%	6.280%
60				
61		100.00%		8.500%

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Vintage Year Book Depreciation Schedule

RESTATED AS IF RATE CASE WAS NOT FILED. FOR INFORMATIONAL PURPOSES ONLY.

			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	Book Depreciation Schedule-Mains		**Actual FY09**	**12 Months FY10**	**Actual FY11**	**Actual FY12**	**Actual FY13**	**Actual FY14**	**Actual FY15**	**Actual FY16**	**Actual FY17**	**Actual FY18**	**Actual FY19**	**Actual FY19**
1	Actual CIBS spending		1,736,153	4,206,295	3,391,069	1,570,208	2,174,813	2,781,140	3,006,856	3,304,532	5,204,619	8,858,559	8,865,300	14,099,869
2	Base spending		(352,073)	(418,248)	(417,650)	(408,438)	(465,466)	(441,199)	(402,383)	(423,720)	(422,739)	(455,796)	(472,039)	(501,731)
3	Incremental CIBS spending		1,384,080	3,788,047	2,973,419	1,161,770	1,709,346	2,339,940	2,604,473	2,880,812	4,781,880	8,402,763	8,393,261	13,598,138
4														
5	Book Depreciation Rate:													
6	Year 1	2.54%	35,065	35,065	35,065	35,065	35,065	35,065	35,065	35,065	35,065	35,065	35,065	35,065
7	Year 1 beginning in FY10	1.92%		72,731	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333	161,151	261,084
8	Year 2	1.92%			72,731	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333	161,151
9	Year 3	1.92%				72,731	57,090	22,306	32,819	44,927	50,006	55,312	91,812	161,333
10	Year 4	1.92%					72,731	57,090	22,306	32,819	44,927	50,006	55,312	91,812
11	Year 5	1.92%						72,731	57,090	22,306	32,819	44,927	50,006	55,312
12	Year 6	1.92%							72,731	57,090	22,306	32,819	44,927	50,006
13	Year 7	1.92%								72,731	57,090	22,306	32,819	44,927
14	Year 8	1.92%									72,731	57,090	22,306	32,819
15	Year 9	1.92%										72,731	57,090	22,306
15	Year 10	1.92%											72,731	57,090
16	Year 11	1.92%												72,731
17	Book Depreciation Expense-Mains		35,065	107,796	164,886	187,191	220,010	264,937	314,943	370,255	462,067	623,400	784,550	972,904
18														
19	Accumulated Depreciation Mains-Beginning of Year		-	35,065	142,860	307,746	494,937	714,947	979,884	1,294,827	1,665,081	2,127,148	2,750,548	3,535,098
20	Accumulated Depreciation Mains-End of Year		35,065	142,860	307,746	494,937	714,947	979,884	1,294,827	1,665,081	2,127,148	2,750,548	3,535,098	4,508,002
21														
22														
23	**Book Depreciation Schedule-Services**													
24														
25	Actual CIBS spending		729,463	822,173	668,631	352,005	161,352	370,655	776,086	705,984	1,209,322	1,389,222	1,147,142	1,334,614
26	Base spending		(147,927)	(81,752)	(82,350)	(91,562)	(34,534)	(58,801)	(103,857)	(90,524)	(98,226)	(71,479)	(61,080)	(47,491)
27	Incremental CIBS spending		581,536	740,421	586,281	260,443	126,818	311,854	672,229	615,460	1,111,096	1,317,743	1,086,062	1,287,123
28														
29	Book Depreciation Rate:													
30	Year 1	2.54%	14,771	14,771	14,771	14,771	14,771	14,771	14,771	14,771	14,771	14,771	14,771	14,771
31	Year 1 beginning in FY10	4.00%		29,617	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710	43,442	51,485
32	Year 2	4.00%			29,617	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710	43,442
33	Year 3	4.00%				29,617	23,451	10,418	5,073	12,474	26,889	24,618	44,444	52,710
34	Year 4	4.00%					29,617	23,451	10,418	5,073	12,474	26,889	24,618	44,444
35	Year 5	4.00%						29,617	23,451	10,418	5,073	12,474	26,889	24,618
36	Year 6	4.00%							29,617	23,451	10,418	5,073	12,474	26,889
37	Year 7	4.00%								29,617	23,451	10,418	5,073	12,474
38	Year 8	4.00%									29,617	23,451	10,418	5,073
39	Year 9	4.00%										29,617	23,451	10,418
40	Year 10	3.55%											26,285	20,813
41	Year 11	3.55%												26,285
42	Book Depreciation Expense-Services		14,771	44,388	67,839	78,257	83,330	95,804	122,693	147,311	191,755	244,465	284,575	333,422
43														
44	Accumulated Depreciation Services-Beginning of Year		-	14,771	59,159	126,998	205,255	288,584	384,388	507,081	654,392	846,147	1,090,612	1,375,188
45	Accumulated Depreciation Services-End of Year		14,771	59,159	126,998	205,255	288,584	384,388	507,081	654,392	846,147	1,090,612	1,375,188	1,708,610
46														
47														
48														
49	Total Mains & Services Depreciation Expense		49,836	152,184	232,725	265,448	303,340	360,741	437,636	517,566	653,822	867,865	1,069,126	1,306,326
50														
51	Total Mains & Services Accumulated Depreciation		49,836	202,020	434,745	700,193	1,003,533	1,364,274	1,801,910	2,319,476	2,973,298	3,841,160	4,910,286	6,216,612

6(a) & 30(a) FY 2009 filing used the composite depreciation rate for both mains and services.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Municipal Taxes as a Percentage of Net Plant

RESTATED AS IF RATE CASE WAS NOT FILED. FOR INFORMATIONAL PURPOSES ONLY.

		(a) 12/31/2005	(b) 12/31/2006	(c) 12/31/2007	(d) 12/31/2008	(e) 12/31/2009	(f) 12/31/2010	(g) 12/31/2011	(h) 12/31/2012	(i) 12/31/2013	(j) 12/31/2014	(k) 12/31/2015	(l) 12/31/2016	(m) 12/31/2017	(n) 12/31/2018	(o) 12/31/2019
1	Plant in Service	258,573	272,678	289,379	305,221	319,737	332,049	344,966	356,165	381,214	419,215	451,950	494,511	539,666	595,016	665,855
2	Depreciation and Amortization Reserve	(82,363)	(88,564)	(94,562)	(102,587)	(108,270)	(114,294)	(119,973)	(121,047)	(129,209)	(137,656)	(149,943)	(163,209)	(171,469)	(134,742)	(224,026)
3	Net Plant	176,209	184,114	194,817	202,634	211,467	217,756	224,993	235,118	252,006	281,559	302,007	331,302	368,198	460,274	441,829
4																
5	Average Net Plant															
6	Plant in Service		265,625	281,028	297,300	312,479	325,893	338,508	350,565	368,690	400,214	435,582	456,863	495,808	567,341	630,435
7	Depreciation Reserve		(85,463)	(91,563)	(98,575)	(105,429)	(111,282)	(117,133)	(120,510)	(125,128)	(133,432)	(143,799)	(150,432)	(160,706)	(153,105)	(179,384)
8	Net Plant		180,162	189,465	198,726	207,051	214,611	221,375	230,056	243,562	266,782	291,783	306,431	335,102	414,236	451,051
9																
10	Municipal Taxes		3,534	3,641	3,771	4,294	5,459	5,776	5,321	6,835	8,560	7,644	9,596	9,380	10,361	12,226
11																
12	% Municipal Taxes to Net Plant		1.96%	1.92%	1.90%	2.07%	2.54%	2.61%	2.31%	2.81%	3.21%	2.62%	3.13%	2.80%	2.50%	2.71%

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

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Fiscal Year 2020 Cast Iron/Bare Steel Replacement Program
Bill Impacts due to Cast Iron and Bare Steel Replacement Program

RESTATED AS IF RATE CASE WAS NOT FILED. FOR INFORMATIONAL PURPOSES ONLY.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		FY2009	**FY2010**	**FY2011**	**FY2012**	**FY2013**	**FY2014**	**FY2015**	**FY2016**	**FY2017**	**FY2018**	**FY2019**	**FY2020**
1	Annual Increase due to Cast Iron Bare Steel program	262,185	713,870	527,261	(92,035)	146,987	332,918	301,819	195,769	690,993	863,940	1,192,749	1,418,631
2													
3	Annual Calendar Year Gross Revenues (Annual Report - Page 11)[3]	154,702,063	150,828,182	154,648,622	163,588,592	158,062,349	160,018,819	166,523,068	172,103,158	186,909,214	182,370,287	183,203,513	185,636,009
4													
5	Increase Factor	$0.0017	$0.0047	$0.0034	($0.0006)	$0.0009	$0.0021	$0.0018	$0.0011	$0.0037	$0.0047	$0.0065	$0.0076
6													
7	Annual Calendar Year Gross Revenues (Annual Report - Page 11)	$176,520,000	$151,224,178	$132,475,941	$146,365,316	$119,363,340	$137,617,008	$119,363,341	$156,933,825	$120,053,649	$139,890,158	$157,495,294	$157,020,559
8													
9	Annual Percent Increase	0.15%	0.47%	0.40%	-0.06%	0.12%	0.24%	0.25%	0.12%	0.58%	0.62%	0.76%	0.90%
10													
11	Miles of Cast Iron/Bare Steel Main Replaced Annually through CIBS	2.96	3.98	2.79	1.56	1.65	3.51	5.00	5.05	10.26	11.58	9.91	11.13
12	Cumulative Miles of Main Replaced through CIBS	2.96	6.94	9.73	11.29	12.94	16.45	21.45	26.50	36.76	48.34	58.25	69.38
13	Total Miles of Cast Iron/Bare Steel Main Remaining[1]	149.8	142.0	137.4	132.1	126.30	120.88	113.96	106.46	93.18	78.65	68.74	55.83
14													
15	Services Replaced Annually[2]	101	127	282	81	84	174	316	291	572	584	270	513
16	Cumulative Number of Services Replaced	101	228	510	591	675	849	1,165	1,456	2,028	2,612	2,882	3,395
17													
18	**Typical Residential bill**	$1,292	$1,107	$1,118	$1,059	$1,020	$1,123	$1,309	$1,309	$1,078	$1,171	$1,170	$1,162
19													
20	Typical Usage	800	800	800	800	800	800	800	800	763	779	778	809
21													
22	Annual Increase for Residential Heating customer	$1.36	$3.79	$2.73	($0.45)	$0.74	$1.66	$1.45	$0.91	$2.82	$3.69	$5.07	$6.18
23													
24	Percent Bill Increase	0.10%	0.34%	0.24%	-0.04%	0.07%	0.15%	0.11%	0.07%	0.26%	0.32%	0.43%	0.53%
25													
26													
27	**Typical G-41**	$3,375	$2,939	$2,842	$2,696	$2,654	$2,926	$3,499	$3,499	$2,651	$3,031	$3,213	$2,943
28													
29	Typical Usage	2,167	2,167	2,167	2,167	2,167	2,167	2,167	2,167	2,029	2,180	2,260	2,260
30													
31	Annual Increase for G-41 customer	$3.67	$10.26	$7.39	($1.22)	$2.02	$4.51	$3.93	$2.46	$7.50	$10.33	$14.71	$17.27
32													
33	Percent Bill Increase	0.11%	0.35%	0.26%	-0.05%	0.08%	0.15%	0.11%	0.07%	0.28%	0.34%	0.46%	0.59%
34													
35													
36	**Typical G-42**	$22,595	$18,926	$18,432	$17,516	$16,884	$18,853	$22,486	$22,486	$16,284	$18,916	$21,784	$19,754
37													
38	Typical Usage	15,567	15,567	15,567	15,567	15,567	15,567	15,567	15,567	14,720	15,883	18,073	18,073
39													
40	Annual Increase for G-42 customer	$26.38	$73.68	$53.07	($8.76)	$14.48	$32.39	$28.21	$17.71	$54.42	$75.24	$117.66	$138.11
41													
42	Percent Bill Increase	0.12%	0.39%	0.29%	-0.05%	0.09%	0.17%	0.13%	0.08%	0.33%	0.40%	0.54%	0.70%
43													
44													
45	**Typical G-52**	$21,973	$16,707	$16,605	$16,025	$14,629	$16,555	$18,667	$18,667	$14,087	$15,714	$17,730	$16,380
46													
47	Typical Usage	15,687	15,687	15,687	15,687	15,687	15,687	15,687	15,687	14,566	15,645	17,935	17,935
48													
49	Annual Increase for G-52 customer	$26.59	$74.25	$53.48	($8.83)	$14.59	$32.64	$28.43	$17.84	$53.85	$74.11	$116.77	$137.06
50													
51	Percent Bill Increase	0.12%	0.44%	0.32%	-0.06%	0.10%	0.20%	0.15%	0.10%	0.38%	0.47%	0.66%	0.84%

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

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