

STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

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DG 14-041

Liberty Utilities (EnergyNorth Natural Gas) Corp.

d/b/a Liberty Utilities

Cast Iron Bare Steel Replacement Program

Direct Testimony

of

Randall S. Knepper
Director – Safety Division

June 23, 2014

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1 **Q. Please state your name, occupation and business address.**

2 A. My Name is Randall S. Knepper. I am employed as the Director of the Safety Division for
3 the New Hampshire Public Utilities Commission. My business address is 21 S. Fruit
4 Street, Suite 10, Concord New Hampshire 03301.

5 **Q. Please summarize your education and professional work experience.**

6 A. I received a Bachelor of Science in Mechanical Engineering from University of Rochester
7 and a Master of Science in Civil Engineering from the University of Massachusetts. I am
8 a licensed Professional Engineer in the State of New Hampshire, License No. 9272. I have
9 been the Director of Safety for the New Hampshire Public Utilities Commission since
10 December 2004. Prior to that I was an Environmental Consultant and Business
11 Development Manager at The Smart Associates, Environmental Consultants, Inc., located
12 in Concord, New Hampshire. My prior work experience includes a number of Business
13 and Operations roles at Keyspan Energy Delivery New England and EnergyNorth Natural
14 Gas Inc. (Keyspan, EnergyNorth), including Key Account Executive, Commercial &
15 Industrial Sales Manager, Sales Engineer, Senior Engineer, Staff Engineer and CAD
16 Supervisor. For many of those years, I designed natural gas distribution systems,
17 recommended capital improvement projects, recommended system expansions, wrote
18 Operations and Maintenance procedures and oversaw construction projects. While
19 performing the duties of each of these occupations I was responsible for compliance
20 related to applicable Local, State and Federal Codes. I worked at Westinghouse Electric
21 designing high voltage transmission lines as a Project Engineer. I have completed 15 of 17
22 Technical Training Sessions provided by the Training and Qualification Center of the
23 Pipeline and Hazardous Materials Safety Administration (PHMSA). I serve as Staff

Engineer for the New Hampshire Site Evaluation Committee and as subject matter expert for the New Hampshire Advisory Council on Emergency Preparedness and Security. My professional work experience spans 30 years.

Q. Are you affiliated with any professional organizations?

A. Yes. I am a member of the Association of Energy Engineers (AEE). I serve on multiple committees of the National Association of Pipeline Safety Representatives (NAPSR). I serve on the Pipeline Safety subcommittee of the National Association of Regulatory Commissioners (NARUC), the Common Ground Alliance Research and Development committee, and I am a board member of the New Hampshire Public Works Standards and Training Council.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of this testimony is to:

1. share with the Commission a brief synopsis of the Cast Iron Bare Steel Replacement (CIBS) replacement program since its inception in 2009;
2. comment on the CIBS program results for Fiscal Year 2014, including the associated costs the Company is seeking to recovery in this proceeding
3. provide my assessment of the adequacy of Liberty Utilities Cast Iron Bare Steel Replacement (CIBS) plan for Fiscal Year 2015;and
4. make recommendations regarding the Company's replacement rate associated with its CIBS Main Replacement Program going forward.

I. HISTORICAL SYNOPSIS OF THE CAST IRON BARE STEEL PROGRAM

Q. Would you please summarize the Safety Division's process used to review the cast iron - bare steel replacement program since its inception?

A. The interests of the Commission, and its Safety Division, have always been to ensure that the appropriate levels of safety are either maintained or improved upon, and associated expenditure considerations result in the least cost impact to customers with minimal disruptions of municipal streets. Through the years, the Safety Division has been actively engaged in its review of proposed replacements of leak prone pipes that the Company prioritizes in its annual plans. We make sure that no segments are selected that are outside the limited scope of the CIBS program. This would include ensuring municipal projects are not included in the segments selected. Other items that are not always initially excluded from these filings include: abandonments, coated steel mains, inside meters and upsizing mains. We also encourage low pressure mains to be replaced with high pressure mains when appropriate. The Safety Division Staff regularly incorporates field inspections of CIBS segments into its monitoring program. After replacements are completed, our Staff will review the submitted written report of actual cutouts of certain segments of pipes that have been replaced through this program. The CIBS Program requires physical cutouts to be hand-delivered to the Staff for examination. This acts as our feedback mechanism providing Staff with the tangible evidence that the selected segments are appropriately chosen. Lastly, Staff reviews actual finalized expenditures and compares the numbers to the previously submitted projections for the recently completed fiscal year.

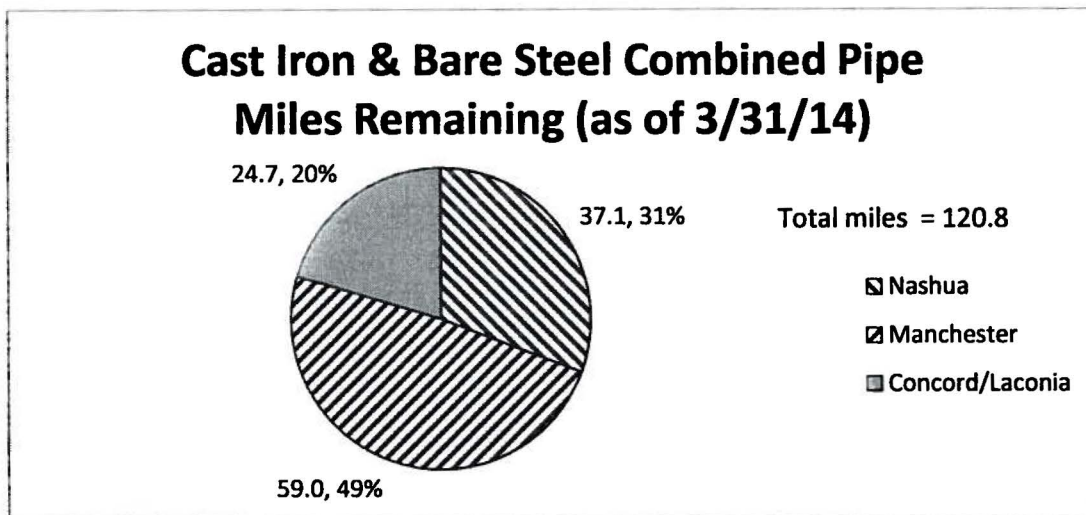
Q. What useful information is the Safety Division able to extract from written condition reports that are provided as part of the CIBS main replacement program?

1 A. The condition reports provide the Safety Division with valuable history regarding pipeline
2 strength, pipeline age, soil conditions, system pressure and location information of pipe
3 segments related to various types and vintages of removed bare steel segments. These
4 characteristics determine integrity and corrosion assumptions useful for incorporation into
5 subsequent planning. It is always a delicate balance to determine the appropriate need for
6 replacing aging piping systems as they near the undesirable condition where leak levels are
7 beginning to increase and main breaks are likely to occur while avoiding premature
8 replacement of pipes that have many years of useful life and pose little risk to the public. In
9 many cases Staff has seen deep pitting, seam cracks, holes and other undesirable features
10 and confirms that the need for replacement continues.

11 **Q. Do certain municipalities have higher percentages of the cast iron and bare steel**
12 **distribution pipe that are addressed as part of the CIBS program?**

13 A. Of the 29 communities served by Liberty Utilities gas distribution operation, only seven have
14 cast iron or bare steel segments (leak prone or worn pipe). As expected, the heaviest
15 concentration is in the municipalities of Manchester, Nashua and Concord. These
16 communities began serving customers back in the 1800's and as a result, have some of the
17 oldest piping in the state. The cities and towns with cast iron or bare steel pipes are listed in
18 Figure 1 below.

1 **Figure 1.**



3 **Figure 1 Notes:**

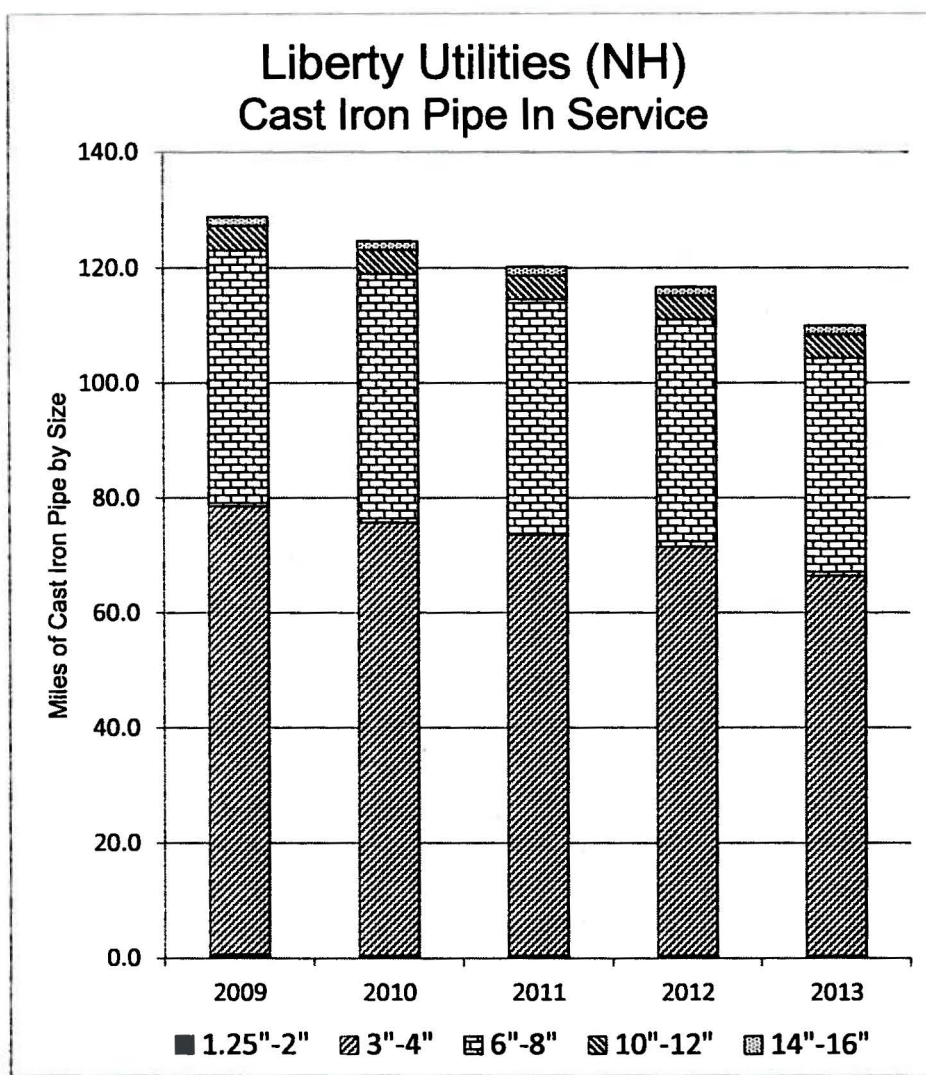
- 4 1. The Southern Division CIBS areas include Nashua and some sections of Hudson.
 5 2. The Central Division CIBS areas include Manchester and small sections of Goffstown and Bedford.
 6 3. The Northern Division CIBS areas include Concord, Laonia and a small single segment in Bow.

8 As can be seen Manchester has the greatest amount of cast iron and bare steel comprising
 9 nearly 60% or the remaining population.

10 **Q. Do you have a breakdown of the how much cast iron pipe is in service for each pipe
 11 diameter, and if yes, why is this information important to the Safety Division?**

12 **A.** The Safety division does track the amount of every type and diameter of pipe in service.

13 This information is helpful to track the performance of each type and size of pipe as we
 14 prioritize which pipe is more leak prone. The information also gives us a better idea of what
 15 the cost will be for the replacement pipe. See Figure 2 below for a breakdown of the
 16 Company's inventory of cast iron pipe, by pipe diameter.

1 **Figure 2.**

2
3
4 **Q. Please provide a perspective on some of the historical statistics such as replacement**
5 **miles and costs.**

6 A. I have created Table 1 (see below) to illustrate some historical perspective of the
7 program. The table summarizes the total cast iron and bare steel mains that have been
8 replaced annually in the *CIBS Replacement Plan*, plus the additional cast iron/bare steel pipe
9 that is replaced during local *municipal projects* and the cast iron mains replaced as part of the
10 separate *Cast Iron Encroachment Program*. As noted by the Company in Attachment MGS-

1, page 4 of Mr. Savoie's testimony, over the past six years 33.99 miles of cast iron and bare steel mains have been replaced. But, only 16.45 miles (48.4%) has been replaced as a result of the CIBS program. This leaves 120.88 miles of cast iron and bare steel mains yet to be replaced. The average rate of replacement over the past six years inclusive of municipal projects has been 5.67 miles per year. It will take an additional 21 years to replace all remaining cast iron and bare steel pipe in Liberty's system at the current pace.

Table 1. Liberty Utilities Cast Iron and Bare Steel Replaced and Remaining Pipe

CIBS Replacement Program Fiscal Year	Municipal Projects & Encroachment Program Pipe Miles Replaced	CIBS Program Pipe Miles Replaced¹	Total CIBS Plan, CIBS Municipal & CI Encroachment Miles Replaced	CIBS Pipe Miles Remaining in System²
2009	2.11	2.96	5.07	149.80
2010	3.82	3.98	7.80	142.00
2011	1.81	2.79	4.60	137.40
2012	3.74	1.56	5.30	132.10
2013	4.15	1.65	5.80	126.30
2014	1.91	3.51	5.42	120.88
Avg/Year	2.92	2.74	5.67	
Total Miles	17.54	16.45	33.99	

Table 1 Source Notes:

1. Re. MGS-1, Bates Page 051, line 11.
2. Re. MGS-1, Bates Page 051, line 13.

Q. Where does New Hampshire rank nationally in terms of amount of cast iron and bare steel ?

A. In New Hampshire, three utilities still have cast iron mains remaining in their system, and two of three of these same utilities have bare steel mains. Liberty by far has the most amount of cast iron mains remaining with 110 miles, New Hampshire Gas has 11 miles remaining

1 and Unitil has 4 miles. In terms of bare steel mains, Unitil has 19 miles remaining and
2 Liberty has 11 miles remaining [New Hampshire Gas has no bare steel]. Collectively New
3 Hampshire ranks as the eighth worst state nationally for cast iron mains as a percentage of
4 the distribution system (6.6%). The seven with higher amounts of cast iron mains are the
5 District of Columbia (34.9%), Rhode Island (26.1%), Connecticut (18.2%), Massachusetts
6 (17.1%), New Jersey (14.3%) , Maryland (9.4%) and New York (8.9%). All of these states
7 have some version of a customer surcharge or separate tracker mechanism implemented for
8 accelerated replacement of leak prone gas pipeline infrastructure for one or more operators.
9 In terms of bare steel mains New Hampshire collectively ranks as the 28th worst state
10 nationally for bare steel mains as a percentage of the distribution system (1.6%) but
11 unfortunately is 12th worst for amount of bare steel services as a percentage of total services
12 (7.5%).

13 **Q. Given the fact that the CIBS Program accounts for 16.45 miles, or 48% of the total cast**
14 **iron – bare steel main replacements over the last 6 years, do you believe the program**
15 **has been a success?**

16 A. To the extent we have an additional 16.45 miles of leak prone pipe that has been replaced,
17 the program has been successful. In addition, 525 bare steel services that are connected to
18 either cast iron mains or bare steel mains have been replaced as well. An indirect benefit is
19 that many inside meter sets that are in homes and business have also been moved from the
20 inside of buildings to the outside of buildings which allows for less of a future need to get
21 into customer's homes for leak surveys, corrosion checks, meter reads or meter replacements
22 and provides for ongoing and future operational savings, increased customer convenience
23 and greater overall safety.

1 **Q. Is this the outcome you envisioned when the program was first established?**

2 A. Initially the Safety Division envisioned the CIBS program to account for roughly 60 percent
3 of the total cast iron and bare steel main replacements, with the remaining 40 percent of this
4 leak prone pipe being replaced in conjunction with municipal projects in any given year. We
5 were fearful that the company could possibly shift priorities from taking advantage of saving
6 restoration costs associated with municipal projects to only relying on the CIBS program as a
7 means for removing large amounts of infrastructure. This fear has not been realized. What
8 we hadn't envisioned was that there would be a number of years (2 of the last 6) when the
9 CIBS program would account for less than 2 miles of main replacements (see Table 1) and
10 that those years would have less than a 30% CIBS to 70% municipal project ratio. [1.56/5.30
11 and 1.65/5.8]. This is nearly an inverse from expectations.

12 **Q. Does Staff have other specific concerns with the existing CIBS program?**

13 A. Yes, Staff does have a few concerns with the current program. First, the portion of overall
14 project costs attributed to degradation fees being imposed by Manchester and Concord are a
15 concern. These charges amount to an additional \$813,168 included in rate calculations over
16 the past four years. The Company is involved in litigation with these municipalities over the
17 imposition of these charges. A court ruling is expected prior to next year's CIBS filing but
18 this has been ongoing for a number of years.

19 A second concern that has been on our radar for the past several years is the increasing
20 amount of indirect costs, referred to as internal loading costs that are being applied to these
21 projects.

22 The final concern we would like to share at this time is related to what we believe are missed
23 opportunities by the Company to aggressively pursue potential customers while these CIBS

1 mains are being replaced. The Company does not appear to take advantage of knowing the
2 majority of scheduled CIBS segments years ahead of time and developing customized plans
3 for attaining conversions targeted at convincing these customers of the many cost effective
4 benefits of connecting and converting to natural gas for heat, clothes drying, cooking and
5 domestic hot water.

6 **Q. Does Staff propose any changes related to controlling costs from municipalities and/or**
7 **the Company's internal loading costs?**

8 A. Staff reviews these costs arising from municipal requirements for permitting, paving and
9 street impact fees. These are external costs that affect the Company, but should not be
10 considered "non-controllable." These are direct costs, which require increased attention and
11 closer scrutiny of trench widths and lengths as well as timing of projects in order to limit the
12 cost exposure. Larger project costs generally result in fewer projects being undertaken and
13 less leak prone pipe being replaced which is in opposition to the intent of the program. The
14 most efficient way to control these costs is through constant communications generated by
15 the Company that produces optimal coordination between municipalities and the Company.
16 Timing main replacements with planned street reconstruction projects is a vital and effective
17 way to controlling these costs that cannot be afforded any lost opportunities.
18 Controlling internal overhead costs has been another significant component of these projects
19 in recent years. We are concerned that the internal overheads (loaded costs) have generally
20 been increasing from year to year at a rate that, in my professional opinion, is unsustainable.
21 We have shared this concern with the Company over the past few years and this is an area we
22 will be closely monitoring going forward. We hope to see additional improvement in this

1 area as the Company transitions away from the larger National Grid model to one managed
2 by the smaller, more nimble Liberty Utilities operation.

3 Taking advantage of opportunities to add new customers along existing CIBS mains as the
4 pipes are being replaced is something that I feel should be a high priority by the Company.

5 Properly trained sales specialists should be knocking on potential customers' doors at times
6 when the property owners are likely to be home. This may require multiple visits to some
7 locations, but the benefits to the Company should make these extra efforts a high priority.

8 Based on my experience, potential customers need to be educated one-on-one with trained
9 sales specialists that are able to answer questions, coordinate scheduling, provide cost-benefit
10 analysis, discuss energy efficiency incentives that are being offered, explain applicable state
11 and federal tax incentives and provide a list of reputable gas appliance suppliers and
12 installers.

13 14 **II. STAFF COMMENTS ON THE FY 2015 CIBS PLAN AND FY 2014 RESULTS**

15 **Q. Would you please share with the Commission your assessment of the adequacy of the**
16 **Liberty CIBS plan for the 12-month period referred to as Fiscal Year 2015, beginning**
17 **with a brief summary of the forecast?**

18 A. Yes. Under the CIBS program forecast, the Company estimates it will replace 5.42 miles of
19 cast iron and bare steel mains over the course of FY 2015. This is approximately double the
20 average number of miles replaced in through the CIBS for FY 2014. In addition, the
21 Company estimates that it will need to replace 198 bare steel services that are tied to these
22 mains. Liberty projects it will cost a total of \$6,955,156 for these FY 2015 incremental

1 investments. This equates to a cost per mile of replaced main and services of slightly more
2 than \$1.28 million per mile.

3 **Q. How does the FY 2015 forecast compare with the Company's CIBS results during FY**
4 **2014.**

5 A. The Company replaced 3.51 miles of Cast iron/bare steel mains and 174 services in which 82
6 services were bare steel during FY 2014 at a cost of \$3.583 million. This equates to a cost
7 per mile of replaced main and services of slightly more than \$1.02 million per mile. Overall,
8 the FY 2015 program is estimated at 25% more incremental cost per mile than this FY 2014
9 [1.28/1.02].

10 **Q. What is your assessment of the adequacy of the Company's plan for FY 2015?**

11 A. Prior to the most recent submission of the company on June 20, 2014 that increased its
12 replacement rate by nearly double the rate of FY 2014, we had expressed concerns that we
13 are losing ground on arguably one of the most important objectives of the program, to
14 achieve an accelerated timeframe for the replacement of these problematic pipelines.

15 **Q. Do you have any thoughts on how the program could be modified to more efficiently**
16 **accelerate the replacement program?**

17 A. We believe there are some things that could be done to improve the existing program. For
18 example, over the course of this program some CIBS sections of main in Liberty's
19 distribution system have had multiple pipe segments in close proximity replaced while others
20 are more discrete and spread throughout the inner cities. As an alternative, it may be more
21 cost effective to go into these areas and replace entire geographic areas or zones rather than
22 the discrete segmentation that has been done in the past. This would require closer
23 coordination and communications with the residents and municipal leaders because of

1 concerns regarding increased traffic disruptions in certain areas over longer durations and
2 greater inconvenience.

3 **Q. Are you proposing this or any other changes to the program at this time?**

4 A. Between now and next year's CIBS preliminary planning and final forecast meetings
5 between the Company and Staff, I believe Staff and the Company should take a closer look at
6 the program to determine the most efficient way we can improve upon what is currently in
7 place. In particular, we would like to see a long term goal of this replacement program
8 increase in acceleration rate to accomplish replacing nearly all cast iron/bare steel pipelines
9 in New Hampshire over the next ten years. The exception would be for cast iron mains with
10 diameters in the 10 to 16 inch range. This larger diameter pipe accounts for approximately 5
11 percent of the total remaining cast iron pipe in the ground, has greater wall thickness and has
12 been less prone to leaks. Staff has shared these thoughts with the Company informally and
13 the possibility of a new accelerated replacement option appears to be well received.
14 One other change that Staff proposed to the Company was that the final CIBS rate plan
15 should be filed no later than April 15 of each year.

16 **Q. What are the cost implications of accelerating the pace of the program as you suggest?**

17 A. Although the annual costs would be noticeably higher in total, we would expect residential
18 customers bills to be impacted by approximately \$40 per year. In the long run, I would
19 expect that rate payers would benefit from more substantial savings in costs related to this
20 accelerated program. Further delaying investing in leak prone infrastructure to a future date
21 will ultimately result in future costs that are higher than would be experienced today. Other
22 considerations would be the improved safety and reliability aspects of this option to replace

1 these problem mains over the course of the next ten years as opposed to the next twenty one
2 years.

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

4 A. Yes.