

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

**RE: PENNICHUCK WATER WORKS, INC.
DW 16- ____**

**2016 WATER INFRASTRUCTURE
AND CONSERVATION ADJUSTMENT FILING**

**DIRECT TESTIMONY
OF
DONALD L. WARE**

FEBRUARY 1, 2016

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 fourth annual Water Infrastructure and
22 Conservation Adjustment (WICA) filing. This filing will describe the WICA projects
23 completed in 2015 and provide a calculation of the WICA surcharge that the

1 Company seeks to implement on or after June 1, 2016, 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 2016, 2017, and 2018.

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 rate case in Docket No. DW 13-130, by Order No.
8 25,694 (July 15, 2014). In Docket No. DW 13-358, the Commission, by Order No.
9 25,261 (May 5, 2014), changed the WICA filing deadline to January 31.

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

12 **A.** Yes. The Company provided notice of the pending WICA filing to all of the
13 Company's customers by a direct post card mailing on December 30, 2015. A
14 sample of the postcard that was mailed is included as Attachment C to this
15 testimony. The message on the postcard informed customers of the pending
16 WICA surcharge filing and directed them to Pennichuck's website for more
17 information.

18 **Q. How does this WICA petition compare to the WICA petition filed in January
19 2015?**

20 **A.** The petition generally follows the format of the previous petition, advancing the
21 elements of the WICA cycle by one year. providing a list of the proposed projects
22 for the next three years, 2016 through 2018, and presenting the projects that were
23 completed during 2015, for which the Company is seeking a surcharge. See

1 Attachment B, page 1 of 4 for the specific list and costs of WICA projects
2 completed in 2015. For surcharge calculations, see Attachment A, which has
3 been produced to conform with Staff's recommendations in Docket 15-043.

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

6 **A.** The WICA projects are limited to the replacement or rehabilitation of water mains,
7 services, gate valves, and hydrants in the Company's core system. Attachment B,
8 pages 2 to 4 to this testimony summarizes the 2016, 2017, and 2018 projects by
9 asset type and amount.

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

11 **A.** As of the end of 2015, the Company had approximately 2,043,100 linear feet of
12 water main in its core water system. The water main targeted for replacement
13 includes unlined cast iron water mains, steel and galvanized steel water mains,
14 and Asbestos-Cement (A-C) water mains. The Company currently has
15 approximately 250,000 linear feet (LF) of unlined cast iron water main,
16 approximately 25,900 LF of steel water main, and approximately 214,500 LF of A-
17 C water main in its Core distribution system. The Company also has
18 approximately 960 steel water services. The Company is in the third year of a five
19 year effort to implement an asset management program that targets the
20 replacement or rehabilitation of water mains based on age, break history, criticality
21 and materials. When completed, the output from the asset management program
22 will be the primary drivers for the type and quantity of water main that will be the
23 subject of future WICA proceedings.

1 The American Water Works Association has indicated that a typical water main
2 has an average life of approximately 100 years. Using an average life of 100
3 years, the Company's target for water main replacement would be approximately
4 20,000 LF of water main per year. The Company has developed its replacement
5 plan for the next three years based on an annual average replacement of
6 approximately 15,000 LF.

7 As stated above, the Company believes that the asset management system it is
8 developing will bring a more scientific approach to its main replacement plan, such
9 that water mains are changed out neither too early nor too late in their useful lives.
10 The target level of 15,000 LF per year continues to move the Company's water
11 main replacement along at a rate that would result in an average water main life of
12 about 136 years. The Company plans to continue to replace steel water services
13 at a rate of 25 to 30 services per year, primarily in conjunction with the City of
14 Nashua's ("City") street paving, sewer and storm drain replacement plans.

15 **Q. How did the Company select the streets included in the 2016 through 2018**
16 **WICA list?**

17 The Company's 2016 list is based on preliminary coordination with City paving
18 and sewer and storm drain replacement projects as well as gas company projects.
19 The Town of Amherst ("Town") does not have any planned street or storm drain
20 work planned in 2016 which would impact the Company's water main replacement
21 plan for that geographic area. The water mains listed for 2016, which do not
22 involve coordination with the City, as well as those listed for the years 2017 and
23 2018, were selected taking the following criteria into consideration:

- 1 1. Water main break history;
- 2 2. Water quality problems;
- 3 3. Fire protection flows;
- 4 4. Key customers;
- 5 5. Coordination with gas company replacement projects; and
- 6 6. Geographical proximity of mains to be replaced/rehabilitated.

7
8 As noted in prior filings, the Company developed its rating system in order to
9 establish the highest priority water mains, and then included geographic area
10 considerations for unlined cast iron, steel, or A-C water mains in proximity to the
11 highest rated mains. The rating system was expanded this year to include
12 coordination with gas company replacement projects. Completing rehabilitation or
13 replacement work in the same geographic area helps minimize community
14 disruption and the cost of mobilizing and demobilizing equipment to different parts
15 of the core system.

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

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

- 18 1. Water Main Break History. One point is assigned for each break that has
19 happened during the past 20 years up to a maximum of 5 points.
- 20 2. Water Quality Problems. Based on a review of the history of colored water
21 complaints on the streets over the past 10 years, 1 point is assigned for each
22 incidence of water quality complaints during the past 10 years up to a maximum of
23 5 points.
- 24 3. Fire Protection Flows. One point is assigned for every 500 gallons per minute
25 that the current fire flows are below the ISO required fire flows, up to a maximum
26 of 5 points.
- 27 4. Key Customers. If there is a key customer (medical facility, major industry,
28 school, nursing home, municipal facility, etc.) fed from a single water main, 3
29 points are assigned. If there is a key customer fed from two water mains - 1 point
30 is assigned.
- 31 5. Geographical Proximity. If the street is connected to a highly rated street,
32 based on points assigned in other categories, it is awarded 3 points. If the street
33 is within 5 blocks of a highly rated street, it is awarded 2 points.

1 6. Project coordination with the City and the gas company. The ratings
2 associated with project coordination are as follows:
3

- 4 i. Where a project involves sewer or storm drain work in conjunction with
5 gas work, a rating of 10 was given. The completion of sewer or storm
6 drain work requires the replacement of the water main. The fact that
7 the gas company is relocating its facilities as part of this project type
8 means that the Company is only responsible for 1/3 of the paving
9 restoration cost.
- 10 ii. Where a project involves sewer or storm drain work only (no gas work),
11 a rating of 9 was given. The completion of sewer or storm drain work
12 requires the replacement of the water main. The fact that the water
13 main is being replaced in conjunction with a City project means that the
14 Company is only responsible for 1/2 of the paving restoration cost.
- 15 iii. Where a project involves gas work in conjunction with a City paving
16 project, a rating of 8 was given. The completion of the gas project and
17 City paving does not require the replacement of the water main. The
18 fact that the water main is being replaced in conjunction with a gas and
19 City paving project means that the Company is only responsible for 1/3
20 of the paving restoration cost. Additionally, if the water main is not
21 replaced prior to the Street paving, it cannot be replaced for another 5
22 years due to a street moratorium.
- 23 iv. Where a project involves City paving work only, a rating of 6 was given.
24 The completion of a City paving project does not require the
25 replacement of the water main. The fact that the water main is being
26 replaced in conjunction with a paving project means that the Company
27 is only responsible for 1/2 of the paving restoration cost. Additionally, if
28 the water main is not replaced prior to the Street paving, it cannot be
29 replaced for another 5 years due to a street moratorium.
- 30 v. Where a project involves gas work only, a rating of 5 was given. The
31 completion of the gas project does not require the replacement of the
32 water main. The fact that the water main is being replaced in
33 conjunction with a gas project means that the Company is only
34 responsible for 1/2 of the paving restoration cost.
35
36

37 **Q. Is it important when the City or Town is working on a street where**
38 **Pennichuck has an unlined cast iron, steel, or A-C water main for the**
39 **Company to replace the water main even though it is not highly rated?**

1 **A.** Yes. There are significant cost savings in the areas of pavement repair and traffic
2 control associated with completing joint projects with the City and/or gas company.
3 Furthermore, it is rare that the City can replace sewers or storm drains and not
4 undercut the existing water main. Often, the water main is located in the same
5 trench as the sewer main, with the sewer main being installed first and the water
6 main laid higher in the same trench. This generally makes it impossible to replace
7 the sewer main without replacing the water main. Unlined cast iron, steel, and A-
8 C water main usually cannot survive loss of soil support or the vibration of heavy
9 construction equipment without experiencing high levels of breakage.

10 **Q. What action does the Company propose if the level of work by the City**
11 **and/or gas company does not result in the Company hitting its desired**
12 **target replacement levels of 10,000 to 15,000 LF of**
13 **rehabilitation/replacement of targeted water main?**

14 **A.** The Company needs to carefully consider the replacement of its water mains
15 ahead of City rehabilitation of sewer and storm drain lines. Water main
16 replacements need to be located where they will not impair future sewer or storm
17 drain replacement work. Over the past several years it has become apparent that
18 the City may not complete sufficient sewer and drain line replacement to match
19 the Company's targeted level of water main replacement work. As a result, the
20 Company has added to its evaluation list water mains that can be safely
21 rehabilitated or replaced without obstructing future sewer or storm drain
22 replacement.

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

5 **A.** A cast iron water main will not stand up to being undermined. If the cast iron
6 water main to be rehabilitated or replaced is within 5 feet of the sewer or storm
7 drain that is being replaced, the bedding under the cast iron water main will likely
8 be compromised and result in numerous failures of the cast iron water mains. The
9 common practice up to 1940 was to dig one trench and place the sewer first and
10 the water main second. This pre-1940's construction practice eliminates the
11 feasibility of rehabilitating the majority of the Company's cast iron water mains.

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

13 **A.** The City budgets, operates and plans based on a July 1 to June 30 fiscal year
14 basis while the Company budgets, operates and plans on a calendar year basis.
15 The City will be establishing its budgets for paving, sewer and storm drain
16 replacement work in the late spring of 2016 for work to be completed in the
17 summer and fall of 2016 and into the spring of 2017. The Company will not get
18 the list of streets with approved paving, sewer and storm drain work in the City
19 Budget for FY 2016 (July 1, 2016 through June 30, 2017) until mid-July of 2016.
20 At the time of this WICA filing, the Company does not know which City streets will
21 be the subject of paving, sewer and storm drain replacement work in the fiscal
22 year beginning in July of 2016. Additionally, the City is still evaluating the list of
23 streets that it will be completing in spring of 2016 for its current fiscal year. The

1 scope of the City paving, sewer and storm drain replacement work for the majority
2 of 2016 is reflected in the Company's 2016 WICA list. The City has historically
3 added additional streets to its sewer replacement work in the second half of the
4 calendar year, which is a new fiscal year for the City.

5 The Company has included a 10% contingency in its WICA budget to allow it to
6 react to additional sewer replacement the City might undertake, which will result in
7 additional water main replacement. All but one of the streets selected for the
8 2016 WICA program are associated with City sewer, storm drain or paving
9 projects. The Company will use a mix of the 10% contingency and street swaps,
10 as needed, to keep the planned 2016 WICA projects under the total projected
11 dollars detailed.

12 **Q. Please explain why the Company's 2016 WICA projects total 12,164 LF of**
13 **replacement, as compared to the target replacement level of 15,000 LF.**

14 **A.** The difference between the budgeted feet of water main replacement and the
15 targeted amount of water main replacement is based on the availability of funds to
16 complete the WICA projects. Based on current project estimates, and cash
17 remaining from the December 2014 bond issuance and available SRF funding, the
18 Company only has sufficient cash to fund 12, 164 LF of WICA water replacement
19 in 2016.

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

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

- 23 1. Schedule Coordination. The scheduling of City paving, sewer and storm drain
24 replacement projects affects the Company's project priorities and schedule for
25 the reasons previously discussed.

- 1 2. Main Breaks. The frequency of breaks on any given segment of pipe may
2 increase in coming years, which will increase the score for that water main.
3 Also, the specific locations of some main breaks create more problems when
4 compared to others such that the Company's top choices for main
5 replacements may not be based strictly on score.
- 6 3. Criticality. Other system improvements may reduce the relative importance of
7 a particular pipe segment. For example, a loop project may create redundancy
8 and/or eliminate a bottleneck resulting in a lower criticality score.
- 9 4. Water Quality Problems. The frequency and nature of water quality issues
10 may change over time, due to factors such as adjustments in treatment or
11 other operating conditions, which could increase or decrease the score for
12 any particular pipe segment.
- 13 5. Staff Input. The experience and field knowledge of the Company's staff with
14 distribution mains change over time through ongoing operating and
15 maintenance activities. Staff opinion regarding the relative priorities of
16 different main replacement projects changes in response to day-by-day
17 working experience with the system.
- 18 6. Capital Budget Constraints. Main replacements cannot be scheduled in strict
19 order of their priority scores because the estimated project costs may exceed
20 available capital funds in some years. Projects must be shifted from year to
21 year depending on what other projects, both WICA and non-WICA, are also
22 being considered by the Company.
- 23 7. Gas Company Projects. The Company and Gas Company are making efforts
24 to coordinate the replacement of their aging infrastructure. If both Companies
25 can work jointly on replacement projects for the same streets it results in
26 shared paving and traffic control costs as well as a onetime versus multiple
27 project interruption of the neighborhood due to construction noise, dust and
28 traffic disruption.

29
30 **Q. Please describe the proposed 2016 WICA replacement program?**

31 **A.** The Company's planned 2016 WICA projects comprise:

- 32 1. Street taps associated with side streets along Main Street. The work on
33 Main Street will include replacing the section of water main from the
34 existing water main on Main Street to 20' beyond the limits of the Main
35 Street paving for each side Street. All of the side streets selected for a tap
36 replacement, except for two, were identified in Docket No. DW 15-043.
37 The Main Street work is being driven by the fact that the City is paving Main
38 Street in 2016.

- 1 2. The remainder of the proposed 2016 WICA projects are the result of
2 coordination with City paving, City sewer or storm drain replacement
3 projects or planned gas line replacement projects.
- 4 3. The proposed Water Street project is the sole project not proposed in
5 coordination with a City or gas project. The project is being driven by the
6 recent renovation of the Mill yard at the end of Water Street. These
7 existing buildings, which are being renovated, all have sprinkler systems
8 (that were part of the original buildings and were adequately serviced from
9 the existing Water Street water main when they were constructed) but no
10 longer have adequate fire flows because of the buildup of tuberculation in
11 the water main along Water Street. The buildup of the tuberculation, in
12 conjunction with the increased domestic usage associated with the
13 renovation of the Mill yard, has resulted in a number of colored water
14 incidents over the past year.

15
16
17 **Q. What happened to the Coburn Woods water main replacement project that**
18 **was included in the 2015 WICA filing for 2015, 2016 and 2017 but is not**
19 **included in any of the projected WICA projects for the next three years?**

20
21 **A.** The Coburn Woods Association paved the Coburn Woods Streets in 2015 without
22 notifying Pennichuck. As a result, work on these streets has been deferred for 5
23 years to avoid excavating a newly paved Street.

24 **Q. What is the estimated rate impact associated with the 2016 through 2018**
25 **WICA projects contained in the Company's filing.**

26 **A.** Under the approved WICA program, WICA surcharges are limited to a 2%
27 increase in rates in any one year, with a maximum increase in rates of 7.5%
28 between full rate cases. Attachment Schedule 2a to this testimony summarizes
29 the WICA surcharge percentages, the amounts, and the impact on a typical
30 annual residential customer bill for the proposed project years 2016, 2017 and

1 2018. The estimated surcharges by project year are: 1.85% for 2016; 1.93% for
2 2017; and, 2.00% for 2018.

3 **Q. Do the projected WICA surcharges for the projects completed in 2016**
4 **through 2018 result in a cumulative WICA surcharge in excess of 7.5%?**

5 **A.** The projected cumulative impact of each year of WICA projects is 4.88% after
6 2016, 6.82% after 2017 and 8.82% after 2018. The last year's cumulative impact
7 of the WICA projects (which is the cumulative impact of WICA projects completed
8 between the beginning of 2013 and the end of 2018) is projected to exceed the
9 allowable 7.5% and would not be allowed unless a rate case occurred prior to the
10 completion of the 2018 WICA projects.

11 **Q. What is the surcharge requested for 2016 related to 2015 projects?**

12 **A.** As shown in Attachment A Schedule 2a, the 2015 projects produce a surcharge of
13 1.23%, which yields a cumulative surcharge of 3.04% (total of the surcharges for
14 WICA projects completed in 2013, 2014 and 2015) to be applied to water service
15 bills issued on or after June 1, 2016. The surcharge will be applied
16 proportionately to all classes of customers on a bills rendered basis.

17 **Q. What is the impact of the 2015 projects on the typical residential customer?**

18 **A.** The typical residential customer using 7.88 CCF per year currently pays \$47.18
19 monthly under existing rates, inclusive of the surcharge that the Company was
20 granted for the WICA projects completed in 2013 and 2014. The proposed WICA
21 surcharge for 2015 projects, if approved, would increase the typical residential
22 customer bill of \$47.18 per month by \$0.57 per month, resulting in a typical

1 residential bill, including the cumulative impact of the 2013, 2014 and 2015 WICA
2 charges, of \$47.75 per month.

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

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

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

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

11 **Q. How did actual 2015 construction compare to the 2015 WICA plan set forth
12 in the Company's January 2015 WICA filing?**

13 A. Attachment F lists the WICA projects that were projected to occur in 2015 as part
14 of the DW 15-043 petition. Attachment B, page 1, reflects the 2015 WICA
15 projects, by street and community with notes explaining the addition and deletion
16 of projects that were completed in 2015 or deferred to a future year. Attachment F
17 provides an explanation of the changes to the 2015 WICA list submitted as part of
18 DW15-043. The amount of water main projected to be replaced in the January
19 2015 filing that initiated DW 15-043 was 14,640 LF, at an estimated cost of
20 \$4,953,960 (inclusive of 10% project contingency). The actual footage of water
21 main replaced as part of the 2015 WICA plan was 11,568 lineal feet at a cost of
22 \$3,089,415. The January 2015 filing also included the replacement of 23 steel
23 water services, at an estimated cost of \$67,722, 5 valve replacements at an

1 estimated cost of \$22,855, and 6 hydrant replacements at an estimated cost of
2 \$33,369, for a total of \$123,946. In 2015, the Company actually replaced 37 steel
3 services at a cost of \$76,496, 5 main line gate valves at a cost of \$10,558 and 17
4 hydrants at a cost of \$79,976, for a total of \$164,030.

5 **Q. How does the cumulative WICA surcharge requested for implementation**
6 **beginning in June of 2016 compare to the cumulative surcharge projected in**
7 **DW 15-043?**

8 **A.** The cumulative surcharge requested for the WICA projects completed during
9 2013, 2014 and 2015 is 3.04%, which is less than the estimated 3.83% surcharge
10 detailed in the project update to DW 15-043 submitted on June 18, 2014.

11 **Q. Are all the projects requested for inclusion in the 2016 WICA surcharge used**
12 **and useful?**

13 **A.** All of the WICA projects requested for inclusion in the 2016 WICA surcharge are
14 used and useful. Please note that certain of the projects still require the
15 installation of permanent pavement in order to complete the projects. The cost of
16 final paving associated with these projects is included as a line item in the 2016
17 WICA project list submitted with this petition.

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

19 **A.** The Company will fund WICA projects with debt. The debt for the 2016 WICA
20 projects is being funded through a combination of SRF loans and proceeds from
21 the 2015 Series A Bonds issuance in December 2014. The source of funding for
22 the 2017 and 2018 WICA projects has not yet been determined. Any new
23 financing required to fund the 2017 and 2018 WICA projects will result in the

1 Company filing a petition with the Commission for approval of the new debt at that
2 time.

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

5 **A.** With regard to the projects planned for 2016, the Company requests that the
6 Commission approve these projects for inclusion in the initial WICA surcharge to
7 be effective as of June 1, 2017. With regard to the projects planned for 2017, the
8 Company requests that the Commission preliminarily approve the projects as
9 WICA-eligible, subject to the Commission's final review next year. Finally, with
10 regard to the projects planned for 2018, the Company is providing the project
11 listing for informational purposes only.

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

13 **A.** Yes.

14

15