

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Re: Petition of Pennichuck East Utility, Inc. for Approval of Financings
Under the State Revolving Loan Fund for
Water Main Improvements for Water Main Replacement in the Maple Hills
Community Water System, Litchfield Water System, and the Pennichuck East
Utility and Pennichuck Water Works Interconnection Pipeline
DW 17-__

DIRECT PREFILED TESTIMONY OF JOHN J. BOISVERT

April 3, 2017

1 **Professional and Educational Background**

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

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

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

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

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

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

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, Operations Department, Customer Service Department, and
9 Senior Management.

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

11 A. I will be describing three proposed Company projects. Two of the projects will
12 replace substandard and deteriorated piping while the third creates an
13 interconnection pipeline through which the Company will purchase the majority
14 of its water demand directly from PWW for the Towns of Litchfield and Pelham.
15 The Three Projects are:

16 A. Maple Hills Community Water System Water Main Replacement Derry,
17 NH.

18 B. Hillcrest Road Water Main Replacement Litchfield, NH.

19 C. PEU and PWW Interconnection Merrimack and Litchfield, NH.

20 The Company is seeking approval to finance all three projects with the proceeds
21 of loans issued by the New Hampshire Department of Environmental Services
22 ("NHDES") through the State Revolving Fund ("SRF"). Please see Exhibit JJB-1

1 for the NHDES letter offering SRF Loan funds for these projects. All three
2 projects will be described later in this testimony.

3 **Q. What are the terms of the SRF loans?**

4 A. The NHDES is offering the following loan amounts and terms:

Project	Loan Amount	Interest Rate	Term (years)
Maple Hills Water Main Replacement	\$ 570,000.00	1.96%	30
Hillcrest Road Water Main Replacement	\$ 245,000.00	1.96%	20
PEU & PWW Interconnection	\$2,400,000.00	1.96%	20

5

6 **Q. Are any of these projects eligible for Principal Forgiveness?**

7 A. Yes. Median Household Incomes in Derry compared to the anticipated water rate,
8 qualifies the Maple Hills project for 10% principal forgiveness and a term of 30
9 years.

10 **Q. Could you please describe each project and the need to complete each at this
11 time?**

12 A. Each Project will be discussed in detail below.

13 Maple Hills Water Main Replacement

14 The Maple Hills Community Water System is located in the Town of Derry, NH.

15 The water system provides domestic service to over 180 single family residential
16 customers. The project will replace all (approximately 2,400 linear feet) of the
17 existing substandard 1 inch and 1.5 inch diameter water main on Brady Avenue.

18 The existing piping on Brady avenue supports 36 single family connections, far

1 too many for this diameter water main. Brady Avenue has experienced 41 water
2 main and water service ("main to stop") breaks since 1998. The Company
3 proposes to replace all 2,400 linear feet of existing water main with new 8 inch
4 diameter ductile iron water main. In addition to main replacement, the Company
5 will also replace the "main to stop" section of each customer service. The project
6 will be completed in cooperation and coordination with the Town of Derry. The
7 Town of Derry will be installing sanitary sewer, making drainage improvements
8 and performing full depth road reconstruction. Exhibit JJB-2 provides an
9 overview map of the Maple Hills project.

10 Hillcrest Road Water Main Replacement

11 A water main break repaired in 2015 revealed significant deterioration (external
12 corrosion) of a section of 12 inch ductile water main along Hillcrest Road in
13 Litchfield. The water main was installed in 1989 and is of the "pressure class"
14 type of main installed by the previous owner of the water system. Pressure class
15 ductile iron water pipe has a thinner wall than the more commonly used (and
16 Company standard) "thickness class" of ductile iron water pipe. This section of
17 Hillcrest Road is adjacent to wetlands and the soils create a corrosive environment
18 to the ductile iron water main. The Company proposes to install approximately
19 1,200 linear feet of new 12 inch diameter C-900 PVC and D-11 high density
20 polyethylene ("HDPE"), as a replacement to the existing pressure class ductile
21 iron in the area where corrosive soils have been identified. There are no customer
22 services within the section of water main to be replaced. Exhibit JJB-3 provides
23 an overview map of the Hillcrest Road project.

1 PEU and PWW Interconnection

2 The interconnection pipeline will run between the Daniel Webster Highway on
3 the west side of the Merrimack River and the Charles Bancroft Highway on the
4 east side of the Merrimack River. The pipeline will connect the distribution main
5 owned by PWW in the Town of Merrimack to the existing PEU distribution
6 system in the Town of Litchfield. The project will include the following
7 components:

- 8 • 12 inch and 16 inch diameter water mains east and west of the
9 Merrimack River;
- 10 • A 16 inch diameter water main crossing of the Merrimack River by
11 directional drilling and open cut methods’
- 12 • A 1.5 million gallon per day pumping facility installed within an existing
13 building structure just north of the Merrimack River Raw Water Pumping
14 Station and Intake. This station will add additional head (pressure)
15 required to deliver 1.5 million gallons per day into the Litchfield
16 distribution system;
- 17 • 1,400 linear feet of 12 and 16 inch diameter water main on the east side
18 of the Merrimack River to connect to the Litchfield distribution system;
19 and
- 20 • Several control valves, sampling stations, and flushing ports.

21 Exhibit JJB-2 provides an overview map of the project. The PEU portion of the
22 project is combined with a PWW project to upgrade and replace a small section of
23 undersized 8 inch diameter water main on Daniel Webster Highway and 8 inch

1 asbestos cement water main on Mast Road leading to the Merrimack Wastewater
2 Treatment Facility and the addition of approximately 3,100 feet of 12 inch
3 diameter water main to support flows to the Merrimack Wastewater Treatment
4 Facility and demand from PEU. The project design is 95% complete and is now
5 in the permitting and final design approval phase of the project. The estimated
6 design and permitting schedule is outlined in Exhibit JJB-4.

7 **Q. What is the annual additional cost to PEU's ratepayer's of completing the**
8 **three projects described above?**

9 A. The estimated annual additional cost would be about \$200,000, or about \$27.21
10 per customer per year based on an interest rate of 1.96%, an average depreciation
11 rate of 1.67%, local property taxes with mil rates of \$19.26/\$1,000 (Litchfield)
12 \$18.87/\$1,000 (Pelham) and \$20.60/\$1,000 (Merrimack) and the State Wide
13 Utility Tax rate of \$6.60 per \$1,000.

14 **Q. Are there estimated costs of removal for the Maple Hills and the Hillcrest**
15 **Road projects?**

16 A. The cost of removal to abandon the existing water main in Maple Hills and on
17 Hillcrest Road is estimated at 10% of the project cost or \$57,000 and \$24,500
18 respectively. The PEU & PWW interconnection is new construction therefore
19 there is no cost of removal.

20 **Q. What are the factors driving the need for the Company to complete the**
21 **Maple Hills and the Hillcrest Road projects?**

22 A. As is described above, both projects are necessary to replace aging or failing
23 infrastructure. The Maple Hills water main has been the subject of multiple

1 failures and the size of the existing main is significantly substandard. The
2 Hillcrest Road water main is a ductile iron water main has significant
3 deterioration due to corrosive soil conditions.

4 **Q. What are the factors driving the need for the Company to complete the PEU**
5 **– PWW interconnection at this time?**

6 **A.** There are several reasons for the Company to pursue the interconnection at this
7 time. They are as follows:

- 8 1. The primary sources of supply for the Town of Hudson and the
9 Company (in the Towns of Litchfield, parts of Pelham, and Windham)
10 are three gravel packed wells located in Litchfield owned by the Town
11 of Hudson as well as a seasonal interconnection between Hudson and
12 PWW know as Taylor Falls. All four sources have limited capacity.
13 The Hudson wells have come under scrutiny by the NHDES in recent
14 years but with greater interest over the past 24 months. Withdrawals
15 from two of the Hudson wells (Dame and Ducharme) have continued to
16 lower groundwater levels in the Darrah Pond Aquifer which indicate
17 that withdrawals are exceeding recharge to the aquifer. Lower
18 groundwater levels caused by the use of the Dame and Ducharme wells
19 have lowered the water level in Darrah Pond, thus causing the NHDES
20 to begin the process taking the action of declaring a surface water
21 quality violation against the Town of Hudson and their use of the Dame
22 and Ducharme wells. The third well (Weinstein) is currently being
23 replaced by the Town of Hudson because of well screen failure. Testing

1 of the replacement well has indicated similar dewatering of the aquifer
2 surrounding it. The result is likely to trigger a reduction in withdrawal
3 volumes from all three wells to prevent over drawing of the aquifers and
4 to reverse negative impacts to Darrah Pond. The Company, by
5 agreement with Hudson, is entitled to 15% of the water from the three
6 Hudson wells. Any reduction in their permitted withdrawal will reduce
7 the volume of water the Company is entitled to. Loss of production
8 volume from the wells would need to be made up through another
9 source, in this case Taylor Falls.

- 10 2. The Taylor Falls pumping station and interconnection pipeline is owned
11 by the Town of Hudson. It is operated seasonally when water demands
12 in Hudson and in the Company's service area exceed the capacity of the
13 Hudson Wells. The Taylor Falls station has a continuous capacity of
14 1,100 gallons per minute (gpm) with the second pump in reserve.
15 Reduction in the capacity of the Hudson wells would place additional
16 stress on Taylor Falls placing a higher and higher reliance on Taylor
17 Falls to meet more and more of the water demand east of the Merrimack
18 River. Average day water demand for the five towns is approximately
19 2,150,000 gpd based on an annual 365 day average. The Hudson wells
20 can produce 1,690,000 at their current permitted capacity. With the
21 Taylor Falls pumping station out of service, average day demand cannot
22 be met. Additional source capacity is required to meet NHDES
23 standards.

1 3. “Normal” or expected customer growth has continued to occur in the
2 five-town area east of the Merrimack River. New customers have been
3 added and distribution systems have expanded. This growth has placed
4 additional stress on the Hudson wells and Taylor Falls. The stress will
5 be further exacerbated by the expansion of the Litchfield water
6 distribution system to over 400 homes and businesses in the northern
7 end of Litchfield due to private well contamination from the chemical
8 compound perfluorooctanoic acid (PFOA).

9 4. The ongoing drought initiated in 2016 has demonstrated the
10 vulnerability of groundwater resources in southern NH. Access to
11 reliable alternate sources of water is critical in managing the effects of
12 drought now and in the future. PWW has two primary sources of
13 supply, Pennichuck Brook and the Merrimack River. Maximum day
14 withdrawals from the Merrimack River remain a small percentage of the
15 lowest statistical flows leaving sufficient capacity to meet the needs of
16 PEU now and into the future.

17 The interconnection offers a solution to the concerns listed above by providing an
18 alternative source to the three Hudson wells that will minimize the effects of
19 reduced water withdrawals from them. The interconnection offers back up and
20 redundancy to the Taylor Falls pumping station critical to meeting the demands of
21 Hudson and the Company. The interconnection will support service to the
22 additional Litchfield customers added to the system because of PFOA

1 contamination. And the interconnection offers greater operational and
2 management flexibility in managing drought conditions.

3 **Q. Will there be additional petitions made by the Company to the Commission**
4 **in support of the PEU and PWW interconnection project?**

5 A. Yes. The Company will be making two additional filings. Since the
6 interconnection pipeline will be installed on and under the bed of the Merrimack
7 River, the Company is required to petition the Commission in accordance with
8 RSA 371:17 for a license to operate and maintain the pipeline within waters of the
9 State. The second petition will present a special water purchase agreement
10 between PWW and PEU.

11 **Q. What is the purpose of the special water purchase agreement between PWW**
12 **and PEU?**

13 A. The petition will request a special wholesale water rate for PEU from PWW
14 through the interconnection pipeline. The wholesale water rate will be supported
15 by a cost of service study. Current projections and estimates result in a reduced
16 purchased water cost for PEU which will offset the expenses of the capital
17 investment and operating expenses that will be incurred from the construction and
18 operation of the interconnection while allowing PWW to achieve the required
19 revenue for providing service to PEU.

20 **Q. Can you explain the factors supporting a wholesale purchase agreement**
21 **between PEU and PWW?**

22 A. PEU currently has to purchase water above the 15% allowance from the Hudson
23 wells from Taylor Falls purchased by the Town of Hudson from PWW. Hudson

1 pays PWW \$2.3560 per ccf and in turn Hudson marks up that purchased water
2 20% resulting in PEU paying \$2.8272 per ccf. Under this arrangement, PEU pays
3 the Town of Hudson about \$494,000 per year for water purchased to meet the
4 demand of its existing customers and the additional customers added because of
5 PFOA and current development under construction. The capital cost for the
6 interconnection is estimated at \$3,000,000 of which \$2,400,000 will be paid
7 directly by PEU from the SRF loan and the remaining monies will be paid by
8 PWW and later recovered in rates from Pennichuck East Utility derived from the
9 cost of service study. The expenses for the interconnection will be approximately
10 \$300,000 per year based on principle & interest and property taxes. In addition to
11 the expenses associated with servicing the capital investment the Company will
12 incur purchased water costs from PWW and the Town of Hudson. The Company
13 anticipates the “break even” (the rate where the total expenses associated with the
14 interconnection plus purchased water from PWW/Hudson is equal to the rate of
15 purchasing all PEU water from Hudson with no interconnection expenses) to be
16 \$1.70 per ccf. This rate will generate an annual purchase of about \$190,219
17 resulting in an overall revenue requirement of about \$490,219 for the
18 interconnection project. The Company anticipates the volumetric rate defined by
19 the PWW-PEU cost of service study will be significantly less than \$1.70 per ccf
20 as the factors considered in the interconnection cost of service study are very
21 similar to the factors used in establishing the existing wholesale agreement
22 between PWW and Anheuser Busch.

23 **Q. Does the Company intend to complete all three projects in 2017?**

1 A. Yes, with the exception of final pavement restoration that may carry over into
2 2018 on the Hillcrest Road project as Litchfield may require trench repairs to pass
3 through a winter freeze/thaw cycle to account for any settlement before the final
4 pavement is applied. The PEU & PWW Interconnection will be completed in
5 2017. Final site stabilization and restoration may carry over into the spring of
6 2018, depending on weather conditions.

7 **Q. Please describe the estimated timeline required to complete the three projects**
8 **in 2017.**

9 A. The NHDES would like to finalize the loan documents associated with the three
10 loans on or before May 15, 2017. The NHDES cannot finalize the loan
11 documents without the NHPUC approving the proposed financing for this project
12 as well as the City of Nashua. The list below provides an estimated timeline for
13 the three projects:

14 Regulatory Approvals and Permits with Estimated Dates

- 15 1. Company Board Resolution approving SRF loan– January 27, 2017.
- 16 2. Shareholder approval of financing – March 21, 2017 (written confirmation
17 is pending).
- 18 3. File financing petition with Commission – March 31, 2017
- 19 4. NHPUC approval of Financing – request for order approving financing, on
20 or before April 18, 2017.
- 21 5. Sign SRF Loan Documents for all Projects – on or before May 15, 2017.

22 Maple Hills Project Design and Construction with Estimated Dates

- 23 1. Complete Engineering Design – March 30, 2017.

- 1 2. NHDES approval of proposed design – April 15, 2017.
- 2 3. Bid the water main replacement project – May 15, 2017.
- 3 4. Open bids for water main replacement project – June 20, 2017.
- 4 5. Construction begins after – July 15, 2017.
- 5 6. Project substantial completion – November 30, 2017.

6 Hillcrest Road Project Design and Construction with Estimated Dates

- 7 1. Complete Engineering Design – March 30, 2017.
- 8 2. NHDES approval of proposed design – April 15, 2017.
- 9 3. Bid the water main replacement project – May 15, 2017.
- 10 4. Open bids for water main replacement project – June 15, 2017.
- 11 5. Construction begins after – July 15, 2017.
- 12 6. Project substantial completion – November 30, 2017.

13 PEU – PWW Interconnection

14 See Exhibit JJB 4.

15 Q. Does this complete your testimony?

16 A. Yes.