



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

Docket No. DG 19-054

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities
Fiscal Year 2019 Cast Iron/Bare Steel Replacement Program Results

JOINT DIRECT TESTIMONY

OF

SHAWN D. FUREY

AND

BRIAN R. FROST

April 15, 2019

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1 **I. INTRODUCTION**

2 **Mr. Furey**

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

4 A. My Name is Shawn D. Furey. My business address is 130 Elm Street, Manchester, New
5 Hampshire.

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

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

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

11 A. I am testifying on behalf of EnergyNorth.

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

13 A. In 2008, I received a Bachelor of Science degree in Mechanical Engineering from the
14 University of Massachusetts Lowell. I have attended several training seminars and
15 courses conducted by various organizations such as the National Association of
16 Corrosion Engineers (NACE) and the Northeast Gas Association (NGA).

17 In April 2017, I assumed my current position as Manager of Gas Operations
18 (Construction) where my responsibilities include overseeing construction activities for
19 various programs such as the Cast Iron/Bare Steel (“CIBS”) Replacement Program,
20 City/State construction, and growth and reliability projects in New Hampshire. From
21 2013 through March 2017, I worked as a Corrosion Engineer for the Company. From

1 2008 through 2013, I worked as a Gas System Operator in the Gas Control Room and as
2 an Engineer in the Asset Replacement Department at National Grid. From 2007 to 2008,
3 I was employed by KeySpan Energy Delivery where I was an intern for the Corrosion
4 Department.

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

6 A. Yes, I previously testified in Docket No. DG 18-064, the 2018 Cast Iron/Bare Steel
7 Replacement Program Results docket.

8 **Mr. Frost**

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

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

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

14 A. In 2007, I received a Bachelor of Science degree in Mechanical Engineering from
15 Rochester Institute of Technology. In the past I have attended the Appalachian Gas
16 Measurement Short Course and NGA Gas Operations School. On an ongoing basis, I
17 regularly complete various self-study training programs on the mapping computer
18 program the Company utilizes to prioritize and manage replacement for gas mains under
19 its CIBS program.

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

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

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

10 A. Yes, I testified in Dockets No. DG 17-063 and DG 18-064, the 2017 and 2018 Cast
11 Iron/Bare Steel Replacement Program Results dockets, respectively.

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") 2018-2019, or
16 the twelve months ending March 31, 2019 ("FY 2019").

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, 2007)
21 in Docket No. DG 06-107, and the settlement agreement in Docket No. DG 11-040

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

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

7 A. Under the CIBS program, the Company annually submits to Commission Staff for review
8 and comment its plan for the replacement of cast iron and bare steel pipes for the coming
9 fiscal year, which begins in April.¹ The proposed plan sets forth a prioritized list of pipes
10 to be replaced based on the year of installation, condition of the pipe, and other relevant
11 factors. The CIBS program's mandate is to replace pipes that have a demonstrated prior
12 leak and degradation history. Following review by Staff, including technical sessions
13 between Staff and the Company, Liberty implements the CIBS plan over the course of
14 the construction season, subject to reasonable deviations based on circumstances that may
15 arise or additional information that may become available.

16 The Company is required to spend a base amount each year on the CIBS program, which
17 is increased annually using the Handy-Whitman index; the base capital expenditure
18 amount required under the FY 2019 CIBS program is \$533,119 ("CIBS Base Amount").

19 The Company is allowed a permanent increase in its base distribution delivery rates

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

1 (“Capital Investment Allowance”), effective July 1 of each year, to recover the annual
2 revenue requirement for investments made in excess of the CIBS Base Amount during
3 the preceding fiscal year. A copy of the CIBS report is included as Attachment
4 SDF/BRF-1 and includes, among other things, an overview of the actual capital
5 expenditures incurred in implementing the FY 2019 CIBS Plan, and a FY 2019 Condition
6 Bare Steel Main Replacement Program – Sample Analysis, which describes the steel pipe
7 and soil samples collected from CIBS projects completed over the course of the FY 2019
8 construction season. Attachment SDF/BRF-2, referenced within the CIBS report,
9 describes detailed financial figures for the program such as final project actual costs,
10 variances between the initial project estimated costs and, comments on variances.

11 **IV. FY 2019 CIBS PROGRAM**

12 **Q. Please describe the FY 2019 CIBS program.**

13 A. The FY 2019 CIBS program was based on a preliminary project plan developed by the
14 Company in January 2018, revised in July 2018, and agreed to by Staff during a
15 subsequent technical session on August 27, 2018. The initial FY 2019 CIBS program,
16 developed in January 2018, consisted of 32 projects that included the replacement or
17 abandonment of approximately 13.83 miles of Cast Iron/Bare Steel Leak Prone Pipe. In
18 July 2018 the program was revised and reviewed with Staff based on available budget
19 projections to contain 27 projects that included replacement or abandonment of 12.09
20 miles of Cast Iron/Bare Steel Leak Prone Pipe. Twenty-four of the planned projects were
21 completed in their entirety, and five completed projects had scope reductions during
22 construction. Construction work uncompleted and reduced scope projects will be

1 prioritized into future year CIBS programs. The completed work in FY 2019 eliminated
2 9.9 miles of leak prone pipe at a total cost of \$16,702,994 (including estimated carryover
3 costs). The program also included the replacement or insertion of 465 associated
4 services, of which 273 were bare steel and 192 were coated steel or plastic. As part of the
5 work performed, 270 services were transferred, six new plastic services were installed,
6 and one bare steel service was abandoned.

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

8 A. In the aftermath of the Columbia Gas incident in Massachusetts, the Company released
9 approximately 30% of its contractor crews and a number of internal customer metering
10 services personnel to assist with the recovery effort as mutual aid. This required a
11 project-by-project evaluation of what work could be completed before the winter season,
12 and at the same time leaving Liberty's gas distribution system configured for proper
13 heating season operation. As such, the Company reduced the scope of a number of
14 projects.

15 **Q. Is all of the replacement main installed as part of the FY 2019 CIBS Program used
16 and useful?**

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

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

2 A. Yes. In FY 2019, the Company replaced 458 feet of cast iron through the Cast Iron
3 Encroachment Policy and 14,793 feet of cast iron and bare steel through municipal
4 projects, totaling to 2.89 miles of replacement.

5 **V. COSTS OF FY 2019 CIBS PROGRAM**

6 **Q. What were the total costs incurred during the FY 2019 CIBS program?**

7 A. As Attachment SDF/BRF-2 shows, total implementation costs for the FY 2019 CIBS
8 program are expected to be \$20,296,315. This number includes \$11,613,249 spent on FY
9 2019 projects during the program year, \$3,593,321 incurred as carryover costs from the
10 prior year's program (FY 2018), and an estimated future carryover cost of \$5,089,745.
11 Of the costs incurred during the FY 2019 program year, \$12,827,024 are eligible for
12 recovery under CIBS rates. This figure includes costs in excess of the 5% carryover cap,
13 and thus the Company is formally requesting recovery of costs incurred over the 5% cap.
14 This leaves \$2,379,546 incurred for unrecoverable costs such as tie-over of plastic
15 services, or replacement of short lengths of plastic pipe where efficient, etc.

16 **Q. Are there any carry-over costs from FY 2018 CIBS projects that the Company
17 incurred in FY 2019?**

18 A. Yes. As shown on Attachment SDF/BRF-2, line 70 column BE, there will be a total of
19 \$3,593,321 of estimated carry-over costs from FY 2018 to FY 2019, as compared to
20 \$2,718,259 in carry over costs from FY 2017 to FY 2018. All of the carry-over costs are
21 related to final trench restoration work that could not be completed in the planned fiscal

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

3 **Q. What are the unit costs for FY 2019?**

4 A. The total loaded actual cost per foot for the FY 2019 program was \$340 (including both
5 carry-over costs and degradation fees) compared to the estimated cost per foot of \$298.
6 The average variance between the estimated and actual costs of FY 2018 completed
7 projects was 7%. On a direct costs basis, the variance between actual and estimated costs
8 was higher at 18% overall.

9 **Q. What causes have increased unit and overall costs in FY 2019?**

10 A. The Company attributes the increase in unit costs to a variety of factors that have an
11 additive effect. As the CIBS program has been in effect for more than ten years and the
12 simpler and less expensive projects have been completed, the Company has to replace
13 more pipe in historically hard to construct areas, and municipalities have increased
14 requirements on the Company. The Company has successfully eliminated approximately
15 half of the CIBS mains that were in service when Liberty Utilities acquired the
16 EnergyNorth service territory. The remaining mains are often located in areas where
17 construction is more difficult, which construction carries higher costs for such factors as
18 known environmental contamination, ledge-prone neighborhoods, and arterial streets
19 with thicker pavement. As the Company has increased the rate of CIBS main
20 replacement, municipalities have also imposed additional construction requirements on
21 the Company. For example, in the past year the Company has commonly seen work hour
22 restrictions on busy streets, city inspection fees, and requirements to protect storm water

1 facilities. In FY 2019 the Company also increased its construction inspection staffing
2 from 5.5 full time equivalents to 11 full time equivalents. With increased contractor
3 work crews being utilized to accomplish the accelerated CIBS schedule, seasonal
4 inspection staff has been required to ensure proper oversight. .In addition, the company
5 strives to maintain construction inspection oversight in exceedance of the minimum
6 standards established in the settlement agreement in Docket No. DG 11-040 approved in
7 Order No. 25,370 (May 30, 2012)

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

10 A. Overheads are currently spread on a monthly basis as opposed to fixed percentage
11 throughout the year. During the busy construction months, the Company will have a
12 larger pool of direct cost over which to spread the overheads, causing a lower percentage
13 of burdens. Spreading actual overhead on a monthly basis causes a fluctuation in the
14 percentage of burden applied to jobs. The current practice of allocating overheads
15 consists of proportionately allocating categories of overhead cost to the direct capital cost
16 incurred. Labor burden, which is comprised of payroll taxes, pension, time not worked,
17 and benefits, is allocated to the direct capital labor charges from Company employees
18 derived from employee timesheets. Back office work consisting of sales and work
19 package preparation is allocated to the cost of the new services which are constructed.
20 Corporate allocations, insurance, fleet, and telephone/internet are allocated to direct
21 capital costs incurred. Construction supervision, engineering, compliance, and plant

1 accounting is allocated to direct capital costs incurred. This is consistent with the process
2 that has been followed over recent years.

3 **Q. What steps is the Company considering to limit increases in direct costs going**
4 **forward?**

5 A. The Company continues to monitor and evaluate the estimating process, crew
6 productivity, and invoice review to ensure the bid units are used correctly and for their
7 intended purposes. In FY 2020 the Company plans to implement daily electronic
8 tracking of each construction crew's productivity and bid units used. The Company also
9 works closely with cities and towns to lessen the effect, and negotiate reduction, of work
10 hour restrictions.

11 The Company also continues to focus on creating synergies with the municipalities where
12 it does work. The Company meets regularly with the three major municipalities (Nashua,
13 Manchester, and Concord) where it does the bulk of the CIBS work. Where prudent and
14 possible, the Company endeavors to schedule CIBS work to occur in conjunction with
15 municipally driven projects. By aligning work in this fashion, the Company is typically
16 able to save on final restoration paving and road degradation fees.

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

19 A. No. Overall budget adherence on the FY 2019 CIBS program was excellent. On an
20 overall basis for FY 2019 projects constructed, the Company's year-end loaded cost
21 variance was only 7%. The direct cost variance for FY 2019 was 18%. Similar to what

1 Staff has recognized in prior years, although FY 2019 demonstrated some variance
2 volatility on an individual project basis, the Company was able to successfully manage
3 the CIBS program as a whole.

4 **VI. FY 2020 CIBS PROGRAM**

5 **Q. What is the planned scope of the FY 2020 CIBS Program?**

6 A. The FY 2020 CIBS program has a total of 39 planned projects that will accomplish the
7 replacement or abandonment of 13.4 miles of cast iron or bare steel pipe. The total
8 estimated cost of the proposed program is approximately \$23.5 million. Currently, it is
9 estimated that there will be approximately \$5.1 million of carryover costs from FY 2019
10 into FY 2020.

11 **Q. Will the Company have sufficient crews to complete the FY 2020 CIBS work?**

12 A. Yes. The Company plans to have approximately 33 construction crews completing work
13 during the 2019 calendar year. Of those, approximately 16 crews will be focused on
14 CIBS program work. The remaining construction crews will be focused on other growth,
15 city/state, or reinforcement construction projects. At the end of the 2018 calendar year,
16 the Company added one additional contractor for work to be completed in the 2019
17 calendar year. This new contractor added an additional six crews that will be available
18 for the 2019 calendar year. The Company also completed a comprehensive analysis
19 based on historical construction productivity in order to predict and reserve availability of
20 sufficient construction crews.

1 **Q. What other steps is the Company taking to ensure completion of the FY 2020 CIBS**
2 **work?**

3 A. In FY 2020 the Company will be able to begin construction earlier than usual in Concord
4 and Nashua. Coordination was also completed with Manchester to ensure that
5 construction work can begin as soon as possible in the spring. The Company also
6 employs a comprehensive resource management plan that looks at planned work units
7 and compares them to historical completed work durations.

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

9 **Q. Order No. 26,154 in Docket No. DG 18-064 required the Company to provide the**
10 **Staff with a report documenting the results of its market research conducted during**
11 **this construction season and its plans for marketing to new customers going**
12 **forward. Did the Company submit this report?**

13 A. Yes. Attachment SDF/BRF-3 contains the report submitted on December 21, 2018.

14 **Q. Please summarize the efforts the Company undertook in FY 2019 to market to**
15 **potential customers along the CIBS routes.**

16 A. For the FY 2019 CIBS campaign, the Company sent notification letters to all residents
17 along the CIBS routes, which is required, and thus reached both existing and potential
18 customers to inform them of the scope of work that would be taking place and to inform
19 non-gas homeowners that the best time to convert to natural gas is when construction is
20 underway. The Company also completed a manual data analysis so that homeowners
21 who were not customers could be provided an additional personalized letter and
22 marketing materials from the Company's Residential Account Sales Team. These letters

1 are shown as Attachments SDF/BRF-4 and SDF/BRF-5. In addition to sending letters,
2 field crews hung door hangers on the doors of potential customers and spoke to potential
3 customers who were home in an effort to get them to sign up for natural gas service.

4 The Company sent out a total of 1,642 letters. Of the 1,642 letters sent to homeowners,
5 1,490 were already natural gas customers. This indicates that only 152 homeowners
6 along the FY 2019 CIBS routes were not customers, or that the route already had a
7 saturation rate of 91%. Out of the 152 letters that were sent to non-customers, the
8 Company received 19 responses yielding a 13% response rate. Out of the 19
9 homeowners who contacted us, 15 signed contracts for gas service in FY 2019, indicating
10 a conversion success rate of 79%. Of the 15 customers contracted, 11 have had meters
11 turned on.² The other four contracted customers should have meters installed by the end
12 of FY 2020.

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

14 **A.** In FY 2019, the Company added 1,272 new customers, of which 16 resulted from sales
15 and marketing efforts along CIBS routes. Overall, customers obtained as a result of
16 CIBS projects represented approximately 1% of the Company's new customers in FY
17 2018. The saturation rate along CIBS routes was 91% in FY 2019.

² Number of FY 2019 CIBS new customers with meters turned on as of March 25, 2019.

1 **Q. Is the Company marketing to potential customers along the CIBS routes being**
2 **worked in FY 2019? If so, please explain how.**

3 A. Yes. The Company will be mailing two letters tailored to each homeowner's individual
4 situation (customer or non-customer).

5 **VIII. CONTINUATION OF THE CIBS PROGRAM**

6 **Q. What type of deterioration typically occurs with CIBS mains?**

7 A. There are three major types of deterioration conditions associated with CIBS mains that
8 the Company considers when evaluating the condition of particular sections of pipe. For
9 cast iron mains the Company tracks main breaks and joint leaks. Main breaks are caused
10 by ground movement, typically from frost heaving, which physically cracks the cast iron
11 pipe in half. Main breaks are especially serious because they often result in Grade 1
12 leaks requiring immediate repair to protect public safety. Joint leaks are another result of
13 degradation of cast iron mains where the aged "jute" joints between 12-foot sections of
14 cast iron pipes, many of which are approximately 100 years old, have dried out and now
15 leak. Finally, bare steel mains are affected by galvanic corrosion in which the wall of the
16 pipe continually corrodes away until holes develop, causing gas leaks.

17 **Q. Is the deterioration of CIBS mains time dependent?**

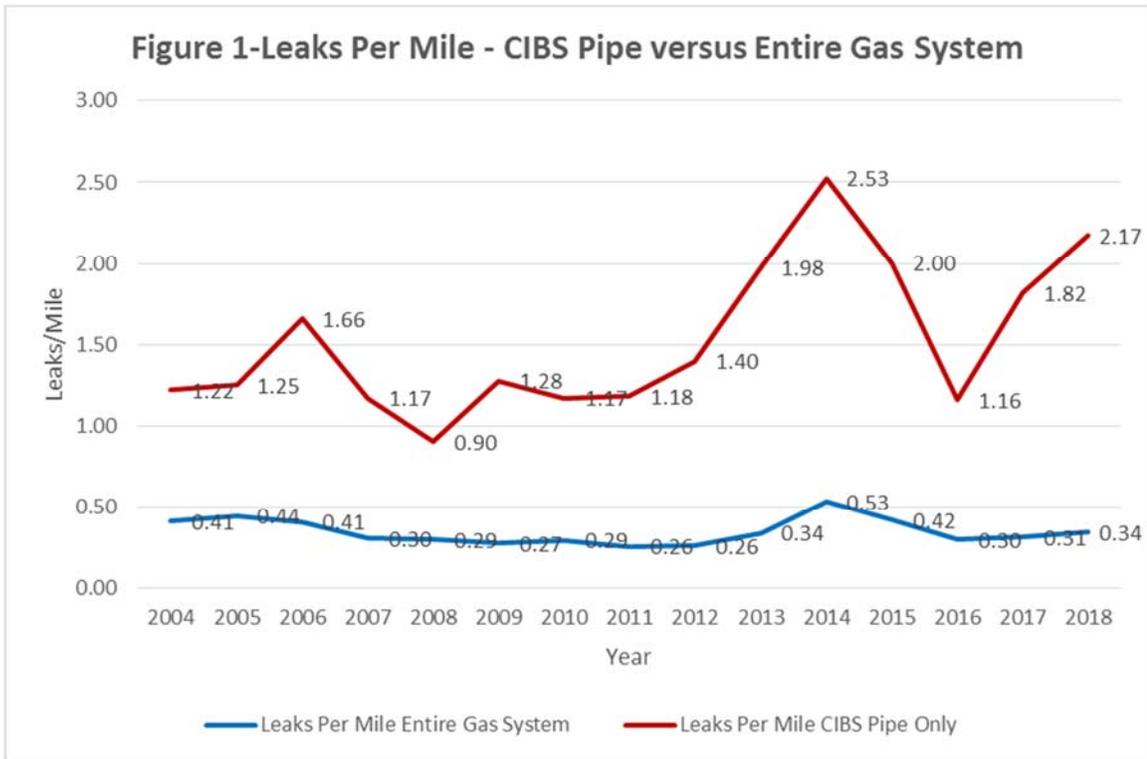
18 A. Yes, the deterioration of cast iron and bare steel mains replaced under the CIBS program
19 is an ongoing issue related to the affected pipe's age. As time goes on the deterioration
20 and leakage of CIBS pipes continues to occur. These pipes will never improve in
21 condition and the rate of deterioration will continue to progress until the pipe is replaced.

1 **Q. Is there a weather related annual variation to leaks on CIBS mains?**

2 A. Yes, leakage rates on CIBS mains is highly dependent on the particular character of the
3 winter season in New Hampshire. In winter seasons where there is excessive ground
4 movement caused by repeated freeze thaw cycles, the company typically sees an increase
5 in CIBS leaks. The Company also observes problems in years where the frost is
6 exceptionally deep and penetrates below the depth of pipes installed underground. For
7 these reasons it is typical to see some amount of year-to-year variation in the number of
8 CIBS leaks.

9 **Q. How does the leakage rate of CIBS pipe compare to the Company's gas distribution**
10 **system as a whole?**

11 A. Even accounting for the weather related variation explained above, there is a long term
12 trend that the Company's remaining CIBS mains have a leaks-per-mile of installed pipe
13 rate that is 2-3 times greater than the Company's distribution system as a whole. Figure 1
14 on the following page shows leaks per mile within the distribution system from 2004 to
15 2018 for both CIBS mains and the entire distribution system.



1

2 **Q. Is CIBS pipe replacement a nationally recognized concern within the gas**
3 **distribution industry and regulatory environment?**

4 A. Yes, the two most recent pipeline safety acts passed by Congress have included the topic
5 of CIBS. In 2011, the Pipeline Safety, Regulatory Certainty, and Job Creation Act of
6 2011 mandated that the Pipeline and Hazardous Materials Safety Administration
7 (PHMSA) identify the amount of cast iron pipelines in service and every two years
8 thereafter report on progress that pipeline operators, such as the Company, have made
9 with replacement of cast iron pipelines. The next PHMSA reauthorization act, the
10 Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2016 (PIPES Act
11 of 2016) mandated that PHMSA provide a report on state policies and recommendations
12 regarding replacement programs for leaking natural gas pipelines.

1 **Q. Under the PIPES Act of 2016 report on leaking pipelines, what major findings and**
2 **recommendations did PHMSA make?**

3 A. The PIPES Act of 2016 report was made by querying state pipeline regulatory officials
4 through the National Association of State Pipeline Safety Representatives to ask about
5 replacement programs and barriers to at-risk pipeline replacement. PHMSA wrote that
6 cast iron and bare steel pipelines are among the oldest in service and are “considered
7 high-risk candidates for accelerated replacement programs.” Relevant findings in the
8 report were that 60% of states at the time of the survey had incentives most commonly in
9 the form accelerated cost recovery to replace leaking pipelines such as CIBS pipe. No
10 regulatory barriers were noted as hindering pipeline replacement, but cost and rate
11 recovery were noted barriers to replacement. Finally, the report’s first recommendation
12 was that, “PHMSA should continue to encourage states, State utility commissions and
13 other rate-setting organizations, and operators to accelerate high-risk pipe replacement, as
14 well as promote cost recovery programs that effectively facilitate decisions through the
15 cost-efficient and timely repair and replacement of pipelines with leaks.”

16 **Q. Are the findings and recommendations of the PIPES Act of 2016 report still relevant**
17 **today?**

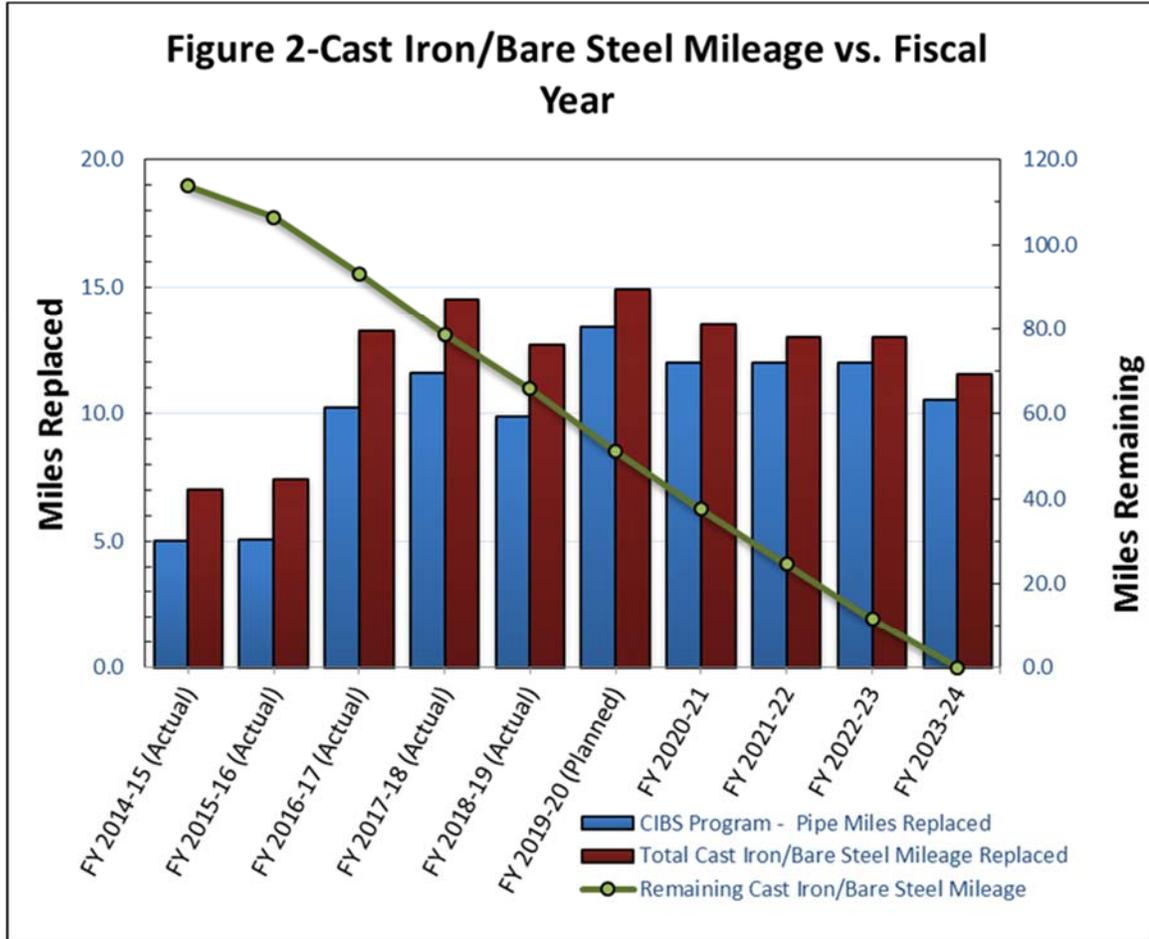
18 A. Yes. Given that CIBS mains suffer from ongoing age related deterioration, the Company
19 strongly believes that continued focus on CIBS replacement is a priority.

20 **Q. Does the Company support ending the CIBS replacement program?**

21 A. No.

1 **IX. THE ACCELERATED CIBS SCHEDULE**

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



4 A.

5 The Company is still on pace to complete the 10-year CIBS replacement plan to eliminate
6 all leak-prone pipe (“LPP”) by year 2024. Currently, there are 66.0 miles of LPP
7 remaining in the Company’s system, excluding the Keene Division. LPP includes
8 vintage cast iron, bare steel, and wrought iron main pipes that have a high risk of main
9 breaks and corrosion, and replacement of the bare steel services along the route. Figure 2

1 above describes the Company's actual progress and forward forecast related to meeting
2 the 10-year accelerated CIBS replacement plan.

3 In the chart, the blue bar represents miles of cast iron and bare steel replaced under the
4 CIBS program and the red bar represents total cast iron & bare steel replaced (including
5 public works and encroachments). The Company has planned approximately 13.4 miles
6 of LPP replacement through CIBS and 1.5 miles of LPP replacement through municipal
7 projects for FY 2020. Going forward, if the Company maintains a replacement rate of
8 approximately 13 miles of LPP combined under CIBS and municipal work, the 10-year
9 planned schedule is expected to be met.

10 **Q. Does this conclude your testimony?**

11 **A. Yes.**

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