

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
PUBLIC UTILITIES COMMISSION

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DIRECT TESTIMONY

OF

DAVID F. RUSSELL

FILED ON BEHALF OF THE BRISTOL COUNTY WATER AUTHORITY

IN THE MATTER OF

PROVIDENCE WATER SUPPLY BOARD

DOCKET 4406

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AUGUST 23, 2013

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1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is David F. Russell, and my business address is 15 Titcomb  
4 Street, Suite 300, Newburyport, Massachusetts 01950.

5  
6 **Q. On whose behalf are you testifying in this case?**

7 A. I am testifying on behalf of the Bristol County Water Authority ("BCWA").  
8

9 **Q. What is the nature of your involvement in this case?**

10 A. I am working with the BCWA as an expert consultant and witness to assist in  
11 its intervention in this Docket. Specifically, I have been asked to review the  
12 rate filing submitted by the Providence Water Supply Board ("Providence" or  
13 "Providence Water") to the Rhode Island Public Utilities Commission ("PUC"  
14 or "Commission"), and to review Providence's revenue requirements, cost of  
15 service and rate design and analyze their impact on the wholesale class of  
16 customers in general, and the BCWA in particular.  
17

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

19 A. This testimony presents my findings and conclusions regarding my review of  
20 Providence's rate filing, including; the proposed revenue requirements, the  
21 cost allocations to customer classes, and certain rate design and cost issues.  
22 It should be noted that my testimony may require supplementation or  
23 modification after review of additional discovery and testimony that may be  
24 submitted by the other parties in this Docket.  
25

26 **Q. What is your present occupation?**

27 A. I am a professional consultant specializing in utility management, economics  
28 and rates. I am the owner and founder of my own consulting business -  
29 Russell Consulting. I specialize in providing the following professional  
30 services to cities, towns, municipal utilities, regulatory agencies and

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1 consumer advocacy groups: management reviews and audits, needs  
2 assessment and facilities planning, utility economics and rate studies,  
3 determination of component and total revenue requirements, cost-of-service  
4 studies, demand management and conservation programs, expert witness  
5 services, utility contracts and negotiations, feasibility studies, system  
6 appraisals and related regulatory/institutional studies.

7  
8 **Q. Please summarize your training and experience.**

9 A. I have 40 years of experience as a professional engineer, utility manager and  
10 consultant. My formal education consists of a B.S. Degree in Electrical  
11 Engineering from Rutgers College, an M.S. Degree in Engineering  
12 Management from Northeastern University and an M.A. Degree in  
13 Economics from Rutgers University. I am a Registered Professional Engineer  
14 in the States of Massachusetts (Registration Number 28342), New Jersey  
15 (Registration Number 26512) and Florida (Registration Number 75247). For  
16 nearly all my career I have been actively involved in the management and  
17 control of utility businesses, from small public water systems to large multi-  
18 state, fully integrated, private electric companies.

19  
20 I have provided expert witness testimony on many occasions before several  
21 state public utility commissions, legislative committees and Superior Courts,  
22 including testimony on matters directly related to utility planning, forecasting  
23 and needs assessment, least cost planning, capital improvements, revenue  
24 requirements, cost of service studies and rate design, and demand  
25 management/conservation programs. I have prepared numerous rate studies  
26 for water and wastewater utilities, and both gas and electric utilities within this  
27 country and internationally. I have also evaluated and critiqued many other  
28 utility rate studies prepared by others as both a regulator and as a consultant.

29  
30 Most recently and going back over 15 years, I provided testimony in the last  
31 four rate cases proposed by the largest private water company in

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1 Massachusetts (Aquarion Water Company and its predecessor  
2 Massachusetts-American Water Company), representing the five towns  
3 served by that company. I also recently reviewed and evaluated a rate study  
4 for two large customers of a South Carolina utility, and am currently  
5 reviewing and evaluating a five year financial plan and rate study prepared by  
6 the Guam Water Authority for the Administrative Law Judge on that Island.

7  
8 Early in my career, I was directly employed by two state regulatory agencies  
9 – The Massachusetts Department of Public Utilities (“DPU”) and the New  
10 Jersey Board of Public Utilities. At the Massachusetts DPU, I held the  
11 position of Chief Engineer for two years, and I was assigned the role of  
12 Hearings Officer in several cases, and also drafted several Orders for the  
13 Commission's consideration and approval. At the New Jersey Board of  
14 Public Utilities, I was employed as a consultant to the Board's Chief  
15 Economist.

16  
17 **Q: Do you belong to any professional organizations or committees?**

18 **A:** Yes, for 25 years I have been an active member of the American Water  
19 Works Association (AWWA) and its regional affiliate - the New England  
20 Water Works Association (NEWWA). As a member of AWWA's Rates and  
21 Charges Committee I had responsibility for revising and updating three  
22 Chapters of their publication entitled, "Principles of Water Rates, Fees, and  
23 Charges," which last year was republished as the sixth edition of that manual  
24 ("M1"). For three years ending in September 2012, I held the position of  
25 Assistant Treasurer for the NEWWA, which included being a member of its  
26 Executive Committee and Board of Directors. I have been a member of  
27 NEWWA's Investment Committee for several years, and have chaired the  
28 Financial Management Committee for many years. I am also a member of  
29 the Florida section of the AWWA.

30

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1 For additional details, please see my resume, which is attached as Exhibit  
2 No. DFR-1.

3

4 **II. DOCKET OVERVIEW**

5 **Q. At the outset how would you characterize this rate increase proposal?**

6 A. Providence's proposed increase comes less than two years since its last  
7 increase. The proposed overall rate revenue increase is 22.4%. While this  
8 may not rise to the level of causing "rate shock," it is a fairly large increase,  
9 particularly, since rates were increased by 13.7% three years ago.  
10 Furthermore, while Providence proposes an Across-The-Board increase for  
11 retail customers, its original proposal called for a 32.8% increase for  
12 wholesale customers. The original proposed wholesale increase – when  
13 combined with the prior increase – would have resulted in a compounded  
14 increase to wholesale customers of 51% over a three year period. These  
15 increases come at a time when the local economy is weak at best,  
16 unemployment is very high, and incomes (for those fortunate to have a job)  
17 have been declining for several years. Thus, the ability to pay for large  
18 increases has diminished considerably for many ratepayers, including the  
19 many retail customers served by Providence's wholesale customers.

20

21 I would also point out that on the surface Providence Water's initial filing  
22 didn't seem to make sense in that the increase to wholesale customers as  
23 proposed would have been approximately 50% higher than the increase to  
24 retail customers given that about 55% of the increase is due to improvements  
25 to the retail distribution system that provides no benefit to wholesale  
26 customers. Portions of my testimony will make this discrepancy clear.

27

28

29

30

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1 **Q. What are your general impressions of this case and the proposed**  
2 **increase?**

3 A. The exact amount of the Providence's proposed increase, as well as the  
4 proportion of the increase it intends to pass on to wholesale customers, has  
5 been difficult to pin down for several reasons:

- 6 • On March 29, 2013, Providence filed its original application to collect  
7 additional revenues.
- 8 • On April 17, 2013, Providence submitted a supplemental filing, with a  
9 modified cost of service analysis.
- 10 • There were significant errors in the original and supplemental filings.
- 11 • As a result of the discovery process, Providence made corrections and  
12 modifications to several allocation factors in their Cost of Service Study  
13 (COSS). As a result, Providence has indicated it will correct or modify several  
14 others in its rebuttal testimony. Specifically, Providence stated in response to  
15 Div. 3-1 that "considering the considerable cost shifts and rate impacts" of the  
16 changes it made to its COSS, it "retains the right to investigate the same, and  
17 propose further changes to [its] study in [its] rebuttal testimony in an effort to  
18 mitigate rate shock..." As there are many interrelated moving parts in the  
19 COSS, this leaves a great level of uncertainty as to what rates and cost  
20 allocations Providence will propose in its rebuttal testimony.

21  
22 **Q. How have you organized the remainder of your testimony?**

23 A. My testimony is separated into three broad topics – Cost of Service Study  
24 Evaluation, Revenue Requirements and Rate Design.

25  
26 **Q. Have you prepared a revised COSS?**

27 A. No, I have not. As set forth both above and herein below, Providence  
28 agreed to make a number of changes to the COSS model Mr. Smith  
29 prepared. Each individual change will affect many other parts of the  
30 model. Thus, I will not prepare a revised COSS until I see the changes

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1 Providence makes in its rebuttal testimony based on issues raised in  
2 discovery and the Division's and Intervener's direct testimony. When I file  
3 my surrebuttal testimony I will be able to file a revised COSS, if necessary,  
4 which will incorporate any changes agreed to by Providence and any  
5 further changes I may recommend.  
6

### 7 **III. COSS Evaluation**

#### 8 **Overview**

9 **Q. Please provide an overview of your analysis of Providence's Cost of**  
10 **Service Study.**

11 A. Because the Division and other interveners are likely to address expense and  
12 revenue issues in detail, I focused my attention on the COSS, and  
13 particularly the relative percentage of costs each customer class will be  
14 responsible for, and the percentage of rate revenues each class will be  
15 required to contribute to the total. The adjustments I recommend below will  
16 result in a much smaller increase to wholesale customers than proposed by  
17 Providence.  
18

19 Each of the adjustments I recommend should be incorporated into the  
20 revised COSS Providence Water submits with its rebuttal testimony. Until all  
21 of these adjustments, and those proposed by others and agreed to by  
22 Providence Water, are incorporated into the COSS, it is very difficult to state  
23 what the precise increase should be, or how the total costs should be applied  
24 to each customer class.  
25

#### 26 **Corrected Net Plant Values**

27 **Q. What corrections should Providence make to its Net Plant Values?**

28 A. Providence should provide an updated COSS that incorporates a change it  
29 has already agreed to regarding Net Plant Values. As with most COSSs,  
30 many, if not most, capital costs are allocated to categories based on the total

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1 percentage of net plant by functional asset accounts allocated to the  
2 designated base-extra capacity cost categories (here they are base, max.  
3 day, max. hour, meter and service, billing and collection, fire protection and  
4 wholesale). Thus, the accounting and reporting of the amounts for each plant  
5 account is critically important for determining the levels of asset values  
6 allocated to each designated cost category, and subsequently the level of  
7 capital costs allocated to each cost category. Ultimately all capital costs  
8 allocated to each cost category are allocated to the various customer classes  
9 along with all other costs to determine the level of revenues recovered from  
10 each class. Thus, significant errors in reporting the amounts associated with  
11 each plant account will likely result in significant errors in total revenues to be  
12 recovered from one or more customer classes.

13  
14 Unfortunately, with Providence Water's initial filing, such errors did occur in  
15 reporting the correct amounts in several plant accounts. Because some  
16 errors were very large, the resulting allocations between classes changed  
17 dramatically with the corrected net asset values.

18  
19 Early in the discovery process Providence Water realized it had reported  
20 wrong amounts for several plant accounts. The correct amounts were  
21 provided in response to KCWA 1-4. The amounts originally included in  
22 Providence Water's filing for net plant assets are repeated for ease of  
23 reference in Exhibit DFR-2 attached to my testimony, and the corrected  
24 amounts by plant account are provided in Exhibit DFR-3 attached hereto. As  
25 is readily seen by comparing these two schedules, the percentage of total net  
26 assets allocated to the wholesale class went from 32.7% in the original filing  
27 to 22.3% in Providence Water's response to KCWA 1-4. As a direct result of  
28 this one change, the level of capital costs assigned to the wholesale class  
29 should, all else being equal, decrease from the original filing of \$8.506 million  
30 to \$5.801 million, which is a \$2.705 million reduction. These estimates are

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1 approximations based on the relative reduction in net plant attributed to  
2 wholesale customers before and after the correction in net plant values.

3  
4 Because of the many interconnections between this adjustment and the  
5 many others that will be made in Providence's rebuttal testimony, it is not  
6 possible to predict the exact reduction in the proportionate rate revenue to  
7 the wholesale class. When Providence Water submits its rebuttal testimony,  
8 the corrected values should be incorporated in the COSS. The two key  
9 allocation factors used to allocate capital costs to the base-extra capacity  
10 cost categories are K1 and K2. The relative percentages used to allocate  
11 costs derived from each of these factors will change dramatically as a result  
12 of this one correction.

13  
14 **Classification of Transmission and Distribution Pipes**

15 **Q. Do you agree with Providence's classification of its transmission and**  
16 **distribution pipes?**

17 A. No. Providence Water includes 12 inch diameter pipes in their classification  
18 of "transmission" pipes. Thus, they classify all water mains 12 inches or  
19 larger as transmission mains, and all water mains smaller than 12 inches as  
20 distribution mains. This has a very significant impact on Providence's rate  
21 filing as it shifts significant costs from retail customers onto wholesale  
22 customers for two reasons. First, this classification has very large  
23 implications on the calculation of several allocation factors. (i.e. allocation  
24 factors A and F). Second, it significantly impacts the calculation of Un-  
25 Accounted for Water (UAW) attributed to transmission and distribution mains.

26  
27 As a result, the demarcation between distribution and transmission mains  
28 should not be arbitrary, but based on the design and operating characteristics  
29 of various size pipes. I agree with Providence Water's categorization of its  
30 water mains, except for 12 inch pipes. All 12 inch pipes in Providence's

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1 pipeline network predominantly serve, and thus benefit, retail customers and  
2 should be classified as such. In support of this position, I note the following:

- 3 ➤ The urban areas served at retail by Providence have networks  
4 consisting of 12 inch mains that only serve the local distribution  
5 network and directly supply some retail customers
- 6 ➤ The outer boundaries of Providence Water's retail franchise area  
7 are interconnected with a transmission network (pipes at least 16  
8 inches) to which all wholesale customers are either directly or  
9 indirectly connected. Thus, circumventing for the most part the  
10 inner distribution network consisting of mains that are 12 inches  
11 and smaller.
- 12 ➤ The four largest wholesale customers of Providence Water are  
13 responsible for 81.4% of all wholesale water purchases (based on  
14 five year averages contained in Schedule HJS-23). Each of these  
15 customers are served directly from the transmission system via  
16 water mains that are either 30 inches or larger (see Providence's  
17 response to BCWA 1-14). In order to maintain water pressure  
18 through the system, smaller mains (here 12 inches and smaller) are  
19 not normally used to supply larger mains. Thus, these customers  
20 receive no benefit from those smaller mains.
- 21 ➤ Providence's own Infrastructure Replacement Plan submitted to the  
22 Rhode Island Department of Health clearly distinguishes between  
23 distribution mains and transmission mains. (See Providence's  
24 response to DIV 1-31). Specifically, this report categorizes pipes 12  
25 inches or smaller as distribution mains, and pipes 16 inches and  
26 larger as transmission mains.
- 27 ➤ All Water utilities that I have worked for that are comparable in size  
28 to Providence Water, and many that are smaller compared to  
29 Providence, make the same distinction between transmission and  
30 distribution mains as specified in the prior bullet.

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1           ➤ All of Providence Water’s wholesale customers are connected in at  
2           least one location to a transmission main 16 inches or larger. And,  
3           all but three of Providence Water's wholesale customers are feed  
4           only from transmission mains that range in size from 20 inches  
5           to 102 inches. The three exceptions are East Smithfield, Johnston  
6           and Kent County. East Smithfield, in addition to being feed from  
7           one 16 inch main, is also connected to two smaller mains - one 8  
8           inch and one 12 inch. Johnston, in addition to being feed from three  
9           24 inch main and one 20 inch main is also connected to two smaller  
10          12 inch mains. Kent County in addition to being feed from one 78  
11          inch main, is also connected to one 12 inch main. (See  
12          Providence’s response to KCWA 5-1) Because all of Providence’s  
13          wholesale customers are predominantly supplied from water mains  
14          at least 16 inches in diameter, the vast majority of their wholesale  
15          water consumption (probably 95% or more) comes from the large  
16          main transmission system.

17  
18          Based on the foregoing, Providence Water should have to adjust several  
19          allocation factors and the distribution system’s responsibility for UAW.

20  
21          **Allocation of UAW to Retail and Wholesale Customers**

22          **Q.     What changes should Providence make to its UAW Calculation?**

23          **A.**     By Providence Water’s estimate, the relative share of UAW due to retail  
24          customers is 75.7%, and the wholesale share is 24.3%. Providence provided  
25          the calculations used to derive these shares in an attachment to BCWA 1-30.  
26          These calculations were flawed for two reasons.

27  
28          First, in Docket 3945 (In Re: Pawtucket Water Supply Board), the  
29          Commission held that relative proportions of distribution mains and  
30          transmission mains to total water mains should only be based on the relative

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1 lengths of each type of water mains. (See Report and Order 19671, page 10)  
2 However, Providence Water based its proportionality on inch-miles of each  
3 type of water main.

4  
5 Second, Providence Water included 12 inch mains in the transmission main  
6 category. As addressed above, 12 inch mains should be included in the  
7 distribution category, not the transmission category. Making these two  
8 changes and following all other Providence Water calculations on the  
9 attachment to BCWA 1-30 the relative share of UAW attributable to each  
10 class should be:

- 11 • Retail Customer share of Lost Water - 95.9%
- 12 • Wholesale Customer share of Lost Water - 4.1%

13  
14 As Providence Water indicated in their response to BCWA 1-30.a., allocation  
15 factors A and F are directly affected by these percentage shares, which  
16 indirectly affect allocation factor HM and other factors that depend in part on  
17 factors A and F. Mr. Smith should make these modification to these allocation  
18 factors in his COSS model and include them in his rebuttal testimony and  
19 exhibits. Additionally, he should highlight each of these changes so that they  
20 can be easily identified by all of the interveners. The net effect will be a  
21 reduction in costs allocated to wholesale customers, and in turn a  
22 commensurate reduction of rate revenues to be recovered from wholesale  
23 customers.

24  
25 **Allocation Factors**

26 **Q. Which allocation factors should Providence revise in its rebuttal**  
27 **testimony?**

28 **A.** During the discovery process, Mr. Smith agreed to modify the basis and/or  
29 relative percentages used to spread certain costs across the defined cost  
30 categories used in the COSS, which are set forth in the list below. This list  
31 also includes modifications to other allocation factors identified in the

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1 preceding sections of my testimony, and others I identified during my  
2 review and evaluation of Providence's COSS. Most if not all of these  
3 adjustments should result in a cost responsibility shift from the wholesale  
4 class to the retail class.

- 5 • **Allocation Factors Y and Z** – Allocation Factor Y will be used to  
6 allocate Administrative & General Employee Pensions and Benefits,  
7 instead of Allocation Factor Z. (Reference Providence Water's  
8 response to KCWA 1-18).
- 9 • **Allocation Factors K1 and K2** – Land values will be removed from  
10 the derivation of Allocation Factors K1 and K2. (Reference Providence  
11 Water's response to KCWA 1-19 and KCWA 1-20) Additionally, as  
12 explained above both of these Factors will be based on the corrected  
13 net asset values provided in response to KCWA 1-4 revised.
- 14 • **Allocation Factors HM, HMC and HOC** – Allocation Factors HM,  
15 HMC and HOC will be updated using FY2010 to FY2012 data, instead  
16 of FY2004 to FY2006 data. (Reference Providence Water's response  
17 to KCWA 1-13)
- 18 • **Allocation Factor A** – Allocation Factor A will be updated using the  
19 average of 4 years of data (FY2010 to FY2013) data, instead of the 3  
20 year average of FY2010 to FY2012. (Reference Providence Water's  
21 response to BCWA 1-19 and BCWA 1-20). In addition, State  
22 Surcharge 1 (Misc. Revenue) was allocated using allocation factor A,  
23 and a portion was incorrectly allocated to wholesale customers. This  
24 will be corrected in Providence's rebuttal testimony. (See PW's  
25 response to BCWA 1-33.)
- 26 • **Allocation Factor X1, X2, HM and HOC** – Allocation Factor X1 and  
27 X2 should be based on three years (FY 2010 to FY2012) not just FY  
28 2012. Additionally, because these Factors are partly based on  
29 Allocation Factors HM and HOC, these Factors must be based on the

- 
- 1 revised values of Factors HM and HOC described in a preceding  
2 bullet. (Reference Providence Water’s response to DIV 2-9)
- 3 • **Allocation Factor N** – Allocation Factor A will be used to allocate  
4 Plant Supply Mains and Other Production Equipment instead of  
5 Allocation Factor N. (Reference Providence Water’s response to DIV  
6 2-9)
  - 7 • **Allocation Factor P** – Allocation Factor P will be modified by  
8 incorporating the adjustment for lost water (as it was incorporated for  
9 the derivation of Factor A) (Reference Providence Water’s response  
10 to BCWA 1-37)
  - 11 • **Allocation Factor HM** – Allocation Factor HM will be updated using  
12 the latest 3 year average, or using the average of the most recent 6  
13 years as currently proposed by PW (See Providence’s response to  
14 Div. 1-3).

15

16 **Direct Allocation of Dedicated Facilities**

17 **Q. Should Providence make any changes to cost allocations for any of**  
18 **its facilities?**

19 A. Yes. Through the discovery process it has become clear that some facilities  
20 included in the Plant Account under the general category heading “Source of  
21 Supply and Pumping,” are only used by, and for the sole benefit of, retail  
22 customers. Specifically, these include six Booster Pump Stations and four  
23 Emergency Power Systems. (See Providence Water’s response to BCWA 1-  
24 7). The six Booster Pump Stations (BPS) are:

- 25 • Greenville Avenue BPS
- 26 • Dean Estates BPS
- 27 • Cranston Commons BPS
- 28 • Alpine Estates BPS
- 29 • Atwood Avenue BPS
- 30 • Ashby Street BPS

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1 And, the four Emergency Power Systems serve the following BPSs:

- 2 • Greenville Avenue BPS
- 3 • Dean Estates BPS
- 4 • Alpine Estates BPS
- 5 • Atwood Avenue BPS

6

7 Similar to the allocation of distribution mains, these facilities should have a  
8 zero amount allocated to the wholesale cost category as part of the allocation  
9 of net plant assets to cost categories. For facilities such as these (discrete  
10 facilities that only serve retail customers, and only benefit those customers), I  
11 recommend they be separated from other assets in allocating net plant  
12 accounts to cost categories so that the wholesale class, which receives no  
13 benefit from them, will not be allocated a portion of their net value.

14

15 This is in essence a direct allocation to a cost category responsible for 100%  
16 of the use of those assets. This recommendation is restricted to discrete  
17 facilities such as these that are known to provide service to only retail  
18 customers. This is not possible for distributed facilities that serve both  
19 wholesale and retail customers. Similarly, if there was a pump station or  
20 water tank that was needed to supply service to only wholesale customers  
21 and provided no benefit to retail customers, the net value of that facility  
22 should be directly assigned to the wholesale cost category. I am not aware of  
23 any other discrete facilities that only serve retail customers and would qualify  
24 for the same treatment I'm proposing for the six pump stations and four  
25 emergency power supplies identified above. The net effect of this  
26 modification will be a reduction in the level of net assets allocated to the  
27 Wholesale Customer Class. This will directly affect the derivation of  
28 allocation factors K1 and K2, both of which should have lower overall  
29 percentages for the wholesale cost category, and in turn, any allocations  
30 based on these factors will result in reduced cost allocations to wholesale  
31 customers.

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1 **Infrastructure Repair and Replacement Program (IFR)**

2 **Q. What changes should Providence make to the assignment of costs**  
3 **related to its IFR program?**

4 A. From Mr. Gadoury's Direct Testimony (page 9 through 13) and PW's  
5 responses to BCWA 1-18 and 1-43, it is clear that Providence plans to invest  
6 very large amounts in its distribution mains throughout its 20 year IFR plan.  
7 This level far exceeds historic levels and greatly distorts the level of  
8 investments in distribution mains as compared to all other plant items, in  
9 particular transmission mains.

10  
11 Over the next five years PW plans to only replace/reline water mains that are  
12 either 6, 8 or 12 inches in diameter. As set forth in my testimony above, all  
13 water mains 12 inches and below should be considered distribution mains.  
14 Thus, all of the main rehabilitation portion of the IFR plan will only benefit  
15 Providence's retail customers.

16  
17 In Providence's response to BCWA 1-18d, it is clear that over the next five  
18 years they intend to spend about \$15.4 million per year only on water mains  
19 that range in size from 6 inches to 12 inches. Thus, nearly two-thirds of the  
20 of the total IFR costs ( $\$77 \text{ million} / \$120 \text{ million} = 64\%$ , as does  $\$15.4 \text{ million}$   
21  $/ \$24 \text{ million annually}$ ) over the next 5 years will be going to facilities that  
22 predominantly serve only retail distribution customers

23  
24 In Providence's response to BCWA 1-43a., it is also clear that over the next  
25 15 years from 2018 to 2033 they intend to continue to spend at least \$15.4  
26 million per year only on water mains that range in size from 6 inches to 12  
27 inches. For this period Providence plans to spend a total of \$19 million per  
28 year on replacing and relining both transmission and distribution mains  
29  $[(\$362 \text{ million} - \$77 \text{ million})/15]$ . In this same response, Providence indicated  
30 that about 20% of that total would be for mains that are 12 inches in diameter  
31 up to mains 24 inches in diameter.

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1 Because of this very large shift in capital investments toward one type of  
2 asset (in this case distribution mains) over a very long extended period of  
3 time (two decades or a full generation), I recommend that a temporary  
4 deviation from the standard cost of service approach that essentially ignores  
5 (smooths over) large capital investments in one type of asset, such as a  
6 treatment plant. The major difference here is that while a new treatment  
7 plant surely represents a major one time investment for one type of asset, it  
8 only occurs in one year, not for twenty consecutive years. The IFR here does  
9 present a very large investment for one type of asset each and every year for  
10 twenty consecutive years as demonstrated above.

11  
12 I recommend dividing the Infrastructure Replacement Capital into two  
13 components. One would include all or some portion dedicated to distribution  
14 mains, which would be allocated to all cost components except wholesale.  
15 The other would be to allocate the remaining portion of the IFR program  
16 costs to all cost categories including wholesale just as currently proposed by  
17 Providence for all of the IFR program costs.

18  
19 This recommendation is fair and reasonable because of the sheer size and  
20 unprecedented nature of Providence's IFR program that invests an inordinate  
21 proportion of its capital improvements in facilities that predominantly serve  
22 only retail distribution customers. (i.e., distribution mains that encompass all  
23 distribution network pipes 12 inches or smaller).

24  
25 **Unidirectional Flushing Program ("UDF")**

26 **Q. Should costs related to Providence's unidirectional flushing**  
27 **program be assigned to wholesale customers?**

28 A. No. This program is designed to flush out loose sediment, deposits, and  
29 biofilms from the interior of water mains. Nearly all of the benefits  
30 associated with this program accrue to Providence Water's retail  
31 customers because it only affects distribution mains. This was made clear

---

1 in Providence Water’s response to BCWA 1-13 in which Mr. Gadoury  
2 states, “Other transmission mains larger than 12 inches will not be  
3 substantially impacted.” Since all transmission mains are larger than 12  
4 inches as explained above, none of Providence Water’s transmission  
5 mains are impacted. Not only will the transmission mains not be  
6 “substantially impacted”, they will not be impacted at all. This is the case  
7 for two reasons.

8  
9 First, the velocities needed to flush sediment from large mains are not  
10 attainable in systems the size as Providence Water’s. Second, because  
11 water in transmission mains is constantly being supplied, it does not have  
12 static periods. Thus, there is no need to flush transmission mains to  
13 improve water quality, and none of the costs associated with the UDF  
14 program should be allocated to wholesale customers. To the extent  
15 Providence Water has included any of the costs associated with the UDF  
16 program in rate year revenues to be recovered from wholesale customers  
17 they should be reallocated to the retail class.

18  
19 **Conversion to Monthly Billing**

20 **Q. Should any of the costs associated with Providence’s conversion to**  
21 **monthly billing be assigned to wholesale customers?**

22 A. No. This program is designed to convert all of Providence Water’s customers  
23 currently billed on a quarterly basis to monthly billing. Because the wholesale  
24 customers have been billed on a monthly basis for some time, nearly all of  
25 the costs associated with this program are incurred solely to convert  
26 Providence Water’s retail distribution customers to monthly billing.

27  
28 This was made clear in Providence Water’s response to BCWA 1-4 a. in  
29 which Ms. Bondarevskis states, “Please note that none of the direct costs  
30 associated with the switch to monthly billing have been charged to

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1 Wholesale." She goes on to state that a portion of the administrative costs  
2 (\$49,000) should be allocated to wholesale customers because, "Providence  
3 Water's banking fees will increase as a result of the increase in processing  
4 payments." While, I don't disagree that processing payments will increase,  
5 this increase is unrelated to wholesale customers. The costs related to  
6 processing wholesale bills will not increase as a result of switching retail  
7 customers to monthly billing. The processing costs associated with wholesale  
8 billing will be the same after the conversion because wholesale customers  
9 are currently billed monthly.

10  
11 Based on the foregoing, Providence Water should modify its allocation factor  
12 used to allocate Account 63580 Contractual Services so that none of the  
13 increased costs associated with this conversion are allocated to wholesale  
14 customers.

#### 15 16 **IV. REVENUE REQUIREMENTS**

##### 17 **New Central Operations Facility**

18 **Q. Do you have concerns about Providence's new Central Operations**  
19 **Facility (COF) and their proposal to include a cash capital revenue**  
20 **requirement to pay for related costs?**

21 A. Yes, I do. My concerns relate to both manner in which Providence is  
22 proposing to fund a portion of an unknown major capital addition without a  
23 definitive plan/study that addresses its alternatives, location or total cost; and  
24 the proportion of the proposed annual cash capital requirement it would have  
25 wholesale customers pay.

26  
27 To begin with, it should be noted that Providence's original filing provided  
28 almost no information about this facility or its cost. As such, the BCWA  
29 issued a data request to gather more information about this facility (See  
30 BCWA 2-3). In particular, the BCWA asked the following:

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- Please describe any progress Providence Water has made in obtaining a new Central Operations Facility since 2010.
- Please provide all information Providence has regarding a new Central Operations facility, including location, estimates on cost of purchase or cost of lease, construction costs, and operation costs.

Providence objected to this request, but indicated it has worked with Dimeo Construction to analyze its current and future operations. From this analysis, Dimeo apparently developed an opinion of “probable” construction costs of “\$36 million (in 2013 dollars).” Providence maintains that this includes “all expenses required to make the Central Operations facility “move-in” ready.” The problem is that – to the best of my knowledge – Providence has not shared this analysis with the Commission, the Division or the ratepayers who will pay for this facility.

Furthermore, it doesn’t appear that the COF has been fully vetted. Specifically, a location has not been determined, and while probable construction costs have been estimated, the total cost could be much higher when land costs, site remediation and infrastructure requirements are factored into the costs. It is also not clear if the alternative of rebuilding or refurbishing the existing facility had been evaluated.

Despite this lack of transparency, Providence proposes that this significant capital cost be funded annually for at least five years from current revenues at a cost of nearly \$2.5 million during the rate year and an additional \$10 million over the succeeding four years. (See PW’s response to BCWA 2-3.) In effect, Providence proposes to include a semi-permanent rate increase in annual revenue requirements of \$2,400,000 without a clear description of the specific costs it will be incurring annually. This represents about 17% of the total proposed increase. Because of all these reasons I recommend that the Commission disallow all, or at least a large portion, of these costs as part of this case.

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1 Providence could continue its endeavor to locate and build such a facility,  
2 and when its justification, location, conceptual design, and total costs are  
3 known to a much greater level of certainty, it could pursue cost recovery in its  
4 next rate case or include it in an abbreviated case. In addition, because this  
5 facility should have a long useful life, perhaps 50 years or more, the vast  
6 majority of its cost should be funded through bonded debt and amortized  
7 over at least 30 years. This would allow for a much better match between its  
8 cost recovery and the ratepayers who over time will pay for and benefit from  
9 its use.

10  
11 My other primary concern relates to the portion of the proposed annual cost  
12 that Providence allocated to the wholesale customer class. As currently  
13 proposed the wholesale class would be required to pay about one-third of the  
14 total annual cost. Because this is an operations center its main purpose will  
15 most likely be to house all operations personnel, maintenance and  
16 construction crews, trucks and heavy equipment, a dispatch center, SCADA  
17 equipment and control room, inventory and stores, and related management  
18 and supervisory personnel. The vast majority of these facilities are needed  
19 and used to operate and maintain the distribution system and pipe network.

20  
21 It is my understanding that if and when this facility is built it will not house the  
22 administration and personnel responsible for the management of the  
23 system's watershed and treatment facilities. These functions will continue to  
24 be located at the Treatment Plant. Clearly, a significant percentage of these  
25 functions and facilities serve all customers. Both retail and wholesale  
26 customers benefit more or less equally from these facilities. Conversely,  
27 aside from a relatively small benefit realized by all customers from the  
28 operation and maintenance of the transmission system of water mains, most  
29 of the remaining use and benefit of this proposed facility will accrue to the  
30 benefit of only retail customers from the operation and maintenance of all  
31 distribution facilities.

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Therefore, to the extent the Commission allows a portion of these capital costs as a pro-forma revenue requirement, only a relatively small portion should be recovered from wholesale customers. Without a detailed analysis of the exact functions that would be performed from the new facility, a reasonable split between the amount of this expense that should be allocated to each class would be the proportional lengths of pipe serving only retail distribution customers and the transmission mains serving both retail and wholesale customers. For Providence's system this would be a split of 12% (116.10 miles) to the wholesale class and 88% (869.74 miles) to the retail class (See Providence's updated HJS Exhibit 14).

By adopting this recommended adjustment to the level to be included as a rate revenue requirement in this case, the amount assigned to the wholesale class would be reduced to \$288,000 from \$633,565 proposed by Providence, which is a reduction of \$345,565.

**Rate Case Expenses And Amortization**

**Q. Do you have a recommendation relative to Providence's proposal to recover rate case expenses and ongoing regulatory costs of \$387,693?**

A. Yes, I do. Providence is seeking to recover at least \$233,622 for rate case expenses related to this case and include half of that amount or \$116,811 as part of its pro-forma revenue requirement. The ongoing regulatory amount proposed is \$270,882 and that entire amount is proposed as a pro-forma adjustment to rate year expenses. These expenses appear to be excessive to me, but I will leave this determination to other parties, including the Division and its consultants. Relative to the amortization period proposed by Providence, however, I do have a recommendation.

Providence has proposed to recover these costs over a very short period of time – two years. It has been my experience that most Public Utility

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1 Commissions generally base the amortization period on an average of the  
2 number of years between full rate cases. Typically, they use the most recent  
3 4 or 5 cases and apply an average of the intervals between them. Because  
4 the three intervals between the effective dates of the three prior cases and  
5 the proposed effective date of this case, are very consistent, I recommend  
6 the use of that average for this case. These cases and the effective dates  
7 and years between each are summarized below.

8

<u>Docket number</u>	<u>Effective Date</u>	<u>Years between Cases</u>
<u>3304</u>	<u>12/26/1995</u>	
		<u>6 years, 0 months</u>
<u>3163</u>	<u>01/01/2001</u>	
		<u>7 years, 11 months</u>
<u>3822</u>	<u>11/01/2007</u>	
		<u>6 years, 2 months</u>
<u>4406</u>	<u>01/01/2014</u>	

9

10 The simple average here is 6.7 years. Providence has proposed to include  
11 their abbreviated filings in this analysis. However, that inclusion here is not  
12 appropriate because of the nature of those proceedings (less time consuming  
13 and many are settled) and the limited costs involved. Thus, for this case I  
14 recommend the amortization period be set at six years (rounding down the  
15 average interval determined above). Because of the consistent interval  
16 between rate cases for this utility, the average interval is very appropriate  
17 and equitable in that recovery of those costs matches a very consistent  
18 interval of time and spreads the cost to consumers over several years  
19 thereby mitigating some of the impact associated with significant rate  
20 increases.

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1 Relative to ongoing regulatory cost recovery proposed here, to the extent  
2 other parties agree that a significant portion of those costs are not ongoing  
3 (as some appear to be), I recommend that the portion that is determined to  
4 not be ongoing, and is approved by the Commission, that that amount also  
5 be amortized over the same six year period as used for rate case expenses.

6  
7 By adopting this recommended amortization period the level of rate case  
8 expenses to be included as a rate revenue requirement in this case will be  
9 reduced to \$38,937 from \$116,811 proposed by Providence (as of the date of  
10 this filing), which is a reduction of \$77,874.

11  
12 **V. RATE DESIGN**

13 **Conservation rates**

14 **Q. Do you have a position on conservation rates?**

15 A. After reviewing both the pre-filed testimony and discovery responses, is clear  
16 the Providence Water is opposed to instituting conservation rates for either  
17 its retail or wholesale customers as part of this case.

18  
19 While institution of conservation rates for retail customers may, or may not,  
20 be appropriate, I fully agree they should not be instituted for wholesale  
21 customers. I don't believe an increasing block structure will result in any  
22 significant intended conservation effect on wholesale customers – and the  
23 retail customers they serve – other than that attributed to an overall price  
24 increase. Furthermore, as the Executive Director and Chief Engineer of  
25 BCWA has stated in her testimony, the conservation rate considered in this  
26 case would have detrimental impact on the BCWA system.

27  
28 Both Mr. Spinelli and Mr. Smith in their pre-filed direct testimonies stated that  
29 they do not recommend inclusion of conservation as part of this case. (See  
30 page 6, lines 21 to 25 in Mr. Spinelli's testimony; and page 25, lines 12 to 20

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1 in Mr. Smith's testimony.) Furthermore, Mr. Smith in response to BCWA 1-  
2 45, stated that the demand management rate (i.e., his conservation rate)  
3 proposed for wholesale customers will not by itself have any significant  
4 conservation effects on wholesale usage. For all of these reasons I  
5 recommend that the Commission not institute a conservation rate for  
6 wholesale customers as part of this case.  
7

8 **VI. CONCLUSION**

9 **Q. Mr. Russell, do you anticipate having to file or provide supplemental**  
10 **testimony in this case?**

11 A. Yes, I do. My testimony provided herein may require supplementation or  
12 modification after review of additional discovery, and consideration of further  
13 testimony submitted by other parties in this Docket. Furthermore, because  
14 additional corrections will be made to the COS model, it is impossible to know  
15 the final increase to wholesale customers that Providence Water will seek in  
16 this case. In addition, I have not been able to fully review Providence's  
17 response to the BCWA's second set of data requests as I did not receive  
18 them until Monday, August 19, 2013. Thus, I may have to supplement my pre-  
19 filed direct testimony in my surrebuttal and hearing testimony, and I would  
20 like to reserve the right to do so.  
21

22 **Q. Mr. Russell, does that conclude your testimony at this time?**

23 A. Yes, it does.

## Resume

**DAVID F. RUSSELL, P.E.**

### **CAREER SUMMARY:**

Since the early 1970s Mr. Russell has been professionally involved in the management, control and regulation of public utilities in the Northeast. He has also successfully completed many related projects throughout the United States and Internationally. He has worked for two regulatory agencies; in MA. – the Department of Public Utilities – as its Chief Engineer; and in NJ. – the Board of Public Utilities – as a special consultant to the Chief Economist. He has held senior engineering and management positions for two New England electric utilities (Eastern Utilities Associates and Unitil Service Corp.), and one in NJ./PA.(General Public Utilities). He has also been a Principal Management Consultant for a major engineering company (Camp, Dresser & McKee, Inc.) at its headquarters in Boston/Cambridge, MA. for several years. Over the past 18 years he founded and developed a successful consulting business with an office centrally located in New England, about 30 minutes north of Boston, in Newburyport, MA. A second office was recently opened in Venice, Florida to serve clients in the southeast.

He is an Engineer and Economist by training (BSEE from Rutgers College), and has advanced degrees in Engineering Management (MS. from Northeastern Univ.) and Economics (MA. from Rutgers Univ.) specializing in resource and regulatory economics. He has testified before three of the six Public Utility Commissions in New England (and several others nationally) on many occasions as an expert on utility management, finance, rate design and cost of service studies, and related industry issues. He is a Registered Professional Engineer in MA. (License No. 28324) and NJ. (License No. 26512) and Florida (License No. 75247). He has authored several papers published in professional journals, and has presented his work at many professional seminars and industry conferences.

Mr. Russell has been a lead technical negotiator for several municipal clients in negotiating multi-million dollar contracts with private utilities and energy customers. He has prepared numerous reports and technical presentations for utility CEO's; and municipal, regional and state governments. He has been responsible for the planning, review and feasibility analysis of numerous utility capital improvement projects, totaling many billions of dollars. This included a broad spectrum of utility facilities (electric, gas, water, sewer and solid waste facilities) - production plants, transmission facilities, and distribution systems. He has also led teams of consultants in the appraisal of utility system components and entire systems (all assets). He has considerable international experience having worked for many other countries, including Mexico, Columbia, Egypt, Sri Lanka and the Bahamas. He is currently working for the Public Utilities Commission on the Island of Guam. For the Government of Egypt he has worked on several projects each of which involved the feasibility and implementation of public-private partnerships in both the water and wastewater sectors.

**PROFESSIONAL EXPERIENCE:****RUSSELL CONSULTING****Public and Private Utility Consultant, 1995-Present**

Provides management and financial consulting services to public and private utilities, municipalities, governmental agencies and private companies. Areas of expertise include management consulting, management reviews and audits, rate design and cost of service studies, expert witness services, appraisals of utility plant and equipment (including GASB-34 Compliance), utility contracts and negotiations, performance enhancement and benchmarking, utility economics, power markets and deregulation, and the feasibility and implementation of public-private partnerships. *RUSSELL CONSULTING* has teamed with other consulting firms to successfully complete several multi-disciplinary projects for International clients.

**Unitil Service Corp.****Director of Regulatory Services, 1993-1994**

Managed the staff and resources of the Regulatory Services Department for this regional utility holding company. Areas of functional responsibility included sales and load forecasting, customer and load research, rate research and analysis, rate design, rate and tariff administration, revenue requirements and cost of service studies, economic analysis, demand side management (DSM) planning, program design and evaluation, and related analytical services. Responsible for insuring that rates and cost recovery for the retail companies contributed positively to the continued financial strength of the corporation and that positive regulatory relations were maintained. Successfully developed and maintained expanded DSM programs in Massachusetts and New Hampshire. Also responsible for preparing and filing each retail company's Least Cost Integrated Resource Plans, covering a 10 year planning horizon, including the first Integrated Gas Resource Plan. Successfully managed and coordinated an external (PUC) audit of the accounting and control of all DSM expenditures by the affiliated retail companies in New Hampshire.

**Camp, Dresser and McKee, Inc.****Principal Management Consultant, 1985-1993**

Took a lead role in many projects including management audits, financial feasibility reports, privatization studies and rate/cost of service studies for a wide range of municipal and private utilities. Gained international experience as a financial advisor to the World Bank, the Governments of Egypt and Mexico, and the Water and Sewerage Authority of the Bahamas. Served as project manager for management audits. As Assistant Team Leader for the Management and Financial Services Group helped to expand its size and capabilities from four professional consultants to nearly 20 over a two year period.

**Eastern Utilities Associates****Section Manager, 1982-1985**

Responsible in the Rate Department for the development and implementation of several pass-through rate clauses designed to recover specific capital and operating costs based on customer demands and/or total use. These cost recovery mechanisms included fuel, purchased power and oil-conservation adjustment clauses. Was lead engineer for cost of service and rate design studies

prepared for rate cases involving affiliated retail electric companies. Also played a key role in rate filings before the Federal Energy Regulatory Commission for the Company's wholesale affiliate. Responsible for all PURPA-related programs for the Company's retail affiliates in Massachusetts and Rhode Island.

New Jersey Board of Public Utilities

**Consultant**, 1981-1982

Participated in the development of standard purchase and sale rates for cogeneration facilities and small powerplants as required by PURPA. Presented the staff's case on rate-of-return issues involving proposed rate increases by major electric and gas utilities. Assisted the Board's Chief Economist in the evaluation of mergers and acquisitions, and a major financing proposed by the State's largest electric utility needed to fund its capital improvement program.

General Public Utilities

**Senior Engineer**, 1978-1980

Provided in-house consulting services to the Corporate Planning Division. Instrumental in implementing the system-wide strategic planning process. Also assisted the Forecasting, Load Research and Supply Planning Groups in determining the need for new power plants and least-cost alternatives. This work included the development of the firm's conservation and load-management programs (the first in the industry).

Commonwealth of Massachusetts, Department of Public Utilities

**Chief Engineer**, 1971-1978

Reviewed, conducted public hearings and reported on the need for and costs of major construction projects proposed by electric and gas utilities including power plants, substations, transmission lines and gas storage facilities (LNG, SNG and Propane) and gas pipelines. Was instrumental in developing the State's gas-pipeline safety code and was responsible for the gas-pipeline safety program funded by the U.S. Department of Transportation. Also helped to design and implement the Cost of Gas Adjustment clause for all retail gas utilities. Managed the environmental review process, which included writing internal procedures, the Scope of Work for major facilities, and Statewide rules and regulations. Was appointed by the Governor to the Cogeneration Commission and the Public Power Commission.

**RELATED PROFESSIONAL EXPERIENCE:**

- Registered Professional Engineer in Massachusetts (28342), New Jersey (26512) and Florida (75247).
- Author of several papers published in professional journals.
- Numerous presentations at regional and national meetings of professional organizations.
- Provided expert testimony in numerous quasi-judicial proceedings before several state public utility commissions, state legislative committees and two state Superior Courts.
- Part-time instructor at Boston University teaching undergraduate and graduate courses in Economics, Management Science and Finance.

**PROFESSIONAL MEMBERSHIPS:**

- American Public Power Association
- Water Environment Federation (WEF) (Member of the Management & Admin. Committee) and the New England Water Environment Association (NEWEA)
- American Water Works Association, Member of the Rates and Charges Committee (responsible for 3 Chapters of the revised M1, "Rates" Manual), also a member of the Florida Section.
- City of Newburyport Chamber of Commerce
- International Water Resources Association (Peer Review Editor)
- Inst. of Electrical and Electronics Engineers (Power Engr. & Engr. Management Sections)
- National Society of Professional Engineers
- New England Water Works Association, Assistant Treasurer (Assoc. Officer) - Member of the Executive Committee and the Board of Directors; Member of the Financial Mngt. (Co-Chairman) Comm., the Conservation (Chairman) Comm., and the Investment Comm.
- Rutgers Engineering Society

**EDUCATION:**

- Rutgers University, MA in Economics (Resource and Regulatory Economics), Research Assistantship with Full Scholarship, 1984
- Northeastern University, MS in Engr. Management (Ops. Res. & Finance), 1977
- Rutgers College, BS in Electrical Engineering, Alumni Scholarship (full tuition and expenses), 1971

**PUBLICATIONS\PRESENTATIONS:** Author of several papers published in professional journals and presentations given at regional and national conventions.

**EXPERT WITNESS SERVICES:** Provided expert testimony in numerous quasi-judicial proceedings before several State Public Utility Commissions, and Legislative Committees. Also, presented expert testimony in litigated proceedings before the New Hampshire Superior Court and the Massachusetts Superior Court (2 cases). Areas of expertise include many of the issues and topics outlined above.

**COMMUNITY SERVICE:** Chairman of the Planning Board, City of Newburyport, Ma.; Commissioner – Newburyport Harbor Commission; Chairman of the Mayor's Special Task Force on Police Facilities (rebuilt and doubled the size of the City's 70 year old Police Station); Member of the Merrimack Valley Planning Commission; I.C. Parish Council; Treasurer for the City Committee (Major Political Party); Treasurer for a State Representative; Member of the American Legion.

**ADJUNCT PROFESSOR:** Part-time instructor at Boston University teaching Undergraduate and Graduate courses in Economics, Management Science and Finance.

**WHO'S WHO IN AMERICA:** His biography was included in the Millennium and all subsequent Editions of Marquis' Who's Who in the America.

**PERSONAL:** U.S. Citizen - Married, three children - Golfer/Runner/Coach (youth athletics)  
FED. ID#: 04-3568177 1st Lt., U.S Army NG (Inactive Res.)

**Plant Investment**  
Test Year Ending June 30, 2012

**Exhibit DFR-2**

	Allocation Factor	Plant in Service	Accumulated Depreciation	Net Book Value	Base	Maximum Day	Maximum Hour	Meters	Billing & Collection	Public Fire Protection	Wholesale	
<b>Source of Supply &amp; Pumping</b>												
Land and Land Rights	A	\$ 17,072,561	\$ -	\$ 17,072,561	\$ 8,974,729	\$ -	\$ -	\$ -	\$ -	\$ 170,726	\$ 7,927,106	
Structures and Improvements	A	\$ 10,672,869	\$ 9,139,121	\$ 1,533,748	\$ 806,263	\$ -	\$ -	\$ -	\$ -	\$ 15,337	\$ 712,148	
Collecting & Impounding Reservoirs	A	\$ 11,995,947	\$ 7,997,570	\$ 3,998,377	\$ 2,101,873	\$ -	\$ -	\$ -	\$ -	\$ 39,984	\$ 1,856,520	
Lakes Rivers and Other Intakes	A	\$ 4,176,429	\$ -	\$ 4,176,429	\$ 2,195,471	\$ -	\$ -	\$ -	\$ -	\$ 41,764	\$ 1,939,193	
Supply Mains	N	\$ 22,321,197	\$ 4,930,307	\$ 17,390,890	\$ 7,858,053	\$ 1,548,541	\$ 290,174	\$ -	\$ -	\$ -	\$ 7,694,122	
Other Power Production Equipment	N	\$ 459,317	\$ 419,867	\$ 39,450	\$ 17,825	\$ 3,513	\$ 658	\$ -	\$ -	\$ -	\$ 17,454	
Electric Pumping Equipment	N	\$ 929,495	\$ 662,009	\$ 267,486	\$ 120,863	\$ 23,818	\$ 4,463	\$ -	\$ -	\$ -	\$ 118,342	
Hydraulic Pumping Equipment	N	\$ 107,721	\$ 76,722	\$ 30,999	\$ 14,007	\$ 2,760	\$ 517	\$ -	\$ -	\$ -	\$ 13,715	
Other Plant & Miscellaneous Equipment	N	\$ 1,150,738	\$ 1,184,314	\$ (33,576)	\$ (15,171)	\$ (2,990)	\$ (560)	\$ -	\$ -	\$ -	\$ (14,855)	
<b>Total Source of Supply &amp; Pumping Plant</b>		<b>\$ 68,886,274</b>	<b>\$ 24,409,910</b>	<b>\$ 44,476,364</b>	<b>\$ 22,073,914</b>	<b>\$ 1,575,642</b>	<b>\$ 295,252</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 267,811</b>	<b>\$ 20,263,745</b>	
<b>Water Treatment Plant</b>												
Land and Land Rights	AA	\$ 29,994	\$ -	\$ 29,994	\$ 8,531	\$ 6,348	\$ -	\$ -	\$ -	\$ 300	\$ 14,815	
Structures and Improvements	AA	\$ 19,394,088	\$ 14,679,990	\$ 4,714,098	\$ 1,340,765	\$ 997,739	\$ -	\$ -	\$ -	\$ 47,141	\$ 2,328,454	
Water Treatment Equipment	AA	\$ 12,482,818	\$ 11,137,630	\$ 1,345,188	\$ 382,593	\$ 284,709	\$ -	\$ -	\$ -	\$ 13,452	\$ 664,434	
Other Plant & Miscellaneous Equipment	AA	\$ 21,631,662	\$ 16,102,981	\$ 5,528,681	\$ 1,572,445	\$ 1,170,145	\$ -	\$ -	\$ -	\$ 55,287	\$ 2,730,804	
<b>Total Water Treatment Plant</b>		<b>\$ 53,538,562</b>	<b>\$ 41,920,601</b>	<b>\$ 11,617,961</b>	<b>\$ 3,304,333</b>	<b>\$ 2,458,941</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 116,180</b>	<b>\$ 5,738,507</b>	
<b>Transmission &amp; Distribution Plant</b>												
Land and Land Rights	L	\$ 614,902	\$ -	\$ 614,902	\$ 211,176	\$ 146,693	\$ 60,693	\$ -	\$ -	\$ 55,459	\$ 140,882	
Structures and Improvements	L	\$ 218,135	\$ 194,720	\$ 23,415	\$ 8,041	\$ 5,586	\$ 2,311	\$ -	\$ -	\$ 2,112	\$ 5,365	
Distribution Reservoirs & Standpipes	AA	\$ 12,117,029	\$ 10,010,622	\$ 2,106,407	\$ 599,096	\$ 445,821	\$ -	\$ -	\$ -	\$ 21,064	\$ 1,040,426	
Transmission & Distribution Mains	TD	\$ 46,059,557	\$ 21,432,116	\$ 24,627,441	\$ 11,559,769	\$ 7,672,991	\$ 5,394,681	\$ -	\$ -	\$ -	\$ -	
Meters & Meter Installation	C	\$ 24,306,880	\$ 17,262,603	\$ 7,044,277	\$ -	\$ -	\$ -	\$ 7,044,277	\$ -	\$ -	\$ -	
Hydrants	FP	\$ 7,928,287	\$ 3,252,397	\$ 4,675,890	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,675,890	\$ -	
Other Plant & Miscellaneous Equipment	AA	\$ 32,794,354	\$ 9,548,763	\$ 23,245,591	\$ 6,611,416	\$ 4,919,929	\$ -	\$ -	\$ -	\$ 232,456	\$ 11,481,790	
<b>Total Transmission &amp; Distribution Plant</b>		<b>\$ 124,039,144</b>	<b>\$ 61,701,221</b>	<b>\$ 62,337,923</b>	<b>\$ 18,989,498</b>	<b>\$ 13,191,020</b>	<b>\$ 5,457,685</b>	<b>\$ 7,044,277</b>	<b>\$ -</b>	<b>\$ 4,986,980</b>	<b>\$ 12,668,463</b>	
<b>General Plant</b>												
Land and Land Rights	T	\$ 23,380	\$ -	\$ 23,380	\$ 8,759	\$ 3,401	\$ 1,136	\$ 1,391	\$ -	\$ 1,060	\$ 7,634	
Structures and Improvements	T	\$ 25,685,489	\$ 16,371,858	\$ 9,313,631	\$ 3,489,124	\$ 1,354,639	\$ 452,417	\$ 553,969	\$ -	\$ 422,379	\$ 3,041,104	
Office Furniture & Equipment	T	\$ 487,041	\$ 449,928	\$ 37,113	\$ 13,903	\$ 5,398	\$ 1,803	\$ 2,207	\$ -	\$ 1,683	\$ 12,118	
Transportation Equipment	T	\$ 6,367,735	\$ 5,904,704	\$ 463,031	\$ 173,463	\$ 67,346	\$ 22,492	\$ 27,541	\$ -	\$ 20,999	\$ 151,190	
Stores Equipment	T	\$ 3,458,977	\$ 3,120,137	\$ 338,840	\$ 126,938	\$ 49,283	\$ 16,459	\$ 20,154	\$ -	\$ 15,367	\$ 110,639	
Tools, Shop & Garage Equipment	T	\$ 1,174,795	\$ 529,359	\$ 645,436	\$ 241,797	\$ 93,877	\$ 31,353	\$ 38,390	\$ -	\$ 29,271	\$ 210,749	
Laboratory Equipment	A	\$ 198,137	\$ 196,548	\$ 1,589	\$ 835	\$ -	\$ -	\$ -	\$ -	\$ 16	\$ 738	
Power Operated Equipment	T	\$ 295,804	\$ 300,374	\$ (4,570)	\$ (1,712)	\$ (665)	\$ (222)	\$ (272)	\$ -	\$ (207)	\$ (1,492)	
Communication Equipment	T	\$ 4,802,326	\$ 1,101,903	\$ 3,700,423	\$ 1,386,273	\$ 538,215	\$ 179,751	\$ 220,099	\$ -	\$ 167,816	\$ 1,208,269	
Miscellaneous Equipment	T	\$ 697,209	\$ 652,904	\$ 44,305	\$ 16,598	\$ 6,444	\$ 2,152	\$ 2,635	\$ -	\$ 2,009	\$ 14,467	
Other Tangible Plant	T	\$ 171,765	\$ 60,849	\$ 110,916	\$ 41,552	\$ 16,132	\$ 5,388	\$ 6,597	\$ -	\$ 5,030	\$ 36,216	
<b>Total General Plant</b>		<b>\$ 43,362,658</b>	<b>\$ 28,688,564</b>	<b>\$ 14,674,094</b>	<b>\$ 5,497,530</b>	<b>\$ 2,134,070</b>	<b>\$ 712,728</b>	<b>\$ 872,712</b>	<b>\$ -</b>	<b>\$ 665,422</b>	<b>\$ 4,791,631</b>	
<b>Total Plant</b>		<b>\$ 289,826,638</b>	<b>\$ 156,720,296</b>	<b>\$ 133,106,342</b>	<b>\$ 49,865,275</b>	<b>\$ 19,359,674</b>	<b>\$ 6,465,665</b>	<b>\$ 7,916,989</b>	<b>\$ -</b>	<b>\$ 6,036,394</b>	<b>\$ 43,462,345</b>	<b>32.7%</b>
Construction Work in Progress	T			\$ 60,594,212	\$ 22,700,139	\$ 8,813,241	\$ 2,943,410	\$ 3,604,106	\$ -	\$ 2,747,983	\$ 19,785,333	
Assets under Capital Lease	T			\$ 13,846,150	\$ 5,187,121	\$ 2,013,880	\$ 672,587	\$ 823,560	\$ -	\$ 627,931	\$ 4,521,070	
<b>Total Plant Investment</b>				<b>\$ 207,546,704</b>	<b>\$ 77,752,536</b>	<b>\$ 30,186,794</b>	<b>\$ 10,081,662</b>	<b>\$ 12,344,655</b>	<b>\$ -</b>	<b>\$ 9,412,307</b>	<b>\$ 67,768,749</b>	<b>32.7%</b>
<i>Totals used to determine Allocation Factors:</i>												
Total Plant less Land				\$ 189,835,861	\$ 68,557,872	\$ 30,036,701	\$ 10,019,834	\$ 12,343,265	\$ -	\$ 9,185,063	\$ 59,693,127	<b>31.4%</b>
Reallocated Meters and Fire Protection					\$ 13,588,771	\$ 5,953,537	\$ 1,986,019	\$ (12,343,265)	\$ (9,185,063)			
Total Plant less Land with Reallocated Meters and Fire Protection				\$ 189,835,861	\$ 82,146,643	\$ 35,990,238	\$ 12,005,852	\$ -	\$ -	\$ -	\$ 59,693,127	<b>31.4%</b>
Total Plant less Land with Reallocated Meters and Fire Protection				\$ 189,835,861	\$ 82,146,643	\$ 35,990,238	\$ 12,005,852	\$ -	\$ -	\$ -	\$ 59,693,127	

**Plant Investment**  
Test Year Ending June 30, 2012

**Exhibit DFR-3**

	Allocation Factor	Plant in Service	Accumulated Depreciation	Net Book Value	Base	Maximum Day	Maximum Hour	Meters	Billing & Collection	Public Fire Protection	Wholesale	
<b>Source of Supply &amp; Pumping</b>												
	A	\$ 17,072,561	\$ -	\$ 17,072,561	\$ 8,974,729	\$ -	\$ -	\$ -	\$ -	\$ 170,726	\$ 7,927,106	
	A	\$ 12,143,397	\$ 10,352,552	\$ 1,790,845	\$ 941,414	\$ -	\$ -	\$ -	\$ -	\$ 17,908	\$ 831,522	
	A	\$ 11,995,947	\$ 7,241,357	\$ 4,754,590	\$ 2,499,400	\$ -	\$ -	\$ -	\$ -	\$ 47,546	\$ 2,207,644	
	A	\$ 4,176,429	\$ -	\$ 4,176,429	\$ 2,195,471	\$ -	\$ -	\$ -	\$ -	\$ 41,764	\$ 1,939,193	
	N	\$ 22,321,197	\$ 5,346,320	\$ 16,974,877	\$ 7,670,078	\$ 1,511,498	\$ 283,232	\$ -	\$ -	\$ -	\$ 7,510,069	
	N	\$ 459,317	\$ 414,463	\$ 44,854	\$ 20,267	\$ 3,994	\$ 748	\$ -	\$ -	\$ -	\$ 19,844	
	N	\$ 929,495	\$ 696,465	\$ 233,030	\$ 105,294	\$ 20,750	\$ 3,888	\$ -	\$ -	\$ -	\$ 103,098	
	N	\$ 107,721	\$ 48,593	\$ 59,128	\$ 26,717	\$ 5,265	\$ 987	\$ -	\$ -	\$ -	\$ 26,160	
	N	\$ 1,150,738	\$ 1,023,497	\$ 127,241	\$ 57,494	\$ 11,330	\$ 2,123	\$ -	\$ -	\$ -	\$ 56,294	
		<b>\$ 70,356,802</b>	<b>\$ 25,123,247</b>	<b>\$ 45,233,555</b>	<b>\$ 22,490,865</b>	<b>\$ 1,552,837</b>	<b>\$ 290,978</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 277,944</b>	<b>\$ 20,620,931</b>	
<b>Water Treatment Plant</b>												
	AA	\$ 29,994	\$ -	\$ 29,994	\$ 8,531	\$ 6,348	\$ -	\$ -	\$ -	\$ 300	\$ 14,815	
	AA	\$ 40,981,689	\$ 22,784,623	\$ 18,197,066	\$ 5,175,535	\$ 3,851,409	\$ -	\$ -	\$ -	\$ 181,971	\$ 8,988,151	
	AA	\$ 13,487,645	\$ 15,782,707	\$ (2,295,062)	\$ (652,752)	\$ (485,750)	\$ -	\$ -	\$ -	\$ (22,951)	\$ (1,133,609)	
	AA	\$ 23,674,487	\$ 15,402,580	\$ 8,271,907	\$ 2,352,662	\$ 1,750,749	\$ -	\$ -	\$ -	\$ 82,719	\$ 4,085,777	
		<b>\$ 78,173,815</b>	<b>\$ 53,969,910</b>	<b>\$ 24,203,905</b>	<b>\$ 6,883,976</b>	<b>\$ 5,122,756</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 242,039</b>	<b>\$ 11,955,134</b>	
<b>Transmission &amp; Distribution Plant</b>												
	L	\$ 614,902	\$ -	\$ 614,902	\$ 58,205	\$ 38,717	\$ 26,699	\$ -	\$ -	\$ 30,124	\$ 1,700	
	L	\$ 218,135	\$ 197,746	\$ 20,389	\$ 1,930	\$ 1,284	\$ 885	\$ -	\$ -	\$ 999	\$ 56	
	AA	\$ 11,468,806	\$ 10,228,091	\$ 1,240,715	\$ 352,879	\$ 262,597	\$ -	\$ -	\$ -	\$ 12,407	\$ 612,831	
	AA	\$ 19,328,096	\$ 8,026,635	\$ 11,301,461	\$ 3,214,136	\$ 2,391,954	\$ -	\$ -	\$ -	\$ 113,241	\$ 5,582,131	
	TD	\$ 31,964,568	\$ 13,274,350	\$ 18,690,218	\$ 8,773,188	\$ 5,823,872	\$ 4,093,158	\$ -	\$ -	\$ -	\$ -	
	C	\$ 69,013,841	\$ 9,877,014	\$ 59,136,827	\$ -	\$ -	\$ -	\$ 59,136,827	\$ -	\$ -	\$ -	
	C	\$ 24,526,690	\$ 16,655,211	\$ 7,871,479	\$ -	\$ -	\$ -	\$ 7,871,479	\$ -	\$ -	\$ -	
	FP	\$ 7,841,748	\$ 3,228,864	\$ 4,612,884	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,612,884	\$ -	
	AA	\$ 7,834,658	\$ 8,547,614	\$ (712,956)	\$ (202,776)	\$ (150,897)	\$ -	\$ -	\$ -	\$ (7,130)	\$ (352,153)	
		<b>\$ 172,811,444</b>	<b>\$ 70,035,525</b>	<b>\$ 102,775,919</b>	<b>\$ 12,197,562</b>	<b>\$ 8,367,527</b>	<b>\$ 4,120,742</b>	<b>\$ 67,008,306</b>	<b>\$ -</b>	<b>\$ 4,762,525</b>	<b>\$ 5,844,566</b>	
<b>General Plant</b>												
	T	\$ 23,380	\$ -	\$ 23,380	\$ 5,660	\$ 2,048	\$ 601	\$ 9,122	\$ -	\$ 719	\$ 5,230	
	T	\$ 4,900,530	\$ 4,733,312	\$ 167,218	\$ 40,478	\$ 14,647	\$ 4,296	\$ 65,244	\$ -	\$ 5,143	\$ 37,409	
	T	\$ 496,042	\$ 454,562	\$ 41,480	\$ 10,041	\$ 3,633	\$ 1,066	\$ 16,184	\$ -	\$ 1,276	\$ 9,280	
	T	\$ 6,798,885	\$ 6,561,271	\$ 237,614	\$ 57,519	\$ 20,813	\$ 6,104	\$ 92,711	\$ -	\$ 7,309	\$ 53,158	
	T	\$ 3,848,851	\$ 3,549,510	\$ 299,341	\$ 72,461	\$ 26,220	\$ 7,690	\$ 116,796	\$ -	\$ 9,207	\$ 66,967	
	T	\$ 417,205	\$ 362,834	\$ 54,371	\$ 13,161	\$ 4,763	\$ 1,397	\$ 21,214	\$ -	\$ 1,672	\$ 12,164	
	A	\$ 198,137	\$ 198,137	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	T	\$ 380,804	\$ 304,055	\$ 76,749	\$ 18,578	\$ 6,723	\$ 1,972	\$ 29,946	\$ -	\$ 2,361	\$ 17,170	
	T	\$ 1,174,151	\$ 919,875	\$ 254,276	\$ 61,552	\$ 22,273	\$ 6,532	\$ 99,212	\$ -	\$ 7,821	\$ 56,886	
	T	\$ 697,209	\$ 697,209	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	T	\$ 255,664	\$ 65,461	\$ 190,203	\$ 46,042	\$ 16,660	\$ 4,886	\$ 74,213	\$ -	\$ 5,850	\$ 42,551	
		<b>\$ 19,190,858</b>	<b>\$ 17,846,226</b>	<b>\$ 1,344,632</b>	<b>\$ 325,492</b>	<b>\$ 117,780</b>	<b>\$ 34,542</b>	<b>\$ 524,643</b>	<b>\$ -</b>	<b>\$ 41,360</b>	<b>\$ 300,815</b>	
Total Plant		<b>\$ 340,532,919</b>	<b>\$ 166,974,908</b>	<b>\$ 173,558,011</b>	<b>\$ 41,897,895</b>	<b>\$ 15,160,900</b>	<b>\$ 4,446,262</b>	<b>\$ 67,532,949</b>	<b>\$ -</b>	<b>\$ 5,323,867</b>	<b>\$ 38,721,445</b>	22.3%
Construction Work in Progress	T			\$ 60,594,212	\$ 14,667,906	\$ 5,307,633	\$ 1,556,578	\$ 23,642,404	\$ -	\$ 1,863,817	\$ 13,555,873	
Assets under Capital Lease	T			\$ 13,846,150	\$ 3,351,707	\$ 1,212,827	\$ 355,688	\$ 5,402,435	\$ -	\$ 425,894	\$ 3,097,600	
<b>Total Plant Investment</b>				<b>\$ 247,998,373</b>	<b>\$ 59,917,508</b>	<b>\$ 21,681,360</b>	<b>\$ 6,358,528</b>	<b>\$ 96,577,788</b>	<b>\$ -</b>	<b>\$ 7,613,577</b>	<b>\$ 55,374,918</b>	22.3%
<i>Totals used to determine Allocation Factors:</i>												
Total Plant less Land				\$ 230,287,530	\$ 50,878,914	\$ 21,640,596	\$ 6,331,229	\$ 96,568,666	\$ -	\$ 7,412,009	\$ 47,440,881	20.6%
Reallocated Meters and Fire Protection					\$ 67,094,157	\$ 28,537,510	\$ 8,349,008	\$ (96,568,666)	\$ (7,412,009)			
Total Plant less Land with Reallocated Meters and Fire Protection				\$ 230,287,530	\$ 117,973,072	\$ 50,178,105	\$ 14,680,236	\$ -	\$ -	\$ -	\$ 47,440,881	20.6%

**CERTIFICATION**

I hereby certify that on August 23, 2013, I sent a copy of the within to all parties set forth on the attached Service List by electronic mail and copies to Luly Massaro, Commission Clerk, Robert A. Watson, Esquire and Peter D. Ruggiero by electronic mail and regular mail.

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