

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

**Petition of Pennichuck East Utility, Inc. for Approval of Financings**

**Under the State Revolving Loan Fund**  
**For Locke Lake Water Main Improvements**

**From CoBank, ACB**  
**For Regulatory Compliance, Maintenance, and Non-Recurring Projects**

**DW 16-\_\_**

**DIRECT PREFILED TESTIMONY OF JOHN J. BOISVERT**

February 12, 2016

1   **Q.    What is your name and what is your position with Pennichuck East Utility,**  
2       **Inc.?**

3   A.    My name is John J. Boisvert. I am the Chief Engineer of Pennichuck Water  
4       Works, Inc. ("PWW"), which provides services to Pennichuck East Utility, Inc.  
5       ("PEU" or the "Company") pursuant to a management allocation agreement. I  
6       have worked for PWW since February 1, 2006. I am a licensed professional  
7       engineer in New Hampshire and Maine.

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

9   A.    I have a Bachelor of Science degree and a Master of Science degree in Civil  
10       Engineering from the University of New Hampshire in Durham, New Hampshire.  
11       I also have a Master's degree in Environmental Law and Policy from Vermont  
12       Law School in South Royalton, Vermont.

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

14   A.    Prior to joining PWW, I served as a Team Leader for Weston & Sampson  
15       Engineers of Portsmouth, New Hampshire in their Water Practices Group from  
16       2000 to 2006. Prior to Weston & Sampson I was employed by the Layne  
17       Christensen Company of Shawnee Mission, Kansas as Regional Manager for their  
18       Geosciences Division in Dracut, Massachusetts from 1994 to 2000. I completed  
19       graduate school in 1992 and was employed by Hoyle, Tanner, & Associates of  
20       Manchester, New Hampshire as a Project Engineer from 1992 to 1994. Prior to  
21       entering full time graduate programs at the University of New Hampshire and  
22       Vermont Law School I was employed by Civil Consultants of South Berwick,

1 Maine as a Project Engineer from 1986 to 1989 and by Underwood Engineers of  
2 Portsmouth, New Hampshire as a project Engineer from 1985 to 1986.

3 **Q. What are your responsibilities as Chief Engineer of the Company?**

4 A. As Chief Engineer, I am responsible for the planning, design, permitting,  
5 construction, and startup of major capital projects, including pipelines,  
6 reservoirs/dams, building structures, pumping facilities, treatment facilities, and  
7 groundwater supplies. I provide regular technical assistance to PWW's Water  
8 Supply Department, Distribution Department, Customer Service Department, and  
9 Senior Management.

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

11 A. I describe a project in Locke Lake for which the Company is seeking funding  
12 from the New Hampshire Department of Environmental Services ("DES")  
13 through the State Revolving Fund ("SRF"). Please see Attachment A for the DES  
14 letter offering SRF Loan funds for this project.

15 I also describe a group of capital related activities associated with or described as  
16 regulatory compliance, maintenance, and/or non-recurring projects that the  
17 Company is seeking to finance with a loan from CoBank. The CoBank loan will  
18 seek reimbursement for work completed in 2015 and fund worked proposed for  
19 2016.

20 **Q. What is the nature of the work in the Locke Lake Water System?**

21 A. The work can be generally described as the replacement of approximately 18,600  
22 linear feet ("LF") of small diameter PVC/PE water main and 213 service

connections in the Varney Road and Winwood area of the Locke Lake Water System located in Barnstead, New Hampshire ("Locke Lake Project").

**Q. What are the terms of the SRF loan for Locke Lake?**

A. DES is offering a \$1,650,000 loan with a 20-year term with level total payments and a current interest rate of 2.464% per annum to fund the Locke Lake Project.

**Q. Is the project eligible for principal forgiveness?**

A. No. Median Household Incomes in Barnstead, NH exceed those that would qualify these projects for principal forgiveness.

**Q. Could you please describe why the Company believes it needs to replace water main in the Locke Lake Water System, given the piping in question is less than 40 years old?**

A. Approximately 74,000 LF of the original 104,000 LF of water main remains in the Locke Lake Water System. There is approximately 36,000 LF of 4-inch and 3-inch schedule 40 glued joint PVC electrical conduit and approximately 37,000 LF of 2-inch 160 PSI IPS HDPE with nylon stab fittings or 2-inch SDR21 PVC with glued joints. Neither type of pipe meets the AWWA standard for water mains. The schedule 40 glued joint PVC (all sizes) is consistently failing at the joints while the 2-inch HDPE consistently fails at the nylon stab fittings. The Company will replace over 18,000 feet of substandard water main as part of this project. Over the past six years (2010 -2015) the Company has repaired 81 leaks in the Locke Lake Water System; 34 have been water main breaks, with the remaining 47 leaks occurring on the main to stop portion of a service. When the system was acquired in 2006, unaccounted for water in the Locke Lake Water system

1 constantly exceeded 60 gpm, or about 125% unaccounted for water. Unaccounted  
2 for water currently averages about 28 gpm, or about 28%. Although the level of  
3 unaccounted water in the overall system has decreased significantly from the main  
4 replacement projects that the Company has undertaken over the past several years,  
5 the level of unaccounted for water continues to remain high. This is due to the  
6 fact that as soon as one leak is found and repaired in the parts of the system with  
7 the original mains still in use, another leak develops in a different location. The  
8 Company believes that the only way to eliminate the constant leakage is to replace  
9 all the water mains and water services (main to stop) in the Locke Lake system,  
10 which do not meet AWWA standards for water main and service pipe materials.  
11 The current main replacement program along with a diligent effort at leak  
12 detection is responsible for the reduction in unaccounted for water from over  
13 125% to slightly over 28%.

14 **Q. If system leakage is a problem why doesn't the Company replace the**  
15 **remaining 74,000 LF of the substandard water main in the Locke Lake**  
16 **Water System as opposed to the proposed (estimated) 18,600 LF?**

17 **A.** As the Commission is aware, the rates at Locke Lake are already very high.  
18 Based on an average of the 2011 through 2015 construction costs, the Company is  
19 replacing water main for about \$72 per LF (including services). Replacing all of  
20 the remaining water main at once would cost about \$5.3 million and would have  
21 a large impact on the water rates of all PEU's customers (not just the Locke Lake  
22 customers). In addition, the remaining sections of the Locke Lake substandard  
23 piping are tighter and more stable (less leakage and fewer failures) than areas

1 previously replaced and as proposed for in this current project. The Company  
2 believes that a program to closely monitor the remaining sections for the next 3 to  
3 5 years will allow future main replacement projects to be more focused, if  
4 necessary. Over the past three years, the Company targeted its total investment  
5 per customer in Locke Lake to approximately equal the amount it invested per  
6 non-Locke Lake customer in PEU. The investment amount per non-Locke Lake  
7 PEU customers in 2016-2018 is projected to be about \$2,900,000 or \$454 per  
8 customer (based on approximately 6,390 non-Locke Lake PEU customers) over  
9 the three-year period. This level of investment from the proposed project would  
10 result in an approximate investment in Locke Lake of about \$474 per Locke Lake  
11 customer when averaged over 4 years as discussed in testimony below.

12 **Q. Why is PEU proposing to spend \$1,650,000 in 2016 when the target has been**  
13 **roughly \$400,000 in recent years?**

14 A. The estimated costs represent approximately four years work at Locke Lake. The  
15 Town of Barnstead is going to reconstruct and re-pave the entire length of Varney  
16 Road in the late fall of 2016. Varney Road is one of the major roads in Locke  
17 Lake, as well as one of the few that are paved. The water main on Varney Road  
18 has been one of the more problematic mains with respect to pipe failure and  
19 leakage. Varney Road also has several streets and water mains that connect into  
20 it. The Locke Lake Project includes replacing water main in Varney Road and  
21 replacing water main and services in those connecting/area streets in order to:

- 22 • Minimize the need for heavy construction vehicles to use Varney Road by  
23 completing all pipeline work prior to reconstruction of Varney Road. This

1 will minimize the potential for damage to a newly reconstructed street,  
2 which the Company might be held responsible for, if construction on  
3 nearby streets were to occur after 2016.

- 4 • This work finishes replacement in the last most pressing area of  
5 substandard piping in Locke Lake. Other areas in Locke Lake with  
6 original piping have not experienced a similar degree of failure and  
7 leakage. Until this point in time, the Company has deferred replacing  
8 the main in Varney Road as it would cause the Company to assume  
9 significant pavement restoration costs. However, with the Town  
10 reconstructing Varney Road in 2016, the Company's road restoration costs  
11 for this project at this time, are approximately one-third of what they  
12 would be absent the Town's participation.

- 13 • By completing this sizeable project in 2016, the company is:
  - 14 ○ Improving the ability to investigate, reduce and manage leakage.
  - 15 ○ Reduce overall cost for the project by partnering with the Town.
  - 16 ○ Relieve residents (customers) in Locke Lake of continuous  
17 summer/fall construction that has been occurring since 2006. The  
18 Company's plan would be step back from major water main  
19 construction activity for a period of four to five years, unless  
20 specific circumstances necessitate other or further action.

21 The Company will continue to monitor the remaining original pipe in Locke Lake  
22 and balance the impact of additional water main replacement in Locke Lake  
23 against the cost of continued leakage and the associated rate impact.

1        Additionally, the Company believes that the unique low interest rate from SRF  
2        financing, the ability to coordinate with the Town, and a continued aggressive  
3        bidding environment justify an investment level of \$1,650,000 in 2016 followed  
4        by a four-year pause in construction.

5        **Q.    What is the annual additional cost to PEU's ratepayers of completing**  
6        **\$1,650,000 of replacement work at Locke Lake?**

7        A.    The estimated annual additional cost would be about \$120,000 or about \$16.54  
8        per customer in the first year based on an interest rate of 2.464%, an average  
9        depreciation rate of 1.67%, local property taxes with a mil rate of 24.57 per \$1,000  
10       and the State Wide Utility Tax rate of \$6.60 per \$1,000.

11       **Q.    Will the Company replace the main to stop portion of the services as it**  
12       **replaces the water mains at Locke Lake?**

13       A.    Yes. The existing services consist of one ¾" IPS HDPE service (main-to-stop)  
14       for every two homes. The small diameter of the services creates pressure  
15       problems for homeowners when both homes receive water. The Company will  
16       replace each single ¾ inch IPS HDPE service with two 1-inch copper services. It  
17       is essential that services be replaced since about one-half of the system leaks each  
18       year occur on the main-to-stop portion of the service. Approximately 200  
19       substandard services (main-to-stop) will be replaced as part of this project.

20       **Q.    What is the estimated cost of removal for the Locke Lake Project?**

21       A.    The cost of removal to abandon the existing 2-inch and 4-inch plastic main in  
22       Locke Lake is estimated at 10% of the project or about \$165,000.

23       **Q.    Does the Company intend to complete the Locke Lake Project in 2016?**



1 A. Yes, with respect to the amount of financing requested in this petition. The ability  
2 to complete the project during 2016 is dependent upon getting the project  
3 construction underway in late spring or early summer. To accomplish this, DES  
4 and the Company need to close on this SRF loan by early June.

5 **Q. Please describe the timeline required to complete the project in 2016.**

6 A. The DES would like to finalize the loan documents associated with this loan on or  
7 before May 1, 2016. The DES cannot finalize the loan documents without the  
8 PUC approving the proposed financing for this project. The list below provides  
9 an estimated timeline for the three projects:

10 Approvals

- 11 1. Board Resolutions approving loans submitted– January 22, 2016.
- 12 2. Shareholder approval request filed with City of Nashua – February 3,  
13 2016.
- 14 3. File financing petition with PUC – February 12, 2016.
- 15 4. PUC approval -- request Order *Nisi* with effective date by end of April,  
16 2016.

17 Project Milestones

- 18 1. Complete engineering design – February 15, 2016.
- 19 2. DES approval of proposed design – February 28, 2016.
- 20 3. Bid project – April, 2016.
- 21 4. Open bids – May, 2016.
- 22 5. Construction begins – June, 2016.
- 23 6. Project substantial completion – November 15, 2016.

1   **Q.     With respect to the proposed CoBank financing, please explain what is**  
2       **meant by regulatory compliance, maintenance and non-recurring projects.**

3   **A**     Regulatory compliance relates to funds used to ensure regulatory compliance with  
4       federal and state drinking water laws and regulations, PUC rules, and other  
5       environmental requirements associated with drinking water. Maintenance relates  
6       to funds used to repair or replace aging infrastructure and plant and equipment.  
7       Non-recurring refers to projects that are necessary for the function of the  
8       Company but may or may not be directly related to regulatory compliance or  
9       maintenance of an existing asset.

10  **Q     Please describe the specific 2015 assets or projects for which PEU is seeking**  
11       **reimbursement funding.**

12  **A.**     The Company is seeking \$1,100,000 in financing through CoBank to reimburse  
13       PEU's parent company, Pennichuck Corporation ("Pennichuck") for  
14       intercompany loans incurred by PEU to complete capital projects/activities in  
15       2015. The projects/activities described below account for approximately  
16       \$883,000 of the total. The remaining \$217,000 will be applied to several smaller  
17       capital expenditures completed in 2015. The project breakdown by category is as  
18       follows:

19       **Regulatory Compliance**

20       **Airstrip Station Upgrade-Complete Design (\$14,000):** Originally planned for  
21       construction in 2015, delays due to local permitting and an unmaterialized  
22       challenge to the Company's easement for the station on the underlying property

1 only permitted the design and local permitting tasks to be completed.

2 Construction is budgeted for 2016 as detailed below.

3 **Lead Free Meter Exchanges (\$122,000):** The Safe Drinking Water Act was  
4 revised in 2011 to require that all wetted surfaces of pipes, fittings, and fixtures  
5 meet the definition of “lead free” in accordance with NSF International (NSF) and  
6 American National Standards Institute (ANSI) Standard NSF/ANSI 372 Annex G.  
7 Water meters are encompassed by this standard. The company is in the process of  
8 exchanging meters containing lead with lead-free meters at the testing intervals  
9 required by NHPUC 600. The Company exchanged 395 meters in 2015  
10 (installing 395 lead-free meters as a replacement for the retirement of 395 meters  
11 containing lead.). This replacement rate is consistent with the requirements of  
12 CHAPTER Puc 600 Section 605.04 Test Schedules for Meters. Puc 605.04  
13 requires that the Company periodically remove and test meters. All 5/8-inch and  
14 3/4-inch meters are required to be removed and tested every 10 years and more  
15 frequently for larger meters.

16 **Maintenance**

17 **Chemical Feed Pump Replacement (\$1,100):** Williamsburg in Pelham required  
18 the replacement of a chlorine feed pump

19 **Well Pump Replacement (\$94,000):** The Company owns and operates 43  
20 community water systems. All but two are served by wells, with nearly all being  
21 small diameter bedrock wells. The Company replaced and/or serviced  
22 approximately 13 wells and related pumping equipment in 2015, which was an

1 unusually high year for well pump replacement. The 2016 budget presented below  
2 is more consistent with what would be anticipated year to year on average.

3 **Instrumentation Replacement (\$6,700):** Spruce Pond in Windham was  
4 upgraded to cellular communication. White Rock in Bow required replacement of  
5 a chlorine analyzer.

6 **Station Mechanical Upgrades and Replacement (\$28,000):** The Company  
7 completed mechanical system upgrades (valves, pumps, piping, HVAC, etc.) at  
8 nine different stations in 2015.

9 **Distribution System Component Replacement**

10 **Hydrant Replacements (\$8,300):** As a part of the Company's ongoing hydrant  
11 replacement program, the Company replaced two hydrants in response to age and  
12 performance. This work was done in accordance with the hydrant maintenance  
13 and inspection requirements of Puc 606.03.

14 **Valve Replacements (\$21,000):** As a part of the Company's ongoing gate valve  
15 replacement program, the Company replaced 10 main line gate valves in response  
16 to age and performance. Gate valves are being replaced as part of the valve  
17 maintenance and inspection requirements of Puc 606.04.

18 **Service Replacements (\$22,000):** The Company replaced 7 customer services  
19 (main-to-stop) due to age, material, and condition.

20 **Nonrecurring**

21 **PEU Station Demolitions (\$222,000):** This work completed demolition of  
22 unused ("abandoned") pumping and treatment structures owned by the Company

that were no longer in service, or needed. Demolition of the structures eliminated potential safety, liability and property tax liability.

**Completion of Water Main Replacement (Approximately \$480,000):**

Approximately \$470,000 of this amount pertains to funded expenditures on major water main replacement, water system interconnection and a CWS station upgrade project where the project expenditures exceeded the available SRF loan amounts. The specific projects include:

Avery Estates Interconnection (Londonderry) - \$62,000

W&E Water Main Replacement Phase 1 & 2 (Windham) - \$37,000

Hardwood Station Replacement and Demolition (Windham) - \$226,000

Locke Lake Winwood and Monroe Phase 1 & 2 (Barnstead) - \$142,000

Locke Lake Varney Road Area Design (Barnstead) - \$13,000

**Q. Please describe the specific 2016 assets or projects for which the Company is seeking funding.**

**A.** The Company is seeking \$1,100,000 in financing through CoBank. The projects/activities described below account for approximately \$1,000,000 of the total. The remaining \$100,000 is available for contingency related capital expenditures in 2016. The project breakdown by category is as follows:

**Regulatory Compliance**

**Locke Lake Airstrip Station Arsenic Treatment (\$130,000):** The Airstrip well is one of the larger producing wells in the Locke Lake system. Untreated raw water drawn from this well contains arsenic above the primary standard of 10 parts per billion (ppb) set by the SDWA and manganese above the secondary

1 standard of 0.05 parts per million (ppm). The Company uses an ion exchange  
2 system to reduce arsenic to levels below the SDWA standard. Adsorptive ion  
3 exchange media is used to “filter” arsenic. The media is a disposable product that  
4 requires a very costly change out when its ability to effectively filter arsenic  
5 levels is “spent.” Additionally, the Company cannot add disinfection to this well  
6 at this time because of the presence of manganese. The challenge is to provide a  
7 way to filter manganese from the water, while providing a less expensive  
8 alternative to the adsorptive media presently used. The Company has a treatment  
9 alternative in service at the Locke Lake Peacham Road Treatment Facility, i.e.,  
10 co-precipitation. Standard (reusable with backwash) iron and manganese  
11 filtration media is used with chlorination and iron addition to co-filter iron and  
12 arsenic at the same time. The effectiveness of co-precipitation at the Airstrip  
13 Station was pilot tested by Company staff and was confirmed to be scalable to the  
14 Airstrip Station. It is anticipated that the new process will treat arsenic at one-  
15 tenth of the ongoing operating cost of the existing adsorptive media system.

16 **Stone Sled CWS Station Improvements (\$500,000):** The levels of iron and  
17 manganese from the Stone Sled wells have increased since originally drilled. The  
18 iron and manganese concentrations exceed the level of which the existing  
19 softeners can effectively reduce them. The planned improvements include the  
20 addition of chemical treatment followed by filtration to reduce iron and  
21 manganese along with arsenic removal. The work will require an addition to the  
22 station building to accommodate the new equipment.

1       **Lead-Free Meter Exchanges (\$121,000):** The SDWA was revised in 2011 to  
2       require that all wetted surfaces of pipes, fittings, and fixtures meet the definition  
3       of “lead free” in accordance with NSF International (NSF) and American  
4       National Standards Institute (ANSI) Standard NSF/ANSI 372 Annex G. Water  
5       meters are encompassed by this standard. The company is in the process of  
6       exchanging meters containing lead with lead-free meters at the testing intervals  
7       required by NHPUC 600. The Company anticipates exchanging 701 meters in  
8       2016 (installing 701 lead-free meters as a replacement for the retirement of 701  
9       meters containing lead.). This replacement rate is consistent with the  
10      requirements of CHAPTER Puc 600 Section 605.04 Test Schedules for Meters.  
11      Puc 605.04 requires that the Company periodically remove and test meters. All  
12      5/8-inch and ¾-inch meters are required to be removed and tested every 10 years  
13      and more frequently for larger meters. The rate of replacement (approximately  
14      590 per year) coincides with the removal and testing schedule of Puc 605.04.

15      **Maintenance**

16      **Chemical Feed Pump Replacement (\$60,000):** Chemical feed pumps for  
17      various chemical injection associated water treatment and disinfection are in place  
18      at nearly all of the Company’s community water systems. This capital  
19      expenditure covers the replacement of out dated or unrepairable feed pumps in  
20      twenty (20) of our community water systems during 2016. Company staff  
21      regularly inspects and evaluates the performance of chemical feed pumps in all of  
22      the Company facilities. Throughout the course of the year minor repairs are made  
23      when needed and the overall condition and effectiveness of the each pump is

1        assessed. Pumps that require an increasing level of repair, or pumps that have  
2        reached obsolescence, are inventoried and scheduled for replacement. The  
3        replacement is covered by this line item.

4        **Station Structural Improvements (\$15,000):** The Company anticipates a  
5        certain amount of structural repairs will be needed throughout the system in 2016.  
6        This work may include painting, roof repair, door, and lock replacements, etc.

7        **Treatment System Installation and Replacement (\$40,000):** This item covers  
8        the need to replace filters, softeners and other treatment devices including  
9        filter/softener media particularly associated with iron, manganese, and arsenic  
10       removal.

11       **Well Pump Replacement (\$30,000):** As the Company owns more than 65  
12       systems having wells (all have two or more) it is anticipated that a number of well  
13       pumps will require replacement in any given year. This budget item reflects a  
14       typical replacement expenditure “run rate” based on year to year experience.

15       **Instrumentation Replacement (\$20,000):** this budget item generally funds the  
16       replacement of station instrumentation including pressure sensors, chemical  
17       monitoring equipment, control panels, etc. based on a typical year-to-year  
18       average.

19       **Remote Station Cellular Alarm Installation (\$15,000):** This effort continues  
20       the process of integrating all critical company stations/facilities, where direct  
21       telephone, internet, and radio communications are not feasible, into the Nashua  
22       Water Treatment Facility SCADA system.



1       **Electrical and SCADA upgrades (\$20,000):** The Company plans to complete  
2       mechanical system upgrades (valves, pumps, piping, HVAC, etc.) over  
3       approximately 10 occurrences (number of stations) in 2016. This item is based on  
4       year-to-year averages.

5       **Station Mechanical Upgrades and Replacement (\$40,000):** This item includes  
6       maintenance repair or replacement to facilities including piping, valves, heating  
7       systems and other equipment to support the function of the facility based on year-  
8       to-year experience.

9       **Well Redevelopment (\$40,000):** Over time, wells lose capacity from mineral  
10      deposits plugging or restricting the flow of water through bedrock fractures and  
11      pumping equipment. Redevelopment is required to restore well capacity. This  
12      project relates to the redevelopment of two wells at the White Rock Community  
13      Water System, both located in Bow, in 2016.

14      **Distribution System Component Replacement**

15      **Hydrant Replacements (\$10,000):** As a part of the Company's ongoing hydrant  
16      replacement program, the Company anticipates replacing two hydrants in  
17      response to age and performance. The Company budgets this work based on past  
18      experience and is currently evaluating the priority of which hydrants are being  
19      replaced during 2016 based on age, condition, and the availability of replacement  
20      parts. This work is done in accordance with the hydrant maintenance and  
21      inspection requirements of Puc 606.03.

22      **Valve Replacements (\$30,000):** As a part of the its ongoing gate valve  
23      replacement program, the Company anticipates replacing 10 main line gate

1 valves, in response to age and performance. The Company has budgeted this  
2 work based on past experience and is currently evaluating the priority of which  
3 gate valves are being replaced during 2016 as part of the valve maintenance and  
4 inspection requirements of Puc 606.04.

5 **Service Replacements (\$31,000):** The Company plans to renew/replace  
6 approximately 10 customer services (main to stop portion) in 2016 due to age,  
7 material, and/or condition.

8 **Non-recurring**

9 **Locke Lake Golf Course Station Demolition (\$25,000):** The Golf Course  
10 Pumping Station was all but removed from service following the construction of  
11 the Peacham Road Station in 2008. The Golf Course Station remained in service  
12 to house individual meters for the Golf Course wells. The Company completed  
13 pipeline work and added individual meter pits for each well in order to bypass the  
14 below ground station. This effort allows for the excavation and disposal of the  
15 below ground vault and steel storage tanks that are no longer needed and which  
16 could become a safety liability should they remain in place.

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

18 **A.** Yes.