

TAB 9

Testimony of David Fox

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**STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION
DW 20-117**

**DIRECT TESTIMONY
OF
DAVID M. FOX, MANAGER
RAFTELIS FINANCIAL CONSULTANTS, INC.**

**IN THE MATTER OF THE
REVISION OF RATES
FILED BY
HAMPSTEAD AREA WATER COMPANY**

November 3, 2020

PREFILED TESTIMONY OF
David M. Fox

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4 **Q: Please state your name and business address?**

5 A: My name is David M. Fox and my business address is 20 Main St. Suite 301, Natick, MA 01760.

6

7 **Q: By whom are you employed and in what capacity?**

8 A: I am a Manager of Raftelis Financial Consultants, Inc. a nationwide consulting firm specializ-
9 ing in water and wastewater rate and financial planning studies.

10 **Prior Experience**

11 **Q: Please describe your qualifications and experience.**

12 A: I have a bachelor's degree in Economics from Coastal Carolina University in Conway, SC and
13 a master's degree in Economics from Clemson University in Clemson, SC. After graduating
14 in 2009, I was employed by Raftelis Financial Consultants, Inc. (Raftelis). Over the course of
15 my career, I have worked on over 100 water and wastewater rate and financial studies within
16 the United States. I have also had the opportunity to work on numerous financial feasibility
17 studies in support of revenue bond issues, capital program financing support, customer rate
18 affordability analyses, utility valuations studies, and rate benchmarking surveys. I currently
19 lead Raftelis' New England efforts based out of our office in Natick, MA.

20

21 **Q: Do you belong to any professional organizations or committees?**

22 A: Yes, I am a member of the American Water Works Association, the New England Water
23 Works Association, Massachusetts Water Works Association, and the Rhode Island Water
24 Works Association. I also sit on the Financial Management Committee of the New England
25 Water Works Association. For the American Water Works Association, I also contributed to
26 the most recent (7th edition) of the M1 Manual on rates – *Principles of Water Rates, Fees,*
27 *and Charges.*

1

2 **Q: Have you previously been involved in matters before state regulatory commissions on rate**
3 **related matters?**

4 A: Yes. I have submitted or prepared expert cost of service analyses in support of water rate
5 filings at the Massachusetts Departments of Public Utilities, and Rhode Island, New Hamp-
6 shire, and Maine Public Utilities Commissions.

7 **Summary**

8 **Q: What is your role in this proceeding?**

9 A: Working with the staff of and advisers to the Hampstead Area Water Company (HAWC), I
10 have prepared a cost of service study and developed new rates based on *pro forma* revenue
11 requirements as developed and presented by Mr. St Cyr in his pre-filed testimony and cor-
12 responding schedules. My testimony and supporting schedules include a cost of service
13 study that allocates the functional costs to various cost components, and then distributes
14 those costs to customer classes and types of service. Finally, I utilized these data and devel-
15 oped new cost of service based rates and charges, along with corresponding customer im-
16 pacts.

17

18 **Q: What was the basis for your cost of service study?**

19 A: In general, I followed the cost of service methodology as outlined in the guidance provided
20 in the most recent edition of the American Water Works Association's M1 Manual of Prac-
21 tice. This is the most widely accepted and used cost allocation method used to calculate
22 water rates.

23

24 **Q: Will you summarize your findings and conclusions regarding HAWC's cost of service and**
25 **proposed rates?**

26 A: Yes.

- 27 • Based on the results of my cost of service study, there will not be an equal percentage
28 or across-the-board change to all of HAWC's existing tariffs. Volumetric rates, fixed

1 charges, and fire protection charges are proposed to be adjusted by varying amounts to
2 equitably recover the cost of service.

- 3 • HAWC is proposing to implement a two-tier inclining block volumetric rate struc-
4 ture of all of its single-family residential customers. The first tier cutoff is pro-
5 posed to be established at a monthly amount of 4 hundred cubic feet (Ccf) in or-
6 der to reflect an essential amount of water for a typical single-family residential
7 home. HAWC's volumetric rate will increase for single-family residential cus-
8 tomer's first tier from \$6.11 to \$6.83 per Ccf. All consumption above the 4 Ccf
9 cutoff will increase from \$6.11 to \$10.24 per Ccf.
- 10 • HAWC is proposing to maintain a uniform volumetric rate for all other non-sin-
11 gle-family residential customers. The uniform volumetric rate will increase from
12 \$6.11 to \$9.31 per Ccf.
- 13 • The existing customer charge for a 5/8" customer, which comprise approxi-
14 mately 98% of HAWC's customers, will increase from \$10.00 per month to
15 \$16.33 per month. All other meter sizes will increase at various percentage in-
16 creases to coincide with cost of service. Please refer to my accompanying sched-
17 ules for detail with regard to the rates for other meter sizes.
- 18 • Public fire protection charges, assessed per hydrant, are proposed to increase
19 from \$200 to \$1,419 annually. Given that the current hydrant charge adequately
20 reflects the readiness-to-service or availability of service aspect of a typical fire
21 charge, HAWC's existing Annual Availability charge of \$2,000 is no longer re-
22 quired and is proposed to be removed from HAWC's tariff.
- 23 • Private fire protection charges will all decrease by varying percentages based on
24 the size of the connection. Please refer to my accompanying schedules for more
25 detail. The reason private fire protection is decreasing is because HAWC is pro-
26 posing for the first time to assess private fire protection charges to homeowners
27 with fire protection systems. This amounts to an additional 1,084 connections
28 assessed a private fire protection charge.

1 **Content of Schedules**

2 **Q: Please describe the schedules included with your pre-filed direct testimony.**

3 A: I have included 7 main schedules, several of which include supporting schedules. The sched-
4 ules included in this filing are:

- 5 • Schedule DF 1 - This schedule presents the test year (2019) along with the
6 adjustments that were used to derive the *pro forma* revenue requirements.
7 Please refer to Mr. St Cyr's testimony and schedules for more detail on reve-
8 nue requirements and adjustments.
- 9 • Schedule DF 2 - This schedule presents the units of service including the
10 number of meters by size and billing frequency, the number of private and
11 public fire services by size of connection, billable water consumption, and
12 water demand and assumptions with regard to required flow during fire
13 events. This schedule also presents meter and demand equivalents, which I
14 will cover later in my testimony.
- 15 • Schedule DF 3 – This schedule presents the allocation of the *pro forma* reve-
16 nue requirements, miscellaneous revenues, plant-in-service records, and de-
17 preciation to general water, fire protection, and customer related charges.
18 These values are used in later schedules to derive the proposed rates.
- 19 • Schedule DF 4 – This schedule summarizes the allocation of total fire service
20 to public and private service, and proposed fire protection calculations and
21 charges. This schedule also presents the proposed customer charges and
22 their derivation, and the proposed water volumetric charges and their deri-
23 vation.
- 24 • Schedule DF 5 - presents a summary of the current rates and the proposed
25 rates derived from the cost of service study.
- 26 • Schedule DF 6 - presents the impact of the proposed rates and charges on
27 various types of customers. A typical HAWC customer uses approximately 5
28 Ccf per month.

1 • Schedule DF 7 - contains the proof of revenues, showing the annual revenues
2 under the existing and proposed rates. Due to the rates being rounded to
3 the nearest penny, the proposed rates provide slightly different total reve-
4 nues from those required.

5 **Units of Service**

6 **Q: Did you analyze water sales, numbers of meters and fire service accounts?**

7 A: Yes. Schedule DF 2 presents the number of meters by size, the number of public fire hydrants
8 and private fire services by size, and metered water use by class.

9

10 **Q: You present several meter-related equivalents on Schedule DF 2. Please explain these.**

11 A: For the purposes of allocating fixed service charges to meter sizes, I used actual consumption
12 equivalents. In other words, these equivalents are based on the actual average demand of
13 the various meter sizes in HAWC's service area. For example, on average a customer with a
14 1" inch meter uses approximately 5 times the amount of water that a customer with a 5/8"
15 meter uses.

16

17 To determine the appropriate fire protection charges I determined the potential water de-
18 mand from hydrants and private fire services. The demand through a closed pipe under
19 pressure is proportional to the diameter of the pipe to the 2.63 power (Hazen Williams for-
20 mula for flow through a pipe under pressure). The flow is not proportional to the square of
21 the diameter because of head (flow) losses against the pipe walls. Smaller pipes have more
22 pipe wall per square foot of area. These equivalents were used to determine the relative
23 cost-based charges for each pipe size.

24 **Rate and Charge Calculations**

25 **Q: Please describe what you did next.**

26 A: Once *pro forma* revenue requirements and the units of service had been established, I began
27 to functionalize and allocate the costs to types of service (water, fire protection, customer).

1 Please refer to Schedule DF 3 for presentation of the functionalization of revenue require-
2 ments. Ultimately said functionalized revenue requirements were then utilized to calculate
3 cost of service based rates. The first such assignment led to the derivation of the customer
4 charges.

5
6 **Q: What was the next cost of service element that you allocated?**

7 A: I then allocated revenue requirements to customer related charges. In the case of these
8 charges, the revenue requirements were split into two components: (a) those costs related
9 to meters and service pipes (vary by the size of the meter and service) and (b) those costs
10 related to billing, meter reading, and collections (vary by the number of billings).

11
12 **Q: Please explain the derivation of your proposed service charges.**

13 A: For the metering component of the service charge, I calculated a cost per equivalent meter,
14 and then scaled this cost up by meter size based on the aforementioned meter equivalents.
15 I then calculated a per-bill charge for the billing component (same for all meter sizes) and
16 added that to each meter component.

17
18 **Q: How did you then proceed with your cost of service and rate calculation?**

19 A: For those revenue requirements allocated to general water, I simply divided into that
20 amount the rate year billable units to arrive at a per-Ccf rate. I then calculated class-based
21 rates in order to establish a two-tier inclining block rate structure for single-family residential
22 customers and a uniform rate for non-residential customers. For the two-tier volumetric rate
23 structure, I established a 4 Ccf cutoff to reflect an essential amount of water usage for a
24 typical residential customer, and assigned a 1.5 times differential to the rate applied to con-
25 sumption above this amount in order to reflect the additional cost of service and provide a
26 conservation price signal. The non-residential volumetric rate was calculated to be equiva-
27 lent to the system-wide per-Ccf rate.

1 **Q: How did you then proceed with your cost of service and rate calculation?**

2 A: I then moved to the derivation of fire protection charges.

3

4 **Q: Please explain how you calculated the proposed fire protection charges.**

5 A: Because the costs associated with public fire hydrants should not be charged to private fire
6 services, I first removed the costs directly related to hydrants from the total fire service allo-
7 cation. Based on the relative potential demands presented on Schedule DF 2, I split the
8 remaining fire service demand costs (net of hydrant expenses) to public and private fire ser-
9 vice. In the case of the public fire service charges I added the allocated public fire service
10 costs to the direct hydrant expenses and divided by the total number of public fire hydrants
11 in HAWC's system or arrive at an annual per hydrant charge. To derive the private fire service
12 charges, I simply determined the number of private fire service equivalents using the fire
13 demand factors described earlier in my testimony. This cost per equivalent was then applied
14 to the equivalency factors for each private fire service size to derive the fire service charge
15 for each size private fire service.

16

17 **Q: Have you provided a summary of the proposed rates and its impact on customers?**

18 A: Yes. Schedule DF 5 presents HAWC's current rates compared to the proposed rates along
19 with the annual percentage change. Schedule DF 6 presents the impact of the proposed rates
20 to various customer types. Please note again that a typical HAWC customer uses approxi-
21 mately 5 Ccf per month.

22

23 **Q: Have you provided a revenue proof summary?**

24 A: Yes. Schedule DF 7 presents HAWC's existing and projected revenue, by rate component.

25 **Conclusion**

26 **Q: Does this conclude your testimony?**

27 A: Yes, it does.