



**STATE OF NEW HAMPSHIRE  
BEFORE THE  
PUBLIC UTILITIES COMMISSION**

Docket No. DG 17-XXX

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

**JOINT DIRECT TESTIMONY**

**OF**

**RICHARD G. MACDONALD**

**AND**

**BRIAN R. FROST**

April 14, 2017

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1 **I. INTRODUCTION**

2 **Mr. MacDonald**

3 **Q. Please state your name and business address.**

4 A. My Name is Richard G. MacDonald. My business address is 130 Elm Street,  
5 Manchester, New Hampshire, 03101-2716.

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

7 A. I am employed by Liberty Utilities Service Corp. as the Director of Gas  
8 Operations for Liberty Utilities (EnergyNorth Natural Gas) Corp. (“EnergyNorth”  
9 or “the Company”).

10 **Q. On whose behalf are you testifying today?**

11 A. I am testifying on behalf of EnergyNorth.

12 **Q. Mr. MacDonald, please state your educational background and professional  
13 experience.**

14 A. In 1977, I received an Associate’s Degree in Applied Science in Industrial  
15 Electricity from the NH Community College in Nashua, NH. In 1997, I received  
16 an Associate’s Degree in Mechanical Engineering Technology from the New  
17 Hampshire Technical Institute in Concord, NH. In July of 2012, I assumed the  
18 position of Director Gas Operations for EnergyNorth. My responsibilities as  
19 Director include managerial oversight of all gas operations and construction  
20 processes.

1 From 1977 to 2000, I was employed by EnergyNorth Natural Gas, Inc. where I  
2 held various supervisory and managerial positions in gas operations. From 2000  
3 to 2008, I was employed by KeySpan Energy Delivery where I was the Manager  
4 of Field Operations and Construction. In 2008, I accepted a position at National  
5 Grid as the New England Resource Planning Manager responsible for operating  
6 and maintenance work plans and capital construction project planning for the  
7 New England region and held this position until 2012.

8 **Q. Have you previously testified before this Commission?**

9 A. Yes, I testified in Docket No. DG 06-045, EnergyNorth's Petition for Termination  
10 of Propane Service to Kaunas Circle, Manchester, NH, as well as recent Cast  
11 Iron/Bare Steel dockets, DG 15-104 and DG 16-449.

12 **Mr. Frost**

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

14 A. My name is Brian R. Frost. My business address is 15 Buttrick Road,  
15 Londonderry, NH 03053. I am a Senior Engineer for Liberty Utilities Service  
16 Corp. in New Hampshire and provide engineering services to EnergyNorth.

17 **Q. Please describe your educational background and training.**

18 A. In 2007 I received a Bachelor of Science degree from Rochester Institute of  
19 Technology. I have also attended the Appalachian Gas Measurement Short  
20 Course.

1 **Q. Please describe your professional background.**

2 A. In April of 2016, I assumed a position in Project Engineering for EnergyNorth  
3 where some of my responsibilities include analyzing, prioritizing, and selecting  
4 the gas main replacement projects under the CIBS Program. From 2008 to 2016 I  
5 worked for New York State Electric & Gas Corporation as an Engineer mainly  
6 specializing in the writing and maintenance of gas construction standards and  
7 operating and maintenance procedures. In 2005 and 2006 I worked as a college  
8 intern at Rochester Gas and Electric Corporation in the Gas Engineering  
9 department.

10 **Q. Have you previously testified before the Commission?**

11 A. No.

12 **II. PURPOSE OF TESTIMONY**

13 **Q. What is the purpose of your testimony?**

14 A. The purpose of our testimony is to explain the Company's annual program report  
15 associated with the CIBS main replacement program for fiscal year ("FY") 2016-  
16 2017, or the twelve months ending March 31, 2017 ("FY 2017").

17 **III. IMPLEMENTATION OF THE CIBS PROGRAM**

18 **Q. Please describe the purpose of the CIBS Program.**

19 A. The CIBS program was established as part of the National Grid/KeySpan merger  
20 settlement agreement approved by the Commission in Order No. 24,777 (July 12,

1 2007) in Docket No. DG 06-107, and the settlement agreement in Docket No. DG  
2 11-040 approved in Order No. 25,370 (May 30, 2012). The program's goal is to  
3 accelerate the replacement of cast iron and bare steel pipes used in the Company's  
4 distribution system, which tend to deteriorate over time. These are pipes that  
5 have been in ground and exposed to a corrosive environment and earth movement  
6 for a long time, in some cases more than one hundred years.

7 **Q. How is the CIBS program implemented?**

8 A. Under the CIBS program the Company annually submits to Commission Staff for  
9 review and comment its plan for the replacement of cast iron and bare steel pipes  
10 for the coming fiscal year, which begins in April.<sup>1</sup> The proposed plan sets forth a  
11 prioritized list of pipes to be replaced based on the year of installation, condition  
12 of the pipe, and other relevant factors. Subject to certain limited exceptions, pipes  
13 replaced as part of public works projects or as part of the Company's gas main  
14 encroachment policy are excluded from the CIBS program because these pipes  
15 would likely have been replaced even in the absence of the program. Following  
16 review by Staff, including technical sessions between Staff and the Company,  
17 Liberty implements the CIBS plan over the course of the construction season,  
18 subject to reasonable deviations based on circumstances that may arise or  
19 additional information that may become available.

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<sup>1</sup> The CIBS' fiscal year begins in April and concludes in March of the following year.

1 The Company is required to spend a base amount each year on the CIBS program;  
2 the capital expenditures required under the FY 2017 CIBS program is \$520,965  
3 (“CIBS Base Amount”). The Company is allowed a permanent increase in its  
4 base distribution delivery rates (“Capital Investment Allowance”), effective July 1  
5 of each year, to recover the annual revenue requirement for investments made in  
6 excess of the CIBS Base Amount during the preceding fiscal year. A copy of the  
7 CIBS report is included as Attachment RGM-BRF-1 and includes, among other  
8 things, an overview of the actual capital expenditures incurred in implementing  
9 the FY 2017 CIBS Plan, variances between the initial project estimated costs and  
10 final project actual costs, with comments on variances. Also included with the  
11 Report is a FY 2017 Condition Bare Steel Main Replacement Program – Sample  
12 Analysis, which describes the steel pipe and soil samples collected from CIBS  
13 projects completed over the course of the FY 2017 construction season.

14 **IV. FY 2017 CIBS PROGRAM**

15 **Q. Please describe the FY 2017 CIBS program.**

16 A. The FY 2017 CIBS program was based on a preliminary project plan developed  
17 by the Company in January 2016 and agreed to by Staff during a subsequent  
18 technical session in April 2016. The initial FY 2017 CIBS program formulated  
19 consisted of twenty five projects that included the replacement or abandonment of  
20 approximately 9.43 miles of Cast Iron/Bare Steel Leak Prone Pipe. When it  
21 became apparent that a deficit in new business main extensions was going to  
22 occur in FY 2017, seven additional incremental projects totaling 1.40 miles were

1 added to the program. Therefore the total planned CIBS program for FY 2017  
2 had thirty two different projects accounting for the replacement or abandonment  
3 of 10.83 miles of leak prone pipe. Thirty one of the planned projects were  
4 completed, with only one project resulting in significant scope reduction.

5 Construction work for the one uncompleted project and pipe affected by the  
6 reduced scope of one project is expected to be completed during the FY 2018  
7 CIBS program. The thirty one completed projects eliminated 10.3 miles of leak  
8 prone pipe at a total cost of \$9,795,922 (including estimated carryover costs).

9 The program also included the replacement, insert, or abandonment of 574  
10 associated services (347 Bare Steel, and 227 Coated Steel or Plastic), the transfer  
11 of 224 services and 12 new services.

12 The Company approximately doubled the amount of CIBS main replaced or  
13 abandoned during the FY 2017 program as compared to figures from the  
14 preceding year FY 2016 program (10.3 miles versus 5.05 miles). The company  
15 remains committed to, and is on track for, completing the removal of substantially  
16 all of the leak prone pipe and associated bare steel services by 2024.

17 **Q. Is all of the replacement main installed as part of the FY 2017 CIBS Program**  
18 **used and useful?**

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

1 **Q. Did the Company replace any other Leak Prone outside of the CIBS**  
2 **Program?**

3 A. Yes. In FY 2017, the Company replaced 30 feet of cast iron through the Cast Iron  
4 Encroachment Policy and 15,663 feet of cast iron and bare steel through  
5 municipal projects, totaling to 2.97 miles of replacement.

6 **V. COSTS OF FY 2017 CIBS PROGRAM**

7 **Q. What were the total costs incurred during the FY 2017 CIBS program?**

8 A. As Attachment RGM-BRF-2 shows, total implementation costs for the FY 2017  
9 CIBS program are expected to be \$10,390,339. This number includes:  
10 \$7,493,962 spent on FY 2017 projects during the program year, \$585,800  
11 incurred as carryover costs from the prior years' program (FY 2016), and an  
12 estimated future carryover cost of \$2,301,960. Of the costs incurred during the  
13 FY 2017 program year, \$6,461,916 are recoverable under CIBS rates. This leaves  
14 \$1,626,463 incurred for unrecoverable costs such as tie over of plastic services, or  
15 replacement of short lengths of plastic pipe where efficient, etc.

16 **Q. Are there any carry-over costs from FY 2016 CIBS projects that the**  
17 **Company incurred in FY 2017?**

18 A. Yes. As shown on Attachment RGM-BRF-2, line 51, column BB, there will be a  
19 total of \$585,800 of estimated carry-over costs from FY 2016 to FY 2017, as  
20 compared to \$593,728 in carry over costs from FY 2015 to FY 2016. All of the  
21 carry-over costs are related to final trench restoration work that could not be

1 completed in the planned fiscal year due to city rules regarding minimum  
2 temperature requirements, or a requirement that trenches be allowed to settle for  
3 one full freeze-thaw cycle before final restoration.

4 **Q. What are the unit costs for FY 2017?**

5 A. The total loaded actual cost per foot for the FY 2017 program was \$197  
6 (including carry-over costs and excluding Manchester degradation fees) compared  
7 to the estimated cost per foot of \$208. The average variance between the  
8 estimated and actual costs of FY 2017 completed projects was -4%. Of the thirty  
9 one jobs completed, twenty-one had a variance of less than or equal to 15%. On a  
10 direct basis, the variance between actual and estimated costs was slightly higher at  
11 7% overall.

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

14 A. Overheads are currently spread on a monthly basis as opposed to fixed percentage  
15 throughout the year. During the busy construction months, the Company will  
16 have a larger pool of direct cost to spread the overheads, causing a lower  
17 percentage of burdens. Spreading actual overhead on a monthly basis causes a  
18 fluctuation in the percentage of burden applied to jobs. The current practice of  
19 allocating overheads consists of proportionately allocating categories of overhead  
20 cost to the direct capital cost incurred. Labor burden, which is comprised of  
21 payroll taxes, pension, time not worked, and benefits, is allocated to the direct

1 capital labor charges from company employees derived from employee  
2 timesheets. Back office work consisting of sales and work package preparation is  
3 allocated to the cost of the new services which are constructed. Corporate  
4 allocations, insurance, fleet, and telephone/internet are allocated to direct capital  
5 costs incurred. Construction supervision, engineering, compliance, and plant  
6 accounting is allocated to direct capital costs incurred. The Company will  
7 continue to evaluate the process of allocating overheads to ensure that direct  
8 capital cost incurred receives a representative share of the overhead burden.

9 **Q. What steps has the Company taken to control and/or reduce direct costs**  
10 **since last year?**

11 A. The Company continues to monitor and evaluate the estimating process, crew  
12 productivity, and invoice review to ensure the bid units are used correctly and for  
13 their intended purposes. The Company also works closely with cities and towns  
14 to ensure that permits are obtained in a timely manner and crew down time is  
15 reduced to the greatest extent possible.

16 The Company has revised its project estimating spreadsheet tool to allow  
17 evaluation of which one of the Company's contractors can give the best lowest  
18 installed cost on a project. The Company also evaluates whether it is a lower cost  
19 to have pipe installation and final restoration activities completed by separate  
20 contractors.

1 Usage of grind and inlay final restoration in the City of Concord has been  
2 formalized. This method was introduced in calendar year 2014 as a pilot program  
3 to provide a higher quality of restoration at lower cost. One aspect of particular  
4 note is that the City of Concord is requiring trenches restored with grind and inlay  
5 to settle over one freeze thaw cycle before final restoration. This has a direct  
6 impact on the amount of carry over costs the Company incurs. During the FY  
7 2017 program the Company also presented the grind and inlay process to the  
8 other New Hampshire municipalities where a significant amount of work takes  
9 place. The grind and inlay process involves daily trench restoration with full  
10 depth of binder pavement. Then after one season of freeze thaw cycle settlement,  
11 the Company grinds the pavement in the area of the trench to inlay a final wearing  
12 course.

13 The company also continues to pursue, where more economically appropriate,  
14 cost sharing or reduced final restoration. Under the cost sharing model multiple  
15 utilities, gas, water, sewer, etc are replaced on a street in a 1-2 year period. Each  
16 utility completes full depth or temporary binder restoration as work progresses.  
17 After all utilities have completed work, final pavement overlay costs are shared  
18 by all parties. Since the final restoration does not involve the labor or materials to  
19 complete full depth 2 foot wide trench cutbacks, restoration costs are lower. In  
20 reduced final restoration projects, the company typically completes work within  
21 1-2 years before the municipality is scheduled to repave a street. Therefore only  
22 full depth binder restoration is required.

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

3 A. No. Overall budget adherence on the FY 2017 CIBS program was excellent. On  
4 an overall basis for FY 2017 projects constructed, the Company's yearend cost  
5 variance was only -4%. Additionally, on an individual project basis only eight  
6 out of the 31 projects completed had a cost variance greater than 20%.  
7 Construction costs came in less than expected for six of the eight projects with  
8 significant variances. General reasons for this negative cost variance center on  
9 the company's continuous efforts to arrive at cost sharing agreements regarding  
10 final restoration if appropriate, or determining routes in the field to run gas main  
11 off pavement.

12 **VI. FY 2018 CIBS PROGRAM**

13 **Q. What is the planned scope of the FY 2018 CIBS Program?**

14 A. The FY 2018 CIBS program has a total of 45 planned projects that will  
15 accomplish the replacement or abandonment of 13.10 miles of cast iron or bare  
16 steel pipe. The total estimated cost of the proposed program is approximately  
17 \$17.5 million dollars. Currently, it is estimated that there will be approximately  
18 \$2.6 million dollars of carryover costs from FY 2017 into FY 2018.

1 **Q. Will the Company have sufficient crews to complete the increased amount of**  
2 **CIBS work in FY 2018 work?**

3 A. Yes. The company plans to have approximately 30 construction crews  
4 completing work during the 2017 calendar year. Of those approximately 13  
5 crews will be focused on CIBS Program work. The remainder of construction  
6 crews will be focused on other growth, city/state, or reinforcement construction  
7 projects. The Company completed a comprehensive analysis based on historical  
8 construction productivity in order to predict and reserve availability of sufficient  
9 construction crews.

10 **Q. What other steps is the company taking to ensure completion of the increased**  
11 **level of work in FY 2018?**

12 A. Due to the light winter experienced in the 2016-2017 winter, the Company was  
13 completing CIBS program work all the way into February 2017. This helped  
14 allow an increase in the amount of leak prone pipe eliminated in the FY 2017.  
15 The company is proposing to continue this practice, weather allowing, going  
16 forward into the FY 2018 program. It is realized that not all winters will  
17 accommodate this practice, however, the Company would like to continue  
18 working with cities and towns to allow working into November and December of  
19 the calendar year.

1 **Q. How will the extended construction season influence carryover costs?**

2 A. An extended construction season would have a direct influence on carryover costs  
3 incurred. Final restoration paving typically cannot be completed after the second  
4 week of November due to outdoor temperature requirements for a professional  
5 finished paving product. Additionally, temporarily paved trenches need to settle  
6 for 2-4 weeks before finish paving. Therefore, for any project completed after  
7 October there is no way to complete final restoration in same fiscal year.

8 **Q. Are there other factors that influence carryover costs?**

9 A. The pavement restoration method chosen also has a direct influence on carry over  
10 costs. The grind and inlay program previously outlined always includes carryover  
11 costs due to the technical requirement to finish pave after one freeze-thaw cycle.  
12 Final restoration under a cost sharing agreement often results in carryover costs  
13 because multiple parties must complete utility replacement work on a street,  
14 before final restoration can begin.

15 **Q. What effect do alternative restoration techniques have on construction costs?**

16 A. The company completed and analyzed three test projects in its northern division  
17 to quantify alternative restoration technique cost savings. The chart below  
18 demonstrates an approximately 30% restoration cost savings where grind and  
19 inlay is used and a 75% savings was achieved when only full depth binder  
20 temporary restoration was used.

<b>Restoration Method</b>	<b>Actual Restoration Cost</b>	<b>Estimated Cost if 2' Cutback Restoration Used</b>	<b>Savings</b>
1.5" Grind & Inlay	\$74,819	\$106,536	30%
1.5" Grind & Inlay	\$141,932	\$211,522	33%
6" Full Depth Binder	\$24,734	\$97,713	75%

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2 **Q. Should the current 5% cap on carryover restoration costs be revisited?**

3 A. Yes. The Company believes that there are substantial cost and program benefits  
4 to revisiting the current 5% cap on carryover costs. Being able to extend the  
5 effective duration of the construction season will help the Company meet  
6 expanded pipe replacement mileage to stay on track for a 2024 goal to replace all  
7 CIBS pipe. There are also very tangible cost savings when using restoration  
8 techniques that result in a carryover cost. The Company believes that expanding  
9 the current 5% cap to 15% would be sufficient.

10 **VII. CUSTOMER GROWTH ALONG CIBS ROUTES**

11 **Q. Commission Order 25,918 in Docket No. DG 16-449 required the Company**  
12 **to provide the Staff with a report documenting the results of its market**  
13 **research conducted during this construction season and its plans for**  
14 **marketing to new customers going forward. Did the Company submit this**  
15 **report?**

16 A. Yes. Attachment RGM-BRF-3 contains the report as submitted by the December  
17 31, 2016, deadline specified by the Commission.

1 **Q. Please summarize the efforts the Company undertook in FY 2017 to market**  
2 **to potential customers along the CIBS routes.**

3 A. For the FY 2017 CIBS campaign, the Company sent letters to all residents along  
4 the CIBS routes, both existing and potential customers, to inform them of the  
5 scope of work that would be taking place and to inform non-gas homeowners that  
6 the best time to convert to natural gas is when construction is underway. The  
7 Company sent out a total of 948 letters. Of the 948 letters sent to homeowners,  
8 891 were already natural gas customers. This indicates that only 67 homeowners  
9 along the FY 2017 CIBS routes were not customers, or that the route already had  
10 a saturation rate of 93%. Out of the 67 letters that were sent to non-customers, we  
11 received 17 responses yielding a 25% response rate. Out of the 17 homeowners  
12 that contacted us, 12 had gas services installed in FY 2017, indicating a  
13 conversion success rate of 71%. Of the 12 services installed, 5 meters have been  
14 turned on and claimed by the sales department.<sup>2</sup> The other 7 services should have  
15 meters installed by the end of FY 2018. In addition to sending letters, field crews  
16 hung door hangers on the door of potential customers and spoke to potential  
17 customers that were home in an effort to get them to sign up for natural gas.

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<sup>2</sup> Number of FY 2017 CIBS new customer turned on meters as of March 24, 2017.

1 **Q. How many new customers did the Company obtain as a result of these**  
2 **efforts?**

3 A. In FY 2017, the Company added 1,591 new customers, of which 12 resulted from  
4 sales and marketing efforts along CIBS routes. Overall, customers obtained as a  
5 result of CIBS projects represented 0.2% of the Company's sales in FY 2016.  
6 The saturation rate along CIBS routes was 93% in FY 2017.

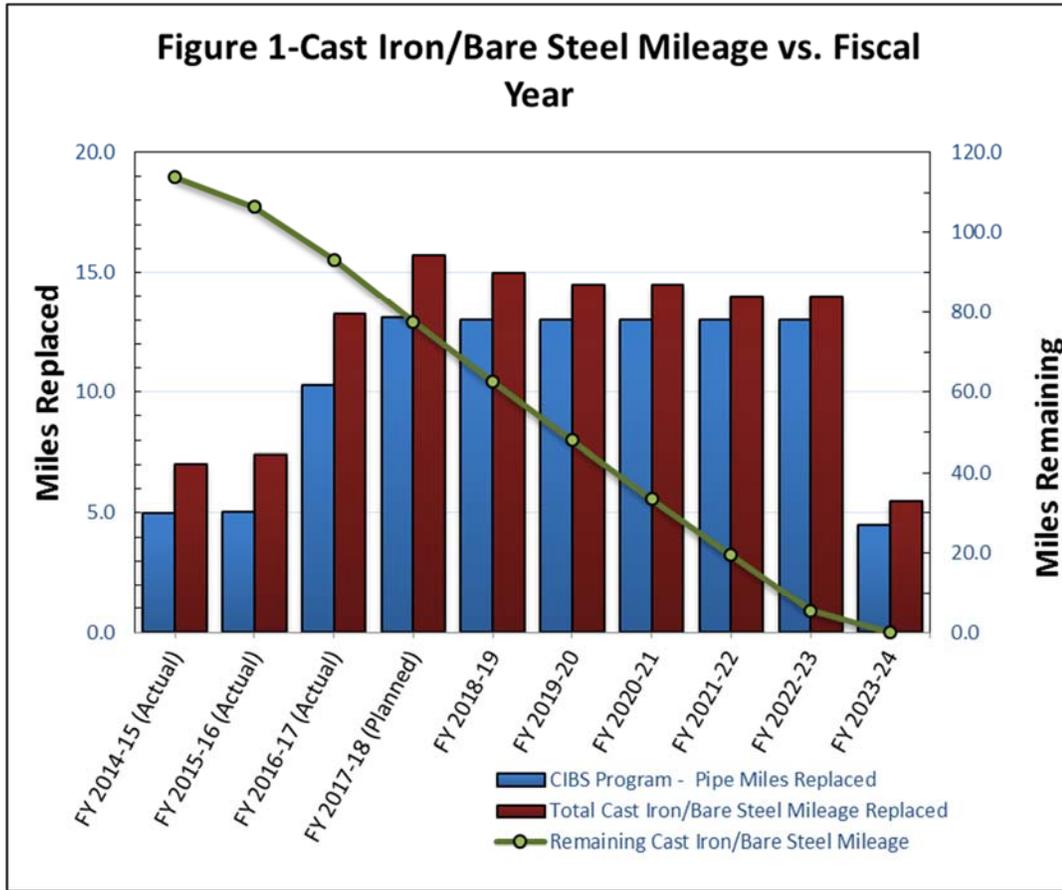
7 **Q. Is the Company marketing to potential customers along the CIBS routes**  
8 **being worked in FY 2018? If so, please explain how.**

9 A. Yes. The Company will be mailing Abutter Letters to all addresses prior to the  
10 commencement of work along the CIBS routes, encouraging potential customers  
11 along those routes to convert to natural gas and providing information on how to  
12 contact the Company to pursue natural gas service if the potential customer is  
13 interested. A second letter will be mailed to only potential new customers along  
14 the CIBS routes to remind non-customers that if they want natural gas, they  
15 should convert concurrent with the construction in the street. The second letter  
16 will be very straight forward and will supply prospects with a Sales  
17 Representative's personal information, including their direct office phone line and  
18 their signature. This letter is also printed on yellow paper to provide a more  
19 vibrant solicitation to non-gas customers. Copies of both the Abutter Letters are  
20 included as Attachment RGM-BRF-4 and RGM-BRF-5. The Company's sales  
21 intake team will track the response to both of these letters, which will allow the  
22 Company to document "before and after" saturation rates.

1 **VIII. THE ACCELERATED CIBS SCHEDULE**

2 **Q. Please provide an update to the Company's ten-year plan for accelerated**  
3 **CIBS replacement.**

4 A. The Company is still on pace to complete the ten-year CIBS replacement plan to  
5 eliminate all leak-prone pipe ("LPP") by year 2024. Currently, there are 93.2  
6 miles of LPP remaining in the Company's system. LPP includes vintage cast  
7 iron, bare steel and wrought iron main pipes that have a high risk of main breaks  
8 and corrosion, and replacement of the bare steel services along the route. Figure 1  
9 shown below describes the Company's actual progress and forward forecast  
10 related to meeting the promised 10 year accelerated CIBS replacement plan  
11 previously promised. In the chart, the blue bar represents miles of cast iron and  
12 bare steel replaced under the CIBS program and the red bar represents total cast  
13 iron & bare steel replaced (including public works and encroachments). The  
14 Company has planned approximately 13.1 miles of LPP replacement through  
15 CIBS and 2.6 miles of LPP replacement through municipal projects for FY 2018.  
16 Going forward, if the Company maintains a replacement rate of 13 miles of LPP  
17 under the CIBS program and 1 to 2 miles of LPP in conjunction with municipal  
18 work, the 10 year planned schedule is expect to be met.



1

2 Q. Does this conclude your testimony?

3 A. Yes.