STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

AQUARION WATER COMPANY OF NEW HAMPSHIRE

DOCKET NO. DW 12-085

DIRECT TESTIMONY
OF
CARL MCMORRAN

May 14, 2012

I. INTRODUCTION AND OVERVIEW OF TESTIMONY

Q. Mr. McMorran, please state your name and business address.

A. My name is Carl McMorran, and my business address is 7 Scott Road, Hampton, New Hampshire 03842.

Q. By whom are you employed and in what capacity?

A. I am the Operations Manager for Aquarion Water Company of New Hampshire, Inc. ("Aquarion" or the "Company").

Q. Please describe your educational background.

A. I have a Bachelor's Degree in Biology from Bucknell University and a Master of Environmental Science Degree from Miami University. I have also taken graduate level courses in business administration, and attended and presented at many water works seminars and conferences.

Q. Please describe your business/professional background.

A. I have worked for Aquarion Water Company of New Hampshire, Inc. ("the Company") since November 2008. As Operations Manager, I oversee all operations, maintenance, capital improvement and administrative activities for the Company.

From April 1999 through October 2008, I served as Production Manager for the Struthers Division of Aqua Ohio. I supervised a 6 million gallon per day ("MGD") surface water treatment plant, was responsible for source water protection and reservoir management activities, and oversaw operations and maintenance for major distribution facilities (tanks, boosters, etc.). I also had interim supervisory duties at other Aqua Ohio production facilities and acted as operations consultant for the City of Campbell's (Ohio) water system.

From August 1990 through March 1999, I served as Water Quality / Technical Services Manager for the Bangor (Maine) Water District. I supervised source water protection and watershed management activities, the water quality laboratory, regulatory compliance, cross connection, and metering and service activities.

From June 1982 through July 1990, I worked as an Environmental Protection Specialist for the Susquehanna River Basin Commission, which regulates water resources in Maryland, New York and Pennsylvania. I conducted water quality assessment surveys, water pollution control and hydropower regulation activities.

I currently hold Class IV Water Treatment and Distribution licenses in both New Hampshire and Maine. I previously held a Class IV Water System license in Ohio and a Class A Water System license in Pennsylvania. I also held a Lake Manager certification from the North American Lake Management Society from 1995 through 2008.

Q. Have you previously testified before the New Hampshire Public Utilities Commission ("PUC" or the "Commission")?

A. I have not provided live testimony before the PUC, but I did submit written pre-filed testimony in Docket DW 10-293 and DW 11-238, the Company's previous water infrastructure and conservation adjustment ("WICA") filings.

Q. What is the purpose of your testimony in this proceeding?

A. My testimony will (i) provide an overview of the Company's water system operations, (ii) detail the infrastructure improvements since the Company's last rate case ("DW 08-098") including WICA investments, (iii) discuss some of the Company's cost containment efforts, (iv) discuss the Company's new distribution center and office space, (v) elaborate on expanded maintenance activities along with their costs and benefits, and (vi) provide an update on the Company's infrastructure planning.

II. OVERVIEW OF THE COMPANY'S SYSTEM

Q. Please provide an overview of Aquarion Water Company of New Hampshire.

A. Aquarion Water Company of New Hampshire, Inc. is a wholly-owned subsidiary of Aquarion Water Company, which in turn is a wholly-owned subsidiary of Aquarion Company. The Company was incorporated in 1889 as Hampton Water Company, and first provided water service on July 4, 1907. Since that time, the Company has continued to grow to the point that it currently provides water service to an area of approximately 31 square miles. The Company serves approximately 9,100 customers along the New Hampshire seacoast in the Towns of Hampton and North Hampton and in the Rye Beach and Jenness Beach Precincts in the Town of Rye. The Company's main office is located in the Town of Hampton.

The Company's water system is operationally and hydraulically integrated to serve all three towns as a single system, rather than through three independent systems. Approximately, 76% of the Company's customers are in Hampton. There are few industrial customers that take service from the Company. In the summer, the Company's customer base increases with the activation of between 900 and 1,000 metered seasonal customers. Meters for these customers are typically installed in the spring and summer and removed in the fall.

As of December 31, 2011, there were 137 miles of main in the system. All meters and service connections in the system are owned by the Company. The Company also owns most of the land on which its structures are located. However, some source of supply land is leased through a long term lease agreement (Well No. 14 in North Hampton and Well No. 16 in Stratham). Other parcels are held through easements. The Company's distribution center and office are also leased in Hampton.

The water supply for the Company is obtained from a total of 18 wells, of which

11 are gravel packed wells in unconsolidated material (Wells No. 5 through 12, 14 and 16) and seven are deep bedrock wells (Wells No. 13A, 13B, 17, 18, 19, 20 and 21) (see Attachment CM-1 for a schematic plan of the system showing the sources of supply). Rated production capacity for the Company's sources of supply is 5.24 MGD. All wells are controlled by the Company's computerized Supervisory Control and Data Acquisition ("SCADA") system.

During 2011, the average daily demand was 2.54 MGD. The Company's peak day occurred on July 23 when the demand was 4.90 million gallons ("MG"). For the year, the Company produced 926 MG of water, of which 618 MG of water were sold, 186 MG were used for non-revenue producing purposes, and 122 MG of water were classified as unaccounted-for.

The Company's water treatment processes consist of disinfection and corrosion control. Treatment is consolidated for Wells 12, 13A, 13B, 16, 17, 18 and 19; for Wells 8A, 20 and 21; and for Wells 5 and 5A. Treatment occurs on site for all other wells.

The main pressure zone for the system covers most of the towns of Hampton and North Hampton. Pressure is controlled by the Exeter Road elevated tank. The Mill Road Standpipe and Booster is a pumped storage facility within this zone. The Hampton Beach Pressure Zone serves the Hampton Beach area, which is controlled by the Glade Path elevated tank. Water is supplied from the Main Pressure Zone through the Tide Mill Road and Kings Highway pressure reducing valve (PRV) stations, which are both metered. The Jenness Beach Pressure Zone serves the system in Rye and a small area in North Hampton. Pressure is regulated from the Jenness Beach Booster and the Maple Avenue and Willow Street PRV Stations, all three of which are metered. The Jenness Beach Booster draws from the Jenness Beach Tank. Tanks, pump stations, pressure reducing valves and chemical feed equipment are monitored through the SCADA system.

II. UTILITY PLANT ADDITIONS SINCE THE LAST RATE CASE

Q. Please provide an overview of the capital improvements that the Company has made to its system since its last rate proceeding Docket DW 08-098.

A. The Company uses an Integrated Water Resource Plan, a comprehensive review of the production and distribution components of the water system prepared in 2007 by its consulting engineers, Tata and Howard, to help prioritize capital projects. Since the Company's last rate case, it has implemented approximately $4.5 million of utility plant additions, $1.7 million of which have been included as part of the Company's two most recent WICA filings, Docket DW 10-293 and DW 11-238. The most significant capital improvement projects are as follows:

-Atlantic Avenue Main Replacement (Three phases) - $1,921,000

The Atlantic Avenue project is a multi-year project to replace approximately 6,000 feet of water main on Atlantic Avenue in North Hampton between Mill Road and Maple Road. This section is a primary transmission main from the Mill Road and Winnicut Road wellfields to the beaches. The original 8-inch cast-iron pipe was installed in 1954. After more than 50 years of service, it no longer provided desired fire flows, partly due to changing system requirements and partly due to declining pipe capacity from deterioration of the cast-iron. The old pipe also exhibited problems with discolored-water, leaks and breaks. The new main consists of 12-inch ductile-iron pipe between Mill Road and Woodland Road and 16-inch ductile-iron pipe from Woodland Road to Maple Road.

The total projected cost of the project exceeds $1,900,000, and therefore it has been phased over a number of years to mitigate the rate impact. In 2010, 2,145 feet of new pipe were installed between Mill Road and Woodland Road. In 2011, 2,120 feet of new pipe were installed between Woodland Road and the east side of the Little River. These first two phases of the project were completed at a cost of $1,186,898. The remaining length of approximately 1,735 feet will be replaced

in 2012 for a total projected cost of $1,921,000. The completed project will improve fire flows and overall reliability for this part of the system and its downstream service areas. Occurrence of discolored water and lost water in the immediate area will also be reduced.

The existence of the WICA program enabled the Company to construct the project over three years, rather than a longer period, because it allowed the Company to begin recovering the costs associated with its investment without having to wait for its next general rate case. An investment of this size exceeded the amount of available capital for a single year, and the Company would not have been in a position to construct the project over a three year period without the interim rate relief offered by the WICA.

-Cross Country Easement Main Replacement--$204,500

This project replaced 1,100 feet of deteriorated pipe running cross country (i.e., not parallel to a street) from Pond Path in North Hampton to Fairway Drive in Rye. The original pipe was installed in 1983 to improve fire flows in the Jenness Beach Pressure Zone. Although installed with standard pipe materials and methods, the original pipe exhibited premature deterioration due to highly-corrosive soil at a localized point where the pipe crosses under a stream. Subsequently, main breaks started occurring here after only 20 years in the ground, a fraction of the pipe's expected life span. In addition to being more difficult to access and fix, owing to being in the woods well off the nearest road, the breaks also caused erosion and siltation on the Abenaqui Golf Course.

The Company was able to complete the project at a lower than average cost because it was done using trenchless technology (pipe bursting), which significantly reduced the amount of digging needed compared to traditional open trench work. Also, because the pipe did not lie under a roadway, costs for paving and police details were much reduced. In addition, the new pipe is plastic, which is less expensive than iron pipe. The completed project restored desired fire flows

from the Main Pressure Zone into the Jenness Beach Pressure Zone and minimized the probability of main breaks there for the foreseeable future.

-Post Rd/I-95 Bridge Main Support Improvement--$145,480

This project involved replacing the supports holding the water main to the Post Road bridge in North Hampton that spans I-95. The pipe supports, which were originally installed in 1964, had deteriorated to the point that pieces were falling onto the roadway below. A catastrophic failure of one of the supports could have broken the main and interrupted supply from the Winnicut wellfield, which would have reduced the Company's production capacity by 40%. Therefore, replacement of the supports was required for public safety and water system reliability.

-Mill Road booster pump station- $74,320

This project involved replacing the booster pump and upgrading the pump station at Mill Road. The old 250 gallon-per-minute ("GPM") pump was replaced with a new 500 GPM pump. Other new equipment installed consisted of a variable frequency drive on the pump, new electrical wiring, SCADA telemetry and controls, and a natural gas-fueled generator with an autotransfer switch. The improvements provide more efficient, effective and reliable use of the volume of the new Mill Road Tank.

-*Well Pump Replacement (Well No 5A)- $174,084*

Well 5, which was installed in 1937, is the oldest well in the Company's system. After more than 70 years of service, the original well screen and surrounding aquifer deteriorated to the point where redevelopment efforts failed to restore the well's original production capacity. The Company installed a replacement well and retained the original well as an emergency backup. Installation of the new well included a new pump and variable frequency drive to optimize power cost.

-*Well 9 Station Improvement- $ 112,648*

In service since 1957, Well 9 is one of the Company's larger capacity wells. Because of changes in regulatory and operating requirements over time and the age of the facility overall, a number of upgrades were required. In particular, the electrical system needed to be brought into compliance with the current electrical code, and three PCB-filled transformers that constituted a contamination risk to the well needed to be removed and replaced with dry transformers. In addition, the natural gas-fueled backup engine was replaced with a natural gas-fueled generator capable of powering the entire station, including the electrical system. The existing engine was not as reliable as needed and was only capable of powering the pump. Upgrading these systems reduces the probability of a failure that would put the station out of service, and improves the overall reliability of the station.

-Redevelopment of Wells 11, 14, 17, 20 & 21-$92,662

The Company redeveloped Wells 11, 14, 17, 20, and 21 by removing the pumps and cleaning the well screens and aquifers. All production wells exhibit gradual loss of capacity over time due to physical, chemical and biological changes in the well screens and surrounding aquifer. To maintain maximum production capacity, the Company periodically redevelops each well when they begin to exhibit a significant loss in production capacity.

- Replacement of SCADA Radios- $ 69,461

The SCADA system allows the Company staff to observe and operate the water system remotely. It is programmed to monitor system conditions and send alarms to on-call staff when problems occur. The SCADA system consists of programmable logic controllers ("PLCs") at each facility and a central operations computer for control, monitoring, record keeping and alarms. Information is transmitted between the PLCs and central computer via radio telemetry. The radios installed with the original SCADA system in the 1990s were obsolete technologically and could not be reconfigured to comply with changes in new FCC narrow band-width requirements. The radios also suffered from interference

from other nearby radio systems, which interrupted SCADA transmissions at times. The old radios were replaced with new digital equipment and relicensed at a new FCC frequency with no interference problems. The new radio system ensures reliable transmission of data and alarms between each remote facility and the central control computer.

-Meter Replacement Program-$606,000

As discussed below, the Company installed 4,369 new meters over a three and a half year period.

Q. Please discuss the Company's meter replacement program and the associated capital investment.

A. Between April 2008 and December 2011, the Company invested a little over $606,000 on new radio-read meters. In total, the Company installed 4,093 5/8-inch meters; 106 1-inch meters; 56 1 ½-inch meters; and 114 2-inch meters. The percentage of radio read meters in service increased from approximately 45% in 2008 to 83% at the end of 2011. The Company is on pace to complete the conversion to all radio read meters in 2013.

Once all services have radio read meters, the Company will be able to begin monthly meter reading and billing. Monthly billing will result in customers receiving smaller bills on a monthly basis, rather than larger quarterly bills, improve the Company's accounting of metered consumption, and increase the likelihood of detecting internal plumbing leaks earlier. The Company is piloting monthly reading and billing procedures on seasonal accounts in 2012.

IV. Renewal of WICA Program

Q. Please comment on your view of the WICA program from an operations perspective.

A. WICA is a valuable and beneficial program, and should be renewed on a permanent basis. WICA facilitates larger non-revenue producing projects that are

needed to replace aging infrastructure, such as older mains, by providing more timely recovery of the associated costs. In the absence of an ongoing, reasonably aggressive pipe replacement program, the frequency of main breaks, leaks and discolored water is likely to increase, and fire flow rates will decline over time. These effects will ultimately result in more inconvenience, less satisfaction, and higher costs for customers.

The WICA program also facilitates more active regulatory oversight for WICA projects, and promotes communication and feedback from the PUC's staff and other interested parties. Under the program as currently structured, project proposals are reviewed and qualified for the program prior to construction, and after completion, final project costs are approved by the PUC prior to inclusion in rates. The WICA program also results in smaller, periodic rate increases compared to the larger ones that would otherwise result from recovering WICA-related costs only through general rate cases.

III. COST SAVINGS INITIATIVES SINCE THE LAST RATE CASE

Q. What steps has the Company undertaken to mitigate increases in its operating expenses since its last rate case?

A. In addition to its ongoing efforts to contain costs, the Company achieved a measure of cost control in its procurement of electricity and chemicals.

Q. What did the Company do to attempt to control its electricity expense?

A. Because of the volatility of electric rates from the local electric utilities (PSNH and Unitil) , the Company explored the potential to lock in a fixed rate from a market supplier. The goal was to find lower rates that had been paid in recent years, and reduce the variability in budgeting and managing electric costs. In 2010, the Company selected Nextera to supply electricity to all of the Company's facilities at a flat rate of $0.0814/kwh for a three year term beginning January 2011. This rate is approximately 10% lower than the average rate over

the previous two years ($0.896/kwh). The flat rate has the potential to generate substantial savings for the Company, and adds stability to energy costs, which previously ranged from $0.0866 to $0.1038/kwh, depending on the particular facility being served and the time period involved.

Q. Please explain what steps the Company took to decrease its chemical expenses.

A. The Company has taken two actions to optimize chemical costs, resulting in a reduction of annual chemical costs from $62,294 to $48,078 since the last rate case. First, chemical purchases are bid annually to receive the most competitive pricing. Second, a process change was made for corrosion control by switching from the use of potassium hydroxide to sodium hydroxide. Potassium hydroxide unit costs increased 325 % from an average of $1.97/gal in 2008 to $6.41/gal in 2010. By comparison, sodium hydroxide currently costs $2.395/gal.

Q. What other cost saving actions have been implemented?

A. The Company was able to reduce the cost of water quality compliance testing by approximately $16,000 per year. The number of regulatory compliance samples was reduced by obtaining waivers from DES for annual testing of synthetic organic compounds at certain wells where the risk of contamination has been shown to be extremely low. The Company also applied for and received approval from DES to reduce the number of bacteria samples collected in the distribution system each month. The reduction was possible because the number of samples is determined by size of the population served. Previously, the number of compliance samples was based on an assumed service population that inaccurately counted summer visitors, which resulted in an inappropriately higher number of samples being required. The population estimate was revised based on actual demand and service connections, resulting in the appropriate number of samples for the actual population served.

In addition, the Company participated in a DES leak detection program that enabled it to take advantage of an ARRA (American Recovery and Reinvestment Act) funded contractor, rather than hiring its own contractor, thereby saving approximately $10,000. The DES-hired contractor performed the leak survey from March through May 2011, finding 17 leaks.

Lastly, over the past several years, the Company refined the management of its cross connection control program and backflow preventer test contractor, which has reduced annual costs by approximately $5,000.

IV. RELOCATION OF DISTRIBUTION SHOP / NEW OFFICE

Q. Recently, the Company relocated its distribution center and consolidated it office location into a single facility in Hampton. Please explain the reason for this move and the costs associated with it.

A. Previously the Company's distribution center was located at 5 Mill Road in North Hampton, while the office was 2 ½ miles away at 1 Merrill Industrial Drive in Hampton. The distribution center has been located at 5 Mill Road, within one of the Company's wellfields, for many years. Over time, DES has adopted source protection regulations that make this location of the distribution shop problematic because the Company's activities within the protective radius of the wells are inconsistent with Best Management Practices.

In considering the options for new space, the Company investigated other available industrial spaces in Hampton and North Hampton. The Company also considered building a new facility, but the estimated cost was over $1,000,000 and construction would have taken several years to complete, thereby delaying the relocation the distribution center out of the wellfield. It also would have required a significant diversion of capital from projects with a far more direct impact on the Company's ability to provide safe, reliable service, such as main replacements and new source exploration.

Ultimately, the Company decided to consolidate its office space needs with the distribution shop in on location. Although the monthly rent of the new facility is higher than what was previously paid for the office space occupied by the Company on Merrill Industrial Drive, the total cost is less than leasing a separate industrial space for the distribution shop in addition to the existing space at Merrill Industrial Drive. The new office space also resolves some business deficiencies with the existing office space. It was on the second story with no elevator; and the stairs were a physical challenge for some of our older, walk-in customers. The office also had no ADA access, and did not meet current security requirements. In addition, travel between the distribution shop and the office resulted in additional fleet miles being incurred and inefficient use of labor time. The separation of office and field staff also impeded communications, management efficiency and emergency operations. As a result, the new location at Scott Road is expected to produce some cost savings over maintaining two separate locations and improve the Company's operating efficiency, level of customer service, and compliance with its legal and regulatory obligations.

V. MAINTENANCE ACTIVITIES AND BENEFITS

Q. Please describe the Company's efforts to improve and optimize major maintenance programs.

A. Effective equipment maintenance is key to maintaining reliable, safe service at optimum cost. The Company commits a significant amount of resources (labor, contractors and materials) to equipment maintenance to meet these goals. The challenge is to find the best balance of resource allocation between routine (scheduled) and reactive (break / fix) maintenance activities that ensures reliability and safety while minimizing costs.

In 2011, the Company concentrated on making more effective use of its SAP information system for maintenance management, especially for production

equipment. Company staff reviewed equipment lists and maintenance procedures, refined and automated maintenance schedules, and improved the use of SAP for tracking maintenance activities. This is an on-going process that will continue to evolve through experience.

Valve maintenance was identified in the last rate case as an area of concern and has been a lead program for optimization by the Company through SAP. In 2011, the Company exercised 426 valves (approximately one third of all system valves), 4% of which needed maintenance. Approximately half of the maintenance performed was due to problems with the valve box, not the valve itself, which shows a high level of reliability for system valves. The SAP system provides the Company with the ability to more fully document this maintenance process.

In addition, maintenance programs for wells, pumps, production meters, chemical feed systems, chemical analyzers, electrical systems, generators, boosters and tanks have been formalized to more closely track regulatory and industry standards and to optimize long-term cost and performance.

Q. Does this conclude your testimony?

A. Yes.