

STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION

Docket No. DW 20-184  
Aquarion Water Company of New Hampshire, Inc.  
Request for Change in Rates

Direct Testimony

of

Douglas W. Brogan  
Engineering Consultant to Staff of the NH Department of Energy

March 2, 2022

1 **Q. Please state your name, by whom you are employed, on whose behalf you are testifying,**  
2 **and your business address.**

3 A. My Name is Douglas W. Brogan. I am a self-employed engineering consultant to the NH  
4 Department of Energy. My business address is 4 Russell Street, Concord, NH 03301.

5 **Q. Please indicate your education and professional background.**

6 A. Please see Attachment DWB-1, Statement of Qualifications, for my employment history and  
7 related background.

8 **Q. Have you previously testified before the New Hampshire Public Utilities Commission?**

9 A. Yes, on many occasions.

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

11 A. I would like to briefly address the merits of continuing the Water Infrastructure and  
12 Conservation Adjustment (WICA) program; and then address one proposed adjustment to  
13 that program.

14 **Q. Please describe the WICA program and how it was established.**

15 A. The WICA program is an annual rate adjustment surcharge mechanism that allows recovery  
16 of the costs of water main replacements and other eligible, non-revenue producing plant  
17 without waiting for the next full rate case. It was initiated as a pilot program in 2009 in DW  
18 08-098 and modified slightly in DW 12-085. In the latter docket, the program was continued  
19 as a pilot program pending a fuller evaluation of its merits in the next full rate case, which is  
20 the instant docket.

21 **Q. What are some of the criteria from past testimony and orders for evaluating the**  
22 **effectiveness of the program?**

23 A. A general list of such criteria includes whether the program accomplishes the following:

- 24 1) Provides the necessary incentive to increase Aquarion's rate of infrastructure  
25 replacement.
- 26 2) Mitigates rate shock.
- 27 3) Extends the time between full rate cases.
- 28 4) Helps reduce lost and unaccounted for water.
- 29 5) Yields greater reliability of the distribution system.

- 1 6) Includes parties in the review process before dollars are spent.
- 2 7) Has limited rate impact.

3 **Q. To what extent has the program been successful in these regards?**

4 A. One key success has been a substantial increase in main replacements, as indicated by the  
 5 numbers below. The numbers compare pre-WICA replacements to WICA-eligible  
 6 replacements beginning in 2010, the first year of eligibility under the program<sup>1</sup>.

	<b>Main Replacement Dollars</b>	<b>Feet of Main Replaced</b>
<b>Pre-WICA Annual Average (2002-2009)</b>	\$438,997	1,794
<b>WICA Annual Average (2010-2021)</b>	\$1,215,712	3,477
<b>Percent Increase Under WICA</b>	<b>177%</b>	<b>94%</b>

7

8 These results indicate not only a substantial increase in investment, but a near doubling of  
 9 feet of main replaced under the program.

10 **Q. Why is acceleration of main replacements important?**

11 A. Aquarion’s system dates from about 1907 - old enough to have deteriorating mains. The  
 12 system still has mains from 1910 and 1915 in service; and ample amounts of ‘bad’ pipe  
 13 materials (unlined cast iron, asbestos-cement, galvanized, etc.) that are more prone to leak,  
 14 break, and contribute to water quality, hydraulic and other problems.  
 15 Based on pre-WICA replacement rates, it would take some 400 years to replace every main  
 16 in the system - most or all of which would presumably have failed by then. The average  
 17 annual replacement under the WICA program cuts that figure nearly in half, to a little over  
 18 200 years - perhaps still higher than desirable but a far more reasonable number.<sup>2</sup>

19 **Q. Do you have any comment on other goals of the program?**

20 A. Briefly, I am not sure how realistic it is to expect improvement in specific parameters like  
 21 numbers of main breaks, water quality complaints, interruption of service complaints, and

<sup>1</sup> Numbers are totals for plant eligible under the WICA program, whether actually recovered through that program, through rate base in DW 12-085, or not yet recovered due to reaching a WICA rate cap in 2018.

<sup>2</sup> Both Aquarion and Pennichuck Water Works share an initial, general, high-level goal of 100 years in this regard - which neither has yet attained.

1 amount of lost water, after the first ten years of a program that currently replaces only  
2 about 0.5 percent of overall mains each year (albeit a higher percent of the most  
3 problematic ones). A review of some of the data in those regards indicates little in the way  
4 of demonstrated improvement, with the possible exception of lost water; however, lost  
5 water percentages are impacted by other efforts than infrastructure replacement alone. The  
6 goal of having a limited rate impact is partially built into the program in the form of rate caps  
7 of 5 percent per year and 7.5 percent between rate cases.

8 **Q. Are there other successes of, or benefits from, the program?**

9 A. The WICA program incentivizes coordination with town sewer work and town or state paving  
10 work, which is a long term benefit and cost saving for all concerned. It provides a degree of  
11 transparency and opportunity for the towns and regulators to provide input on specific  
12 projects. Aquarion already has a fairly comprehensive rating system in place for prioritizing  
13 individual pipe segments by the specific characteristics of each, including age, material,  
14 break history, criticality, hydraulic concerns and other factors.

15 **Q. Why is a financial incentive such as a WICA important?**

16 A. From a larger perspective, the issue of main replacements is one where it's better to get  
17 ahead of the problem rather than trying to catch up from far behind, as so many water  
18 systems across the country have found themselves doing. An incentive is particularly helpful  
19 because main replacements cost a lot of money, there is no external requirement driving the  
20 company to do them, and customers see only the disruption from the construction with little  
21 or no immediate perceived benefit.

22 **Q. What about the goal of extending the time between rate cases?**

23 A. From past orders it appears the company was chronically under-earning prior to  
24 establishment of the WICA program in 2009; but has been over-earning for much of the time  
25 since the last rate case in 2012. For that reason it is hard to evaluate the impact of the WICA  
26 program itself on extending the time between cases.

27 **Q. You mentioned a proposed modification to the WICA program. Please explain.**

28 A. The program was modified in DW 12-085 to exclude the first \$50,000 each year in costs of  
29 services, valves and hydrants as a means of limiting recovery of reactive, as opposed to

1 planned, replacements. For the following reasons I believe it is appropriate to increase this  
2 limit to \$70,000:

3 1) The numbers below indicate no measurable impact of the program on total dollars  
4 spent on these smaller eligible items.<sup>3</sup>

	<b>Hydrants</b>	<b>Services</b>	<b>Valves</b>
<b>Pre-WICA Annual Average (2002-2009)</b>	\$14,489	\$46,635	\$11,188
<b>WICA Annual Average (2010-2020)</b>	\$12,206	\$42,085	\$6,343
<b>Percent Change Under WICA</b>	<b>-16%</b>	<b>-10%</b>	<b>-43%</b>

5  
6 2) Replacement of services, valves and hydrants are of much smaller magnitude than  
7 main replacements, comprising only 5 percent of all WICA-eligible expenditures since  
8 inception of the program (even less when the \$50,000 limit is applied).

9 3) A review of various construction cost indices suggests an increase in the \$50,000 limit  
10 is needed. For example, application of the Turner Building Cost Index from second  
11 quarter 2013, when the limit was established, through fourth quarter 2021 would  
12 suggest in increase to \$72,000.

13 4) A higher limit would lessen Staff review time in years the limit is not reached.

14 While probably important to retain some level of incentive to replace these smaller items as  
15 they age, I believe an increase in the exclusion limit is appropriate, especially considering the  
16 current climate of inflation.

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

18 A. Yes.

<sup>3</sup> Numbers are prior to application of the \$50,000 limit.

## Statement of Qualifications for Douglas W Brogan

I received a BSCE degree from MIT in 1975.

My early work experience included employment with a consulting firm performing flood studies; with the NH Water Resources Board working in dam safety and related programs; two and a half years with the NH Water Supply and Pollution Control Commission performing construction inspection and other functions involving sanitary collection, treatment and training facilities; three years at the Portsmouth Naval Shipyard specifying radiological controls for submarine overhauls; and five years with a consulting firm as project engineer involved with design and construction of water distribution and storage facilities, water system studies and subdivision reviews.

My more recent experience includes 23 years (1989 - 2012) at the NH Public Utilities Commission, the last 20 as water/sewer engineer. From 2013 to 2017 and again from 2019 to present, I have provided engineering consulting services to the Commission (now Department of Energy) on water and sewer dockets. From 2018 to present I have also provided engineering consulting services to Omni Mount Washington on several dockets involving Omni at the Commission.

My responsibilities since 1991 in all of the above have generally involved review of physical facilities and operations, system improvements, and quality of service issues relating to regulated water and sewer systems.

I am a licensed Professional Engineer in New Hampshire.