

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

**RE: PENNICHUCK WATER WORKS, INC.  
DW 15- \_\_\_\_**

**2015 WATER INFRASTRUCTURE  
AND CONSERVATION ADJUSTMENT FILING**

**DIRECT TESTIMONY  
OF  
DONALD L. WARE**

**JANUARY 2015**

1 **Professional and Educational Background**

2 **Q. What is your name and what is your position with Pennichuck Water Works,**  
3 **Inc.?**

4 **A.** My name is Donald L. Ware. I am the Chief Operating Officer of Pennichuck  
5 Water Works, Inc. (the "Company"). I have been employed with the Company  
6 since April 1995. I am a licensed professional engineer in New Hampshire,  
7 Massachusetts and Maine.

8 **Q. Please describe your educational background.**

9 **A.** I have a Bachelor in Science degree in Civil Engineering from Bucknell University  
10 in Lewisburg, Pennsylvania. I have a Masters in Business Administration from the  
11 Whittemore Business School at the University of New Hampshire.

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

13 **A.** Prior to joining the Company, I served as the General Manager of the Augusta  
14 Water District in Augusta, Maine from 1986 to 1995. I served as the District's  
15 engineer between 1982 and 1986.

16 **Q. What are your responsibilities?**

17 **A.** As the Chief Operating Officer of the Company, I am responsible for the overall  
18 operations of the Company, including water quality and supply, distribution,  
19 engineering and customer service.

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

21 **A.** I will be providing details of the Company's third annual Water Infrastructure and  
22 Conservation Adjustment (WICA) filing. This filing will describe the WICA projects  
23 completed in 2014 and provide a calculation of the WICA surcharge that the

1 Company seeks to implement on or after June 1, 2015, subject to the approval of  
2 the New Hampshire Public Utilities Commission (NHPUC or Commission). The  
3 filing will also present the WICA projects proposed for 2015, 2016, and 2017.

4 **Q. What is the basis for the Company's filing?**

5 **A.** The Commission authorized the WICA pilot program in Docket No. DW 10-091, by  
6 Order No. 25,230 (June 9, 2011). It subsequently authorized PWW to continue  
7 the pilot in the Company's recent rate case, Docket No. DW 13-130, by Order No.  
8 25,694 (July 15, 2014). In the Company's previous WICA filing, Docket No. DW  
9 13-358, the Commission, by Order No. 25,261 (May 5, 2014), extended the WICA  
10 filing deadline one month, from December 31 to January 31.

11 **Q. Did the Company provide notice to customers at least thirty (30) days in  
12 advance of this WICA filing?**

13 **A.** Yes. As required by its tariff, the Company included a notice on all of the  
14 Company's customer bills during the month of December 2014 regarding this  
15 WICA filing. The last of the monthly bills was mailed on December 24, 2014. A  
16 sample bill is included as Attachment A. The message on the bills informed  
17 customers of the pending WICA surcharge filing and directed them to  
18 Pennichuck's website for more information.

19 **Q. How does this WICA petition compare to the WICA petition filed in 2013?**

20 **A.** The petition generally follows the format of the previous petition, advancing the  
21 elements of the WICA cycle by one year. Specifically, this filing provides a list of  
22 the proposed WICA projects for the next three years, 2015 through 2017. In  
23 addition to providing the proposed future WICA projects, it also presents the

1 WICA projects that were completed during 2014, for which the Company is  
2 seeking a surcharge. Attachment B, page 1 of 4.

3 **Q. What is the nature of the WICA eligible projects being submitted by the**  
4 **Company?**

5 **A.** The WICA projects are limited to the replacement or rehabilitation of water mains,  
6 services, gate valves, and hydrants in the Company's core system. Attachment B,  
7 pages 2 to 4 to this testimony summarizes the 2015, 2016, and 2017 projects by  
8 asset type and amount.

9 **Q. Please describe the status of the Company's WICA plan.**

10 **A.** As of the end of 2014, the Company had approximately 2,040,300 linear feet of  
11 water main in its core water system. The water main targeted for replacement  
12 includes unlined cast iron water main, steel and galvanized steel water main, and  
13 Asbestos-Cement (A-C) water main. The Company currently has approximately  
14 256,700 linear feet (LF) of unlined cast iron water main, approximately 26,900 LF  
15 of steel water main, and approximately 217,800 LF of A-C water main in its Core  
16 distribution system. The Company also has approximately 1,006 steel water  
17 services. The Company is in the process of developing an asset management  
18 system that will develop a targeted replacement/rehabilitation plan for its water  
19 mains based on age, break history, criticality and materials. When completed,  
20 this system will be the driver for the type and quantity of water main that the  
21 Company will target for future replacement.

22 The American Water Works Association has indicated that average water main  
23 life is approximately 100 years. If an average life of 100 years is used, then the



1 Company's target would be to replace approximately 20,000 LF of water main per  
2 year. The Company has developed its replacement plan for the next three years  
3 based on an annual average replacement of approximately 15,000 LF.

4 As stated above, the Company believes that the asset management system it is  
5 developing will bring a more scientific approach to its main replacement plan, such  
6 that water mains are changed out neither too early nor too late in their useful lives.

7 The target level of 15,000 LF per year continues to move the Company's water  
8 main replacement along at a rate that would result in an average water main life of  
9 about 136 years. The Company plans to continue to replace steel water services  
10 at a rate of 25 to 30 services per year, primarily in conjunction with the City of  
11 Nashua's (City) street paving, sewer and storm drain replacement plans.

12 **Q. How did the Company select the streets included in the 2015 through 2017**  
13 **WICA list?**

14 The Company's 2015 list is based on the preliminary coordination of the  
15 Company's core system replacement work with road and sewer projects of the  
16 City and the Town of Amherst (Town). The water mains listed for 2015, which do  
17 not involve coordination with the City and Town, as well as those listed for the  
18 years 2016 and 2017, were evaluated using the following considerations:

- 19 1. Water main break history;
- 20 2. Water quality problems;
- 21 3. Fire protection flows;
- 22 4. Key customers; and
- 23 5. Geographical proximity of mains to be replaced/rehabilitated.

24  
25 The Company developed a rating system regarding the first four items in order to  
26 establish the highest priority water mains and then included geographic area

1 considerations for unlined cast iron, steel, or A-C water mains in proximity to the  
2 highest rated mains. Completing rehabilitation or replacement work in the same  
3 geographic area helps minimize community disruption and the cost of mobilizing  
4 and demobilizing equipment to different parts of the core system.

5 **Q. Please explain the rating system.**

6 **A.** The rating system is as follows:

7 1. Water Main Break History. One point is assigned for each break that has  
8 happened during the past 20 years up to a maximum of 5 points.

9 2. Water Quality Problems. Based on a review of the history of colored water  
10 complaints on the streets over the past 10 years, 1 point is assigned for each  
11 incidence of water quality complaints during the past 10 years up to a maximum of  
12 5 points.

13 3. Fire Protection Flows. One point is assigned for every 500 gallons per minute  
14 that the current fire flows are below the ISO required fire flows, up to a maximum  
15 of 5 points.

16 4. Key Customers. If there is a key customer (medical facility, major industry,  
17 school, etc.) fed from a single water main, 3 points are assigned. If there is a key  
18 customer fed from two water mains - 1 point is assigned.

19 5. Geographical Proximity. If the street is connected to a highly rated street,  
20 based on points assigned in other categories, it is awarded 3 points. If the street  
21 is within 5 blocks of a highly rated street, it is awarded 2 points.

22  
23 **Q. Is it important when the City or Town is working on a street where**

24 **Pennichuck has an unlined cast iron, steel, or A-C water main for the**

25 **Company to replace the water main even though it is not highly rated?**

26 **A.** Yes. There are significant cost savings in the areas of pavement repair and traffic  
27 control associated with completing joint projects with the City or Town.

28 Furthermore, it is rare that the City or Town can replace sewers or storm drains  
29 and not undercut the existing water main. Often, the water main is located in the  
30 same trench as the sewer main, with the sewer main being installed first and the

1 water main laid higher in the trench. This generally makes it impossible to replace  
2 the sewer main without replacing the water main. Unlined cast iron, steel, and A-  
3 C water main usually cannot survive loss of soil support or the vibration of heavy  
4 construction equipment without experiencing high levels of breakage.

5 **Q. What action does the Company propose if the level of work by the City or the**  
6 **Town does not result in the Company hitting its desired target replacement**  
7 **levels of 10,000 to 15,000 LF of rehabilitation/replacement of targeted water**  
8 **main?**

9 **A.** The Company needs to be careful as it considers the replacement of its water  
10 main ahead of City or Town rehabilitation of sewer and storm drain lines. Any  
11 water main replacements need to be located where they will not impair the future  
12 sewer or storm drain replacement work. Over the past several years it has  
13 become apparent that the City and Town may not complete sufficient sewer and  
14 drain line replacement to match the Company's targeted level of water main  
15 replacement work. As a result, the Company has added to its evaluation list water  
16 mains that can be safely rehabilitated or replaced without obstructing future sewer  
17 or storm drain replacement.

18 **Q. With regard to the choice of rehabilitating versus replacing a water main,**  
19 **over the past three years the Company has not rehabilitated any water main**  
20 **but instead has replaced all of its aging water main. Why hasn't the**  
21 **Company rehabilitated any water main?**

22 **A.** A cast iron water main will not stand up to being undermined. If the cast iron  
23 water main to be rehabilitated or replaced is within 5 feet of the sewer or storm



1 drain that is being replaced, the bedding under the cast iron water main will likely  
2 be compromised and result in numerous failures of the cast iron water mains. The  
3 common practice up to 1940 was to dig one trench and place the sewer first and  
4 the water main second. This pre-1940's construction practice eliminates the  
5 feasibility of rehabilitating the majority of the Company's cast iron water mains.

6 **Q. Why did the Company include a 10% contingency in its WICA budget?**

7 **A.** The City and Town fiscal years run 6 months behind the Company's calendar  
8 year. The City and Town will be establishing their budgets for sewer and storm  
9 drain replacement work in the late spring of 2015 for work to be completed in the  
10 summer and fall of 2015 and into the spring of 2016. The Company will not get  
11 the approved list of streets in the City and Town Budgets for 2015 (July 1, 2015  
12 through June 30, 2016) until mid-July of 2015.

13 At the time of this WICA filing, the Company does not know which streets in the  
14 City and Town will be the subject of sewer and storm drain replacement work in  
15 the fiscal year beginning in July of 2015. Additionally, the City is still evaluating  
16 the list of streets that it will be completing in spring of 2015. The Town of Amherst  
17 has finalized its street work list for spring of 2015. The scope of the City sewer  
18 replacement work for the majority of 2014 is reflected in the Company's 2014  
19 WICA list. The City has historically added additional streets to its sewer  
20 replacement work in the second half of the calendar year, which is a new fiscal  
21 year for the City.

22 In the Company's previous WICA filing, a 20% contingency was included. As a  
23 result of the new January 31 filing deadline, the Company has somewhat better



1 information about municipal plans than in the past. Therefore, the Company has  
2 reduced the contingency in its WICA budget to 10% to allow it to react to  
3 additional sewer replacement the City might undertake, which will result in  
4 additional water main replacement. Since about 2/3 of the streets selected for the  
5 2015 WICA program are not associated with City or Town projects, the Company  
6 will use a mix of the 10% contingency and the street swaps as necessary to keep  
7 the planned 2015 WICA projects under the total projected dollars detailed.

8 **Q. Please explain any factors that can contribute to changes in the list of WICA**  
9 **projects proposed in this filing.**

10 **A.** Several factors will change in priority over time as follows:

- 11 1. Schedule Coordination. The scheduling of City and Town sewer and storm  
12 drain replacement projects affects our project priorities and schedule for the  
13 reasons previously discussed.
- 14 2. Main Breaks. The frequency of breaks on any given segment of pipe may  
15 increase in coming years, which will increase the score for that water main.  
16 Also, the specific locations of some main breaks create more problems when  
17 compared to others such that the Company's top choices for main  
18 replacements may not be based strictly on score.
- 19 3. Criticality. Other system improvements may reduce the relative importance of  
20 a particular pipe segment. For example, a loop project may create redundancy  
21 and/or eliminate a bottleneck resulting in a lower criticality score.
- 22 4. Water Quality Problems. The frequency and nature of water quality issues  
23 may change over time, due to factors such as adjustments in treatment or  
24 other operating conditions, which could increase or decrease the score for  
25 any particular pipe segment.
- 26 5. Staff Input. The experience and field knowledge of the Company's staff with  
27 distribution mains change over time through ongoing operating and  
28 maintenance activities. Staff opinion regarding the relative priorities of  
29 different main replacement projects changes in response to day-by-day  
30 working experience with the system.
- 31 6. Capital Budget Constraints. Main replacements cannot be scheduled in strict  
32 order of their priority scores because the estimated project costs may exceed  
33 available capital funds in some years. Projects must be shifted from year to

1 year depending on what other projects, both WICA and non-WICA, are also  
2 being considered by the Company.

3 **Q. The Company's proposed 2015 WICA plan details replacement work in the**  
4 **Lovell Street area where the City has no immediate plans for sewer or drain**  
5 **replacement. What is the driver for doing the work on the streets in this**  
6 **area prior to the City carrying out its sewer and storm drain replacement**  
7 **work?**

8 **A.** The reasons for replacing main in the Lovell Street area include:

- 9 1. There is a senior housing project that has been approved for construction  
10 along Lovell Street. To meet the fire flows for this project the water mains  
11 in this area need to be replaced. The water mains requiring replacement in  
12 this area were installed between 1888 and 1892.
- 13 2. The project developer has agreed to contribute 10% of the cost of the  
14 proposed water main improvements in order to accelerate the Lovell Street  
15 water main replacement project by one year. The 10% contribution will  
16 more than offset the additional cost associated with the Company paving  
17 the full cost of pavement replacement for this project as opposed to a 50%  
18 share of the paving for a project coordinated with a City sewer or storm  
19 drain replacement project.
- 20 3. The City has no current plans to replace the sewer or storm drain in the  
21 Lovell Street area. The Lovell Street project is high on the Company's  
22 replacement list due to the type of building structures in this area,  
23 incidences of colored water and the lack of adequate fire protection.  
24

25 **Q. Please describe the proposed 2015 WICA replacement program?**

26 **A.** The Company's planned 2015 WICA projects comprise:

- 27 1. Street Replacement projects coordinated with the 2014-2015 Fiscal Year  
28 City sewer and storm replacement program. This includes Mulberry, Ninth  
29 and Temple Streets. Miami Street is also included in this work based on  
30 potential impact from the Broad Street Parkway, water quality and lack of  
31 fire protection.  
32
- 33 2. Street Replacement projects coordinated with the 2014-2015 Fiscal Year  
34 Town storm drain replacement program. This includes School Street and  
35 the Manchester Road (identified as Mack Hill in the 2014 WICA plan)  
36 Bridge crossing project in Amherst.  
37



1 3. Street replacement projects coordinated with the Lovell Street water main  
2 replacement project. This includes Chestnut, Brook, Hamilton, Burritt, Ash  
3 and Lake Streets.

4  
5 4. Allds Street A-C and unlined cast iron water main replacement. This  
6 project involves replacing a key section of large diameter A-C water main in  
7 downtown Nashua that is critical for carrying water from the 24" main  
8 located on Main Street to the east. This water main broke in 2014,  
9 discharging water at a rate in excess of 10,000 gallons per minute, which  
10 caused substantial street damage, damage to an adjacent gas main,  
11 damage to the Allds Street Bridge over Salmon Brook, low pressure and  
12 colored water throughout large portions of the City. During the repair the  
13 exterior condition of the A-C water main was noted as being soft. The  
14 criticality of this water main, the high potential for damage as the result of a  
15 failure, and the high impact of a break pushed this water main to the top of  
16 the Company's WICA replacement plan projects. This project will also  
17 result in the retirement of approximately 1722 LF of 8" unlined cast iron  
18 water main, which parallels the 12" A-C water main that is being replaced.

19  
20 5. Coburn Woods 2" Polybutylene water main replacement. This project  
21 involves a 5 to 7 year replacement program to replace about 4600 LF of 2"  
22 polybutylene water main installed in 1969 to serve about 230 individual  
23 condominium units with 1" main to stop polybutylene services in the Coburn  
24 Woods subdivision. A total of 28 spurs of 2" water main feed off of a main  
25 line 6" C900 PVC water main. There have been no water main breaks on  
26 the 6" C900 PVC during its 45 years of operation. There have been 31  
27 water main and service breaks on the 2" and 1" polybutylene (PB) over the  
28 past 5 years. At the time of the water main installation in 1969, PB pipe  
29 was considered to be an acceptable water main/service material by the  
30 American Water Works Association. PB pipe has proved to be brittle and  
31 subject to high breakage rates. This is the only PB water main in the  
32 Company's distribution system. The constant breakage and corresponding  
33 leakage makes the replacement of this water main a target of the  
34 Company's WICA program.

35  
36 **Q. What is the estimated rate impact associated with the respective year's**  
37 **projects contained in the Company's filing.**

1 A. Under the WICA program, surcharges are limited to a 2% increase in rates in any  
2 one year, with a maximum increase in rates of 7.5% between full rate cases.  
3 Attachment C to this testimony summarizes the WICA surcharge percentages, the  
4 amounts, and the impact on a typical annual residential customer bill for the  
5 proposed project years 2015, 2016 and 2017. The estimated surcharges by  
6 project year are: 1.92% for 2015; 1.97% for 2016; and, 1.63% for 2017.

7 **Q. What is the surcharge requested for 2015 related to 2014 projects?**

8 A. As shown in Attachment C, the 2014 projects produce a surcharge of 1.26%,  
9 which yields a cumulative surcharge of 1.91% to be applied to water service bills  
10 issued on or after June 1, 2015. The surcharge will be applied proportionately to  
11 all classes of customers on a bills rendered basis.

12 **Q. Why is the Company seeking an effective date of June 1, 2015 for the**  
13 **surcharge on a bills-rendered basis?**

14 A. Using an effective date of May 1 on a service-rendered basis can cause confusion  
15 for customers because certain bills would need to be pro-rated based on the  
16 respective customer's meter read date. To avoid such confusion, as well as  
17 unnecessary administrative effort, the Company proposes an effective date of  
18 June 1 on a bills-rendered basis. The Company would forego some revenue  
19 under this approach but believes the result is reasonable in order to avoid  
20 customer confusion and special programming.

21 **Q. What is the impact of the 2014 projects on the typical residential customer?**

22 A. The typical residential customer using 7.88 CCF per year currently pays \$46.65  
23 monthly under existing rates, inclusive of the surcharge that the Company was



1 granted for the WICA projects completed in 2013. The proposed WICA surcharge  
2 for 2014 projects, if approved, would increase the typical residential customer bill  
3 of \$46.65 per month by \$0.58 per month, resulting in a typical residential bill of  
4 \$47.23 per month.

5 **Q. How will the WICA surcharge be displayed on the customer's bill?**

6 A. The WICA will be reflected on the customers' bills as a WICA Surcharge Amount.  
7 The charge would be expressed as a percentage and applied to the effective  
8 portion of the total amount billed to each customer under the Company's approved  
9 tariff rate and charges with the exception of miscellaneous charges. A sample  
10 customer bill is attached to this testimony as Attachment D.

11 **Q. Has the Company included revised tariff pages for the WICA surcharge?**

12 A. Yes. The proposed revised tariff pages are Attachment E to this testimony.

13 **Q. How did actual 2014 construction compare to the 2014 WICA plan set forth  
14 in the Company's December 2013 WICA filing and updated in June of 2014?**

15 A. Attachment F lists the WICA projects that were projected to occur in 2014 as part  
16 of the DW 13-358 petition. Attachment B, page 1, reflects the 2014 WICA  
17 projects, by street and community, as updated by the Notice of Project  
18 Substitution filed by the Company on June 19, 2014, pursuant to section III. of its  
19 WICA tariff provision, with notes explaining that certain projects were deferred  
20 until 2015. The Company did not complete the substitute work on Mack Hill Road  
21 in Amherst because the project was delayed to synchronize with the Town of  
22 Amherst's storm drain replacement project. The Company did not complete the  
23 substitute work on Ninth and Mulberry Streets because the City of Nashua's sewer

1 contractor did not complete the work on those streets in 2014; that work is  
2 scheduled to be completed during the spring of 2015.

3 The amount of water main projected to be replaced in the December 2013 filing  
4 that initiated DW13-358 was 12,961 LF, at an estimated cost of \$2,905,145. The  
5 actual footage of water main replaced as part of the 2014 WICA plan was 10,597  
6 lineal feet at a cost of \$3,235,215. The December 2013 filing also included the  
7 replacement of 28 steel water services, at an estimated cost of \$54,936, 15 valve  
8 replacements at an estimated cost of \$30,000, and 4 hydrant replacements at an  
9 estimated cost of \$22,800, for a total of \$107,736. In 2014, the Company actually  
10 replaced 28 steel services at a cost of \$82,444, 5 main line gate valves at a cost  
11 of \$22,855 and 6 hydrants at a cost of \$33,369, for a total of \$138,668.

12 **Q. How does the WICA surcharge requested for implementation beginning in**  
13 **June of 2015 compare to the surcharge projected in DW 13-358?**

14 **A.** The surcharge requested for the WICA projects completed during 2014 is 1.26%,  
15 which is slightly higher than the estimated 1.11% surcharge detailed in the project  
16 update to DW 13-358 that was submitted to the Commission on June 18, 2014.

17 **Q. Are all the projects requested for inclusion in the 2015 WICA surcharge used**  
18 **and useful?**

19 **A.** All of the WICA projects requested for inclusion in the 2015 WICA surcharge are  
20 used and useful. Please note that certain of the projects still require the  
21 installation of permanent pavement in order to complete the projects. The cost of  
22 final paving associated with these projects is included as a line item in the 2015  
23 WICA project list that is being submitted with this petition.

1 **Q. How does the Company intend to finance the WICA improvements?**

2 **A.** The Company will fund WICA projects with debt. The debt for the 2014, 2015,  
3 and 2016 WICA projects is being funded through a combination of SRF loans and  
4 from the proceeds from the 2015 Series A Bonds issuance in December 2014.  
5 The source of funding for the 2017 WICA projects has not yet been determined.  
6 Any new financing required to fund the 2017 WICA projects will result in the  
7 Company filing a petition with the Commission for approval of the new debt at that  
8 time.

9 **Q. What action is the Company requesting with regard to the projects shown**  
10 **on Attachment B, pages 2 to 4?**

11 **A.** With regard to the projects planned for 2015, the Company is requesting that the  
12 Commission approve these projects for inclusion in the initial WICA surcharge to  
13 be effective as of June 1, 2016. With regard to the projects planned for 2016, the  
14 Company is requesting that the Commission preliminarily approve the projects as  
15 WICA-eligible, subject to the Commission's final review next year. Finally, with  
16 regard to the projects planned for 2017, the Company is providing the project  
17 listing for informational purposes only.

18 **Q. Does this complete your testimony?**

19 **A.** Yes.