



The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 08-27

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Petition of Aquarion Water Company of Massachusetts to the Department of Public Utilities for a General Rate Increase as set forth in M.D.P.U. No. 1

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I. INTRODUCTION

On May 14, 2008, Aquarion Water Company of Massachusetts (“Aquarion” or “Company”) filed a petition with the Department of Public Utilities (“Department”) pursuant to G.L. c. 164, § 94, and G.L. c. 165, § 2, for a general increase in water rates of \$3,070,511.¹ The Company based its proposed increase on a test year ending December 31, 2007 (Exh. AQR-LMD at 7). During the proceedings, Aquarion revised its revenue deficiency to \$3,354,080. The Department docketed the petition as D.P.U. 08-27 and suspended the effective date of the Company’s revised pages to its tariff M.D.P.U. No. 1 until April 1, 2009, for further investigation. Aquarion’s last general rate increase was the result of a settlement agreement approved by the Department on April 26, 2001. Massachusetts-American Water Company, D.T.E. 00-105 (2001).

The outstanding common stock of Aquarion is owned by Aquarion Water Company, a wholly-owned subsidiary of Aquarion Company, which is in turn owned by Macquarie Utilities, Inc. (“MUI”), a special-purpose corporation formed by the Macquarie Group (“Macquarie”) to acquire and hold Aquarion Company (Exhs. AQR-LLB at 5; AQR-LMD at 7; Hingham/Hull 1-47).² Aquarion serves approximately 18,517 customers in six

¹ Chairman Paul J. Hibbard has recused himself from participation in the Company’s rate increase proposal.

² Aquarion Company is the parent company of the regulated and non-regulated entities in New England; it has no other function (Exh. Hingham/Hull 1-47; Tr. 1, at 106). Aquarion owns three affiliates in New England: (1) Aquarion; (2) Aquarion Water Company of Connecticut; and (3) Aquarion Water Company of New Hampshire (Exh. AQR-LLB at 5).

communities, which comprise two service areas: (1) the Town of Hingham (“Hingham”), the Town of Hull (“Hull”), the northern section of the Town of Cohasset (“Cohasset”), and a portion of the Town of Norwell (“Norwell”) (together, “Service Area A”); and (2) the Town of Millbury (“Millbury”) and the Town of Oxford (“Oxford”) (together, “Service Area B”) (Exh. AQR-LLB at 5-8).

On July 15, 2008, the Department granted full party intervenor status to Hingham and Hull.³ On July 18, 2008, the Department granted full party intervenor status to Oxford.⁴ On July 29, 2008, the Department granted full party intervenor status to Wheelabrator Millbury, Inc. (“Wheelabrator”). Pursuant to notice duly issued, the Department held two public hearings: (1) in Oxford on July 9, 2008; and (2) in Hull on July 16, 2008. The Department held seven days of evidentiary hearings between November 18, 2008, and December 8, 2008. On January 7, 2009, Hingham, Hull, and Oxford submitted a joint initial brief (“Towns Joint Brief”) and Oxford submitted a separate initial brief outlining certain distinct issues (“Oxford Brief”). On January 21, 2009, Aquarion submitted an initial brief (“Company Brief”). On January 30, 2009, Oxford submitted a reply brief (“Oxford Reply Brief”) and on February 6, 2009, Aquarion submitted a reply brief (“Company Reply Brief”). The evidentiary record consists of 658 exhibits and responses to 33 record requests.⁵

³ Although Hingham and Hull submitted separate petitions to intervene, the two towns issued joint discovery (see, e.g., Hingham/Hull 1-1).

⁴ Hingham, Hull, and Oxford are jointly referred to as the “Town Intervenors.”

⁵ The Town Intervenors included two documents with its initial brief and asked that the
(continued...)

In support of its filing, Aquarion sponsored the testimony of six witnesses:

(1) Larry L. Bingaman, senior vice president in charge of operations for Aquarion;
(2) Linda M. Discepolo, director of rates and regulation for Aquarion Water Company of Connecticut (“Aquarion-CT”); (3) Troy M. Dixon, manager of regulatory compliance for Aquarion-CT; (4) Robert L. Roland, director of operations for Aquarion; (5) John F. Guastella of Guastella & Associates; and (6) Jay W. Shutt of the Floyd Browne Group. Hingham, Hull, and Oxford sponsored the testimony of David Russell of Russell Consulting.⁶ Oxford also sponsored the testimony of Sean Divoll, director of the Oxford Department of Public Works, and Robert Sims, managing engineer at Pare Corporation.

II. RATE BASE

A. Introduction

In the period between Aquarion’s previous rate case in 2001 and the end of 2007, the Company has placed into service approximately \$21.4 million in new plant (Exh. AQR-LLB at 11). Of this plant, approximately \$17.9 million is for sources of supply, treatment, water

⁵(...continued)

Department move the documents as exhibits into the record: (1) Attachment 1 provides examples of the allowed returns on equity for private water companies; and (2) Attachment 2 is an email dated January 2, 2009, from Tata & Howard, Inc., on behalf of Aquarion, to Hull officials (Towns Joint Brief at 26, 56). This request was made after the close of the evidentiary record and, thus, should have been submitted with a motion to reopen the record pursuant to 220 C.M.R. § 1.11(8). Nonetheless, no party objected to this request. Therefore, we find there is no prejudice to any party and Attachments 1 and 2 are entered into the evidentiary record in this case and are marked as Exhibits Town Intervenors Att. 1 and Town Intervenors Att. 2, respectively.

⁶ David Russell provided joint testimony for Hingham and Hull, and he provided separate testimony for Oxford.

mains, meters, services, and hydrants (id.). The largest capital projects completed during this period were: (1) the Millbury Avenue Water Treatment Facility (“Millbury WTP”), completed in 2003 at a total cost of \$5,230,848; and (2) a perchlorate treatment facility located at Jacques Street Wells Nos. 1 and 2 (“Jacques 1” and “Jacques 2”), completed in 2005 at a total cost of \$1,517,819 (Exh. AQR-RLR at 6-7).⁷ In addition, the Company placed into service during 2008 a number of plant additions, most of which pertain to improvements at: (1) Free Street Well No. 4 (“Free Street 4”); (2) Scotland Street Well (“Scotland Street”); and (3) Fulling Mill Station (“Fulling Mill”) (Exh. 5, Sch. 2 (updated); Tr. 4, at 438-484, 492).

Aquarion provided the work orders and closing reports for all capital projects in excess of \$50,000 that were completed between January 1, 2003, and December 31, 2007 (Exh. DPU 2-6). The information included project execution plans, project report cards, alternative analyses, and project goal worksheets, along with various supplemental memoranda (id.).

B. Standard of Review

1. Prudent, Used and Useful

For costs to be included in rate base, the expenditures must be prudently incurred and the resulting plant must be used and useful to ratepayers. Western Massachusetts Electric Company, D.P.U. 85-270, at 20 (1986). For a plant item to be considered used and useful, it

⁷ Most of the perchlorate treatment facility costs were recovered from a property owner responsible for the perchlorate contamination at Jacques 1 and 2 (Exh. AQR-RLR at 7-8). See Section IV.J., below, for a further discussion of the perchlorate treatment facility.

must be in service and providing benefits to ratepayers. Id. at 60-107. The Department also reviews plant previously included in rate base to determine whether it continues to be used or useful. Fitchburg Gas and Electric Light Company v. Department of Public Utilities, 375 Mass. 571, 578-579 (1978); Fitchburg Gas and Electric Light Company, D.P.U. 19084, at 22-32 (1977); Fitchburg Gas and Electric Light Company, D.P.U. 18296/18297, at 6-7 (1975).

A prudence review involves a determination of whether the utility's actions, based on all that the utility knew or should have known at that time, were reasonable and prudent in light of the extant circumstances. Such a determination may not properly be made on the basis of hindsight judgments, nor is it appropriate for the Department merely to substitute its own judgment for the judgments made by the management of the utility. Attorney General v. Department of Public Utilities, 390 Mass. 208, 229 (1983). A prudence review must be based on how a reasonable company would have responded to the particular circumstances and whether the company's actions were in fact prudent in light of all circumstances that were known or reasonably should have been known at the time a decision was made. Boston Gas Company, D.P.U. 93-60, at 24-25 (1993); D.P.U. 85-270, at 22-23; Boston Edison Company, D.P.U. 906, at 165 (1982). A review of the prudence of a company's actions is not dependent upon whether budget estimates later proved to be accurate but rather upon whether the assumptions made were reasonable, given the facts that were known or that should have been known at the time. Massachusetts-American Water Company, D.P.U. 95-118, at 39-40

(1996); D.P.U. 93-60, at 35; Fitchburg Gas and Electric Light Company, D.P.U. 84-145-A at 26 (1985).

The Department has cautioned companies that, as they bear the burden of demonstrating the propriety of additions to rate base, failure to provide clear and cohesive reviewable evidence on rate base additions increases the risk to the utility that the Department will disallow these expenditures. Massachusetts Electric Company, D.P.U. 95-40, at 7 (1995); D.P.U. 93-60, at 26; The Berkshire Gas Company, D.P.U. 92-210, at 24 (1993); see also Massachusetts Electric Company v. Department of Public Utilities, 376 Mass. 294, at 304 (1978); Metropolitan District Commission v. Department of Public Utilities, 352 Mass. 18, at 24 (1967). In addition, the Department has stated that:

In reviewing the investments in main extensions that were made without a cost-benefit analysis, the [c]ompany has the burden of demonstrating the prudence of each investment proposed for inclusion in rate base. The Department cannot rely on the unsupported testimony that each project was beneficial at the time the decision was made. The [c]ompany must provide reviewable documentation for investments it seeks to include in rate base.

D.P.U. 92-210, at 24.

2. Post-Test Year Additions and Retirements

The Department does not recognize post-test year additions or retirements to rate base, unless the utility demonstrates that the additions or retirements represent a significant investment which has a substantial effect on its rate base. Boston Gas Company, D.P.U. 96-50-C at 16-18, 20-21 (1997); D.P.U. 95-118, at 56, 86; D.P.U. 85-270, at 141 n.21. As a threshold requirement, a post-test year addition to plant must be known and

measurable, as well as in service. Dedham Water Company, D.P.U. 84-32, at 17 (1984); D.P.U. 906, at 7-11.

C. Millbury Water Treatment Facility

1. Introduction

In 2003, Aquarion placed into service a water filtration and treatment facility at its Millbury Avenue Well in Millbury (Exh. AQR-RLR at 6). The Millbury WTP was required under the terms of an administrative consent order (“ACO”) with the Massachusetts Department of Environmental Protection (“DEP”) dated June 16, 2000, which identified the Millbury Avenue Well as groundwater under the influence of surface water, thus requiring filtration (Exh. OXF-2, Att. C at 6, 11). The Millbury WTP consists of a treatment building, raw water pump equipment, four horizontal pressure sand filters, and associated chemical feed set-ups and associated piping, valves, and monitoring equipment, with a total cost of \$5,230,848 (Exhs. AQR-RLR at 6; DPU 1-1, Att. C, at 4-5). Of the total project cost, \$3,376,102 was financed through a zero percent interest loan program offered by the Massachusetts Water Pollution Abatement Trust (“MWPAT”) through the Drinking Water State Revolving Fund program administered by DEP (Exhs. DPU 4-15; OXF 3-9; see also Aquarion Water Company of Massachusetts, D.T.E. 02-57, at 1-4 (2002)).⁸ Aside from Aquarion’s general contention that all of its plant is used and useful, and providing service to customers, the Company did not address this issue on brief (see Company Brief at 5-6, citing

⁸ The outstanding balance of the MWPAT financing has been incorporated into the Company’s proposed capital structure (Exhs. 6, Sch. 1; AQR-RLR at 6-7).

D.P.U. 95-118, at 40). None of the other parties commented on brief about the used and useful status of the Millbury WTP or the prudence of its cost.

2. Analysis and Findings

The Millbury Avenue Well has been identified as groundwater under the influence of surface water and, thus, required filtration (Exh. OXF 3-10, Att. B at 1; Tr. 4, at 506-507; see 310 C.M.R. § 22.01). The Company entered into an ACO with DEP to construct filtration facilities at the Millbury Avenue wellfield (Exh. OXF 3-10, Att. B at 1). Therefore, the Department finds that the Company's decision to construct the Millbury WTP was reasonable and prudent.

The Millbury WTP was in service as of the end of the 2007 test year in this proceeding and is currently providing benefits to customers. Therefore, the Department finds that this project is used and useful. Boston Gas Company, D.P.U. 96-50 (Phase I) at 23-24 (1996); D.P.U. 85-270, at 60-63. Turning to the cost of the Millbury WTP, the original estimated cost of construction was \$3,114,103 (Exh. OXF 1-4, Att. B). In June 2002, the initial capital authorization for this project was established at \$4,561,726 (Exh. DPU 2-6, Att. A at 40). By 2004, the construction budget increased to \$4,740,211 because of the need to delay completion of certain climate-sensitive punch list items until the weather permitted (id., Att. A at 38-39). The final cost of the project was \$5,230,848, representing an increase of 14.7 percent over the original capital authorization and an increase of 10.4 percent over the revised capital authorization (Exh. AQR-RLR at 6). This increase is attributed to design modifications required during the pilot testing process (Exh. OXF 3-10, Att. B at 1-3, App. at 2-5). Project

cost overruns can be incurred for a wide range of reasons that can be outside of a company's control; the existence of such overruns in and of themselves do not necessarily demonstrate imprudence on a company's part. New England Gas Company, D.P.U. 08-35, at 24 (Feb. 2, 2009); Bay State Gas Company, D.T.E. 05-27, at 80-82 (2005).

The Department has reviewed the underlying cost documentation for the Millbury WTP, including the pilot test analysis in Exhibit OXF 3-10, the original construction estimate from Exhibit OXF 1-4, and the cost documentation in Exhibit DPU 2-6. The Department finds that the Company has provided sufficient and reviewable evidence to demonstrate that it has controlled costs, through use of a competitive bidding process and ongoing project review (Exh. DPU 2-6, Att. A at 41). The Department's review of the supporting documentation also leads us to conclude that Aquarion acted prudently in estimating the costs associated with the Millbury WTP and that the reasons for the increased final project cost are mostly attributable to design modifications identified through pilot plant testing, with weather as a smaller contributing factor (id., Att. A at 39-40; Exh. OXF 3-10, Att. B at 1-3, App. at 2-5). Accordingly, we will allow the cost of the Millbury WTP project to be included in rate base. The Department will discuss the ratemaking treatment of the Millbury WTP in Section VI.D., below.

D. North Main Street Wells

1. Introduction

There are presently three wells at the Company's North Main Street well site in Oxford. North Main Street Well No. 1 ("North Main 1") was originally constructed in 1950,

and North Main Street Well No. 2 was constructed in 1959 (Exh. DPU 1-13, Att. B at 2-1). Because North Main 1's capacity had declined in recent years, a replacement well ("North Main Replacement") intended to restore that lost capacity was installed in December 2007 at a cost of \$148,699 (Exh. AQR-RLR at 10). After the project was placed into service, the Company spent an additional \$34,000 in electrical and site work for the North Main Replacement that was completed in May 2008 (id.). No party commented on this matter on brief.

2. Analysis and Findings

The North Main Replacement project was placed into service prior to the end of 2007, which is the test year in this proceeding, and is currently providing benefits to customers. Therefore, the Department finds that this project is used and useful. D.P.U. 96-50 (Phase I) at 23-24; D.P.U. 85-270, at 60-63.

Concerning the cost of the North Main Replacement project, the project's original capital authorization was established in 2007 at \$150,000 and was later increased to \$155,000 (Exh. DPU 2-6, Att. at 84). The final cost of the project was \$182,699, representing an increase of 17.9 percent over the revised cost estimate mostly related to additional electrical and site work (Exh. AQR-RLR at 10). The Department has reviewed the underlying cost documentation for the North Main Replacement project and finds that the Company has provided sufficient and reviewable evidence to demonstrate that it has controlled costs and that the project expenditures were prudent (id.; Exhs. DPU 1-13, Att. B at 2-1; DPU 2-6, Att. at 84-88; see also Exh. OXF-DFR at 27). The Department's review of the supporting

documentation also leads us to conclude that Aquarion acted prudently in estimating the costs associated with this project. Accordingly, we will consider the inclusion of the North Main Replacement project in rate base.

As of the end of the test year, the total investment in the North Main Replacement was \$148,699 (Exh. AQR-RLR at 10). Based on the findings above, the Department will include this amount in Aquarion's rate base. The Department finds, however, that the \$34,000 in electrical and site work completed in May 2008 does not represent a significant addition to test year-end rate base. D.P.U. 95-118, at 86; Massachusetts-American Water Company, D.P.U. 1700, at 5-6 (1984); Salisbury Water Supply Company, D.P.U. 1608, at 4 (1984). Accordingly, the Department will reduce the Company's proposed rate base by \$34,000.

E. Strawberry Hill Storage Tank

1. Introduction

The Strawberry Hill storage tank ("Strawberry Hill"), located in Hull, was constructed in 1933 and has a capacity of 510,000 gallons (Exh. DPU 1-13, Att. A at 2-2). According to the Company, Strawberry Hill serves both as pumped storage to customers in Hull and as to maintain backup pressure on the system in the event that the water level in the Company's elevated tank in Hingham at Turkey Hill ("Turkey Hill") falls below ten feet (Exh. Hingham/Hull 3-11; Tr. 3, at 435-436, 437; Tr. 4, at 526-529, 599).

In June 2006, a tank inspection was performed by an independent inspection company who concluded that Strawberry Hill was deteriorating and in need of significant repairs (Exhs. DPU 2-6, Att. A at 55; Certified Video of Hull Town Meeting of July 28, 2008

at 0:08). In the spring of 2007, the Company determined that the condition of Strawberry Hill and its proximity to residences justified that the tank be dismantled and replaced with one of similar capacity (Exhs. DPU 2-6, Att. A at 55, 82; Hingham/Hull 3-11; Tr. 7, at 1229). At that time, the Company anticipated that a replacement tank could be in service by the spring of 2008 (Exh. DPU 2-6, Att. A at 56). Based on hydraulic modeling conducted in 2007 by Tata & Howard in conjunction with Hull's own engineers, the Company concluded that Strawberry Hill could be safely removed from service without replacement and without adversely affecting service within Hull (Tr. 3, at 444-445; Tr. 7, at 1229). Aquarion indicated that it intended to take Strawberry Hill out of service in December 2008 (Tr. 3, at 444). The Company subsequently extended this date to spring 2009 (Exh. Town Intervenors Att. 2).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors oppose the inclusion of Strawberry Hill in rate base (Towns Joint Brief at 54). They argue that it had been presumed that Strawberry Hill was used for fire protection and to provide water pressure. They contend, however, that the Company now acknowledges that Strawberry Hill has not been necessary, except for limited purposes, since the completion of the Turkey Hill storage tank sometime during the 1940s (*id.*). The Town Intervenors argue that the Company's recovery of costs associated with plant that provides little, if any, service raises serious questions of mismanagement on the part of Aquarion (*id.* at 55).

The Town Intervenors contend that the Company's claims during evidentiary hearings that Strawberry Hill continues to provide storage benefit is a post hoc attempt to justify the continued inclusion of Strawberry Hill in rate base (id.; see, e.g., Tr. 5, at 883). The Town Intervenors point to a public meeting between the Hull Board of Selectmen and representatives of the Company on July 29, 2008, where they contend that the Company's regional vice president acknowledged that the installation of Turkey Hill had eliminated the need for Strawberry Hill (Towns Joint Brief at 55, citing Exh. Certified Video of Hull Town Meeting of July 28, 2008).⁹ According to the Town Intervenors, it was difficult during the public meeting to extract information regarding Strawberry Hill from the Company, and it is disingenuous for Aquarion to now claim that its officials were not under oath during that meeting and, therefore, their statements cannot be relied on (Towns Joint Brief at 55-56, citing Exh. Certified Video of Hull Town Meeting of July 28, 2008).

The Town Intervenors argue that the Company's plans to remove Strawberry Hill have been placed on hold until sometime in the spring of 2009 (Towns Joint Brief at 56). The Town Intervenors contend that the delay is attributable to the Company's failure to properly consider all of the safety, health, and environmental issues associated with the removal of the tank (id.). The Town Intervenors argue that, to the extent Aquarion is seeking to recover any portion of the tank removal costs in this proceeding, they should be disallowed (id. at 57).

⁹ The Town Intervenors cite to this recording on brief as Exhibit Hingham/Hull 3-12. The Department refers to the recording as Exhibit Certified Video of Hull Town Meeting of July 28, 2008.

The Town Intervenors assert that, in addition to removing Strawberry Hill from rate base, the Company should be penalized for the imprudent use of its resources (id. at 57-58). Accordingly, the Town Intervenors propose that the Department direct Aquarion to issue a refund to its customers for the costs associated with Strawberry Hill over the years since the tank was, in their view, unnecessary (id. at 57).

b. Company

The Company contends that Strawberry Hill is used and useful because it provides pumped storage (Company Brief at 11, citing Tr. 3, at 436; Tr. 4, at 526). Moreover, the Company argues that Strawberry Hill would be able to deliver water into Service Area A if for some reason the Turkey Hill storage tank were to drain below its altitude valve (Company Brief at 11-12, citing Tr. 3, at 437).

According to Aquarion, the fact that an engineering study determined that Strawberry Hill may now be retired does not mean that the tank has been useless for decades (Company Brief at 12). Rather, the Company contends that the study merely demonstrates that Strawberry Hill can now be removed without affecting the future operations of the Company (id.). The Company also notes that once Strawberry Hill is removed, it will be necessary to recognize the significant removal expense associated with the retirement (id. citing Tr. 3, at 312, 315). Aquarion argues that Strawberry Hill has been included in rate base in numerous rate proceedings, and had Hull been concerned about whether the tank was used and useful, then Hull should have raised the issue previously (Company Brief at 11).

3. Analysis and Findings

For costs to be included in rate base, the expenditures must be prudently incurred and the resulting plant must be used and useful to ratepayers. D.P.U. 85-270, at 20; D.P.U. 18296/18297, at 6-7. The Department has the authority to review plant previously included in rate base but which is no longer used or useful. 375 Mass. 571, 578; Fitchburg Gas and Electric Light Company v. Department of Public Utilities, 371 Mass. 881, 886-887 (1977). The Department does not, however, allow the litigation of the prudence of an investment once it has been included in rate base, in the absence of extraordinary circumstances. The Berkshire Gas Company, D.P.U. 92-210-B at 14 (1993).

There has been considerable controversy in this proceeding over the continued need for Strawberry Hill. The Company's hydraulic modeling studies, as confirmed by Hull's own engineers, indicate that Strawberry Hill can now be retired without adversely affecting service in Hull (Exh. Certified Video of Hull Town Meeting of July 28, 2008 at 0:53, 1:10; Tr. 3, at 444-445; Tr. 7, at 1229). Regardless of the potential value of Strawberry Hill, Aquarion has represented that the tank is scheduled for retirement in spring 2009 (Exhs. DPU 2-6, Att. at 55, 82; Hingham/Hull 3-11; Town Intervenors Att. 2; Certified Video of Hull Town Meeting of July 28, 2008 at 0:57; Tr. 7, at 1229). Accordingly, the Department will review the continued inclusion of Strawberry Hill in the Company's rate base under the Department's used and useful standard. The Berkshire Gas Company, D.T.E. 01-56, at 42-43 (2002); D.P.U. 93-60, at 43.

The evidence in this proceeding demonstrates that Strawberry Hill is in the process of being retired, with the actual dismantling of the tank expected to take no more than one or two days and the total project duration estimated at between four and six weeks (Exh. Certified Video of Hull Town Meeting of July 28, 2008 at 0:48-0:50; Tr. 7, at 1221). Given the proximity of this retirement to the date of this Order, the Department finds that Strawberry Hill is no longer used and useful. D.T.E. 01-56, at 42-43; D.P.U. 93-60, at 43-44.

As of the end of the test year, the gross book value of Strawberry Hill was \$66,116, and the book value of the associated land was \$1,076 (Exh. Hingham/Hull 2-76; 2007 Annual Return to Department at 400). Accordingly, the Department will reduce the Company's proposed plant investment by \$67,192. The Company has indicated that the land retains potential value for a replacement storage tank if one becomes necessary in the future (Exh. Certified Video of Hull Town Meeting of July 28, 2008 at 0:54-0:55). The Department directs the Company to reclassify the land associated with Strawberry Hill to Account 202 - Miscellaneous Physical Property once Strawberry Hill has been dismantled.

Consistent with this treatment of Strawberry Hill, corresponding reductions to the Company's depreciation reserve, operating and maintenance ("O&M") expense, depreciation expense, and property taxes are appropriate. The Company does not maintain depreciation reserve data by individual plant items but rather by plant account (Exh. Hingham/Hull 2-76). As of the end of the test year, the total accumulated depreciation associated with Aquarion's tanks and standpipes was \$137,881 (*id.*). Therefore, it is necessary to calculate for ratemaking purposes a proxy for the accumulated depreciation associated with Strawberry Hill. Of the

Company's total gross investment of \$64,324 in Strawberry Hill, \$30,347 was invested between 2002 and 2006, and \$33,977 was invested during the test year (Exh. Hingham/Hull 3-13). In the absence of information on the year-by-year capital expenditures made at Strawberry Hill since 1933, the Department will assume for ratemaking purposes that the Company's pre-2002 plant investment is fully depreciated, that the 2002 through 2006 additions were made in equal amounts each year, and that no depreciation had been booked on the 2007 additions. Using these assumptions and the 2.67 percent depreciation accrual rate established in 2001 and in use for this account during the test year, the Department estimates that the accumulated depreciation associated with Strawberry Hill as of the end of the test year was \$3,818.¹⁰ The Department finds that, given the age of Strawberry Hill and the capital expenditures made at Strawberry Hill in recent years, the \$3,818 provides a reasonable proxy for the accumulated depreciation associated with Strawberry Hill. Accordingly, the Department will reduce the Company's depreciation reserve by \$3,818.

Turning to the other expenses associated with Strawberry Hill, the test year electric power expense for pumping was \$811, and test year property taxes were \$9,623 (id.). The Department will remove these expenses from the Company's proposed cost of service.

D.P.U. 93-60, at 44. Finally, Aquarion has proposed an annual depreciation accrual rate of 2.12 percent for its distribution reservoirs and standpipes, representing a total proposed depreciation expense of \$1,402 for Strawberry Hill (Exh. AQR-JWS-1, Table 5-2). The

¹⁰ This amount consists of \$1,792 in accumulated depreciation associated with pre-2002 capital expenditures, plus \$2,026 in accumulated depreciation associated with 2002 through 2006 capital expenditures.

Department will remove this amount from the Company's total depreciation expense as detailed in Section IV.M.4., below.

The Town Intervenors request that the Department direct the Company to issue a refund to its customers for the costs associated with Strawberry Hill for the period that the tank was, in their view, not contributing to the system (Towns Joint Brief at 57-58). It was not until the computer modeling studies were performed, however, that Strawberry Hill was determined to be unnecessary for system requirements. Moreover, the Department had previously found that Strawberry Hill was used and useful as both a backup to Turkey Hill and for fire protection requirements in the northern part of Hull. Hingham Water Company, D.P.U. 1590, at 5-6 (1984). This availability for fire protection has been acknowledged by Hull town officials (Exh. Certified Video of Hull Town Meeting of July 28, 2008 at 1:00). Therefore, the evidence does not support a conclusion that Strawberry Hill provided no value to customers.

F. Prospect Hill Storage Tank

1. Introduction

One of the Company's storage tanks is a 214,000 gallon tank on Prospect Hill in Oxford ("Prospect Hill") (Exh. DPU 1-13, Att. B at 2-1).¹¹ Prospect Hill was constructed in 1905, and the Company's engineers have recommended that the tank be retired from service because of its condition (id., Att. B at 7-5 to 7-6).

¹¹ The Prospect Hill tank is also referred to as the Old Tank (Exh. DPU 2-13, Att. B at 2-1).

2. Intervenor Analysis

Oxford stated that Prospect Hill no longer serves any significant purpose and that the Company has expressed its intention to remove the tank from service (Exh. OXF-DFR at 27). Oxford, therefore, states that Prospect Hill should be taken out of service and removed as soon as possible, with the land it presently occupies sold and any net proceeds used for infrastructure improvements in Oxford (id.). Oxford also states that all test year capital and operating costs associated with Prospect Hill should be excluded from Aquarion's cost of service (id.). Oxford acknowledges, however, that certain main upgrades may be necessary before retiring the tank (id.). In that event, Oxford states that the required main upgrades should be accelerated in the absence of any other more urgent projects (id.). No party addressed Prospect Hill on brief.

3. Analysis and Findings

Prospect Hill is deteriorating and in need of significant upgrades (Exh. DPU 1-13, Att. B at 7-5 to 7-6). Unlike the situation with Strawberry Hill, however, Prospect Hill remains an integral part of the Company's distribution system. The main transmission line in the Oxford system is an undersized eight-inch main consisting of a combination of unlined cast iron originally installed in 1907, and ductile iron replacements added over the subsequent years (Exh. OXF 2-14). Because of its age and reduced carrying capacity, the main acts as a bottleneck between Prospect Hill and the Company's Jevic Avenue tank ("Jevic Tank") and limits the amount of water that can be delivered from the Jevic Tank during periods of high demand (id.). Consequently, Prospect Hill must remain in service until the main is replaced

with a larger ductile iron pipe (id.). Based on this evidence, the Department declines to remove Prospect Hill from the Company's rate base. The Department expects Aquarion to retire Prospect Hill in a manner and time consistent with the Company's obligation to provide safe and adequate service to its customers.

While Oxford has proposed that any net proceeds associated with the retirement be earmarked for infrastructure improvements within Oxford, the Department's Uniform System of Accounts for Water Companies requires that such proceeds be charged against the depreciation reserve. 220 C.M.R. § 52.00 et seq. Because land is not depreciable, the Department's long-standing policy with respect to gains on the sale of utility property is to require that the entire gain associated with the sale be returned to customers, provided those assets were recorded above-the-line and supported by customers. D.P.U. 96-50 (Phase I) at 111; Barnstable Water Company, D.P.U. 93-223-B at 12-13 (1994); Commonwealth Electric Company, D.P.U. 88-135/151, at 92 (1989). The cost of the Prospect Hill tank has been supported by Aquarion's customers as a whole for approximately 20 years, since the 1989 merger of Oxford Water Company and Massachusetts-American Water Company into Hingham Water Company (see Tr. 4, at 587). If the property associated with Prospect Hill is sold prior to the Company's next rate case, the Department will evaluate the appropriate ratemaking treatment of any gain on the sale as part of that rate case, including the propriety of any proposed change to the Department's standard ratemaking treatment.

G. Free Street Well No. 4

1. Introduction

Free Street 4, located in Hingham, was constructed in 1983 and had an approved safe yield of 0.81 million gallons per day (“MGD”) (Exh. DPU 1-13, Att. A at 2-1 to 2-2). Since 1995, Free Street 4 has been approved only as an emergency source because it does not meet DEP’s mandate of possession or control of a 400-foot radius around the well for approval as an active source (Exhs. DPU 1-13, Att. A at 5-4; DPU 2-6, Att. A at 126; Hingham/Hull 2-22, Att. B at 3-7; Tr. 4, at 485-486). See also D.P.U. 95-118, at 5 n.10. Under the terms of a then-effective ACO with DEP, the Company was prohibited from withdrawing more than its registered threshold limit of 3.51 MGD for Service Area A by more than 100,000 gallons per day (“GPD”) (Exh. DPU 2-6, Att. A at 125).¹² To address the ACO’s restrictions, the Company explored several options, including purchasing water from other systems and developing a new source of supply (id., Att. A at 127; see Exh. Hingham/Hull 2-22, Att. B). Aquarion determined in late 2003 that its preferred option was to change the status of Free Street 4 to an active source of supply (Exh. DPU 2-6, Att. A at 127-129). At that time, the Company estimated that the cost of the project would be approximately \$992,223 (id., Att. A at 126, 129-130).

In 2004, Aquarion petitioned DEP to change the designation of Free Street 4 to an active source and increase the available yield to 1.3 MGD (Exhs. AQR-RLR at 8; DPU 1-13,

¹² DEP lifted the ACO in 2006 because the Company had satisfied its terms (Exh. AQR-RLR at 5).

Att. A at 5-4). Aquarion's proposal was the subject of extensive DEP and Massachusetts Water Resources Commission ("MWRC") review due to: (1) DEP's permitting process for new sources of supply; (2) the interbasin transfer of water as defined by the Interbasin Transfer Act, G.L. c. 21, § 8C; and (3) potential environmental impacts on the Weir River basin, (RR-Hingham-4, at 1, 4; Tr. 4, at 485-487). During this review process, Aquarion determined that, based on its conversations with DEP, the Department of Conservation and Recreation, and local environmental advocates, approval of its proposal to redesignate Free Street 4 to an active source was unlikely (Exh. Hingham/Hull 2-22, Att. A at 1). DEP denied the Company's petition in 2005 and identified a number of items that Aquarion would need to address before a new source of supply could be approved (Exhs. DPU 2-6, Att. A at 52; Certified Video of Hull Town Meeting of July 28, 2008, at 0:38).

On May 9, 2005, the Executive Office of Energy and Environmental Affairs determined that the proposed expansion of Free Street 4 required the preparation of an environmental impact report ("EIR") because it involved a new and significant interbasin transfer of water (RR-Hingham-4 Supp., Att. A at 1). In July 2005, the Company's consulting engineers, Tata & Howard, recommended that Aquarion conduct a comprehensive water supply and demand analysis before submitting its EIR to DEP (Exh. Hingham/Hull 2-22, Att. A at 1). Subsequently, in the autumn of 2005, the Company engaged the services of Tata & Howard to conduct a comprehensive water supply and distribution study of its entire system (Exhs. DPU 1-13, Att. A, § 1; Hingham/Hull 1-5). Pending the results of this study, the Company evaluated its sources of supply in Service Area A and test wells were developed at

Free Street No. 2 (“Free Street 2”), Scotland Street, and Fulling Mill during the autumn of 2006 (Exh. DPU 2-6, Att. A at 58, 60-61).¹³ In December 2006, Aquarion determined that Free Street 2, Scotland Street, and Fulling Mill potentially could be restored to their original capacities (Exh. DPU 1-13, Att. A at 5-3; see Exh. Hingham/Hull 2-22, Att. A).

In April 2007, Tata & Howard issued its comprehensive study of Aquarion’s system (“Tata & Howard Study”) (Exh. DPU 1-13, Atts. A, B, C). The results of the Tata & Howard Study confirmed that Scotland Street could be restored to its original capacity and indicated that Free Street 2 could acquire additional capacity (id., Att. A at 5-3; Exh. DPU 2-6, Att. at 52). It was recommended, however, that two replacement wells be installed at Fulling Mill and that the existing dug well at that location be converted to a backup source of supply (Exh. DPU 1-13, Att. A at 5-3). In May 2007, the Company estimated that the cost of redeveloping Free Street 2 would be \$273,700, the cost of redeveloping Fulling Mill would be \$411,300, and the cost of redeveloping Scotland Street would be \$287,400 (Exh. DPU 2-6, Att. at 59, 60, 62).

Aquarion conducted pump tests at the test wells to determine the actual yields for the replacement wells, the results of which were submitted to DEP for approval (id., Att. A at 53; Exh. Hingham/Hull 2-22, Atts. C, D, E). Once DEP approved the pump test results, Tata & Howard assisted the Company in preparing bid packages for actual construction

¹³ During a 2006 meeting between DEP and Aquarion representatives, DEP staff indicated that the Company should bring all of its approved sources of supply within Service Area A back up to the original capacity before seeking approval of any new source of supply (Exh. DPU 2-6, Att. A at 52; Tr. 4, at 487-488).

(Exh. DPU 2-6, Att. at 53). The Company conducted the competitive bid process and contracts were awarded to the lowest bidders (id., Att. at 53).

The replacement well at Free Street (“Free Street 2A”) was approved by DEP and went into service in December 2007 at a total cost of \$368,670 (Exh. AQR-RLR at 9; Tr. 4, at 483, 537-538). The replacement wells at Fulling Mill were approved by DEP and went into service in June 2008 at a total cost of \$435,941 (Exhs. AQR-RLR at 9-10; Hingham/Hull 1-32; Tr. 4, at 484).¹⁴ The replacement wells at Scotland Street were approved by DEP and also went into service in June 2008 at a total cost of \$309,919 (Exhs. AQR-RLR at 9-10; Hingham/Hull 1-32).

Free Street 4 was approved by DEP as an active source of supply in November 2008, subject to a maximum daily withdrawal of 0.81 MGD and a combined maximum withdrawal with Free Street 2A of 1.8 MGD (Tr. 4, at 536; RR-Hingham-4 Supp., Att. A at 16-17). Free Street 4 was placed into service in November 2008 and Free Street 2 was, thereafter, redesignated from an active to an emergency source of supply (Exh. Hingham/Hull 1-31; Tr. 4, at 492-493, 536). As of the end of the test year, the total cost associated with the Free Street 4 project was \$1,248,258, consisting of permitting, well rehabilitation, a new submersible pump and related electrical, mechanical, and monitoring equipment, plus required long duration pump testing (Exh. AQR-RLR at 8-9). The \$1,248,258 does not include any costs incurred after December 2007 (id. at 8).

¹⁴ Actual construction at the Fulling Mill site was deferred into 2008, pending the results of redevelopment work at the Free Street and Scotland Street sites (Exh. DPU 2-6, Att. at 53).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors argue that the Company's expenditure of almost \$1.25 million for Free Street 4 produced almost no benefit to customers (Towns Joint Brief at 68). The Town Intervenors characterize the Company's efforts to expand the capacity of Free Street 4 to 1.3 MGD as "futile" (id. at 67). According to the Town Intervenors, the Company embarked on an expansion project that required a far more extensive permitting process than a replacement well project would have required, including consideration of the Interbasin Transfer Act (id.). Because of the difficulties in obtaining the necessary authorizations, the Town Intervenors contend that Aquarion abandoned its efforts to expand the capacity of Free Street 4 in 2006 in favor of redeveloping other wells (id. citing Tr. 4, at 488-489).

The Town Intervenors maintain that the Company was only able to activate Free Street 4 by converting Free Street Well 2 to emergency status, which did not result in any expanded capacity (Towns Joint Brief at 67-68, citing Tr. 7, at 1310). The Town Intervenors claim that, on a comparable unit capacity basis, Aquarion spent the equivalent of \$2,547,000 per MGD on the Free Street 4 project, versus \$706,000 per MGD on the Fulling Mill improvements and \$369,000 per MGD on the Scotland Street improvements (Towns Joint Brief at 68).

Even if the Free Street 4 expenditures had resulted in increased capacity, the Town Intervenors argue that Aquarion had no reasonable basis on which to seek such an expansion in capacity (id.). The Town Intervenors maintain that the Tata & Howard Study's demand

projections rely on population estimates that are greater than those found in other studies, including those of the Metropolitan Area Planning Council (“MAPC”), the Massachusetts Institute for Social and Economic Research (“MISER”), and local planning boards (id. at 69-70, citing Exh. DPU 1-13, Att. A at 3-6 to 3-7, Figure 3-2, Table 3-3). According to the Town Intervenors, the difference in population projections is attributable to a number of housing developments in Service Area A but that these developments are required to negate any new water demands on Aquarion’s system as part of the Company’s water balancing plan (Towns Joint Brief at 70-71, citing Tr. 4, at 478-482).¹⁵ Thus, the Town Intervenors conclude that the Tata & Howard Study produced flawed water demand projections (Towns Joint Brief at 70).

Based on the Town Intervenors’ estimates, Free Street 4 will not be needed until 2015 at the earliest (id. citing Exh. AQR-LLB at 13; Tr. 6, at 946-947). The Town Intervenors conclude that because the Free Street 4 expenditures were not necessary and will remain so into the foreseeable future, that the Department must disallow \$1.25 million of the Company’s requested addition to rate base (Towns Joint Brief at 71).

¹⁵ The Company’s water balance plan applies to new and expanded water usages greater than 100,000 gallons of water per year in Service Area A, with the exception of any residential single dwelling units (Exh. Hingham/Hull 3-29). Under the plan, a customer must offset their new or additional use through either measures intended to reduce their own consumption or retrofitting public buildings with water-saving appliances (Tr. 5, at 865-866). See Section VIII., below.

b. Company

Aquarion maintains that Free Street 4 and the replacement wells are currently necessary to meet peak demand within Service Area A (Company Brief at 10). Aquarion contends that the Town Intervenors' calculation of maximum day demand erroneously assumes that all sources of supply are functioning at their approved capacities, despite the fact that a number of wells are operating below capacity because of age and water quality conditions (id. citing Tr. 7, at 1299). Moreover, the Company argues that DEP would not allow a project to be initiated unless there was a demonstrated need for additional water supplies (Company Brief at 10, citing Tr. 7, at 1302). Aquarion also contends that although the Town Intervenors suggested that the Company could have relied on water purchases from Cohasset rather than undertake the expense of establishing new or additional sources of supply, the Cohasset Water Department had no legal authority to sell water on a wholesale basis until 2008 (Company Brief at 10, citing Tr. 7, at 1301).

Aquarion asserts that if the Department were to adopt the Town Intervenors' proposals and exclude Free Street 4 from rate base, it would send a message to utilities that they should not undertake efforts to ensure an adequate supply of water (Company Brief at 11). The Company contends that it has an obligation to ensure that it has a sufficient supply of water, which necessarily requires engaging in supply-side planning well in advance of the time that demand will occur (id.). Aquarion, therefore, concludes that its efforts to develop Free Street 4 were prudent and that these costs should be included in rate base (id.).

3. Analysis and Findings

a. Free Street 4

i. Need for Free Street 4

The Town Intervenors contend that the reactivation of Free Street 4 is not necessary to meet demand and, thus, fails to meet the definition of used and useful plant. The Department has long recognized the need for utilities to maintain sufficient production capacity to meet peak demand, subject to reasonable conditions. D.P.U. 95-118, at 44; Nantucket Electric Company, D.P.U. 88-161/168, at 31 (1989); Lowell Gas Company, D.P.U. 19037/19037-A at 14-15 (1977); Whitinsville Water Company, D.P.U. 18070, at 4 (1974). At the same time, water systems are obligated to meet various regulatory requirements of DEP, the Department of Conservation and Recreation, and the MWRC, including the provisions of the Water Management Act and the Interbasin Transfer Act. Water systems should strive to meet these demands through both supply- and demand-based initiatives. The exact mix of these initiatives will depend upon the particular circumstances of the water utility.

The Tata & Howard Study determined that while the DEP-approved withdrawal rate from Service Area A's wells was 6.71 MGD, the then-current estimated yield from those wells was only 3.85 MGD (Exh. DPU 1-13, Att. A at 5-2 to 5-3; Tr. 7, at 1299). The total loss in capacity at Aquarion's three largest wellfields (Free Street 2, Fulling Mill, and Scotland Street) was 2.49 MGD, representing 53 percent of the approved withdrawal rate from these wells (Exh. DPU 1-13, Att. A at 5-2). If the then-largest source of supply, Free Street 2, had to be taken off-line for any reason, the Company's current estimated yield would have declined to

3.06 MGD (id., Att. A at 5-2). In comparison, the annual day demand in Service Area A during 2005 was 3.31 MGD, and the maximum day demand was 6.47 MGD (id., Att. A at 5-1).

The Town Intervenors' analysis presumes that Aquarion's wells are operating at approved capacity (Tr. 7, at 1299; RR-AQR-1). Because the Company's wells were operating below their approved capacity, some by a significant factor, the Department concludes that the Town Intervenors' analysis understates Aquarion's need for additional supplies (Exh. DPU 1-13, Att. A at 5-2; Tr. 7, at 1299).

The Town Intervenors also contend that the water demand projections contained in the Tata & Howard Study are overstated because they fail to account for demand-side management ("DSM") initiatives and fail to recognize the role of the Company's water balancing plan in controlling system demand (Towns Joint Brief at 69-70). While DSM initiatives must be considered as part of any water system's planning to meet system demand, it would not be prudent for a water system to assume that DSM initiatives will be sufficient to control demand, especially in this circumstance where the margins between actual peak or maximum days as compared to projected maximum days are narrow (Exh. Hingham/Hull 2-22, Att. A at 5-1; Tr. 7, at 1299-1300).¹⁶ This is also particularly appropriate given the three- to seven-year permitting process required for a new source of supply (Tr. 7, at 1300).

¹⁶ In 2007, Aquarion's maximum day demand in Service Area A was 6.47 MGD, while its approved withdrawal rate was 6.71 MGD (Exh. DPU 1-13, Att. A at 5-1).

Based on the foregoing analysis, the Department finds that the Company had appropriately considered its supply sources and water demands in determining that Free Street 4 should be reactivated as an active source of supply. Accordingly, the Department finds that Aquarion's decision to undertake the Free Street 4 project was reasonable and prudent. The Company's decision-making process and the prudence of its actions with respect to implementation of the Free Street 4 project are discussed below.

ii. Prudent, Used and Useful

Free Street 4 was reclassified from an emergency source to an active source of supply in November 2008 (Tr. 4, at 492). Because the improvements to Free Street 4 were placed into service some eleven months after the end of the test year, the project is a proposed post-test year addition to rate base (*id.*). The total cost of the project as of the end of the test year was \$1,248,258, with some unidentified amount incurred during 2008 (Exh. AQR-RLR at 8-9). The Department is satisfied that the costs associated with the conversion of Free Street 4 to an active source of supply incurred through 2007 represent a significant addition to test year-end rate base. D.P.U. 95-118, at 56; Assabet Water Company, D.P.U. 95-92, at 21 (1996); D.P.U. 85-270, at 141. As noted above, Aquarion demonstrated that Free Street 4 was necessary and it is benefitting ratepayers by delivering water. As such, the plant is in service and providing benefits to ratepayers and, therefore, it is used and useful. See D.P.U. 85-270, at 70-107 passim. Accordingly, the Department finds that these costs meet the threshold criteria for consideration of inclusion in rate base.

The Department has reviewed the underlying cost documentation, including the scope of work provided in Exhibit DPU 2-6.¹⁷ On November 18, 2003, the Company initially determined that, on the basis of pre-design cost estimates, the Free Street 4 project would cost \$993,000, with a potential variation of plus or minus 25 percent (Exh. DPU 2-6, Att. A at 124).¹⁸ At this point, approximately \$649,000 had been already expended, consisting of \$152,108 in costs incurred for an alternatives analysis and \$496,900 for design costs (*id.*, Att. A at 124, 128).¹⁹ Of the remaining \$344,000, Aquarion estimated that it would spend an additional \$211,800 for design work, \$59,500 for execution-phase work, and \$72,700 for overhead costs (*id.*, Att. A at 124).

By July 15, 2004, Aquarion had increased its cost estimate for the execution phase of the Free Street 4 project to \$1,026,000, with a potential variation of plus or minus ten percent

¹⁷ Well-organized and fully-documented information on capital additions facilitates both Department and intervenor review. D.P.U. 08-35, at 23 n.16. In the future, the Department expects Aquarion to present its capital additions in an organized manner that fully identifies capital projects, their associated costs, variances from budgeted estimates, and the reasons for any variances. See D.T.E. 05-27, at 94 n.68.

¹⁸ According to Aquarion, actual permit expenditures depend upon the responses to comments received as well as the number of appeals, neither of which can be quantified in advance (Exh. DPU 2-6, Att. A at 130 n.C).

¹⁹ The alternatives analysis refers to the comprehensive needs analysis performed by Comprehensive Environmental in June 2003 (Exh. Hingham/Hull 2-22, Att. B).

(id., Att. A at 101).²⁰ At that time, Aquarion had expended a total of \$891,719 on the Free Street 4 project (id., Att. A at 101). The 2004-2005 capital budget prepared at that time includes \$162,000 for the EIR required as part of the permitting process (id., Att. A at 101, 104).

As noted above, the total project cost was \$1,248,258 (Exh. AQR-RLR at 8-9). Aquarion did not substantiate the \$222,252 difference between the \$1,026,000 July 15, 2004 project estimate and the final cost of \$1,248,252. While at least some portion of the \$222,252 may have a reasonable basis, the Company did not provide clear and cohesive reviewable evidence. The burden of proof rests with Aquarion as the proponent of recovery. See D.P.U. 05-27, at 93-96. That burden having not been sustained, the Department is unable to establish whether this portion of the Company's post-test year addition to rate base was prudently incurred. Therefore, the Department will exclude \$222,252 in additional post-test year costs related to the Free Street 4 project because it fails to meet our standard for post-test year changes to rate base. See D.P.U. 05-27, at 93-96; Housatonic Water Works Company, D.P.U. 86-235, at 3 (1987). Because Free Street 4 is a post-test year plant addition, we will not require the Company to adjust its accounting records to remove \$222,252 in Free Street 4 costs from plant investment. Aquarion may include the undepreciated balance of this plant in rate base as part of the Company's next rate case, upon a showing by satisfactory evidence that these project costs were prudently incurred.

²⁰ The \$1,026,000 estimate represents a consolidated number for all project phases.

Of the remaining \$1,026,000 in Free Street 4 project costs, \$162,000 represents costs for an EIR (Exh. DPU 2-6, Att. A at 101, 104). Aquarion was first notified by the DEP on May 5, 2005, that an EIR would be required (RR-Hingham-4 Supp., Att. A). Given the timing of DEP's 2005 rejection of Aquarion's initial petition to reactivate Free Street 4, it is unclear whether an EIR was actually completed and submitted to DEP. Therefore, while the Department will exclude these costs from the allowable Free Street 4 project costs, we do so on the basis that the Company has failed to substantiate these costs. Aquarion may include the undepreciated balance of this plant in rate base as part of the Company's next rate case, upon a showing by satisfactory evidence that these project costs were prudently incurred. In granting this treatment, we place the Company on notice that it bears a heavy burden to demonstrate the prudence of any expenses related to the EIR.²¹

Turning to the remaining \$864,000 in Free Street 4 project costs, \$152,108 was incurred by the Company as part of its alternatives analysis (Exh. DPU 2-6, Att. A at 128). The information provided by Aquarion on this point consists of a computer-generated printout with three coded references (i.e., BX19, BX-27, and BX28) and associated dollar amounts in a column labeled "SOURCE" (id., Att. A at 128). The spreadsheet does not provide an explanation of the codes or any narrative that would allow the Department to understand the nature of these expenditures. Thus, without these indicators, the information provided by the

²¹ The prevailing conditions at Free Street 4, such as the required interbasin transfer of water and environmental impacts on the Weir River, suggest that an application to change the status of Free Street 4 would have been a prolonged process that carried a significant risk of rejection.

Company is inadequate to support the recovery of the identified project costs. Bay State Gas Company, D.T.E. 05-27-A at 44-48 (2007). Therefore, the Department finds that the \$152,108 in Free Street 4 costs must be excluded because it fails to meet our standard for post-test year changes to rate base. See D.P.U. 05-27, at 93-96; D.P.U. 86-235, at 3.

In addition to the \$152,108 in alternatives analysis costs disallowed above, the Department has identified \$4,972 in plant overhead costs and \$7,605 in contingency costs that are allocable to the \$152,108 (see Exh. DPU 2-6, Att. A at 128). Therefore, the Department will exclude the \$12,577 in overhead and contingency costs from the allowable Free Street 4 expenses. This adjustment produces a total disallowance of \$164,685 of Free Street 4 project costs associated with costs incurred prior to the June 2003 alternatives analysis. As discussed above, we will not require the Company to adjust its accounting records to remove the \$164,685 from its plant investment. Aquarion may include the undepreciated balance of this plant in rate base as part of the Company's next rate case, upon a showing by satisfactory evidence that these project costs were prudently incurred.

Turning to the remaining \$699,315 in Free Street 4 expenses, the Department has reviewed the underlying cost documentation, including the scope of work provided in Exhibit DPU 2-6. In this instance, the Department finds that the Company has provided sufficient and reviewable evidence to demonstrate that it has controlled costs and that the project expenditures were prudent (Exhs. AQR-RLR at 8-9; DPU 2-6, Att. A at 125-130; RR-Hingham-4). The Company also engaged in appropriate cost-containment measures including competitive bidding and project monitoring (Exh. DPU 2-6, Att. A at 53).

Therefore, the Department will include the remaining \$699,315 in costs associated with Free Street 4 in rate base.

b. Scotland Street and Fulling Mill

Both the Scotland Street and Fulling Mill were placed into service during June 2008 (Exhs. AQR-RLR, at 9-10; Hingham/Hull 1-32; Tr. 4, at 483). Therefore, both projects are proposed post-test year additions to rate base. Because these projects were integral to the reactivation of Free Street 4, the Department will consider the costs of these projects together with the cost of Free Street 4 and find that, together, the projects are significant increases to year-end rate base. D.P.U. 95-118, at 56. Based on this consideration, the Department finds that the Scotland Street project with a total cost of \$309,319 and the Fulling Mill project with a total cost of \$435,941 together represent significant additions to the Company's test year-end rate base. Therefore, the Department will consider these projects for inclusion in rate base under our post-test year rate base standard. D.P.U. 96-50-C at 16-18, 20-21; D.P.U. 85-270, at 141 n.21.

As noted above, both Scotland Street and Fulling Mill are in service and are currently providing benefits to customers. Therefore, the Department finds that both of these projects are used and useful. D.P.U. 96-50 (Phase I) at 23-24; D.P.U. 85-270, at 60-63. Turning to the prudence of the Company's investment, the Department has reviewed the underlying cost documentation for both the Scotland Street and Fulling Mill projects, including the scope of work and analysis of alternatives provided in Exhibit DPU 2-6 (Exhs. AQR-RLR at 9; Hingham/Hull 1-32; DPU 2-6, Att. A at 46-78). The Department finds that the Company has

provided sufficient and reviewable evidence to demonstrate that it has controlled costs and that the project expenditures were prudent (Exhs. AQR-RLR at 9; Hingham/Hull 1-32; DPU 2-6, Att. A at 46-78). Specifically, Aquarion engaged in appropriate cost-containment measures such as competitive bidding and ongoing budgetary management of the projects (Exh. DPU 2-6, Att. A at 53). Therefore, the Department will include these plant items in rate base.

As part of its initial filing, Aquarion stated that, subject to the receipt of final cost data, the cost of the Scotland Street project was \$310,364 and that the cost of the Fulling Mill project was \$451,702 (Exh. 5, Sch. 2 (updated) at 1). The actual cost of the Scotland Street project was \$309,919, and the actual cost of the Fulling Mill project was \$435,941 (Exh. Hingham/Hull 1-32). Accordingly, the Department will reduce Aquarion's proposed rate base by \$445 for the Scotland Street project and by \$15,761 for the Fulling Mill project, for a total reduction of \$16,206.

H. Oak Pond Well Pump Replacement

1. Introduction

Aquarion proposes to increase its test year-end plant in service by \$35,000 to recognize the replacement of a pump at Oak Pond Well in Millbury (Exh. 5, Sch. 2 (updated)). The Company proposes a corresponding reduction of \$8,923 to recognize the retirement of the former pump (*id.*, Sch. 2 (updated)). The Company reported that the Oak Pond well pump was placed into service in March 2008 (Exh. DPU 2-1). No party commented on the Company's proposal.

2. Analysis and Findings

As noted in Section II.B., above, the Department does not recognize post-test year additions or retirements to rate base, unless the utility demonstrates that the additions or retirements represent a significant investment which has a substantial effect on its rate base. D.P.U. 96-50-C at 16-18, 20-21; D.P.U. 95-118, at 56, 86; D.P.U. 85-270, at 141 n.21. The Department finds that the \$35,000 addition does not represent a significant addition to test year-end rate base so as warrant its inclusion in rate base. Consistent with this disposition, the Department will not reduce the Company's year-end rate base by \$8,923 for the retired pump. Boston Gas Company, D.P.U. 88-67 (Phase I) at 28 (1988). Accordingly, the Department will reduce the Company's proposed rate base by a net total of \$26,077.

I. Completed Additions Not Recorded to Plant

1. Introduction

The Company has proposed to increase its plant in service by \$104,371, representing plant completed during 2007, but not fully recorded to plant in that year (Exh. 5, Sch. 2 (updated)). These plant items consist of \$28,908 associated with a main replacement in Oxford and \$75,463 associated with the replacement of North Main 1 in Oxford. (Id., Sch. 2 (updated); Exh. DPU 1-13, Att. B at 2-1). None of the parties addressed this issue on brief.

2. Analysis and Findings

For costs to be included in rate base, the expenditures must be prudently incurred and the resulting plant must be used and useful in providing service to ratepayers. D.P.U. 85-270, at 20. The Department has historically not allowed the inclusion of construction work in

progress (“CWIP”) in rate base, because unfinished construction cannot provide any service to then-present ratepayers. Oxford Water Company, D.P.U. 1219, at 4 (1983); D.P.U. 906, at 208.

The plant items in question represent a distribution main upgrade and replacement of a well in Oxford (Exh. 5, Sch. 2 (updated) at 1). These plant items were in service as of the end of 2007, but not all of the costs had been posted to the Company’s general ledger because of a lag in receiving some of the associated invoices (Exhs. DPU 2-1; DPU 4-11). The Department is satisfied that the plant items were in service as of the end of the 2007 test year and, thus, do not constitute CWIP or post-test year additions to rate base. D.P.U. 08-35, at 41-42; D.T.E. 05-27, at 103. Therefore, the Department will include the plant additions of \$104,371 in rate base.

J. Cash Working Capital

1. Introduction

In their day-to-day operations, utilities require funds to pay for expenses incurred in the course of business, including O&M expenses and purchased fuel and power. These funds are provided either through funds generated internally by the company or through short-term borrowing. A company is entitled to be reimbursed for the cost associated with the use of its funds or for the interest expense incurred on borrowing. D.T.E. 05-27, at 97; Western Massachusetts Electric Company, D.P.U. 87-260, at 22-23 (1988). This reimbursement is accomplished by adding a working capital component to the rate base calculation.

Aquarion proposed a cash working capital allowance of \$31,457 (Exh. 5, Sch. 2 (updated)). The Company arrived at this amount by multiplying its pro forma O&M expense of \$6,011,797 by 12.50 percent (id., Sch. 2 (updated)). The 12.50 percent represents a 45/360-day cash allowance that the Company used to determine cash working capital needs in the absence of a lead-lag study (id., Sch. 2 (updated)). None of the parties addressed this issue on brief.

2. Analysis and Findings

If properly designed, lead-lag studies are an appropriate method to determine cash working capital. In the absence of a lead-lag study, the Department has generally relied on the 45-day convention as reasonably representative of O&M working capital requirements. D.T.E. 05-27, at 98; D.P.U. 88-67 (Phase I) at 35.²² Because lead-lag studies are complex and costly to undertake, the costs associated with such studies are often out of proportion to the contributions of cash working capital to a company's rate base. In recognition of this fact, the Department has directed that companies propose alternatives to lead-lag studies if such studies

²² In recent years, the Department has expressed concern that the 45-day convention may no longer provide a reliable measure of a utility's working capital requirements. Boston Gas Company, D.T.E. 03-40, at 92 (2003); Fitchburg Gas and Electric Light Company, D.T.E. 98-51, at 15 (1998). The Department has recognized, however, that for companies on a quarterly billing system, a lead lag study is likely to produce a higher cash working capital allowance than the 45-day convention. Massachusetts-American Water Company, D.P.U. 19900, at 10 (1979). Therefore, the 45-day convention remains in use by water companies. Pinehills Water Company, D.P.U. 01-42, at 7 (2001); D.P.U. 95-92, at 11.

are not cost-effective. Boston Gas Company, D.T.E. 03-40, at 94 (2003); Fitchburg Gas and Electric Light Company, D.T.E. 02-24/25, at 57 (2002).²³

Aquarion's application of the 45-day convention consists of multiplying its pro forma O&M expense by 12.5 percent, which corresponds to a 45/360-day ratio (Exh. 5, Sch. 2 (updated)). Because the 45-day convention is used as a proxy for a lead-lag study, which is based on the number of days in a year, we find that the proper denominator to use in calculating cash working capital is 365, rather than 360. Western Massachusetts Electric Company, D.P.U. 1300, at 19-21 (1983); Boston Edison Company, D.P.U. 1350, at 25 (1983).²⁴ Application of this lead-lag factor to the level of O&M expense authorized by this Order produces a cash working capital allowance of \$706,156, as shown in Schedule 6 of this Order.

²³ In this context, "cost-effective" means that the normalized cost of the study (i.e., the cost of the study divided by the normalization period used in the utility's rate case) is less than the reduction in revenue requirements that would occur using the results of the lead-lag study in lieu of the 45-day convention. D.T.E. 02-24/25, at 57 n.34.

²⁴ Aquarion's use of 360 days instead of 365 days, or a "one-eighths" convention, is a throwback to what the Department has aptly characterized as "the green visor days." D.P.U. 1350, at 24-25.

III. REVENUES

A. Displacement Revenues from Linden Ponds

1. Introduction

The Company supplies water to Linden Ponds, an age-restricted housing development located in Hingham, through a displacement arrangement with Cohasset.²⁵ While Linden Ponds is a customer of Cohasset and is billed directly by Cohasset for metered water use, Aquarion bills Linden Ponds at the Company's tariffed charges for fire service, private hydrants and service fees, plus a volumetric wheeling fee pursuant to a Wheeling Agreement (Exh. AQR-LLB at 6-7). See Aquarion Water Company of Massachusetts, D.T.E. 03-WC-1, Wheeling Agreement, Article 1.29, (2004).²⁶ Although some additional build-out associated with this development has occurred since the end of the test year, Aquarion has not proposed any adjustments to revenues associated with Linden Ponds (Tr. 2, at 216-218).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors assert that the Company did not review the volume of water deliveries to Linden Ponds after 2007 to determine if any post-test-year adjustment should be applied to the volume of water sales (Towns Joint Brief at 46-47). In the absence of such

²⁵ Further discussion of Linden Ponds is provided in Section VI.H., below.

²⁶ The Wheeling Agreement approved in D.T.E. 03-WC-1 was incorporated by reference into the record in this proceeding (Tr. 5, at 825).

analysis, the Town Intervenors argue that a pro forma adjustment for increased water sales is appropriate (id.).

b. Company

Aquarion contends that the Department should not increase test year revenues to recognize any pro forma adjustment for Linden Ponds (Company Brief at 24). In support of its assertion that there should not be a pro forma adjustment for Linden Ponds, Aquarion focuses on a generic argument that its ability to earn its allowed return will be significantly affected by its ability to increase its revenues from additional sales on a going-forward basis (id. at 24-25). Specifically, the Company argues that it has experienced declining use per customer (id. at 24, citing Exh. AQR-JFG at 18-20). The Company also suggests that the implementation of DSM can have a negative effect on a utility's financial performance (Company Brief at 24-25, citing Tr. 6, at 1133-1134). In addition, Aquarion argues that the risk of not being able to earn its allowed return is further increased by the inclining block rate design it has proposed as a conservation measure in this case (Company Brief at 25).

3. Analysis and Finding

The Department typically does not adjust test year revenues for post-test year changes in customer numbers that fall within the normal "ebb and flow" of customers. Bay State Gas Company, D.P.U. 1122, at 46-49 (1982). Nonetheless, the addition or deletion of a customer or a change in a customer's consumption either during or after the test year, that (1) represents a known and measurable increase or decrease to test year revenues, and (2) constitutes a significant adjustment outside of the ebb and flow of customers, warrants a departure from this

standard practice. In cases where such a change in consumption or customers is found to exist, the Department may include a representative level of sales in deriving a utility's revenue requirement. Fitchburg Gas and Electric Light Company, D.T.E. 99-118, at 14-20 (2001); Massachusetts-American Water Company, D.P.U. 88-172, at 7-9 (1989); Western Massachusetts Electric Company, D.P.U. 558, at 70-72 (1981).

In this case, the usage billed to Linden Ponds for the twelve-month period November 2007 through October 2008 indicates an increase in consumption of 7,140 gallons and would result in an increase in revenues of \$7,988 over the Company's test year (RR-DPU-3). The total test year Company volume and revenues was 1,715,432 gallons and \$11,064,367, respectively (Exh. 4, Sch. 3 (updated) at 1). The Department finds that the sales growth on Linden Ponds is well within the normal ebb and flow of customers and revenues. Therefore, the Town Intervenors' proposed revenue adjustment is denied.

B. Service Fee Increases

1. Introduction

During the test year, the Company booked \$53,110 in revenues associated with various fees imposed on customers, including fees for connection and after-hour call-outs (id., Sch. 4 (updated) at 20). The Company proposes to increase its connection fees and after-hours call-out fees based on current employee hourly rates as well as current overhead rates (Exh. AQR-TMD at 9). If approved, the connection fees during normal business hours will increase from \$20 to \$49, and both the after-hours connection fee and after-hours call-out fee will increase from \$165 to \$294 (Exhs. 4, Sch. 4 (updated) at 20; DPU 1-9). Aquarion also

proposes to change the fee for testing meters larger than one inch from \$75 to actual cost plus overhead (Exh. M.D.P.U. No. 1, First Revised Sheet No. 24). Finally, the Company proposes to change its drought conditions termination and restoration fee from \$50 to \$100 for restorations during business hours and from \$50 to actual cost for restorations after hours (id., First Revised Sheet No. 23).²⁷

The proposed business-hours connection fee assumes one hour of labor for a service technician, plus applicable benefits and overhead costs, for a total of \$49 (Exh. DPU 1-8).²⁸ The proposed after-hours connection and call-out fees assume four hours of labor for a service technician, which Aquarion represents is the minimum number of call-out hours under its union contract, plus applicable benefits and overhead costs (id.). The Company then applied a factor of 1.5, representing the time-and-a-half hourly rate, to arrive at a proposed charge of \$294 per after-hours event (Exh. DPU 1-9; Tr. 2, at 246). The Company did not provide any analysis of the actual costs associated with testing meters larger than one inch or terminations and restorations in drought conditions.

²⁷ The Company did not book any revenues related to the drought conditions termination and restoration fee during the test year (Exh. AQR-TMD at 9).

²⁸ The rate for a service technician is \$26.55 per hour. The Company applied a benefit rate of 60.34 percent and a general administrative and overhead rate of 15 percent, resulting in an hourly cost of \$48.96 (Exh. DPU 1-8).

2. Positions of the Parties

a. Oxford

Oxford states that the after-hours minimum billing of four hours should be disallowed (Oxford Brief at 40). Oxford suggests that billing a customer a total of four hours and not taking into account the time actually spent on the visit is unfair and unreasonable (id.). Additionally, Oxford states that this fee bears no relationship to the services actually provided to a customer (Oxford Reply Brief at 20). Oxford further argues that this type of fee could cause a customer to defer or avoid requesting essential service visits (Oxford Brief at 40).

b. Company

Aquarion contends that the after-hours minimum service charge is based on the Company's costs under its union contract (Company Reply Brief at 8, citing Tr. 2, at 246). Under that contract, the Company states that when a service technician is called out after regular hours, Aquarion is required to pay them for a minimum four hours of time (Company Reply Brief at 8-9, citing Tr. 2, at 246). Aquarion argues that it is proposing to pass on its actual cost to those customers who require this service and that the proposed charge is consistent with the Department's prior approval of such charges (Company Reply Brief at 8-9, citing D.P.U. 95-118, at 82-84).

3. Analysis and Findings

The Department has found that fees for various services, such as meter testing, bounced checks, and cross-connection inspection fees, must be based on the costs associated with these functions that the company actually incurred. D.T.E. 01-42, at 28; D.T.E. 95-118, at 84;

Whitinsville Water Company, D.P.U. 89-67, at 4-5 (1989). Fees for ancillary services such as processing after-hours call-outs are intended to reimburse a company for actual costs incurred in providing these particular services. See, e.g., D.P.U. 95-118, at 84; D.P.U. 89-67, at 4-5; Commonwealth Electric Company, D.P.U. 956 at 62 (1982).

The Department has reviewed the Company's calculations and assumptions and finds that the proposed business-hours connection fee of \$49 is reasonable as it is based on the costs that the Company actually incurs associated with this function. Further, the Department has reviewed Aquarion's calculations and assumptions and finds that the proposed after-hours call-out fee of \$294 and the proposed after-hours connection fee of \$294 are reasonable as they are designed to reimburse Aquarion for the cost of providing these services. With respect to the two after-hour fee increases, the Company's collective bargaining agreements address the minimum hourly rate for an emergency call to duty. In Service Area A, employees receive a minimum of four hours of pay between the hours of 4:30 p.m. and 4:00 a.m; in Service Area B, employees receive a minimum of three hours of pay from 4:30 p.m. to midnight and a minimum of four hours of pay between midnight and 6:00 a.m. (Exh. DPU 3-23, Atts. A at 15-16, B at 14-15). Overtime pay also varies between 1.5 times employees' regular pay to double their regular pay, depending on the particular service area and time worked (id., Atts. A at 15-16, B at 14-15). The Department finds that, on balance, after-hours call-out service fees based on 1.5 times an employee's regular pay and a four hour minimum fairly represent the costs incurred by Aquarion. Accordingly, the Department approves Aquarion's

proposed service fees related to business-hours connections, after-hours call-outs, and after-hours connections.

While Aquarion's proposed changes for its drought conditions termination and restoration fees appears in the proposed tariff, the Company did not provide evidentiary support to demonstrate that the proposed change is based on the cost associated with these functions. Aquarion has provided no evidence that terminations and restorations during drought conditions require a level of effort that warrant a separate charge.²⁹ As such, the Department directs the Company to revise its drought conditions termination and restoration fee to comport with the connection fees charged during normal business hours and after-hours (i.e., \$49 and \$294).

With respect to the proposed change for testing meters larger than one inch from \$75 to its actual cost plus overhead, although this change appears in the proposed tariff, there was no mention of the proposed change in the Company's testimony. Accordingly, where Aquarion has failed to substantiate the proposed change, the Department rejects the Company's proposal to change the fee for testing meters larger than one inch.

Based on the above revisions to Aquarion's service fees, the Company's service fee revenues will increase to \$64,846 (see Exh. 4, Sch. 4, at 20). This amount represents an increase of \$1,230 from the Company's initial filing. Accordingly, the Department will

²⁹ The fact that the Company did not book any revenues related to its drought conditions termination and restoration fee further illustrates the lack of necessity for a separate termination and restoration rate.

increase the Company's proposed service fee revenues by an additional \$1,230. D.T.E. 05-27, at 67.

IV. OPERATING AND MAINTENANCE EXPENSES

A. Payroll Expense

1. Introduction

During the test year, Aquarion booked \$1,259,260 in union and non-union payroll expense (Exh. 2, Sch. 3). In its original filing, the Company included a pro forma increase to test year salary and wage expenses of \$48,268 (id., Sch. 3). The pro forma adjustment includes a 3.5 percent increase for non-union employees effective April 1, 2008 (id., Sch. 3). For union employees, the pro forma adjustment includes a three percent increase scheduled to take effect April 1, 2008, for Hingham union employees and August 1, 2008, for Millbury union employees (id., Sch. 3).

On November 11, 2008, Aquarion filed an updated schedule to include salary and wage changes that had occurred since the original filing (Exh. DPU 3-24 Supp., Att. A). The revised pro forma adjustment to test year salary and wage expense is \$58,898 (id., Att. A). This update incorporated known changes to both union and non-union salaries (Tr. 1, at 164-167). The union wages increased due to a recently-negotiated union contract that was effective August 1, 2008, while the non-union salaries increased due to the accounting of increases that took effect on April 1, 2008 (id.). The increase in non-union wages was partially offset by the replacement of an employee who retired prior to August 1, 2008, with an employee receiving a lower compensation level (id.).

2. Positions of the Parties

Aquarion argues that its employee compensation expense is reasonable and complies with Department precedent (Company Brief at 13). The Company states that it has worked to reduce its labor expense (id.). In addition, the Company avers that its updated salary and wage expenses comply with Department precedent as they are known and measurable changes that will take effect prior to the midpoint of the twelve months after the Order is issued (id.). No other party addressed the Company's proposed payroll expenses.

3. Analysis and Findings

a. Introduction

The Department's standard for union payroll adjustments requires that three conditions be met: (1) the proposed increase must take effect before the midpoint of the first twelve months after the rate increase; (2) the proposed increase must be known and measurable (i.e., based on signed contracts between the union and the company); and (3) the company must demonstrate that the proposed increase is reasonable. D.P.U. 96-50 (Phase I) at 43; D.P.U. 95-40, at 20; Cambridge Electric Light Company, D.P.U. 92-250, at 35 (1993); Western Massachusetts Electric Company, D.P.U. 86-280-A at 73-74 (1987).

To recover an increase in non-union wages, a company must demonstrate that: (1) there is an express commitment by management to grant the increase; (2) there is a historical correlation between union and non-union raises; and (3) the non-union increase is reasonable. D.P.U. 96-50 (Phase I) at 42; D.P.U. 95-40, at 21; Fitchburg Gas and Electric Light Company, D.P.U. 1270/1414, at 14 (1983). In addition, only non-union salary

increases that are scheduled to become effective no later than six months after the date of the Order may be included in rates. Boston Edison Company, D.P.U. 85-266-A/271-A at 107 (1986).

In determining the reasonableness of a company's employee compensation expense, the Department reviews the company's overall employee compensation expense to ensure that its employee compensation decisions result in a minimization of unit-labor costs. D.P.U. 96-50 (Phase I) at 47; D.P.U. 92-250, at 55. This approach ensures and recognizes that the different components (e.g., wages and benefits) are to some extent substitutes for each other and that different combinations of these components may be used to attract and retain employees. The Department also requires companies to demonstrate that they have minimized their total unit-labor cost in a manner that is supported by their overall business strategies.

D.P.U. 92-250, at 55.

To enable the Department to assess the reasonableness of a company's total employee compensation expense, companies are required to provide comparative analyses of their employee compensation expenses. D.P.U. 96-50 (Phase I) at 47. Both current and total compensation expense levels and proposed increases should be examined in relation to other New England investor-owned utilities and to companies in a utility's service territory that compete for similarly skilled employees. D.P.U. 96-50 (Phase I) at 47; D.P.U. 92-250, at 56; Bay State Gas Company, D.P.U. 92-111, at 102-103 (1992); Massachusetts Electric Company, D.P.U. 92-78, at 25-26 (1992).

b. Union Payroll Increase

With respect to the Company's union payroll increases, the proposed adjustments appropriately include only those increases that have been granted or will be granted before the midpoint of the first twelve months after the Department's Order in this proceeding (Exh. AQR-LMD at 15). Also, the union payroll increases are based on a signed collective bargaining agreement and, therefore, are known and measurable (id.; Exh. DPU 3-23). Finally, Aquarion's analyses of compensation levels for similarly-situated companies demonstrates that the hourly rates paid to Aquarion's union employees are reasonable because they are comparable to the average hourly rates of other comparable companies in New England (Exh. DPU 3-27). Having found that the proposed union wage increases (1) take effect before the midpoint of the first twelve months after the rate increase, (2) are based on collective bargaining increases for April 2008 and August 2008 and, therefore, are known and measurable, and (3) are reasonable in amount, the Department will allow Aquarion to adjust its test year cost of service for the union payroll increases.

c. Non-Union Payroll Increases

Regarding the updated non-union wage amounts that were filed on November 11, 2008, the updated numbers appropriately account for non-union wage increases that took effect on April 1, 2008, and the replacement of an employee by a new employee at a lower pay scale (Tr. 1, at 164-167). Aquarion has provided satisfactory evidence that the Company has expressly committed to granting a 3.5 percent non-union wage increase on April 1, 2008 (Exhs. 2, Sch. 3; AQR-LMD at 14; DPU 3-25 Att. A). Accordingly, with respect to the

Company's non-union payroll increases, the proposed adjustments appropriately include only those increases that have been granted or will be granted before the midpoint of the first twelve months after the Department's Order in this proceeding (Exh. AQR-LMD at 14-15).

To address the requirement that there be a historical correlation between union and non-union wages, the Department notes that between 2002 and 2008, both union wages and non-union wage increases averaged three percent (Exh. DPU 3-22). Therefore, the Department finds that a sufficient correlation exists between union and non-union wage increases. See Fitchburg Gas and Electric Light Company, D.P.U. 07-71, at 76 (2008); Essex County Gas Company, D.P.U. 87-59-A at 18 (1988).

With respect to a demonstration of the reasonableness of the proposed non-union salary increase, Aquarion states that it bases its non-union payroll increases on survey data from published sources such as Mercer, AOM Consulting, increases at other local companies, and other factors such as cost of living data (Exh. DPU 3-27). The Department finds that Aquarion's review of industry compensation and compensation levels for other companies within its service territories is sufficient to confirm the reasonableness of the Company's salary levels. See D.P.U. 08-35, at 87; D.T.E. 05-27, at 109; D.T.E. 02-24/25, at 95.

Having found above that the proposed non-union wage increases (1) are known and measurable, (2) indicate a historical correlation between union and non-union wage increases, and (3) are reasonable, the Department will allow the Company to adjust its test year cost of service for the non-union payroll increases. Accordingly, the Department will increase Aquarion's test year cost of service by \$58,898.

B. Pension and Post-Retirement Benefits Expense

1. Introduction

a. Background

The Company participates in the Aquarion Water Company plan covering both pension benefits and post-retirement benefits other than pension (“PBOP”) benefits (RR-DPU-1, Att. A). In Aquarion Water Company of Massachusetts, D.T.E. 03-91 (2003), the Department approved the Company’s request for an accounting ruling permitting it to defer and record as a regulatory asset or liability the difference between the level of the pension and PBOP expenses that are included in rates and the amount that must be booked in accordance with the Statement of Accounting Standards (“SFAS”) No. 87 and SFAS No. 106.³⁰

Aquarion calculates that, based on its actuarially-determined pension and PBOP expense for 2008, the Company’s pension deferral is \$575,558 and its PBOP deferral was \$885,221 (Exh. DPU 5-3 (Supp), Att. A, C; Tr. 2, at 276). The Company requests authority to continue this accounting practice and record either a regulatory asset or liability for pension and PBOP expense in an effort to mitigate what it considers to be the volatility of these expenses (Exh. AQR-LMD at 24).

b. Pension Expense

During the test year, Aquarion booked \$63,821 in pension expense (Exh. DPU 5-3 Supp., Att. B). The Company proposed to increase this expense by \$56,571 to \$120,392,

³⁰ According to the Company, the levels of pension and PBOP expenses currently included in rates are \$25,029 and \$118,006, respectively (Exhs. DPU 1-4; DPU 1-5).

based on its actual 2008 expense computed in accordance with FAS 87 (id., Att. B).³¹ The Company determined its proposed pension adjustment by multiplying its actual 2008 pension contribution of \$151,000 by 79.73 percent, representing the amount booked to expense, thereby producing a pro forma pension expense of \$120,392 (Exhs. AQR-LMD at 16; DPU 5-3 Supp., Att. B). The Company attributes the increase to the declining stock market and subsequent reduction in plan assets, lower interest earnings on plan assets, and increasing medical costs (Exh. DPU 5-3 Supp.).

c. PBOP Expense

During the test year, Aquarion booked \$96,712 in PBOP expense (Exh. 2, Sch. 5). In its initial filing, the Company proposed to increase this expense by \$131,316 to \$228,028 (Exh. DPU 5-3 Supp., Att. D). The Company determined this expense by multiplying its FAS 106-determined 2008 estimate of \$286,000 by 79.73 percent, representing the amount booked to expense, thereby producing a pro forma PBOP expense of \$228,028 (Exhs. AQR-LMD at 15-16; DPU 5-3 Supp., Att. D). Subsequently, Aquarion reduced its proposed increase to \$117,555 to recognize its actual FAS 106-determined PBOP expense of \$268,741 (Exh. DPU 5-3 Supp., Att. D). Like pension expense, the Company attributes the overall increase to the declining stock market and subsequent decline in plan assets, lower interest earnings on plan assets, and increasing medical costs (id.).

³¹ In response to questions raised by the Department during evidentiary hearings, Aquarion proposed, in its reply brief, to implement a reconciling mechanism that would provide for recovery of actual pension and PBOP expenses through a pension adjustment factor that would be implemented in the succeeding year (Company Reply Brief at 7, citing Tr. 2, at 281-283).

2. Positions of the Parties

Aquarion states that it was asked to comment on the potential of recovering pension and PBOP expense through a reconciling mechanism instead of through base rates (Company Reply Brief at 7, citing Tr. 2, at 281-283). The Company states that it is willing to implement a reconciling mechanism that would provide for recovery of actual pension and PBOP expenses through a pension adjustment factor that would be implemented in the succeeding year and requests that the Department approve it as part of this Order (Company Reply Brief at 7). No other party commented on brief on the issue of pension and PBOP expense.

3. Analysis and Findings

a. Reconciling Pension and PBOP Mechanism

In NSTAR Pension, D.T.E. 03-47-A at 2-8 (2003), the Department found that economic conditions warranted implementation of a reconciling mechanism for pension and PBOP obligations that was consistent among all jurisdictional gas and electric companies. Id. at 6. Several gas and electric companies have since then implemented a reconciling mechanism for pension and PBOP obligations. See, e.g., D.T.E. 05-27, at 120; Fitchburg Gas and Electric Light Company, D.T.E. 04-48, at 21, 22-24 (2004); D.T.E. 03-40, at 308-309.

While the Department explored the issue of establishing a reconciling pension and PBOP mechanism during the proceedings, we are not persuaded that there is sufficient evidence on the record to warrant adoption of such a mechanism for Aquarion at this time. Aquarion's request to implement a reconciling mechanism was made on reply brief. While the Company indicated its general support of the concept of reconciling mechanism at the

evidentiary hearings, the intervenors had no indication that questions posed by the Department to Aquarion during evidentiary hearings would ultimately result in a significant proposed change in rate recovery for one of Aquarion's costs (Tr. 2, at 281-283). Moreover, the adoption of a reconciling pension and PBOP mechanism would require further analysis, including consideration of the various components of the reconciling mechanism, issues surrounding appropriate carrying charges (if any), the actual reconciliation process, and customer reaction to an additional surcharge on Aquarion's bills. Therefore, the Department declines to adopt a reconciling mechanism for pension and PBOP expenses in this proceeding.

b. Pension Expense

While the evidence indicates that Aquarion has made regular contributions to its pension fund in recent years, the future level of funding remains uncertain. Pension expense is affected by multiple factors, including projections of payroll increases, Internal Revenue Service requirements, plan returns, and participant demographics (Exh. DPU 5-3 Supp., Att. A). The Company's pension fund contributions in recent years (i.e., 2003 through 2007) have ranged between \$63,932 and \$218,432, with a five-year average over that period of \$160,223 (Exh. DPU 1-4). Aquarion proposed to include pro forma pension expense of \$120,392 (Exhs. AQR-LMD at 17; DPU 5-3 Supp., Att. B). The Department is persuaded that sufficient volatility remains in Aquarion's cash contributions to its pension plan to preclude use of the Company's test year pension expense. Accordingly, the Department will determine a representative level of pension expense.

The Department will base pension expense on the five-year average of the cash contributions (less the capitalized portion) for 2003 through 2007, inclusive. D.P.U. 95-118, at 111. The Company's cash contribution to its pension plan for the years 2003 through 2007 was \$801,164, representing an average of \$160,233 per year (Exh. DPU 1-4). Of this amount, 79.73 percent would be booked to expense (Exh. 2, Sch. 6). Therefore, the Department will allow \$127,754 as a representative level of pension expense. This results in an increase of \$63,933 to Aquarion's test year pension expense and an increase of \$7,362 to the Company's proposed pension expense. Accordingly, the Department will increase the Company's proposed cost of service by \$7,362.

c. PBOP Expense

The Department has previously expressed concerns about PBOP obligations for regulated utilities because the reliability of PBOP-obligation estimates is affected by several potentially volatile factors, including inflation, discount and investment rates, medical cost predictions, medical trend assumptions, and changes in the health care field. D.P.U. 96-50 (Phase I) at 84-85; D.P.U. 95-118, at 105; D.P.U. 92-111, at 224; D.P.U. 92-78, at 79-80. Further, in determining the level of PBOP obligations to include in rates, the Department has held that financial accounting standards do not automatically dictate ratemaking treatment. NYNEX Price Cap, D.P.U. 94-50, at 436 (1995); D.P.U. 92-78, at 79; Bay State Gas Company, D.P.U. 89-81, at 33 (1989); D.P.U. 85-270, at 118-119. The Department is charged with setting just and reasonable rates for companies within our jurisdiction and we

cannot permit accounting standards alone to determine our treatment of expenses.

D.P.U. 85-270, at 118-119.

Aquarion's FAS 106 costs for 2008 were \$268,741 (Exh. DPU 5-3 Supp., Att. D). Aquarion proposed a pro forma PBOP expense of \$228,028 (Exhs. 2, Sch. 5 (updated); AQR-LMD at 15-16). The Department will base PBOP expense on the four-year average of the cash contributions to its PBOP trust (less the capitalized portion) for tax years 2004 through 2007, inclusive. D.P.U. 95-118, at 111. The Company's cash contribution to its PBOP trust for the years 2004 through 2007 was \$718,811, representing an average of \$179,703 per year (Exh. DPU 1-5). Of this amount, 79.73 percent would be booked to expense (Exh. 2, Sch. 6). Therefore, the Department will allow \$143,277 as a representative level of PBOP expense. This results in an increase of \$46,565 to the Company's test year PBOP expense. Accordingly, the Department will reduce Aquarion's proposed cost of service by \$71,040.

d. Pension and PBOP Regulatory Assets

Aquarion requests that the Department allow it to continue to record the difference between its actual pension and PBOP expense and those pension and PBOP expenses included in rates (Exh. AQR-LMD at 24). The Department has authorized the recording of a regulatory asset to avoid significant reductions to stockholders' equity that result from the recognition of liabilities associated with pension and PBOP obligations. Boston Gas Company, D.T.E. 03-1 (2003); Fitchburg Gas and Electric Light Company, D.T.E. 02-83 (2002); Boston Edison

Company/Cambridge Electric Light Company/Commonwealth Electric Company/NSTAR Gas Company, D.T.E. 02-78 (2002).

Although pension and PBOP expenses have been relatively stable in the past several years, the Company continues to experience volatility in these expenses (Exh. DPU 1-4; DPU 1-5). Recent stability does not eliminate the inherent instability of this expense category. Future writeoffs, if they occur, could be of sufficient magnitude to have a material impact on the financial well-being of Aquarion and translate directly into higher borrowing costs, higher rates, and a potential disruption in service. D.T.E. 04-48, at 17; D.T.E. 03-47-A at 25-27; D.T.E. 03-40, at 308-314. Based on these considerations, and consistent with Department precedent, we allow the Company to continue to record the difference between its actual pension and PBOP expense and those pension and PBOP expenses included in rates as either a regulatory asset or a regulatory liability.

C. Chemical Expense

1. Introduction

The Company uses various chemicals, including sodium hypochlorite, sodium fluoride, sodium hexametaphosphate, and potassium hydroxide for the treatment of raw water (Exh. 2, Sch. 8, at 2). In the test year, the Company booked \$125,196 to chemical expense (id., Sch. 8, at 1). In its initial filing, Aquarion proposed a pro forma reduction to test year chemical expense of \$396 (id., Sch. 8, at 1). This adjustment excludes chemicals that are used at the Hingham water treatment plant (“Hingham WTP”) (Exh. AQR-LMD at 18).

On November 11, 2008, the Company updated its chemical expense and included a pro forma increase to test year expense of \$276,399 (Exh. DPU 3-44 Supp., Att. A). The Company provided documentation of this increase in chemical expense (id.).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors assert that Aquarion cites fuel prices as a significant driver of chemical cost increases (Towns Joint Brief at 47, citing Tr. 4, at 575; Oxford Brief at 42). Accordingly, the Town Intervenors argue that the Department must adjust the chemical expense based on current, lower energy prices (Towns Joint Brief at 47; Oxford Brief at 42). The Town Intervenors further claim that the updated chemical price information provided by Aquarion is obsolete and not useful (Towns Joint Brief at 47; Oxford Brief at 42; Oxford Reply Brief at 22).

b. Company

Aquarion contends that its updated chemical expense is reasonable (Company Brief at 19). The Company argues that it has demonstrated that the increased chemical expense is known and measurable (id.). The Company asserts that it provided invoices from suppliers that substantiated these cost increases, which were not refuted (id. at 19-20).

Aquarion disputes the Town Intervenors' contention that its chemical expense should be updated based on recent declines in fuel prices (id. at 20). The Company argues that it has provided evidence that the change in the chemical expense is not solely a result of changes in energy markets but also is a result of increased demand for these chemicals for agricultural use

(id.; Company Reply Brief at 9). The Company also asserts that these cost increases are beyond the control of Aquarion as they are related to worldwide demand for the various chemicals and changes in energy markets (Company Brief at 19; Company Reply Brief at 9; see Exh. DPU 3-44 Supp.). Aquarion argues that it does not expect that chemical expenses will moderate soon (Company Brief at 20).

3. Analysis and Findings

Department precedent allows for the inclusion of chemical expense in cost of service based on the test year amount of the chemicals used multiplied by the price per unit of the chemicals. D.P.U. 95-118, at 113-114; Wannacomet Water Company, D.P.U. 84-33, at 16 (1984). Proposed changes to test year revenues, expense, and rate base require a finding that the adjustment constitutes a “known and measurable” change to test year cost of service. D.T.E. 05-27, at 129; D.T.E. 02-24/25, at 76; D.P.U. 84-32, at 17-18. A “known” change means that the adjustment must have actually taken place or that the change will occur based on the record evidence. D.T.E. 05-27, at 129; D.T. E. 02-24/25, at 76. A “measurable” change means that the amount of the required adjustment must be quantifiable based on the record evidence. D.T.E. 05-27, at 129; D.T.E. 02-24/25, at 76. In addition, to obtain an adjustment to test year expense, a utility would have to demonstrate that the proposed cost level is more representative than that of the test year. D.P.U. 84-32, at 17-18.

Aquarion experienced a significant post-test year increase in the cost of chemicals (Exh. DPU 3-44 Supp.). The Company provided sufficient evidence of this increase, including invoices from suppliers and a letter from a supplier explaining the reason for the

price increase, including the supplier's outlook for future chemical prices (id., Att. C; Tr. 3, at 392-393). The supplier noted that the price of the raw materials for sodium hypochlorite is "at an all time high" and that the supplier "has no control over these escalating product costs" (Exh. DPU 3-44 Supp., Att. C).

We find that the increase in the cost of chemicals experienced by Aquarion was largely beyond the Company's control (id., Att. C). Although the Town Intervenors claim that this increase in chemical expense is tied solely to a short-term increase in the price of fuel oil, the evidence demonstrates that the increase in chemical expense is due to sharp increases in the global demand for these chemicals and the price of the raw materials used in the production of these chemicals (id., Att. C). Aquarion attempted to secure long-term contracts for chemicals but suppliers were not willing to offer fixed prices for more than 90 days because of price volatility (Tr. 1, at 148-149; Tr. 3, at 391-396). Consequently, the Department finds that the price changes reflected in Aquarion's chemical expense calculation constitute known and measurable changes to test year expense. Milford Water Company, D.P.U. 92-101, at 42 (1992); Oxford Water Company, D.P.U. 86-172, at 12 (1987). Therefore, the Department will increase the Company's test year cost of service by \$276,399.

D. Pumping, Fuel, and Heating Costs

1. Introduction

During the test year, Aquarion booked a total of \$937,942 related to pumping, fuel, and heating costs. Specifically, the Company booked \$595,618 in electric power expense related to pumping operations (Exhs. 1, Sch. 5; JFG-1, Sch. 6, at 1). The Company also reported an

additional \$113,535 in other purchased fuels associated with pumping, consisting of \$95,296 for fuel oil, \$9,590 for natural gas, and \$8,649 for other fuels (Exh. JFG-1, Sch. 6, at 1). Aquarion also reported building costs related to fuel (e.g., air conditioning, heating, pumping) of \$220,592 (Exh. 3, Sch. 2 at 1, 6). Of this amount, \$44,915 was associated with heating expense at the Hingham WTP (id., Sch. 2, at 1).

Finally, during the test year, Aquarion booked \$15,368 in propane expense (Exh. 2, Sch. 20). The Company has proposed a reduction of \$7,171 to recognize the actual propane charges incurred during the test year (id., Sch. 20, at 1-2; Exh. AQR-LMD at 25).

2. Positions of the Parties

The Town Intervenors argue that there has been a sharp decline in fuel prices recently and, as such, an adjustment must be made to all expenses that are fuel intensive (e.g., electricity costs, pumping costs, and transportation costs) (Towns Joint Brief at 47; Oxford Brief at 42; Oxford Reply Brief at 22). The Town Intervenors recommend that the Department reopen the evidentiary record to acquire updated expense data based on current energy prices (Towns Joint Brief at 48; Oxford Brief at 43; Oxford Reply Brief at 22). Oxford argues that if a fuel cost adjustment is not made, obsolete test year data will be unfairly embedded in water rates (Oxford Reply Brief at 22). No other party addressed the issue of pumping, fuel, and heating costs on brief.

3. Analysis and Findings

With the exception of heating and propane expense, the Company is seeking to recover only the test year expense for the expenses described above. The Department has reviewed

these expenses and finds that they are reasonable (Exhs. 1, Sch. 5; 3, Sch. 2 at 1, 6; AQR-JFG-1, Sch. 6, at 1). Therefore, these expenses will be allowed in the Company's cost of service at the test year levels requested by Aquarion. The Department will also allow the proposed reduction for propane expense as it recognizes the actual propane charges incurred during the test year (Exhs. 2, Sch. 20; AQR-LMD at 25).

Regarding heating expense, the Company updated its proposed recovery to account for decreases in the cost of fuel oil since Aquarion made its initial filing (Exh. Hingham/Hull 1-66 Supp.). The Town Intervenors request that the Department reopen the record to obtain more recent fuel cost data (Town's Joint Brief at 48; Oxford Brief at 43; Oxford Reply Brief at 22). The price of fuel oil has changed since the Company provided updated information, however, given the fact that the price of fuel changes on a regular basis, we find that this change in price is not a sufficient showing of good cause to reopen the record.³² The Company has included a representative level of fuel expense in its cost of service. The Company updated its cost of service with the most recently available fuel cost data before the record closed in this proceeding. The Town Intervenors have not shown that reopening the record is likely to have

³² The Department's procedural rule at 220 C.M.R. § 1.11(8), states, in pertinent part, "[n]o person may present additional evidence after having rested nor may any hearing be reopened after having been closed, except upon motion and showing of good cause." Good cause has been defined as showing that the proponent has previously unknown or undisclosed information regarding the material issue that would be likely to have a significant impact on the decision already rendered. Massachusetts-American Water Company, D.P.U. 95-118-A at 2 (1996); Machise v. New England Telephone and Telegraph Company, D.P.U. 87-AD-12-B at 4-7 (1990); Boston Gas Company, D.P.U. 88-67 (Phase II) at 7 (1989); Tennessee Gas Pipeline Company, D.P.U. 85-207-A at 11-12 (1986).

a significant impact on the ultimate decision rendered by the Department. Accordingly, the Department will not reopen the record in this proceeding in order to obtain further updates for fuel price data.

Aquarion correctly identified that the price of fuel oil had dropped considerably since its initial filing. Consequently, the Company filed revised schedules to account for this drop in price as a cost component of the Hingham WTP (Exh. Hingham/Hull 1-66 Supp.). The Department is satisfied that this drop in the price of fuel oil constitutes a known and measurable change to test year expense. Accordingly, the Department finds that the updated figures for the Hingham WTP heating expense based on the revised fuel cost data are a more representative level of heating expense than the test year figures. Therefore, Aquarion will be allowed to include \$62,277 in its cost of service for heating expense associated with the Hingham WTP. The effect of this adjustment is described in Section VI.I.3., below.

E. Rate Case Expense

1. Introduction

In its initial filing, Aquarion estimated that it would incur \$340,000 in rate case expense (Exh. 2, Schs. 9, 10, 11). The Company's proposed rate case expense is comprised of: (1) legal services of \$150,000; (2) preparation and expert service regarding the cost of service and revenue deficiency of \$75,000; (3) preparation and expert service regarding the depreciation study of \$50,000; (4) preparation and expert service regarding the cost of service and rate design study ("COSS/RD study") of \$40,000; and (5) other associated costs such as copying, shipping, office supplies, and transcripts of \$25,000 (id., Schs. 9, 10, 11;

Exj/ DPU 6-9 Supp. 7, Att. A). During the course of the proceeding, the Company submitted invoices or other documents supporting actual rate case expense of \$468,732 (see Exh. DPU 6-9 Supp. 7, Att. A).³³

The Company requested proposals for legal services from two law firms (Exh. DPU 4-16). Aquarion did not seek bids for any of the other services (id.). Aquarion proposes to normalize its rate case expense based on what it considers to be the normal interval between rate cases, i.e., three years (Exhs. 2, Sch. 9; AQR-LMD at 18). The Company states that it does not plan to conduct a depreciation or COSS/RD study as part of every rate case but rather intends to conduct them once every two rate case cycles, i.e., in alternating rate cases (Exh. DPU 2-25). As such, the Company proposes to amortize the cost of its depreciation study and COSS/RD study over six years (Exhs. 2, Sch. 10, 11; AQR-LMD at 18-19). Based on the Company's updated expense levels, the Company's proposed depreciation study normalization expense is \$8,804, and the proposed COSS/RD study normalization expense is \$10,824 (Exhs. 2, Sch. 10, 11; AQR-LMD at 18-19; DPU 6-9 Supp. 7, Att. A).

Aquarion proposes to normalize the remaining \$350,983 in rate case expense over a three-year period (Exhs. 2, Sch. 9; AQR-LMD at 18). Normalizing the remaining rate case expense of \$350,983 over three years produces an annual rate case expense of \$116,994.

³³ The final rate case expense is made up of: (1) legal services of \$219,869; (2) revenue requirement preparation of \$89,362; (3) preparation of depreciation study of \$52,824; (4) preparation of COSS/RD study of \$64,942; and (5) miscellaneous expenses of \$41,735 (Exh. DPU 6-9 Supp. 7, Att. A).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors do not question the appropriateness of the incurred rate case expenses. Instead, the Town Intervenors focus on the normalization period and ask that the Department lengthen the period to mitigate the impact of the expense on customers (Towns Joint Brief at 44). The Town Intervenors note that the Company's previous depreciation study was performed several years prior to its last rate case, which was in 2000 (id.). The Town Intervenors also note that the Company's previous COSS/RD study was performed eight years ago (id.). In view of the length of time since Aquarion's last depreciation and COSS/RD studies, the Town Intervenors propose a twelve-year amortization for the Company's depreciation study and an eight-year amortization for the Company's COSS/RD study (id. at 44-45). With respect to the remaining rate case expenses, the Town Intervenors recommend using an amortization period of six years, which they contend is more consistent with the time period between rate cases (id. at 45).

b. Company

Aquarion asserts that it has undertaken significant efforts to manage its rate case expense (Company Brief at 23). Specifically, the Company states that it competitively bid its legal services and otherwise retained experts who are familiar with Aquarion's operations, thereby minimizing the time required to familiarize themselves with the Company's operations, records, and assets (id.). The Company also argues that its rate case expense is reasonable

based on the number of active intervenors, the amount of discovery, and the number of public and evidentiary hearings (id.).

The Company contends that a six-year amortization period for its depreciation study and COSS/RD study is consistent with its express intent to file such studies every other rate case cycle (Company Brief at 24). Aquarion cites to the testimony of the Town Intervenor's witness, who recommended that the Company conduct another depreciation study and update its accrual rates after collecting three to five years of additional data (id. citing Tr. 6, at 983). Aquarion asserts that its amortization of the remaining rate case expense over three years is consistent with the Department's decision in D.P.U. 95-118, at 119 (Company Brief at 24).

3. Analysis and Findings

a. Introduction

The Department allows recovery for rate case expense based on two important considerations. First, the Department permits recovery of rate case expense that has been actually incurred and, thus, is considered known and measurable. D.P.U. 07-71, at 99; D.T.E. 05-27, at 157; Fitchburg Gas and Electric Light Company, D.T.E. 98-51, at 61-62 (1998).³⁴ Second, such expenses must be reasonable, appropriate, and prudently incurred. D.T.E. 05-27, at 160-161; D.T.E. 98-51, at 58; D.P.U. 95-118, at 115-119; D.P.U. 84-32, at 14.

³⁴ While companies may seek recovery of rate case expense incurred on a fixed-fee basis for work performed after the close of the evidentiary record (e.g., for completion of necessary compliance filings), the reasonableness of the fixed fees must be supported by sufficient evidence. D.T.E. 02-24/25, at 196.

The overall level of rate case expense among utilities has been, and remains, a matter of concern for the Department. D.T.E. 03-40, at 147; D.T.E. 02-24/25, at 192; D.T.E. 98-51, at 57. The Department has cautioned that rate case expense, like any other expenditure, is an area where companies must seek to contain costs. D.T.E. 03-40, at 147-148; D.T.E. 02-24/25, at 192; D.P.U. 96-50 (Phase I) at 79.³⁵ Below, we address competitive bidding requirements, recoverable rate case expenses, and the appropriate normalization period.

b. Competitive Bidding

The Department has consistently emphasized the need to obtain competitive bids for consultant services as an important part of a company's overall strategy to contain rate case expense. See, e.g., D.T.E. 05-27, at 158-159; D.T.E. 03-40, at 148; D.T.E. 02-24/25, at 192. The Department has found that if a company elects to secure outside services for rate case expense, it must engage in a "structured, objective competitive bidding process for these services." D.T.E. 03-40, at 153.

It is each regulated company's duty to ensure that it is complying with Department directives and, as such, Aquarion was required to engage in a structured, objective competitive bidding process for all outside rate case services. See, e.g., D.P.U. 07-71, at 101-102; D.T.E. 05-27, at 158-159; D.T.E. 03-40, at 152. Aquarion failed to comply with this directive. For legal services, the Company did not engage in a structured, objective

³⁵ The Department has also found that rate case expenses will not be allowed in cost of service where such expenses are disproportionate to the relief being sought. See Barnstable Water Company, D.P.U. 93-223-B at 16 (1994).

competitive bidding process but rather Aquarion contacted two law firms that it had previously engaged and asked them each to submit a proposal; the Company ultimately selected the lowest-cost proposal (Exh. DPU 4-16, Atts. A, B). The Company engaged non-legal consultants based solely on the long-term relationship and institutional knowledge that each consultant had with Aquarion (id.).³⁶

The Department has previously stated, and we again emphasize, that when engaging outside rate case services, the very discipline of having to submit a competitive bid in a structured and organized process keeps even a consultant with a stellar past performance from taking the relationship for granted. D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. No harm is done by competition to provide services and some gain in efficiency is likely. D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. Obtaining competitive bids does not mean that a company must then necessarily retain the services of the lowest bidder; rather, the bidding and qualification process merely provides a benchmark for reasonableness of the cost of the services sought. D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. While the qualitative factors used by Aquarion to select its outside service providers are appropriate, the Department expects them to be used within the context of a structured, objective, competitive bidding process. See, e.g., D.P.U. 07-71, at 101; D.T.E. 03-40, at 152.

We recognize that the actual rate case expenses for outside consulting and legal services in this case are comparable to those in similar rate proceedings and that any gain resulting from

³⁶ Three of the outside witnesses were employed by Aquarion's affiliate, Aquarion-CT (see Exhs. AQR-LMD at 1; AQR-TMD at 1; DPU 4-18, Att. A).

a competitive bidding process may have been slight (see Exh. DPU 6-9 Supp. 7, Att. A). Moreover, the witnesses or their firms have appeared previously before the Department and demonstrated a thorough understanding of their areas of expertise. As such, the Department will not disallow the rate case expense for failure to engage in a structured, objective competitive bidding process for these services in this instance. Nonetheless, Aquarion's disregard of Department directives concerning rate case expense will be considered in determining the appropriate return on common equity. See Section V.C.4., below. See, e.g., D.T.E. 02-24/25, at 231. Further, should Aquarion in the future fail to comply with the Department's directives regarding competitive bidding processes for outside consulting and legal services, such costs will likely be disallowed.

c. Recoverable Rate Case Expenses

The Department has directed companies to provide all invoices for outside rate case services that detail the number of hours billed, the billing rate, and the specific nature of the services performed. D.T.E. 03-40, at 157; D.T.E. 02-24/25, at 193-194; D.T.E. 01-56, at 75; D.T.E. 98-51, at 61; D.P.U. 96-50 (Phase I) at 79. Further, we have stated that failure to provide this information could result in the Department's disallowance of all or a portion of rate case expense. D.T.E. 02-24/25, at 193; D.T.E. 96-50 (Phase I) at 79.

As the Company failed to provide invoices for all of the outside services during the discovery period, Aquarion was reminded of the Department's requirements in this area during the first day of evidentiary hearings on November 18, 2008 (Tr. 1, at 7; see also

Exhs. DPU 4-17; DPU 6-9).³⁷ Nonetheless, Aquarion did not properly itemize rate case expenses for the services provided by Aquarion-CT employees (see, e.g., Exh. DPU 6-9 Supp. 5, Att. B). That is, the Company did not provide any detail of the number of hours billed, the billing rate, and the specific nature of the services performed by these employees. Instead, Aquarion provided a sum of the amount billed by each of the three Aquarion-CT employees for work the Company represents is related to this case without any reference to the number of hours worked, the hourly billing rate, or the services performed (see, e.g., *id.*, Supp. 5, Att. B; Tr. 7, at 1251). Because they were performed by Aquarion-CT employees, the rate case expenses at issue here are affiliate services, which bear an even higher level of scrutiny. Hingham Water Company, D.P.U. 88-170, at 21 (1989); D.P.U. 86-172, at 25.³⁸

Because the Company did not provide detailed invoices including the number of hours billed, the billing rate, and the specific nature of the services performed for the rate case

³⁷ As noted above, it is each regulated company's duty to ensure it is complying with Department directives. See, e.g., D.P.U. 07-71, at 101-102; D.T.E. 05-27, at 158-159; D.T.E. 03-40, at 152. Thus, while the Department was under no obligation to educate the Company regarding Department precedent, the Company was notified that "if Aquarion seeks to recover rate-case expense, the Company is required to provide sufficient information to show the activities for which recovery is sought (Tr. 1, at 7)." Further, Aquarion was directed to "provide all invoices for outside services and detail the number of hours billed, the billing rate, and the specific service rendered. Failure to substantiate the expense, such as lack of detail, renders the expense subject to disallowance" (*id.*).

³⁸ Any payments by a utility to an affiliate must be (1) for activities that specifically benefit the regulated utility and do not duplicate services already provided by the utility, (2) made at a competitive and reasonable price, and (3) allocated to the utility by a formula that is both cost-effective and nondiscriminatory. D.P.U. 88-170, at 21-22; AT&T Communications of New England, D.P.U. 85-137, at 51-52 (1985).

services provided by Aquarion-CT employees, it has failed to meet its burden that such expenses are reasonable, appropriate, and prudently incurred. D.T.E. 05-27, at 160-161; D.T.E. 98-51, at 58; D.P.U. 95-118, at 115-119; D.P.U. 84-32, at 14. Further, without such detail, the Company cannot demonstrate that the services were made at a competitive and reasonable price, as required by our standard of review for affiliate services. D.P.U. 88-170, at 21-22; AT&T Communications of New England, D.P.U. 85-137, at 51-52 (1985).³⁹

Aquarion proposes to include a total of \$89,362 in rate case expense related to three Aquarion-CT employees (Exh. DPU 6-9 Supp. 7, Att. A). Although Aquarion's failure to substantiate the expense with detailed invoices renders the expense subject to disallowance, we will not do so here. Instead, we will use our judgment and experience to determine a reasonable and appropriate level of rate case expense related to the services provided by Aquarion-CT's employees. We note that the Aquarion-CT employees were actively involved in the rate case proceeding (see, e.g., Exhs. AQR-LMD; AQR-TMD). Two of the employees sponsored pre-filed testimony, responded to discovery requests, testified at evidentiary hearings, and prepared responses to record requests; the third employee assisted the witnesses with discovery responses and provided support to the witnesses during evidentiary hearings.

³⁹ In addition, except for the Company's assertions that the total amounts billed by the Aquarion-CT employees were solely to prepare and participate in the rate case, the Department has no way to confirm through a review of detailed invoices, whether the charges were correctly billed and, therefore actually incurred (Tr. 7, at 1251). For example, the Department identified three invoices related to Aquarion-NH in support of the Company's capital additions and, thus, had to confirm that the invoices were included in error (see Exh. DPU 4-13). Likewise, without detailed invoices, the Department cannot confirm that activities specifically benefit the Company and do not duplicate services already provided by Aquarion.

Based on our observation of the services provided by the Aquarion-CT employees in this case as well as the level of effort and expense for similar services in other rate proceedings, we will allow Aquarion to recover \$66,000 in rate case expenses related to the services provided by Aquarion CT employees as reasonable, appropriate, and prudently incurred (see Exh. DPU 6-9, Att. A). See, e.g., D.T.E. 98-51, at 59. Thus, we disallow \$23,362 in Aquarion-CT employee-related rate case expense (\$89,362 - \$66,000).

Finally, as noted above, Aquarion was put on notice that it was required to provide adequate documentation including the number of hours billed, the billing rate, and the specific nature of the services performed for each element of rate case expense that it seeks to recover(see, e.g., Exh. DPU 6-9 Supp. 7, Att. A). Although the Department could have denied all of Aquarion's rate case expense for services provided by Aquarion-CT employees for failure to provide such detailed invoices, we have determined not to do so here. Instead, we have allowed Aquarion to recover a portion of these rate case expenses as discussed above. However, Aquarion's disregard of a Department directive to provide detailed invoices for all outside services will be considered in determining the appropriate return on common equity. See Section V.C.4., below. See, e.g., D.T.E. 02-24/25, at 231.

As to the remaining outside rate case services totaling \$379,370, we determine that the invoices provided to the Department by Aquarion appropriately detail the number of hours billed, the billing rate, and the specific nature of the services performed (see Exh. DPU 6-9 Supp. 7, Att. A and exhibits referenced therein). Based on our review, we determine that such invoices represent expenses that were actually incurred and thus, are known and measurable

(see id., Att. A and exhibits referenced therein). We also determine that such expenses were reasonable, appropriate, and prudently incurred (see id., Att. A and exhibits referenced therein).

d. Normalization of Rate Case Expenses

The proper method to calculate a rate case expense adjustment is to determine the rate case expense, normalize the expense over an appropriate period, and then compare it to the test year level to determine the adjustment. D.T.E. 05-27, at 163; D.T.E. 03-40, at 163; D.T.E. 02-24/25, at 197; D.T.E. 98-51, at 62; D.P.U. 95-40, at 58. The Department's practice is to normalize rate case expenses so that a representative annual amount is included in the cost of service. D.T.E. 05-27, at 163; D.T.E. 03-40, at 163; D.T.E. 02-24/25, at 191; D.T.E. 01-56, at 77; D.T.E. 98-51, at 53; D.P.U. 96-50 (Phase I) at 77; The Berkshire Gas Company, D.P.U. 1490, at 33-34 (1983). Normalization is not intended to ensure dollar-for-dollar recovery of a particular expense; rather, it is intended to include a representative annual level of rate case expense. D.T.E. 05-27, at 163; D.T.E. 03-40, at 163-164; D.T.E. 02-24/25, at 191; D.P.U. 96-50 (Phase I) at 77. The Department determines the appropriate period for recovery of rate case expense by taking the average of the intervals between the filing dates of a company's last four rate cases, including the present case, rounded to the nearest whole number. D.T.E. 05-27, at 163 n.105; D.T.E. 03-40, at 164 n.77; D.T.E. 02-24/25, at 191. If the resulting normalization period is deemed unreasonable or if the company has an inadequate rate case filing history, the Department will

determine the appropriate normalization period based on the particular facts of the case. South Egremont Water Company, D.P.U. 86-149, at 2-3 (1986).

On the issue of normalization versus amortization, normalization is not intended to ensure dollar-for-dollar recovery of a particular expense. Rather, the amount in rates is intended to represent a representative annual level of expense. Thus, normalization places back onto shareholders a certain degree of risk that should normally be expected in the course of operations. D.P.U. 92-101, at 48-49; Nantucket Electric Company, D.P.U. 91-106/138, at 20 (1991). In contrast, amortization implies dollar-for-dollar recovery of an expense, as would occur in the case of an extraordinary loss. D.P.U. 85-266-A/271-A at 95-99. While the Company and the Town Intervenors use the word “amortization” in their briefs, Aquarion is proposing to normalize its rate case expense (Exh. 2, Sch. 9; see, e.g., Company Brief at 24; Towns Joint Brief at 44).

The Company asserts that it anticipates submitting rate case filings every three years and that it anticipates submitting COSS/RD and depreciation studies with every other rate case (Company Brief at 24). As such, the Company proposes the use of a three-year normalization period for most of its rate case expense and a six-year normalization period for expenses related to its COSS/RD and depreciation studies (id.). The Town Intervenors propose three different normalization periods: (1) an eight-year period for COSS/RD study-related expenses; (2) a twelve-year period for depreciation study-related expenses; and (3) a six-year period for the remaining rate case expense (Towns Joint Brief at 45; see also Exh. HH-DFR at 30-31).

Applying Department precedent, the average of the intervals between the filing dates of the Company's last four rate cases, including the present case, rounded to the nearest whole number is six years.⁴⁰ Neither the Company nor the Town Intervenors has established that this result is unreasonable. Accordingly, we will apply a normalization period of six years to all of the Company's rate case expense, including expenses related to the COSS/RD and depreciation studies.

4. Conclusion

Based on the findings above, the Department concludes that Aquarion may recover rate case expense in the amount of \$445,370, comprised of \$52,824 for depreciation study expenses, \$64,942 for the COSS/RD study expenses, and \$327,604 for all other rate case expenses. A normalization period of six years results in normalized rate case expense of \$74,228 (\$445,370 divided by six years). The Company did not book any rate case expense in its test year and proposed a total rate case expense of \$98,333 (Exh. 2, Schs. 9, 10, 11).⁴¹ Accordingly, the Company's proposed cost of service is reduced by \$24,105.

⁴⁰ Including the present case (filed May 14, 2008), Aquarion's most recent rate case proceedings are: D.T.E. 00-105, filed November 16, 2000; D.T.E. 95-118, filed November 16, 1995; and Massachusetts-American Water Company, D.T.E. 90-146 (1990), filed June 15, 1990. The differences between these cases (7.49 years plus 5 years plus 5.41 years), divided by three, and rounded to the nearest whole number of years, results in a normalization period of six years.

⁴¹ Aquarion did not submit revised schedules incorporating updated rate case expense.

F. Shared Services and Common Facilities

1. Introduction

Aquarion and Aquarion Water Company entered into a service agreement on April 25, 2002 (“AWC Service Agreement”) whereby Aquarion Water Company and its affiliates provide Aquarion with certain services (Exhs. AQR-LMD at 7, 8; DPU 4-4, Att.). Specifically, Aquarion Water Company’s affiliate Aquarion-CT provides services in two major functional areas that Aquarion proposes to include in cost of service: (1) customer services, including handling customer inquiries, scheduling fieldwork appointments, and resolving billing disputes; and (2) computer-related services, including software and hardware maintenance, networking services, and data processing services (Exh. AQR-LMD at 20-22).⁴² All costs incurred in providing these services are allocated among the utilities receiving such services based on the number of customers served at the end of the immediately-preceding calendar year (id. at 21-22).⁴³

⁴² As discussed in Section IV.E.3., above, Aquarion-CT personnel also supported Aquarion through participation in the current proceeding (see Exh. DPU 4-4, Att. at 8-9).

⁴³ As of December 31, 2007, Aquarion Water Company had a total of 206,412 customers divided among its three affiliate companies as follows: (1) Aquarion with 18,498 or 8.96 percent of the customers; (2) Aquarion Water Company of New Hampshire (“Aquarion-NH”) with 8,770 or 4.25 percent of the customers; and (3) Aquarion-CT with 179,144 or 86.79 percent of the customers (Exh. 2, Sch. 14). Incoming calls to Aquarion-NH are placed directly to the New Hampshire office; hence, for customer-related expenses only, Aquarion Water Company reduced Aquarion-NH’s allocation by 50 percent and increased the remaining two affiliates’ allocations correspondingly, resulting in Aquarion receiving 9.16 percent, Aquarion-NH receiving 2.17 percent, and Aquarion-CT receiving 88.57 percent (id., Sch. 15; Exh. AQR-LMD (continued...))

Aquarion proposes to include in cost of service \$143,548, representing its allocated portion of Aquarion Water Company customer service-related expenses of \$1,567,771 (Exh. 2, Sch. 15). Because Aquarion's test year expense was \$238,057, this results in a pro forma decrease of \$94,509 in O&M expense (id. Sch. 15). Aquarion also proposes to include in cost of service \$501,452 of Aquarion Water Company computer-related expenses of \$5,595,509 (id., Sch. 14). Because Aquarion's test year expense was \$207,524, this results in a pro forma increase of \$293,928 to O&M expense (id., Sch. 14).

In connection with providing these shared services, Aquarion-CT maintains three common facilities: (1) an operations center; (2) a corporate office; and (3) a customer service call center (Exh. AQR-LMD at 22). These office costs are apportioned among Aquarion Water Company's affiliates through a building overhead rate per facility that is then applied to labor charged from each facility, as determined by the formula contained in the AWC Service Agreement (id. at 22-23; Exh. DPU 4-4, Att. at 12-14). Based on this calculation, Aquarion proposes to include in cost of service its allocated portion of common facilities of \$69,756 (Exh. 2, Sch. 16). Because Aquarion's test year allocation was \$114,395, this results in a pro forma decrease of \$44,639 to O&M expense.

2. Positions of the Parties

Aquarion asserts that the services provided by Aquarion-CT benefit the Company, are not otherwise provided by the Company, are at a competitive and reasonable cost, and are

⁴³(...continued)
at 22).

allocated using a fair method (Company Brief at 16). Aquarion also contends that if Aquarion-CT were unable to provide these services, the Company would be required to hire additional staff to perform such services (id. citing Tr. 7, at 1273-1274). Aquarion further argues that the purchase of the services from Aquarion-CT is more cost effective than hiring additional staff because the Company pays only for those services necessary for a particular project (Company Brief at 16, citing Tr. 7, at 1274). No other party commented on this matter.

3. Analysis and Findings

As discussed above, to qualify for inclusion in rates, any payments by a utility to an affiliate must be (1) for activities that specifically benefit the regulated utility and do not duplicate services already provided by the utility, (2) made at a competitive and reasonable price, and (3) allocated to the utility by a formula that is both cost-effective and nondiscriminatory within both those services specifically rendered to the utility by the affiliate and for general services which may be allocated by the affiliate to all operating affiliates.

D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52.

Aquarion does not have any employees assigned to handle customer service matters (see Exh. Hingham/Hull 1-22). Instead, all customer service-related activities are handled by its affiliate Aquarion-CT (Exh. AQR-LLB at 19-20; Tr. 5, at 855). For example, Aquarion-CT personnel are responsible for handling customer inquiries, scheduling appointments for fieldwork, resolving billing disputes, editing meter reading results, implementing the meter change-out program, explaining Aquarion's programs and services, making payment

arrangements, handling customer maintenance, and preparing final bill accounts (Exh. DPU 4-4, Att. at 10). These activities are necessary to Aquarion's business and thus specifically benefit Aquarion. Moreover, these activities do not duplicate services provided by Aquarion personnel.

The computer-related services provided by Aquarion-CT are a key component to the customer service that Aquarion-CT provides to Aquarion and its customers.⁴⁴ Specifically, Aquarion-CT uses an integrated software package ("SAP")⁴⁵ that supports customer and billing services throughout Aquarion Water Company (Exh. AQR-LLB at 28-29; Tr. 7, at 1232-1233; see also Tr. 3, 404-405; Tr. 5, at 915-916). SAP went on-line on January 2, 2007, and provides an integrated solution that links all aspects of the Company's business into a single information technology system (Exh. AQR-LLB at 29; Tr. 7, at 1232-1233). For example, the integrated SAP system has improved the Company's ability to interact with customers and provide better customer service (Tr. 7, at 1233). The SAP system also has a call center interface that allows the Company to create notifications to field employees to facilitate interactions with customers and also provides field employees with real time access to

⁴⁴ While Aquarion-CT provides Aquarion with ongoing network and data processing services and software and hardware maintenance, the majority of the computer-related expenses allocated by Aquarion-CT to Aquarion relate to the SAP system (Exh. 2, Sch. 14).

⁴⁵ SAP stands for Systems, Applications and Products (Tr. 7, at 1232). SAP provides, for example, the capability to manage financial information through all aspects of the Company as well as enterprise assets, enables the Company to conduct cost accounting, manage production operations, inventory, personnel, and plant information, and to archive and retrieve enterprise documents (id. at 1233).

customer-related information (id. at 1234). Finally, the SAP system provides financial management that includes accounting and general ledger reporting functions (id. at 1233-1234). As such, the computer-related services provided by Aquarion-CT, including the SAP system, provide direct benefit to Aquarion by facilitating its overall business, including its customer service. In addition, the computer-related services do not duplicate services available at Aquarion.

In developing the SAP system, the Company issued a request for proposals and ultimately selected the winning bidder based on their extensive experience and the lowest cost bid (Exh. DPU 3-9). Thus, we determine that the SAP system was obtained at a competitive and reasonable price. Nonetheless, the Company's proposed allocation of the SAP relies on an 8.26 percent weighted cost of capital and a tax gross-up factor of 1.665 percent (RR-DPU-4, Att.). This weighted cost of capital was approved for Aquarion-CT by the Connecticut Department of Public Utility Control ("CT-DPUC") (see Exh. DPU 4-6). The CT-DPUC's decision involved a different company (i.e., Aquarion-CT) and, in addition, is based on a different evidentiary record, including Aquarion-CT's required cost of capital and income taxes. The Department finds that application of the proposed 8.26 percent weighted cost of capital and 1.665 tax gross-up factor to determine the Company's allocated share of the SAP costs would result in Massachusetts ratepayers inappropriately subsidizing the operations of Aquarion-CT. Therefore, the Department will recalculate the required return on the SAP using Aquarion's 7.96 percent weighted cost of capital and a tax gross-up factor of 1.6205. See Schedules 5, 7, attached. Application of these factors to the \$15,400,000 total SAP

investment produces an annual cost of \$5,489,675, of which 8.96 percent, or \$491,875, is allocated to Massachusetts operations (see Exh. 2, Sch. 14). This produces an increase to test year cost of service of \$284,351. Accordingly, the Company's proposed cost of service will be reduced by \$9,577.

Labor-related costs for the customer service and computer-related services provided by Aquarion-CT are based on actual time spent by personnel, with no profit built into the charges (Exh. AQR-LMD at 8; DPU 4-4, Att. 11). For these types of services, the Department has previously determined it is appropriate to allocate costs based on customer counts.

D.P.U. 88-172, at 33; D.P.U. 88-171, at 23. Aquarion Water Company reduced the customer count of Aquarion-NH by 50 percent for purposes of allocating customer costs because Aquarion-NH handles its own customer calls (Exh. AQR-LMD at 22). In recognition of Aquarion-NH's particular customer service operations, the Department accepts this adjustment. Thus, we determine that the allocation used by the Company is a cost-effective and non-discriminatory formula and thus appropriate.

Based on the foregoing, the Department finds that the proposed allocations to Aquarion represent activities that specifically benefit the Company and do not duplicate services already provided by Aquarion. In addition, we find that the services are provided at a competitive and reasonable price. The Department further finds that, with the exception of the allocated SAP costs as outlined above, the amounts are allocated to Aquarion by a formula that is both cost-effective and non-discriminatory. Thus, as proposed by Aquarion, the Company's test year cost of service will be (1) decreased by \$94,509 for customer service-related expenses,

and (2) decreased by \$44,639 for common facility-related expenses. For computer service-related expenses, however, the Department has determined that the Company's cost of service should be \$491,875, which is a decrease of \$9,577 from Aquarion's proposed cost of service of \$501,452. Accordingly, the Department will reduce Aquarion's proposed cost of service by \$9,577.

G. Benefits Allocated from Aquarion-CT

1. Introduction

Aquarion-CT directly charges the Company for services provided, except for customer service and information technology functions that are charged on the basis of allocation factors (id. at 17). In contrast, payroll overheads, such as benefits and payroll taxes, are allocated to Aquarion on the basis of Aquarion-CT's benefits overhead rate and payroll taxes (id.). During the test year, Aquarion was allocated \$196,053 in benefits charges and \$38,281 in payroll taxes from Aquarion-CT (Exh. 2, Sch. 7). The Company has proposed a decrease to test year benefits expense of \$57,474, based on Aquarion-CT's 2007 benefits allocation factor of 39.83 percent and a decrease to test year payroll tax expense of \$9,403, based on Aquarion-CT's 2007 payroll tax factor of 8.3 percent (id., Sch. 7). No party commented on the Company's proposal.

2. Analysis and Findings

The Department has examined the proposed payroll overhead and tax factors and finds them to be based on a cost-effective and non-discriminatory formula. Therefore, the

Company's proposed reductions to test year cost of service of \$57,474 for benefits expense and \$9,403 for payroll taxes are allowed.

H. Corporate Expenses

1. Introduction

In addition to direct services, Aquarion's parent company, Aquarion Company, allocates to its affiliates certain corporate expenses billed to it by MUI and Macquarie (Exhs. AQR-LMD at 20; DPU 4-2; DPU 4-3). These corporate expenses are comprised of (1) common corporate charges such as bank fees, audit and tax preparation, legal services, and building overhead; and (2) management services provided by employees of Macquarie,⁴⁶ pursuant to an agreement effective April 30, 2007, between MUI and Aquarion Company ("MUI Agreement") (Exhs. 2, Sch. 13; AQR-LMD at 20; DPU 4-2, Att.).

Aquarion proposes to include in cost of service \$132,414 related to these corporate expenses. Aquarion's portion of allocated costs is derived by taking the total cost of \$1,497,961 in corporate expenses and allocating it to the three affiliates based on the "Massachusetts formula,"⁴⁷ which results in an allocation to Aquarion of 8.84 percent, or

⁴⁶ While the service agreement is with MUI, Macquarie employees actually provide the services (Tr. 1, at 59).

⁴⁷ The Massachusetts formula is a three-part allocator that uses a weighted cost average ratio comparing gross revenues, plant, and payroll (Exh. AQR-LMD at 20; Tr. 7, at 1257-1258; see Exh. 2, Sch. 13, at 2). The Massachusetts formula was originally developed in 1919 by the Commonwealth of Massachusetts for the purpose of apportioning income tax liabilities for companies with multi-state operations (Tr. 7, at 1259; see Acts of 1919, c. 355, § 18). Since that time, regulatory commissions across the United States have used this general approach and variations thereon to

(continued...)

\$132,414 (Exhs. 2, Sch. 13; AQR-LMD at 20). Because the test year expense allocated to the Company was \$145,367, this results in a proposed decrease of \$12,953 (Exh. 2, Sch. 3).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors argue that the expenses under the MUI Agreement appear to be imprudent (Towns Joint Brief at 48). Specifically, the Town Intervenors point to excessive charges of \$475 per hour for multiple Macquarie employees for what they argue are regular and apparently routine asset update communications (*id.* at 48-49, *citing* Exh. DPU 4-3, Att. B). The Town Intervenors assert that the \$475 per hour payment is equivalent to almost \$1 million per employee per year (Towns Joint Brief at 49).⁴⁸

The Town Intervenors also question the appropriateness of paying Macquarie's board of directors the equivalent of \$2 million per year (*id.* *citing* DPU 4-3, Att. B).⁴⁹ The Town Intervenors contend that while Aquarion pays only a pro rata share of Macquarie expenses, such expenses, in sum, are self-evidently imprudent and unreasonable (Towns Joint Brief at 49-50). Thus, the Town Intervenors ask that the Department disallow all or a portion of

⁴⁷(...continued)

apportion common costs among utility companies that operated in multiple jurisdictions (Tr. 7, at 1259).

⁴⁸ In calculating the annual amount, the Town Intervenors took the \$475 per hour and multiplied it by eight hours a day, and multiplied that product by 262 work days per year, which totals \$995,600 (Towns Joint Brief at 49, *citing* DPU 4-3, Att. B).

⁴⁹ The Town Intervenors noted that the affiliates were being allocated five percent, or \$100,000, of the directors' salaries (Towns Joint Brief at 49, *citing* DPU 4-3, Att. B).

such expenses (id. at 50). The Town Intervenors also suggest that to the extent Macquarie may be receiving a de facto return on investment through such high management fees, the Department should take this into account and grant Aquarion a lower return on common equity (“ROE”) (id.).

b. Company

The Company asserts that the costs associated with the MUI Agreement are reasonable and meet the Department’s standard for cost recovery of affiliate transactions (Company Brief at 16, 17). Specifically, Aquarion asserts that given the professional expertise associated with the services provided, the charges are appropriate (id. at 16, citing Tr. 7, at 1279). In highlighting the benefit to Aquarion, the Company states that Macquarie provides Aquarion with access to capital, which it passes through to Aquarion at actual cost (Company Brief at 16, citing Tr. 1, at 110-111). The Company notes that even the Town Intervenors acknowledged that Macquarie’s access to the debt market provides an important benefit to Aquarion (Company Brief at 16, citing Tr. 6, at 1091).

Aquarion also contends that under Macquarie’s ownership, management fees to its New England affiliates have been reduced from \$1,300,000 to approximately \$896,000, a reduction of over \$400,000 (Company Brief at 16-17, citing Tr. 7, at 1280).⁵⁰ In conclusion, the Company asserts that it would be inappropriate to outsource the types of services provided

⁵⁰ Macquarie purchased Aquarion Company and its affiliates in April 2007 (Tr. 1, at 109). The prior owner, Kelda Group, plc, provided similar corporate management services and similarly allocated costs to Aquarion (id. at 110).

by Macquarie (Company Brief at 17). Aquarion further argues that as its owner, Macquarie has the right to be actively involved in managing its investment (id. citing Tr. 1, at 113).

3. Analysis and Findings

To qualify for inclusion in rates, payments by Aquarion to Macquarie and MUI are examined under the affiliate transaction standard. D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52. The Department also has a long-standing practice of examining management contracts. As we have stated, “holding companies, in their efforts to derive income in addition to that obtained through dividends, frequently resort to all sorts of contractual relations with the operating utilities which they control. These contracts in any rate proceeding necessarily are subject to suspicion and to careful scrutiny.” Boston Edison Company/Boston Edison Mergeco Electric Company, D.P.U./D.T.E. 97-63, at 63 n.20 (1998), citing Department of Public Utilities 1932 Annual Report to the Legislature at 7. The Department has previously expressed concern about the apparent duplication of services by the Company and its predecessor service companies and, thus, this scrutiny is particularly apt here. See D.P.U. 88-170, at 19-26; D.P.U. 86-172, at 25; Oxford Water Company, D.P.U. 1699, at 10-13 (1984).

Pursuant to the MUI Agreement, Aquarion Company allocates to Aquarion expenses related to asset management, risk management, investor relations, and capital procurement services, as well as a percentage of the board of directors’ salaries, board expenses for travelling, printing, and telecommunications, directors and officers insurance, and miscellaneous and direct costs (Exhs. DPU 4-2, Att.; DPU 4-3, Att. A). Aquarion Company

also allocates to Aquarion other corporate charges including labor and benefits, bank fees, audit and tax preparation, legal services, and building overhead (Exhs. AQR-LMD at 20; DPU 4-3, Att. A).

With respect to the management fees allocated to Aquarion pursuant to the MUI Agreement, Macquarie purchased Aquarion Company and its affiliates in April 2007, and the MUI Agreement was executed effective April 30, 2007 (Exh. DPU 4-2). Thus, at the time that Aquarion submitted its rate filing, the Company estimated its test year costs for such expenses (Exh. 2, Sch. 13; see Tr. 1, at 61). During the proceeding, the Company provided actual invoices for the fourth quarter of 2007 and the first and second quarters of 2008 (Exh. DPU 4-3; RR-Hingham-1; RR-DPU-12).⁵¹

The MUI Agreement states that services rendered be charged “based on time spent or allocated cost of those personnel” (Exh. DPU 4-2, Att.). The management fee allocated to the affiliates is, however, simply a pro rata portion of Macquarie personnel costs and other expenses that is divided into quarterly invoices (id., Att.; RR-Hingham-1; see Tr. 1, at 116). The Company admitted that it did not have full detail to support each item (Tr. 1, at 116; Tr. 7, at 1245).⁵²

⁵¹ It is difficult to reconcile the actual invoices with the annual management fee being allocated to the affiliates (Compare Exhs. 2, Sch. 13; DPU 4-3, Att. A with Exh. DPU 4-3, Att. B; RR-Hingham-1; RR-DPU-12). In general, however, the actual invoices are higher than the estimated amounts.

⁵² Even where Aquarion was able to provide documentation, such documentation did not support the Company’s contention that the services provided specifically benefit the Company. For example, the bulk of the asset managers’ out-of-pocket expenses
(continued...)

The Town Intervenors questioned the appropriateness of passing through a portion of the Macquarie board of directors' salaries to Aquarion (Towns Joint Brief at 49). Aquarion stated that the payment is for specific services performed by the board pursuant to the MUI Agreement (Tr. 1, at 62). The MUI Agreement, however, does not delineate specific functions to be performed by the board. Instead, as with the other management fees, a pro rata portion of the boards' salaries is allocated to the affiliates. Thus, we determine that the Company failed to adequately demonstrate that the services provided pursuant to the MUI Agreement specifically benefit Aquarion.

As to the cost of the services, Aquarion initially stated that it was unable to confirm that any due diligence had been done to ensure that the rates being charged by Macquarie were reasonable (*id.* at 72-73). Aquarion later stated that because Macquarie was its owner, it would be inappropriate to conduct due diligence as Aquarion would not be able to outsource the provided services in any event (Tr. 7, at 1279).⁵³ Instead, the Company focused on the fact

⁵²(...continued)

incurred during the fourth quarter of 2007 and the first quarter of 2008 related to a Connecticut rate case (RR-DPU-12). While we recognize that activities will vary over the course of a given year, this focus on non-Massachusetts operations weakens Aquarion's assertions that the billed services specifically benefit the Company.

⁵³ In outlining the general services that are provided to Aquarion Company pursuant to the MUI Agreement, the Company stated that Macquarie, as its parent, has the responsibility to ensure that the Company operates as efficiently as possible and that the Company invests in capital as prudently as possible (Tr. 7, at 1275; *see* Exh. DPU 4-2, Att.). For example, Macquarie's asset managers work side by side with the Company to ensure performance improvement and efficiency (Tr. 7, at 1275-1276). Macquarie employees also provide a monthly update to its investors on Aquarion's performance (Tr. 1, at 56-57; Tr. 7, at 1277). Macquarie employees attend monthly board meetings
(continued...)

that management fees have declined under the ownership of Macquarie as proof that the fees allocated were appropriate (id. at 1279-1280). The fact that management fees have been reduced does not, on its own, prove that the current management fees are appropriate. Instead, the Company must demonstrate that the payments made to Macquarie for management fees were at a competitive and reasonable price. D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52. Aquarion failed to do so. Thus, we determine that Aquarion has not demonstrated that the services provided under the MUI Agreement qualify for inclusion in rates. Therefore, the Department will disallow \$79,265, Aquarion's share of management fees related to the MUI Agreement.

With respect to the corporate charges being allocated to Aquarion outside of the MUI Agreement, we determine that they are, in sum, appropriate (Exhs. 2, Sch. 13; AQR-LMD at 20; DPU 6-1; Tr. 2, at 202-203). Specifically, as an affiliate, Aquarion is required to participate in the preparation of consolidated tax returns and internal audits. Aquarion Company also manages, for Aquarion and its affiliates, a consolidated bank account on which bank fees accrue (Tr. 2, at 202). In addition, it is also appropriate, in this instance, to allocate to the affiliates labor charges and building overhead related to these services and expenses. Thus, the Department determines that the corporate charges unrelated to the MUI Agreement are for activities that specifically benefit Aquarion, do not duplicate services already available

⁵³(...continued)

and report on Aquarion's performance (Tr. 1, at 60; Tr. 7, at 1276-1277). Finally, Macquarie's finance department gathers information for pension funds and dividends as well as investor presentations (Tr. 7, at 1277).

at Aquarion, and are at a competitive and reasonable price. Therefore, the Department allows \$521,294 in corporate charges, of which 8.84 percent, or \$46,082 is allocated to Aquarion. The Department has previously relied on the Massachusetts formula for allocation of similar corporate expenses. Eastern Edison Company, D.P.U. 1130, at 29-31 (1982). We find that such allocation formula is, in this instance, cost-effective and nondiscriminatory.

In sum, the Department finds that Aquarion failed to meet its burden that certain of the corporate expenses, as outlined above, are for activities that specifically benefit the regulated utility, as well as its burden to demonstrate that the expenses are at a competitive and reasonable price. Therefore, we disallow \$79,265, which represents Aquarion's share of the \$896,667 in management fees related to the MUI Agreement. Aquarion proposed cost of service was \$132,414. Allowing \$46,082 related to corporate expenses, the Company's proposed cost of service is reduced by \$86,332.

I. Oxford Storage Tank

1. Introduction

On January 9, 2007, the Company entered into a lease agreement with Oxford for a 500,000 gallon water storage tank located on Sutton Avenue in Oxford (Exhs. AQR-LMD at 23; DPU 3-47, Att. A). Oxford constructed the tank, at its sole cost and expense, for the purpose of providing potable water and fire protection within Oxford (Exhs. AQR-LMD at 23; DPU 3-47, Att. A at 1). Aquarion agreed to provide potable water and operate and maintain the storage tank (Exhs. AQR-LMD at 23; DPU 3-47, Att. A at 2, 5). Under the lease agreement, Aquarion will make equal annual payments to Oxford for a period of 20 years

(Exhs. AQR-LMD at 23; DPU 3-47, Att. A at 5). Payments under the lease commenced in January 2008 (Exh. AQR-LMD at 23; see Exh. DPU 3-47, Att. A at 3). The Company has proposed an increase to test year cost of service of \$38,125 for the annual lease expense (Exh. 2, Sch. 17).

2. Positions of the Parties

The Company claims that the lease arrangement for the Sutton Avenue storage tank is mutually beneficial to both Oxford and Aquarion (Company Reply Brief at 8). The Company states that the agreement benefits Aquarion through the construction of necessary plant without increasing the Company's rate base (id.). The Company asserts that Oxford benefits from the lease agreement through low-cost capital to finance the construction of the tank, with the lease payments covering a significant portion of the debt service (id.).

3. Analysis and Findings

A utility's lease expense represents an allowable cost qualified for inclusion in its cost of service. D.T.E. 05-27, at 224; D.T.E. 03-40, at 171; D.P.U. 88-161/168, at 123-125. The Department permits the recovery of lease expense provided the lease agreement is an arm's length arrangement that is a known and measurable change to test year cost of service. D.P.U. 88-67 (Phase I) at 97. The Department has also found that the standard for inclusion of lease expense is one of reasonableness. D.T.E. 05-27, at 224; Commonwealth Electric Company/Cambridge Electric Light Company, D.P.U. 89-114/90-331/91-80 (Phase I) at 96 (1991).

The Company has provided a copy of the lease agreement and all correspondence between Aquarion and Oxford regarding the construction of the Sutton Avenue storage tank (Exhs. DPU 3-47, Att. A; DPU 3-49, Att. A). This evidence demonstrates that Aquarion acted prudently when entering into this lease agreement with Oxford. The Company and Oxford are not affiliated companies as defined by G.L. c. 164, § 85; accordingly, the lease agreement is an arm's length transaction. In addition, these lease payments are a known and measurable change and are reasonable. For these reasons, the Department will allow the lease payments for the Sutton Avenue storage tank in Oxford to be recovered as part of the Company's test year cost of service. Accordingly, no adjustment is made to Aquarion's cost of service.

J. Amortization of Deferred Expenses

1. Introduction

In D.T.E. 03-91, the Department granted the Company's request to defer and record as a regulatory asset the difference between the level of pension and PBOP included in rates and the amount of pension expense booked in accordance with SFAS No. 87, plus PBOP expense booked in accordance with SFAS 106 (Exh. AQR-LMD at 23-24). The current deferred balance consists of \$575,558 in deferred pension costs and \$885,221 in deferred PBOP costs (Exh. 2, Sch. 18 (update)). The Department also granted, in Aquarion Water Company of Massachusetts, D.T.E. 03-127, at 12 (2005), the Company's request to defer \$289,313 in security-related expenditures undertaken in response to the events of September 11, 2001 (Exh. AQR-LMD at 24).

Finally, the Department granted the Company's request to defer \$540,793 in expenses relative to the investigation and subsequent treatment of its Jacques Street wellfield for perchlorate contamination in Aquarion Water Company of Massachusetts, D.T.E. 04-77, at 12 (2005) (Exh. AQR-LMD at 24). Specifically, in May 2004, perchlorate, an accelerant used in explosives, was detected in the Company's Jacques 1 and 2 in Millbury (Exh. AQR-LLB at 37). The wells were immediately taken out of service (id.). Aquarion subsequently built a perchlorate removal treatment facility that was completed in June 2005, whereupon the wells were returned to service (id. at 38).

After investigation, the source of the perchlorate contamination was discovered and a developer identified as the potentially responsible party (id.). The Company negotiated an agreement with the party responsible for the perchlorate contamination (id.; Exh. OXF 2-24). The agreement required the responsible party to reimburse Aquarion for 95 percent of the costs associated with the original contamination including, but not limited to, the cost of the perchlorate removal treatment facility (Exh. AQR-LLB at 38). In addition, the responsible party agreed to reimburse Aquarion for 95 percent of the annual operations and maintenance costs of the perchlorate removal treatment facility for seven years (id. at 39).⁵⁴ As a result of this agreement, the Company recovered all but five percent (or \$27,040) of the deferral related to the perchlorate contamination (Exhs. 2, Sch. 18; AQR-LMD at 24).

⁵⁴ Under the terms of the settlement, all of the test year operating expenses associated with the perchlorate treatment facility were reimbursed to Aquarion (Exh. OXF 2-24).

As a result of the three accounting deferrals, the Company has recorded a total of \$1,777,132 in deferred expenses (Exh. 2, Sch. 18 (update)). The Company proposes to amortize these expenses over a period of five years based on Aquarion's understanding of the Department's treatment of other types of amortizations (Exhs. 2, Sch. 18; AQR-LMD at 24; Tr. 1, at 128-130). Therefore, the Company proposes to increase its test year cost of service by \$355,426 (Exh. 2, Sch. 18 (update)).

2. Positions of the Parties

With respect to the perchlorate contamination expenses, while Aquarion did not obtain complete indemnification from the potentially responsible party in perpetuity, the Company argues that the fact that it was able to recover 95 percent of the deferred expenses should be viewed as the successful management of this expense (Company Brief at 21). Alternately, Oxford argues that the Company should have sought 100 percent recovery of the expenses from the responsible party, not the 95 percent figure settled upon (Oxford Brief at 12-13).

The Town Intervenors argue that Aquarion's deferred expenses should be amortized over a period of seven years in order to mitigate some of the rate impacts that will result from the Company's proposed rate increase (Towns Joint Brief at 45; Tr. 1, at 128-130). According to the Town Intervenors, using a seven-year amortization period, as opposed to the five years proposed by the Company, will reduce the associated annual revenue requirement by \$101,468 (Town Intervenors Brief at 45-46). The Company did not address this issue on brief.

3. Analysis and Findings

The Department formulated its standard for reviewing requests for deferral accounting treatment in North Attleboro Gas Company, D.P.U. 93-229 (1994). In that case, the Department stated that a utility seeking deferral treatment must demonstrate prima facie in its petition that: (1) based on Department precedent, the annual expense may be recoverable as an extraordinary expense if it were incurred during a test year;⁵⁵ (2) a Department denial of the request for deferral would significantly harm the overall financial condition of the company; and (3) the Department's denial of the request for deferral is likely to cause the filing of a rate case that would include in its test year the expense for which deferral is sought.

D.P.U. 93-229, at 7. Granting a deferral pursuant to this standard does not constitute a guarantee that the subject expense would be recoverable in a future rate case. Rather, subsequent ratemaking treatment of the expense is considered in the company's next rate case. Id. at 8.

In each of Aquarion's petitions for accounting deferrals, the Department evaluated the proposal and determined the appropriate amount eligible for deferral treatment. D.T.E. 04-77, at 6-7; D.T.E. 03-127, at 5-7; D.T.E. 03-91. The Department's approval of those deferrals, however, did not guarantee recovery of those costs in a future rate case; the prudence of these costs will be examined in the context of this case.

⁵⁵ For example, a company's request for deferral would be evaluated in terms of what would constitute an annualized amount. D.P.U. 93-229, at 7 n.9.

Based on our review of the underlying reasons for and costs associated with each of the deferrals, the Department finds that the deferred costs were prudently incurred and, accordingly, are eligible for rate recovery. Concerning Aquarion's perchlorate expenses, utilities are responsible to pursue all reasonable and prudent avenues to protect ratepayer interests, including litigation if warranted. D.P.U. 84-32, at 23; Boston Gas Company, D.P.U. 1100, at 89-92 (1982). Where a utility does not appropriately pursue the available legal avenues to protect ratepayers' interests, the Department will take appropriate action to apportion costs between the company and its ratepayers. D.P.U. 1100, at 91.

In this instance, we determine that Aquarion appropriately met its obligation to protect ratepayer interests by pursuing a settlement with the party responsible for the perchlorate contamination. Further, the Company evaluated its remediation options and determined that the most cost-effective solution was to install ion exchange equipment at the Jacques Street site (Exh. DPU 2-6, Att. A at 94, 96, 102). The Department has examined the deferred costs associated with the perchlorate contamination and finds that the costs were prudently incurred and are reasonable in amount (Exh. DPU 2-3, Atts. A, B).⁵⁶ Accordingly, the Department will

⁵⁶ The Town Intervenors argue that Aquarion should have sought 100 percent recovery from the party responsible for the perchlorate contamination rather than the 95 percent recovery settled upon (Oxford Brief at 12-13; Tr. 1, at 37-38). The Department has found that the Company acted prudently with respect to its decision to pursue legal action in this case. Further, in light of the potential cost of litigation and the risk of an unsuccessful outcome, we find that Aquarion's decision to enter into a settlement to recover 95 percent of the perchlorate contamination costs was reasonable (Exh. OXF 2-24).

allow Aquarion to recover the unreimbursed five percent (or \$27,040) of the deferred perchlorate contamination costs.

With respect to Aquarion's security-related expenditures, during 2001 and 2002 Aquarion incurred \$146,310 in expenses associated with ensuring direct after-hours calls capability and \$143,003 for 24-hour police patrol services around the Company's facilities to comply with the directives of the Public Health Security and Bioterrorism Response Act of 2001 (Exhs. 2, Sch. 18 (updated); AQR-LMD at 24). D.T.E. 03-127, at 5. The Department has reviewed these costs and finds that they were prudently incurred and reasonable in amount (Exhs. 2, Sch. 18 (update); AQR-LMD at 24). Therefore, the deferred security-related expenditures are eligible for rate recovery.

With respect to Aquarion's pension and PBOP deferrals, the Department has reviewed these costs (Exhs. DPU 1-4; DPU 1-5). Based on our review, we find that the Company's pension and PBOP deferrals were calculated correctly, were prudently incurred, and are reasonable in amount. Therefore, the deferred pension/PBOP costs are eligible for rate recovery.

The Company has proposed to amortize these costs over five years, while the Town Intervenors have proposed a seven-year amortization. Amortizations are based on a case-by-case review of the evidence and underlying facts. D.P.U. 93-223-B at 14; D.P.U. 84-145-A at 54. The Department has considered such factors as the amount under consideration for deferral and the effect of the adjustment based on various amortization periods upon the Company's finances and income. Based on the underlying facts giving rise to

the deferrals and the evidence in this proceeding, the Department finds that a seven-year amortization of the deferred expenses is reasonable. Application of a seven-year amortization period to the \$1,777,132 in deferred expenses produces an annual amortization expense of \$253,876, versus the Company's proposed amortization expense of \$355,426. Accordingly, the Company's proposed cost of service will be reduced by \$101,550.

K. Income Taxes

1. Introduction

The Company proposes to calculate federal income taxes and deferred federal income taxes associated with depreciation using a 35 percent federal income tax rate (Exh. 2, Schs. 33, 34). None of the parties addressed this issue on brief.

2. Analysis and Findings

The Department calculates taxes on a "stand-alone" basis for utilities, including those that are part of a holding company structure. Massachusetts Electric Company, D.P.U. 89-194/195 at 66 (1990). The Department has determined that a company's individual, or stand-alone, pro forma income tax rate is the appropriate tax rate to apply when determining the provision for deferred income taxes. D.P.U. 86-172, at 26-27. The appropriate tax rate for Aquarion on a stand-alone basis is 34 percent. Therefore, the Department will use a 34 percent federal income tax rate in calculating pro forma income tax expense and deferred income taxes. Additionally, the Department has adjusted the Company's book depreciation expense used in its income tax calculations to recognize the level of

depreciation expense being approved in this Order. The results of the revised federal tax rate and depreciation expense are provided on Schedule 8, attached.

L. Bad Debt

1. Introduction

During the test year, Aquarion booked \$28,412 in uncollectible expense (Exh. 2, Sch. 26). The Company has proposed an increase of \$7,059 to this expense (id., Sch. 26). To derive this expense, the Company first divided its test year bad debt expense of \$28,412 by total test year pro forma revenues from water sales of \$12,328,673 (id., Sch. 26). This calculation produced a bad debt ratio of 0.2305 percent (id., Sch. 26). Next, Aquarion applied the uncollectible ratio of 0.2305 percent to the pro forma revenue amount of \$15,388,678 under its proposed rates, resulting in a pro forma uncollectible expense of \$35,471 (id., Sch. 26). This represents an increase of \$7,059 to test year cost of service (id., Sch. 26). None of the parties addressed this issue on brief.

2. Analysis and Findings

The Department permits companies to include for ratemaking purposes a representative level of uncollectible revenues as an expense in cost of service. D.P.U. 96-50 (Phase I) at 70-71; D.P.U. 89-114/90-331/91-80 (Phase One) at 137-140. The Department has found that the use of the most recent three years of data available is appropriate in the calculation of bad debt. D.P.U. 96-50 (Phase I) at 71. The calculation of a company's bad debt ratio factor is derived by dividing the three-year average net write-offs by the billed average revenues over the same period. D.P.U. 95-118, at 135. This bad debt ratio is then multiplied by test year

retail billed revenues, adjusted for any revenue increase or decrease that was approved for recovery in the current rate case. See D.P.U. 96-50 (Phase I) at 71.

The Company's bad debt calculations described above are flawed. Specifically, as noted above, the Company divided its test year bad debt expense by its total test year pro forma revenues (Exh. 2, Sch. 26). Next, Aquarion inappropriately applied the uncollectible ratio to its pro forma revenue amount under its proposed rates (id., Sch. 26). The appropriate bad debt calculation for uncollectible ratio is to take the three-year average of Aquarion's net write-offs for the years 2005 through 2007 (as shown on Exhibit DPU 2-6) as a percentage of total revenues for the corresponding period, which results in a uncollectible ratio of 0.3971 percent. See D.P.U. 88-170, at 27. Based on Department precedent, this ratio should then be multiplied by the Company's test-year revenues of \$12,328,673, adjusted by the revenue increase approved in the current rate case, to arrive at an uncollectible expense of \$60,671. Id. The Company booked \$28,412 during the test year. Accordingly, Aquarion's proposed cost of service will be increased by \$24,552.

M. Depreciation Expense

1. Introduction

a. Depreciation Study

During the test year, Aquarion booked \$927,358 in depreciation expense (Exh. 2, Sch. 28 (updated) at 2).⁵⁷ The Company proposes to increase its depreciation expense by

⁵⁷ The present depreciation accrual rates are based in part on a depreciation study performed as part of D.T.E. 00-105 (Exhs. Hingham/Hull 2-13, Att. A;

(continued...)

\$352,979 to recognize the application of new accrual rates to its pro forma plant in service (id., Sch. 28 (updated) at 2). The proposed accrual rates are based on a depreciation study that recommended an overall accrual rate of 2.69 percent, representing an increase from the Company's current overall accrual rate of 2.1 percent (Exh. AQR-JWS-1, Table 5-1 (rev.); Tr. 3, at 300).

Aquarion's depreciation study uses the remaining life method, which is a well-accepted approach whereby the cost of plant, less depreciation and net salvage, is recovered over the estimated remaining life of the property in each plant account (Exh. AQR-JWS at 9-10). The depreciation study was based on plant data as of December 31, 2007 (id. at 6). For those plant accounts where there have been sufficient retirements for study, Aquarion developed actuarial service life data through simulated plant record ("SPR") analysis that examined the history of additions, retirements, and plant balances over a select period of years (Exh. AQR-JWS-1, at 3-2; Tr. 3, at 372-373). The resulting survivor curves were then fitted to standard "Iowa" curves to produce an average service life ("ASL") (Exh. AQR-JWS-1,

⁵⁷(...continued)

Hingham/Hull 2-70). As part of the settlement approved in that proceeding, the parties agreed to account-specific accrual rates producing a composite depreciation accrual rate of 2.06 percent, with a further increase of 0.55 percent to be considered as part of the Company's next rate case. D.T.E. 00-105, at 3. The increase in the composite accrual rate to 2.1 percent results from the changes in plant mix that have occurred since 2001.

at 2-4 to 2-5).⁵⁸ Using the ASL data, as well as average service lives and average ages, the Company calculated the remaining life of the plant account (id. at 3-2).

Aquarion also developed net salvage factors (id. at 4-1). For those plant accounts where insufficient retirement data was available to provide a statistically reliable result, the Company relied on the National Association of Regulatory Utility Commissioners publication, “Depreciation Practices for Small Water Utilities” (August 15, 1979) (“NARUC Depreciation Manual”), as well as the results of the Company’s prior depreciation study and the historic experience of the Company’s Connecticut and New Hampshire affiliates, to derive an appropriate remaining life (Exhs. AQR-JWS at 13; Hingham/Hull 2-67; Tr. 3, at 353).⁵⁹ Application of the resulting accrual rates to plant in service as of December 31, 2007, resulted in a composite accrual rate of 2.69 percent (Exh. AQR-JWS-1, Table 5-1 (rev.)).

b. Accounts 346, 391H, 391S, and 396 Overaccruals

In the course of preparing its depreciation study, Aquarion noted that four of its plant accounts (i.e., Accounts 346 (meters), 391H (computer hardware), 391S (computer software), and 396 (power operated equipment)) had booked depreciation reserves that exceeded the total plant account balances (id. at 4-12).⁶⁰ The Company noted that for these accounts, the annual

⁵⁸ Iowa curves are frequency distribution curves initially developed in the 1930s at Iowa State University (Exh. AQR-JWS-1, at 2-4). These curves are widely accepted as a means of determining average life frequencies for utility plant (id. at 2-4 to 2-5).

⁵⁹ The Department has taken administrative notice of the NARUC Depreciation Manual pursuant to 220 C.M.R. § 1.10(2) (Tr. 3, at 324).

⁶⁰ The Company maintains its accounting records using both the Uniform System of
(continued...)

depreciation expense accrual would have to be set high enough to cover both on-going retirements and overcome the negative book balances (id.). Therefore, the Company proposed to adjust the accrual rates for these accounts so that the negative book values could be eliminated in what Aquarion considered to be a reasonable manner.

First, the Company proposes to eliminate the depreciation overaccrual for Account 346 by applying an 8.33 percent accrual rate for twelve years (Exhs. 2, Sch. 28 (updated) at 1; AQR-JWS-1, at 4-12). Second, the Company proposes to eliminate the depreciation overaccrual for Account 391H by applying a negative 2.4 percent accrual rate to the current account balance for three years and amortize future additions at a rate of 20 percent per year consistent with the ASL of five years determined for this account (Exhs. 2, Sch. 28 (updated) at 2; AQR-JWS-1, at 4-13). Third, the Company proposes to eliminate the depreciation overaccrual for Account 391S by applying a negative 35.84 percent accrual rate to the current account balance for three years, and amortize future additions at a rate of 20 percent per year consistent with the ASL of five years determined for this account (Exhs. 2, Sch. 28 (updated) at 2; AQR-JWS-1, at 4-13). Finally, the Company proposes to eliminate the depreciation overaccrual for Account 396 by applying a negative 13.31 percent accrual rate to the current account balance for three years and amortize future additions at a rate of 14.3 percent per year consistent with the ASL of seven years determined for this account (Exhs. 2, Sch. 28 (updated) at 2; AQR-JWS-1, at 4-13).

⁶⁰(...continued)

Accounts for Water Companies, 220 C.M.R. § 52.00 et seq., and a more detailed chart of accounts (Exhs. AQR-LMD at 6; DPU 2-4, Att. A at 5).

2. Town Intervenors Analysis

The Town Intervenors reviewed the Company's depreciation study and offered a number of conclusions relative to both the magnitude of the proposed increase in depreciation expense and technical issues related to the study (Exh. HH-DFR at 24). Based on the results of the review, the Town Intervenors proposed to revise a number of account-specific accrual rates, thus reducing the proposed depreciation expense by \$168,020 (id. at 30). The Town Intervenors also propose to limit the maximum increase in the composite depreciation accrual rate to 50 percent of the Company's proposal, thus producing a composite accrual rate of 2.435 percent (id.).

3. Positions of the Parties

a. Town Intervenors

The Town Intervenors note that it is difficult to achieve reliable results with the remaining life method when evaluating a relatively small utility such as Aquarion, because of the lack of statistically-reliable data (Towns Joint Brief at 28). The Town Intervenors argue that because of the extensive use of assumptions and judgment required in a depreciation study, two analysts, working independently using the same method, would not generally develop the same results (id. at 29, citing Exh. HH-DFR at 25; Tr. 3, at 326, 340). Therefore, the Town Intervenors emphasize the role of judgment and subjective considerations in the development of appropriate accrual rates (Towns Joint Brief at 29).

The Town Intervenors identify four accounts for which they consider the proposed ASLs are understated: (1) Account 317, other water source plant; (2) Account 342,

distribution reservoirs and standpipes; (3) Account 325; electric pumping equipment; and (4) Account 345, services (id. at 38). According to the Town Intervenors, the Company's proposed ASLs for these accounts fail to recognize the actual service life experience attained by both Aquarion and other water companies in the New England area, through both good preventative maintenance practices and the widespread use of polyvinyl chloride ("PVC") pipes for service lines (id. at 39-41). The Town Intervenors propose to increase the proposed ASLs for these accounts as follows: (1) from 30 to 40 years for Account 317; (2) from 20 to 25 years for Account 325; (3) from 60 to at least 75 years for Account 342; and (4) from 40 to 50 years for Account 345 (id.). The Town Intervenors calculate that adoption of these ASLs would reduce the Company's depreciation expense by \$56,533 (id. at 41-42).

The Town Intervenors also contest a number of the Company's proposed net salvage value estimates. The Town Intervenors first contend that Aquarion is seeking to double-recover estimated salvage or retirement costs for several accounts (id. at 29). According to the Town Intervenors, certain construction projects include costs associated with removal of old structures as part of the contract price (id. at 30-31, citing Tr. 4, at 495-496). Because removal costs are frequently included in the overall cost of a project, the Town Intervenors argue that the Company's practice of including salvage charges as a component of the depreciation accrual rate would result in customers being required to pay twice for the same costs (Towns Joint Brief at 32). Therefore, the Town Intervenors request that the Department

closely examine all accounts with proposed negative salvage values to determine whether these negative values are being charged to customers twice (id. at 32-33).⁶¹

Even if salvage costs are being accounted for appropriately, the Town Intervenors dispute Aquarion's proposed salvage values. The Town Intervenors note that there are many plant accounts where the Company had to exercise judgment (id. at 33). They maintain, however, that the Company failed to take into account the experience of other water utilities in New England other than Aquarion's affiliates in New Hampshire and Connecticut and assumed relatively high removal costs while possibly discounting any offsetting salvage values (id.). The Town Intervenors propose a range of salvage estimates that they consider more consistent with the evidence (id. at 33-37).⁶² The Town Intervenors urge the Department to reject the Company's net salvage estimates in favor of their proposed salvage estimates, producing a decrease in retirement costs of \$111,487 (id. at 37).

Finally, the Town Intervenors note that acceptance of the Company's proposed depreciation study would result in an increase of approximately 28 percent to depreciation expense (id. at 28). In the interest of mitigating customer impacts associated with this rate case, the Town Intervenors propose that, to the extent that the Department approves an

⁶¹ Negative salvage values were estimated for ten accounts (Exh. AQR-JWS-1, Table 5-1 (rev)).

⁶² The Town Intervenors propose the use of the following salvage values by plant account: Account 316 (negative 20 percent); Account 325 (negative ten percent); Account 342 (zero percent); Account 343 (negative 20 percent); Account 345 (negative five percent); Account 348 (negative ten percent); and Account 392 (positive ten percent) (Towns Joint Brief at 37).

increase in depreciation expense, that the increase in accrual rates be phased in as was done as part of the settlement in D.T.E. 00-105 (id.).

b. Company

The Company contends that its depreciation witness is an acknowledged expert in the field (Company Brief at 21). Aquarion maintains that the Town Intervenors' witness is not an expert in depreciation and that it is not appropriate to substitute the judgment of a witness who has never conducted a depreciation study for the judgment of the Company's depreciation expert (id.).

Aquarion contends that its proposed ASLs and net salvage factors are reasonable. The Company argues that its witness relied on company-specific data to develop his proposed ASLs and relied on industry experience with particular asset classes if such data did not exist (id. at 22). To develop its net salvage factors, Aquarion stated that it relied on data from the Company's prior depreciation study and salvage histories from Aquarion's Connecticut and New Hampshire affiliates (id. citing Tr. 3, at 335-336).

The Company opposes any phase-in of the depreciation accrual rates proposed in this proceeding. Aquarion contends that the Department has recognized the role of depreciation expense in generating both funds for capital replacement and recovery of capital investment used to provide service to customers (Company Brief at 22, citing D.P.U. 95-118, at 132-133). The Company argues that since the 2001 settlement, it has been recording depreciation expense at a level significantly below the levels recommended in its depreciation study (Company Brief at 22-23). Aquarion maintains that the Town Intervenors demand more investment in the

Company's infrastructure while seeking to delay recovery of the necessary capital (id. at 23). The Company argues that such an approach is unsound in that it would shift the costs of these investments to future ratepayers and, thus, create intergenerational inequities that even the Town Intervenor acknowledged would warrant consideration (id. citing Tr. 6, at 1078).

4. Analysis and Findings

a. Standard of Review

Depreciation expense allows a company to recover its capital investments in a timely and equitable fashion over the service lives of the investments. D.T.E. 98-51, at 75; D.P.U. 96-50 (Phase I) at 104; Milford Water Company, D.P.U. 84-135, at 23 (1985); D.P.U. 1350, at 97. Depreciation studies rely not only on statistical analysis but also on the judgment and expertise of the preparer. The Department has held that when a witness reaches a conclusion about a depreciation study which is at variance with that witness's engineering and statistical analysis, the Department will not accept such a conclusion absent sufficient justification on the record for such a departure. D.P.U. 92-250, at 64; D.P.U. 89-114/90-331/91-80 (Phase One) at 54-55; D.P.U. 88-135/151, at 37. It is also necessary to go beyond the numbers presented in a depreciation study and consider the underlying physical assets. D.P.U. 92-250, at 64; The Berkshire Gas Company, D.P.U. 905, at 13-15 (1982); Massachusetts Electric Company, D.P.U. 200, at 21 (1980).

The Department recognizes that the determination of depreciation accrual rates requires both statistical analysis and the application of the preparer's judgment and expertise.

D.T.E. 02-24/25, at 132. Because depreciation studies rely by their nature on examining

historic performance to assess future events, a degree of subjectivity is inevitable.⁶³

Nevertheless, the product of a depreciation study consists of specific accrual rates to be applied to specific accounts' balances associated with depreciable property. A mere assertion that judgment and experience warrant a particular conclusion does not constitute evidence. See Eastern Edison Company, D.P.U. 243, at 16-17 (1980); D.P.U. 200, at 20-21; D.P.U. 19037/19037-A at 23.

It thus follows that the reviewer of a depreciation study must be able to determine, preferably through the direct filing, and at least in the form of comprehensive responses to well-prepared discovery, the reasons why the preparer of the study chose one particular life-span curve or salvage value over another. The Department will continue to look to the expert witness for interpretation of its statistical analyses but will consider expert testimony and evidence to the contrary and expect sufficient justification on the record for any variances resulting from the engineering and statistical analyses. D.P.U. 89-114/90-331/91-80 (Phase One) at 54-55.⁶⁴ To the extent a depreciation study provides a clear and comprehensive

⁶³ This is especially relevant in the calculation of net salvage factors where the cost to demolish or retire facilities cannot be established with certainty until the actual event occurs. D.P.U. 92-250, at 66; Boston Edison Company, D.P.U. 1720, at 44 (1984); D.P.U. 1350, at 109-110.

⁶⁴ Aquarion faults the Town Intervenor for confining their proposed adjustments to certain accounts and failing to perform a full depreciation study (Company Brief at 21). Nonetheless, intervenors are free to shape their litigation strategies in whatever manner they desire, including deciding where to place their emphasis in reviewing a company's filing.

explanation of the factors that went into the selection of accrual rates, such an approach will facilitate Department and intervenor review.

b. Remaining Life Approach

The Department has long accepted the use of the remaining life method for depreciation purposes. D.P.U. 1350, at 110. For many of Aquarion's plant accounts, the remaining life analyses demonstrate that there has been an insufficient history of retirements to provide statistically reliable results using a simulated plant balance analysis (Exh. AQR-JWS-1, at 4-1 to 4-4, 4-6, 4-8 to 4-11; Tr. 3, at 353). A major reason for this lack of retirement data is the Company's size and resulting lack of sufficient plant of particular types (Tr. 3, at 360-361, 372-373, 378-380). Another factor is that certain types of plant, such as dams and intakes, tend to be long-lived and do not require interim additions or retirements (Exhs. AQR-JWS at 4-2; AQR-JWS-1, App. B at 5-6). Because insufficient retirement data exists to determine an ASL using SPR analysis, it is necessary to use other methods to derive the ASL. Accordingly, the Department will examine the judgment and expertise relied on by Aquarion in determining the ASL values applied in its depreciation study.

c. Salvage Values

Unlike the selection of ASLs and dispersion curves, the selection of salvage values is more subjective. This is because salvage values are theoretically intended to recognize some future cost that cannot be quantified until the actual retirement occurs. D.P.U. 92-250, at 66. Whenever there is insufficient data regarding salvage values, it is necessary to exercise reasoned judgment in the determination of salvage values. D.P.U. 92-250, at 66.

In addition to engineering judgment and experience, Aquarion's salvage analyses relied on the NARUC Depreciation Manual, the Company's previous depreciation study, and salvage analyses conducted by Aquarion's Connecticut and New Hampshire affiliates (Exhs. Hingham/Hull 2-13, Att. A; Hingham/Hull 2-67, Atts. A, B). The Department has previously relied on the depreciation guidelines set forth by the NARUC Depreciation Manual for both ASLs and salvage factors. Pinehills Water Company, D.T.E. 01-42, at 17 (2001); D.P.U. 95-92, at 16-17; Westport Harbor Aqueduct Company, D.P.U. 85-107, at 7 (1985); D.P.U. 84-135, at 22-24.

While the NARUC Depreciation Manual and salvage analyses conducted by Aquarion and its affiliates constitute credible evidence, use of other salvage data may serve to confirm or revise the conclusions therein. For example, the experience of other investor-owned water companies, including those in New England, should also be considered in determining salvage values (Exh. HH-DFR at 26-27). Therefore, the Department will take into consideration both the salvage data provided in the Company's depreciation study and other evidence, as well as the judgment and expertise relied on by Aquarion in determining salvage values.

The Town Intervenors are concerned that removal costs are being double-collected through the negative salvage values and the inclusion of removal costs as part of construction (Exh. DPU-H/H 1-7). Depreciation expense represents a return of the investment and return on rate base represents the utility's earned return on that investment. D.P.U. 1590, at 22. It thus follows that the inclusion of removal costs (i.e., negative salvage values) in the cost of a construction project provides for the recovery of the actual removal costs through depreciation

expense and provides for a return on the company's investment in the removal costs through the return component. In this situation, no double-recovery of removal costs is incurred.

d. Account-By-Account Analysis

i. Account 316, Supply Mains

The current accrual rate for this account is 1.34 percent (Exh. AQR-JWS-1, Table 5-2). The Company proposes to use an R5-95 curve⁶⁵ and a salvage factor of negative 30 percent for this account, resulting in a remaining life of 84.48 years and a decrease in the accrual rate to 1.21 percent (id. at 4-3 & Table 5-2 & App. B at 9). Most of this plant was placed in service during the 1995 to 1996 period, as part of the construction of the Hingham WTP (id., App. B at 9). Thus, there is insufficient retirement data for this account. The Department has accepted the use of an R5-95 curve for Account 343, as explained below. Because supply mains are similar to transmission and distribution mains, the Department finds that the R5-95 curve is also applicable to Account 316.

Turning to the proposed salvage factor, the retirement experience associated with supply mains is consistent with that of transmission and distribution mains (id. at 4-3). The bulk of retirement costs are associated with backfill and pavement repairs at the point of excavations that are necessary to disconnect the retired main from other mains, hydrants, and service lines (id. at 4-3, 4-7).

⁶⁵ Iowa curves are typically designated by curve type and the years of service (Exh. AQR-JWS-1, at 2-5). For example, an R5-95 curve refers to the R5 Iowa curve and an ASL of 95 years.

The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed ASL and salvage factor. Therefore, the Department accepts the proposed accrual rate for Account 316.

ii. Account 317, Other Water Supply Plant

The current accrual rate for this account is 1.59 percent (id., Table 5-2). The Company proposes to use an R1-30 curve and a salvage factor of zero percent for this account, resulting in a remaining life of 28.56 years and an increase in the accrual rate to 3.39 percent (id. at 4-3 & Table 5-1 & App. B at 10). Most of this account is represented by various engineering studies (Exh. Hingham/Hull 2-73). Although the Town Intervenors are concerned that this account may include other types of plant, the Department is satisfied that the Company has accurately described the components of Account 317. These types of engineering studies are typically based on a 20-year planning horizon but they retain some residual value for some years thereafter (id.).

The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed ASL and salvage factor. Therefore, the Department accepts the proposed accrual rate for Account 317.

iii. Account 325, Electric Pumping Equipment

The current accrual rate for this account is 2.57 percent (Exh. AQR-JWS-1, Table 5-2). The Company proposes to use an R1-20 curve and a salvage factor of negative 20 percent for this account, resulting in a remaining life of 10.25 years and an increase in the accrual rate to 8.48 percent (id. at 4-4 & Table 5-2 & App. B at 14). The Company noted that the

overwhelming salvage cost factor is labor for removal, and that while current scrap metal prices are at historical highs, scrap metal values would have a very small effect on the salvage factor (Exh. Hingham/Hull 2-74). Aquarion chose what it considered to be a conservative salvage estimate to be consistent with the prior study and current Company practice (id.).

Aquarion's remaining life analysis for this account indicates significant negative salvage factors in recent years (Exh. AQR-JWS-1, App. B at 14). The Company has, however, overstated the complexity associated with removal costs (Exh. DPU-H/H 1-7). The salvage analyses for both the Connecticut and New Hampshire affiliates indicate negative salvage factors in the range of 25 to 28 percent in recent years, with a trend towards declining removal costs (Exh. Hingham/Hull 2-67, Att. A at 4 & Att. B at 3). The NARUC Depreciation Manual applies a zero percent salvage value for this type of equipment (NARUC Depreciation Manual at 11). In view of the trend towards reduced removal costs and the information provided in the NARUC Depreciation Manual, the Department considers the Company's proposed salvage factor of negative 20 percent to overstate the required accrual rate.

Accordingly, the Department considers an adjustment to Aquarion's proposed salvage factor for this account is warranted. Therefore, the Department directs the Company to use a salvage factor of negative 15 percent for Account 325.

The use of an R1-20 curve and a negative 15 percent salvage factor produces an accrual rate of 7.99 percent for Account 325. Therefore, the Department directs the Company to apply a depreciation accrual rate of 7.99 percent to Account 325.

iv. Account 342, Distribution Reservoirs and Standpipes

The current accrual rate for this account is 2.67 percent (Exh. AQR-JWS-1, Table 5-2). The Company proposes to use an R3-60 curve and a salvage factor of negative ten percent for this account (id., Table 5-1 (rev.)).⁶⁶ This results in a remaining life of 40.39 years and a decrease in the accrual rate to 2.12 percent (id. at 4-6 & Table 5-2 & App. B at 22).

The retirement analysis for this account indicated that the R3-57.9 Iowa curve had an excellent retirement experience index (“REI”), but only a fair index of variation (“IV”) rating (id. at 4-6 & App. A at 6).⁶⁷ While the NARUC Depreciation Manual suggests an ASL for this type of plant of between 30 and 60 years, three of the Company’s distribution tanks and standpipes are more than 75 years old (Exh. DPU-H/H 1-8; NARUC Depreciation Manual at 11). The Company’s previous depreciation study relied on a lifespan analysis for this account. The study estimated a lifespan of between 70 and 100 years, which is consistent with the experience of other New England water utilities with tanks still in service after 70 to 80 years (Exhs. DPU-H/H 1-8; Hingham/Hull 2-13, Att. A at Table 1). This ASL appears to be consistent with the Company’s own experience but must be tempered with the actual condition of Strawberry Hill (constructed in 1933) and Prospect Hill (constructed in 1905) (Exhs. DPU 1-13, Att. B at 7-6; DPU 2-6, Att. at 55; DPU 2-20; Hingham/Hull 2-76).

⁶⁶ The narrative contained in the Company’s depreciation study incorrectly references an R5-40 curve (Exh. AQR-JWS-1, at 4-6).

⁶⁷ The REI measures the extent to which sufficient retirement data exists for a particular account, and the IV measures the consistency between simulated and actual balances (Exh. AQR-JWS-1, at 2-3 to 2-4).

Although the Company's engineering and statistical analysis is valid, the witness failed to consider other factors in his selection of a 60-year ASL for this account. Based on the actual experience of both Aquarion and other New England water utilities, along with the high REI index, the Department finds that an ASL of 70 years is appropriate for this account.

Turning to the proposed salvage factor, the bulk of retirement costs associated with this account are incurred to meet the requirements for lead paint abatement (Exh. AQR-JWS-1, at 4-6). Special equipment and techniques are required in demolishing structures with lead paint, such as may be found in older storage tanks (see Exh. Certified Video of Hull Town Meeting of July 28, 2008, at 0:41-0:43). The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed salvage factor.

Application of a 70-year ASL to the Company's R3 curve data increases the remaining life of this account from 40.39 years to 47.12 years (see Exh. AQR-JWS-1, App. B at 21-22). The Department accepts Aquarion's proposed use of an R3 Iowa curve for this account. When combined with the negative 10 percent salvage factor, this data produces an accrual rate of 1.82 percent for Account 325. Therefore, the Department directs the Company to apply a depreciation accrual rate of 1.82 percent to Account 342.

v. Account 343, Mains and Accessories

The current accrual rate for this account is 1.44 percent (id., Table 5-2). The Company proposes to use an R5-95 curve and a salvage factor of negative 30 percent for this account, which produces a remaining life of 76.29 years and a decrease in the accrual rate to

1.42 percent (id. at 4-6 to 4-7 & Table 5-2 & App. B at 24). The Company chose what it considered to be a conservative salvage estimate to be consistent with the prior study and current Company practice (Exh. Hingham/Hull 2-77).

The Company identified an R5-94.4 curve as the ideal fit, with excellent REI and IV ratings (Exh. AQR-JWS-1, at 4-6 & App. A at 7). While an L5-96.2 curve was also found to be a good statistical fit, the Company stated that engineering experience suggests that an R-shaped curve is more indicative of real-life behavior, because the peak retirement years for this account occur after the median age (id. at 4-6 & App. A at 7). The Department finds that the Company has properly interpreted the results of its statistical analyses in its selection of the proposed ASL of 95 years.

Turning to the proposed salvage factor, retired transmission and distribution mains tend to be abandoned in place (id. at 4-7). Nonetheless, significant costs are associated with backfill and pavement repairs at the point of excavations that are necessary to disconnect the retired main from other mains, hydrants, and service lines (id.).

The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed ASL and salvage factor. Therefore, the Department accepts the proposed accrual rate for Account 343.

vi. Account 345, Services

The current accrual rate for this account is 1.96 percent (id., Table 5-2). The Company proposes to use an R5-40 curve and a salvage factor of negative 20 percent for this account, resulting in a remaining life of 33.63 years and an increase in the accrual rate to 2.81 percent

(id. at 4-7 & Table 5-2 & App. B at 26). The Company noted that although most of a service line is abandoned in place, the cost of excavation and pavement restoration at the points of physical disconnection from the main and the customer's location represents the bulk of retirement costs (Exh. Hingham/Hull 2-78). The Company chose what it considered to be a conservative salvage estimate to be consistent with the prior study and current Company retirement procedure (id.).

The SPR analysis indicated that the ASLs with the best fit were those ranging between 49.2 and 57.6 years (Exhs. AQR-JWS-1, at 4-7 & App. A at 8). Although the NARUC Depreciation Manual suggests a range of 30 to 50 years for this account, the widespread use of PVC service lines in recent years suggests that the ASL for this account is more than the Company's proposed 40 years (Exh. DPU-H/H 1-8, at 2). The witness' conclusion is inconsistent with the engineering and statistical analysis. His departure from the analytical conclusions is not warranted. Accordingly, the Department rejects the Company's proposed ASL of 40 years for this account. Based on the statistical analysis, the NARUC Depreciation Manual and the increased use of PVC service lines, the Department finds that an ASL of 50 years is appropriate for this account.

Turning to the proposed salvage factor, retired service lines are abandoned in place. Nevertheless, significant costs are associated with excavation, backfill, and pavement repairs associated with retiring service lines (Exhs. AQR-JWS-1, at 4-7; Hingham/Hull 2-78). The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed salvage factor.

Application of a 50-year ASL to the Company's R5 curve data increases the remaining life of this account from 33.63 years to 42.04 years (see Exh. AQR-JWS-1, App. B at 25-26). The Department accepts Aquarion's proposed use of an R5 Iowa curve for this account. When combined with the negative 20 percent salvage factor, this data produces an accrual rate of 2.38 percent for Account 345. Therefore, the Department directs the Company to apply a depreciation accrual rate of 2.38 percent to Account 345.

vii. Account 348, Hydrants

The current accrual rate for this account is 1.68 percent (id., Table 5-2). The Company proposes to use an R1-70 curve and a salvage factor of negative 25 percent for this account, resulting in a remaining life of 59.99 years and a decrease in the accrual rate to 1.66 percent (id. at 4-8 & Table 5-1 (rev.) & App. B at 32). The Company noted that most of the retirement costs for this account are for labor and excavation, with scrap metal values having little effect on the overall salvage factor (Exh. Hingham/Hull 2-79). The Company chose what it considered to be a conservative salvage estimate to be consistent with the prior study and current Company practice (id.).

The SPR analysis indicated a range of 38 to 88 years for this account, with the best fit represented by an R1-69.9 curve (Exh. AQR-JWS-1, App. A at 12). The Department finds that the Company has properly interpreted the results of its statistical analyses in its selection of an ASL of 70 years. Turning to the proposed salvage factor, the bulk of retirement costs for this account are associated with excavation and pavement repairs (id. at 4-8).

The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed ASL and salvage factor. Therefore, the Department accepts the proposed accrual rate for Account 348.

viii. Account 392, Transportation Equipment

The current accrual rate for this account is 9.87 percent (id., Table 5-2). The Company proposes to use an R4-7.5 curve and a salvage factor of 10 percent for this account, resulting in a remaining life of 2.81 years and an increase in the accrual rate to 19.74 percent (id. at 4-10 & Table 5-1 (rev.) & App. B at 42).⁶⁸ Aquarion has a policy of replacing one service vehicle each year (RR-Hull-7). This accrual rate recognizes the types of vehicles owned by Aquarion, as well as the Company's vehicle replacement policies (Exh. AQR-JWS-1, at 4-10).

The Department finds that Aquarion has properly interpreted the data and exercised reasoned judgment in its selection of the proposed ASL and salvage factor. Therefore, the Department accepts the proposed accrual rate for Account 392.

e. Overaccruals for Accounts 346, 391H, 391S, and 396

An accrual period must be sufficient to permit a company to recover its original capital investment over the productive life of the asset, while avoiding placing the financial burden solely on current or future customers. D.T.E. 98-51, at 76. The Department has examined the proposed accrual rates for Accounts 346, 391H, 391S, and 396, and finds that the

⁶⁸ The schedules in Aquarion's initial filing inadvertently applied a negative ten percent net salvage value to Account 392 (Exh. AQR-JWS-1, Table 5-1; Tr. 3, at 332-333).

Company has properly interpreted the results of its statistical analyses. In accepting these results, the Department further finds that the Company has correctly identified the presence of depreciation overaccruals associated with these accounts, as well as the magnitude of these overaccruals.

At the time of Aquarion's previous depreciation study, there was no indication that depreciation overaccruals existed for any account (Exh. Hingham/Hull 2-13, Att. at Table 1). The overaccruals in Account 346 appear to be attributable to the Company's meter changeout policy pursuant to the requirements of its Water Management Act, G.L. c. 21G, permit (Exh. AQR-JWS-1, at 4-12; Tr. 2, at 266-267; Tr. 4, at 581). The overaccruals in Accounts 391H and 391S could not be identified earlier because the required detailed depreciation reserve data was not available until now (Exhs. DPU 2-22; DPU 2-23). Therefore, the Department finds that Aquarion's depreciation overaccruals on these accounts were not the result of imprudent actions on the part of the Company.

The Department has examined Aquarion's proposed method to eliminate its depreciation overaccruals. Based on our review, the Department finds that the proposed amortizations for these accounts strike a reasonable balance between the need to eliminate the depreciation overaccruals and the need for intergenerational equity among current and future customers. See D.T.E. 98-51, at 76-77. Accordingly, the Department accepts Aquarion's proposed amortization rates. In doing so, we emphasize that only plant assets booked to these accounts prior to the date of this Order will be subject to amortization. Plant items booked to these accounts after this date will be depreciated in accordance with the respective rates

approved herein, unless the Department otherwise orders.⁶⁹ See Boston Edison Company/Cambridge Electric Light Company/Commonwealth Electric Company/Canal Electric Company, D.T.E. 06-40, at 77 (2006).

f. Proposed Phase-In of Depreciation Accrual Rates

The Town Intervenors point to the 32 percent increase in depreciation expense as justification for a phase-in of depreciation accrual rates as a means of mitigating the effects of this rate increase on customers. Overall bill impacts on customers, versus percentage changes in individual cost components, are more of a determining factor in deciding whether to phase in a rate increase. See D.P.U. 85-270, at 127-130. Aquarion's proposed depreciation expense represents approximately 8.14 percent of the Company's proposed revenue requirement (Exh. 2, Sch. 1 (updated)). The proposed increase in depreciation accrual rates represents approximately \$272,479, or less than nine percent, of the Company's proposed rate increase (id.; Exh. AQR-JWS-1, Table 5-1 (rev.) & Table 5-2).⁷⁰ The Department has examined Aquarion's proposed accrual rates and revised them as necessary. The Department finds that no further adjustment or phase-in of the Company's depreciation rates is warranted.

⁶⁹ The approved depreciation rates for these accounts are as follows: (1) Account 346, 8.33 percent; (2) Account 391H, 20 percent; (3) Account 391S, 20 percent; and (4) Account 396, 14.3 percent.

⁷⁰ The \$272,479 represents the sum of the difference between Aquarion's current and proposed depreciation accrual rates multiplied by the respective test year-end plant balance for each respective account (Exh. AQR-JWS-1, Table 5-1 (rev.) & Table 5-2).

g. Conclusion

In order to calculate the annual depreciation expense based on the revised accrual rates the Department determined for Accounts 325, 342, and 345, the Department has applied the accrual rates approved by this Order to the Company's depreciable plant balances included in rate base. Specifically, the depreciable plant balances include the post-test year plant additions included in rate base and exclude \$66,116 associated with Strawberry Hill, as discussed in Section II.E., above. Based on this analysis, the Department finds that the Company's annual depreciation expense is \$1,256,447, rather than the \$1,280,337 proposed by the Company. Accordingly, the Department will reduce the Company's proposed depreciation expense by \$23,890. This adjustment also affects the book depreciation used for computing income taxes. See Section IV.K.2., above.

V. CAPITAL STRUCTURE AND RATE OF RETURN

A. Capital Structure

1. Introduction

At the end of the test year, Aquarion's capital structure consisted of \$11,218,897 in long-term debt, \$6,900,000 in short-term debt, and \$12,570,841 in common equity (Exh. 6, Sch. 1). This represents a capital structure consisting of 36.56 percent long-term debt, 22.48 percent short-term debt, and 40.96 percent common equity (*id.*, Sch. 1).

2. Positions of the Parties

The Company argues that its capital structure is appropriate (Company Brief at 26). According to Aquarion, it is appropriate to include the Company's short-term debt as part of

its capital structure for purposes of this case because such debt was used to finance rate base (id. at 27, citing Exh. DPU 2-10). Aquarion claims that it would not be cost-effective to replace short-term debt with long-term debt given the current level of interest rates as well as the difficulties associated with even accessing the capital markets (Company Brief at 27).

None of the Intervenors addressed the Company's capital structure on brief.

3. Analysis and Findings

Aquarion's calculation of its capital structure is consistent with Department precedent. D.P.U. 95-92, at 31; see also Eastern Edison Company, D.P.U. 1580, at 13 (1984). Short-term debt, however, is not typically included in capitalization for ratemaking purposes because it is generally used to finance construction or working capital needs. See North Attleboro Gas Company, D.P.U. 86-86, at 22 (1986); Chatham Water Company, D.P.U. 323, at 8 (1981). In the present case, however, Aquarion has sufficiently demonstrated that the current state of the capital markets, including the inability to obtain bond insurance, prevents the Company from obtaining long-term debt (Tr. 2, at 190). Further, the Company has adequately supported its claim that short-term debt such as intercompany borrowings is used as a proxy for long-term debt and is being used to finance the Company's rate base (Exh. DPU 2-10; Tr. 2, at 181-182). Finally, the Company had demonstrated that the inclusion of short-term debt in its capital structure approximates a 60/40 debt-to-equity ratio, which is consistent with the Company's capitalization policy (Tr. 2, at 189-190).⁷¹

⁷¹ In contrast, excluding short-term debt from capital structure would result in a 47/53 debt-to-equity ratio (see Exh. 6, Sch. 1).

Accordingly, we will include the Company's short-term debt in Aquarion's capital structure as set forth in the attached Schedule 5. Based on the foregoing analysis, the Department will use a capital structure consisting of 36.56 percent long-term debt, 22.48 percent short-term debt, and 40.96 percent common equity for purposes of calculating Aquarion's overall cost of capital.

B. Cost of Debt

1. Introduction

Aquarion's long-term debt consists of \$7,000,000 in 7.71 percent series general mortgage bonds, \$1,400,000 in 9.64 percent series general mortgage bonds, and \$2,818,897 in 0.0 percent series MWPAT (Exh. 6, Sch. 1). The Company's short-term debt consists of \$6,900,000 in 6.22 percent notes payable to Aquarion Company (id., Sch. 1; Exh. DPU 2-11, Att. A; Tr. 2, at 184-185; RR-DPU-2). Therefore, based on the respective ratios and effective interest rate applicable to each long-term debt series, the Company proposed a weighted long-term debt cost of 6.18 percent (Exh. 6, Sch. 1). Further, the Company proposed a short-term debt cost of 6.22 percent (id., Sch. 1).

2. Positions of the Parties

Aquarion argues that its cost of long-term debt is reasonable (Company Brief at 27-28). The Company claims that it has considered refinancing its mortgage bonds but determined that doing so would require paying the bondholder's foregone interest as well as a significant prepayment penalty if this debt is refinanced (Company Brief at 27). None of the Intervenors addressed the cost of debt on brief.

3. Analysis and Findings

The Department has reviewed the evidence and finds that the Company's calculation of its embedded cost of long-term debt is consistent with Department precedent (Exhs. 6, Sch. 1; DPU 2-15). See D.P.U. 92-101, at 63. With regard to Aquarion's cost of short-term debt, the Department accepts the Company's assertion that, given the nature of the capital markets at the moment, it may not be prudent or cost-effective to replace this short-term debt with either long-term debt or refinancing with more short-term debt. Accordingly, for purposes of calculating the overall cost of capital, the Department will use a weighted cost of long-debt equal to 6.18 percent and a cost of short-term debt equal to 6.22 percent.

C. Return on Common Equity

1. Introduction

The Company requests an 11.5 percent rate of return on common equity (Exhs. 6, Sch. 1, AQR-LMD at 34). Aquarion based its requested ROE on the Department's regulation at 220 C.M.R. § 31.00, et seq. (Exh. AQR-LMD at 34). Pursuant to this regulation, a water company may request that the Department establish its allowed ROE based on the formula contained in 220 C.M.R. § 31.03. This formula takes the most recent twelve-month average of 30-year United States Treasury bond interest rates based on a date proximate to four months after the company's filing and adds either 2.5 percent, 3.0 percent, or 3.5 percent, depending on the company's common equity ratio. 220 C.M.R. §§ 31.01, 31.03. The regulation further provides that, unless the Department determines otherwise, the allowed ROE may not be less than 11.5 percent or exceed 14.5 percent. See 220 C.M.R. § 31.03. If a company elects this

option, it is deemed to have presented a prima facie case concerning its allowed ROE and to have established a rebuttable presumption that the application of the formula will result in a fair and reasonable allowed ROE. 220 C.M.R. § 31.02.

2. Town Intervenor Analysis

The Town Intervenor calculates an ROE of 7.7 percent for Aquarion (Exh. HH-DFR at 20). To arrive at this ROE, the Town Intervenor used the formula found at 220 C.M.R. § 31.03 without consideration of the regulation's floor and ceiling provisions (id. at 19). As inputs to the formula, the Town Intervenor used the average of twelve months (June 2007 through May 2008) of 30-year Treasury Bonds, or 4.67 percent, and then added the 3.0 percent margin used in the formula for companies with a common equity ratio between 25 percent and 75 percent (id. at 19-21).

To test the reasonableness of their calculated ROE, the Town Intervenor examined the 2007 performance of a proxy group of twelve water companies (id. at 21; Tr.6, at 938).⁷² According to the Town Intervenor, the median earned ROE of the comparison group during 2007 was 8.4 percent, which they consider to be close to their calculated ROE of 7.7 percent (Exh. HH-DFR at 22; Tr. 6, at 938). The Town Intervenor notes that seven of the twelve companies in the comparison group had earned ROEs ranging between 7.5 percent and 9.7 percent (Exh. HH-DFR at 22). The Town Intervenor argues that Aquarion's required

⁷² The Town Intervenor's proxy group consists of: (1) American States Water Works; (2) American Water Works; (3) Aqua America; (4) Artesian Resources; (5) California Water SVC; (6) Connecticut Water; (7) Consolidated Water Company; (8) Middlesex Water Company; (9) Pennichuck Corporation; (10) SJW Corporation; (11) Southwest Water Company; and (12) York Water Company (Exh. HH-DFR at 21-22).

ROE should be set at the low end of those required by the companies in the proxy group because Aquarion is one of the largest private water companies in the country and considered to be among those with stronger financial conditions and, therefore, its financial risk is likely to be less than many companies in the comparison group (id.).

The Town Intervenors also performed a simplified discounted cash flow (“DCF”) analysis using the 2007 yields for the comparison group (id. at 22-23). The yield component of the DCF analysis was based on the average 2007 yield for the comparison group of 3.1 percent (id. at 23). With respect to the growth component of the DCF analysis, the Town Intervenors contend that typical growth rates for financially-sound water utilities are in the range of three to five percent (id. at 22-23). Using the high end of the growth rate range of five percent, the Town Intervenors derive a required ROE of 8.1 percent (id. at 23).

3. Positions of the Parties

a. Town Intervenors

On brief, the Town Intervenors propose an ROE in the range of 8.0 percent or 9.0 percent (Towns Joint Brief at 13-14). The Town Intervenors contend that Aquarion’s proposed ROE of 11.5 percent is excessive and, therefore, it should be reduced (id. at 13). First, the Town Intervenors argue that current economic conditions have changed for the worse since the Company’s filing on May 14, 2008 and, accordingly, its required ROE is lower than 11.5 percent (id.).

Next, the Town Intervenors argue the requested ROE of 11.5 percent is not reasonable when compared to the allowed returns of other comparable water utilities (id.). According to

the Town Intervenors, the guiding principle for calculating the cost of equity is that it should be commensurate with returns on investments in other enterprises having corresponding risks (id. citing Attorney General v. Department of Public Utilities, 392 Mass. 262 (1984), citing Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944) (“Hope”). The Town Intervenors argue that because Aquarion provides a necessary product, there is no risk that customers will stop purchasing water as well as no risk that the Company’s customers will purchase water from a competitive provider (Towns Joint Brief at 13).

The Town Intervenors assert that application of the formula contained in 220 C.M.R. § 31.00, et seq., without consideration of the 11.5 percent floor, results in a reasonable ROE of 7.7 percent for Aquarion (id. at 18-20). As an additional test to the reasonableness of a 7.7 percent ROE, the Town Intervenors argue that their simplified DCF analysis produces an ROE of 8.0 percent (id. at 21-24). Further, the Town Intervenors argue that recently-allowed ROEs for the Company’s two affiliates in New England are 9.5 percent for New Hampshire in 2000 and 10.0 percent for Connecticut in 2007 (id. at 24).

The Town Intervenors further assert that, in deriving its proposed ROE, the Company simply relied on the minimum ROE of 11.5 percent contained in the Department’s regulations and did not conduct its own analysis of a reasonable ROE (id. at 14-15). The Town Intervenors assert that the range of 11.5 percent and 14.5 percent in the formula was meant as a guideline for small water companies so that they did not have to incur the expense associated with detailed studies by expert witnesses (id. at 15). The Town Intervenors also assert that the

Department should update the range values and possibly the formula itself when there are significant changes in financial markets, which they assert is the case today (id. at 15, 18).

Therefore, the Town Intervenors conclude that the Company's presumption that its proposed ROE is fair and reasonable has been rebutted (id. at 20). As such, the Town Intervenors request that the Department reject the Company's proposed ROE of 11.5 percent and, instead, allow Aquarion an ROE in the range of 8.0 percent to 9.0 percent (id. at 13-14).

b. Oxford

Oxford argues that the Department should grant a lower ROE to Aquarion because of what it asserts to be high levels of water leakage that are neither prudent nor reasonable (Oxford Brief at 38; Oxford Reply Brief at 17). Specifically, Oxford asserts that Aquarion has unaccounted-for water that is excessive by industry standards (Oxford Brief at 38; Oxford Reply Brief at 17).⁷³ Oxford asks that the Department send a regulatory signal to the Company by making any increase to its ROE dependent on a corresponding decrease in excessive unaccounted-for water (Oxford Brief at 38-39).

c. Company

Aquarion argues that its proposed ROE of 11.5 percent should be approved because the regulations at 220 C.M.R. § 31.00, et seq., establish a prima facie case in favor of the Company's position and creates a rebuttable presumption that its proposed rate of return on

⁷³ Oxford asserts that Aquarion's unaccounted-for water was 28.65 percent in 2007 and approximately 20 percent for the first nine months of 2008, while the industry standard is closer to 15 percent (Oxford Reply Brief at 17; Oxford Brief at 38). The Department addresses the issue of unaccounted-for water in Section VII.B., below.

common equity is fair and reasonable (Company Brief at 28). The Company posits that it should not be penalized for having relied on the Department's regulations in presenting its case, particularly in the absence of credible evidence to rebut the presumption of reasonableness (id. at 29).

According to the Company, the Town Intervenors fail to present any expert testimony or other credible alternative basis for establishing a different rate of return on common equity (id. at 28). For example, Aquarion alleges that the Town Intervenors made numerous mistakes in their ROE analysis, such as (1) relying on earned ROEs rather than authorized ROEs for other water companies, (2) incorrectly assuming the overall rate of return for one company was the authorized ROE, (3) disregarding the DCF theory of the compounding effect of quarterly dividend payments, thereby artificially reducing the calculated returns, (4) using spot prices in the DCF calculations, (5) assuming a blanket growth rate of five percent for all companies in the comparison group, (6) failing to demonstrate that proxy companies were comparable to Aquarion, (7) relying on a single growth factor, and (8) failing to recognize that a heightened level of risk in today's markets may significantly increase the 300 basis point premium over the Treasury index (id. at 30-31). Therefore, Aquarion claims that the Town Intervenors' calculations are flawed and that the Towns' testimony on cost of equity should be given no weight (id. at 33).

To support its case that an 11.5 percent ROE is reasonable, Aquarion recalculates the comparison group's yields based on more current data (id. at 32). Based on the more current yield data, the Company argues that the average yield for the comparison group is 3.9 percent,

rather than the 3.1 percent used by the Town Intervenor (id. citing Exhs. AQR-8 through AQR-18). For comparison purposes, Aquarion uses American Water Works Co., Inc., which it identifies as having a more current dividend yield of 4.2 percent and a company-specific growth rate of nine percent, to produce a required ROE of 13.2 percent (Company Brief at 32, 33, citing Tr. 6, at 1121-1122).

Regarding Oxford's proposal to reduce the Company's ROE in light of Aquarion's alleged high levels of unaccounted-for water, Aquarion maintains that Oxford seeks to hold the Company to an unaccounted-for water standard that has not been adopted by the Department (Company Reply Brief at 6). Further, the Company claims that it has made and continues to make substantial efforts to reduce unaccounted-for water (id. at 7, citing Exh. AQR-OXF 4-3). Aquarion contends, based on the reasons cited above, that there is no basis to set the Company's allowed ROE below the 11.5 percent floor provided in 220 C.M.R. § 31.00 et seq. (Company Brief at 33).

4. Analysis and Findings

The standard for determining the allowed rate of return on common equity is set forth in Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia, 262 U.S. 679, 693 (1923) ("Bluefield") and Hope at 603. D.P.U. 07-71, at 138; D.P.U. 85-266-A/271-A at 169-170. According to the Bluefield and Hope standards, the Department's allowed return on common equity should preserve the Company's financial integrity, allow it to attract capital on reasonable terms, and be comparable to returns on investments of similar risk. D.P.U. 07-71, at 138; D.P.U. 85-266-A/271-A at 169-170.

In Generic Rate of Return on Equity for Water Companies, D.P.U. 85-115 (1985), the Department adopted regulations 220 C.M.R. § 31.00, et seq., instituting an optional formula for water companies to use in establishing a requested ROE. The regulation was promulgated with the intent to establish a fair and reasonable allowed ROE for water utilities while sparing these companies additional administrative and litigation costs that could further erode water companies' earnings. See D.P.U. 85-115, at 2-3.

For a water company with a capital structure in excess of 25 percent but below 75 percent equity, 220 C.M.R. § 31.00, et seq., allows an ROE that is equal to the twelve-month average of 30-year United States Treasury bond yields, including the interest rate published on or near to a date four months following the proposed effective date of the rates, plus three percentage points. 220 C.M.R. §§ 31.01, 31.03. Once a water company elects to use the optional formula, it is deemed to have presented a prima facie case concerning the allowed ROE and to have established a rebuttable presumption that the application of the formula results in a fair and reasonable allowed ROE. 220 C.M.R. § 31.02.

The regulations provide for a minimum ROE of 11.5 percent and a maximum ROE of 14.5 percent but expressly allow the Department to deviate from this bandwidth. 220 C.M.R. § 31.03. In other words, notwithstanding the bandwidth contained in 220 C.M.R. § 31.03, the Department retains both the authority and discretion to adjust a water company's ROE beyond the bandwidth if the record supports such a finding. Generic Rate of Return on Equity for Water Companies, D.P.U. 96-90-A at 11-12 (1997). For example, continued deficiencies in service quality could rebut the presumption created by

220 C.M.R. § 31.02 that a proposed ROE within the regulations' bandwidth is fair and reasonable. D.P.U. 96-90-A at 11; South Egremont Water Company, D.P.U. 95-119/122, at 28-29 (1996); D.P.U. 95-118, at 184. Similarly, the Department has set utility ROEs at the low end of a range of reasonableness upon a showing that the utility's performance was deficient. D.P.U. 96-90-A at 11; see also D.P.U. 08-35, at 220 (reducing ROE to account for customer service deficiencies); D.P.U. 85-266-A/271-A at 172 (finding ROE should be set at low end of reasonable range for failure to fulfill conservation responsibilities and for mismanagement).

For the following reasons, the Department determines that there is sufficient evidence to rebut the presumption that the optional cost of equity formula contained in 220 C.M.R. § 31.00 produces a fair and reasonable allowed ROE and to warrant an allowed ROE outside the bandwidth of 220 C.M.R. § 31.03. First, the Town Intervenors have presented expert testimony and data that sufficiently rebuts the presumption that the Company's proposed ROE based on the floor contained in the optional formula is fair and reasonable (Exhs. HH-DFR at 19-23; Town Intervenors Att. 1; AQRN 1-17). Although the Town Intervenors' analysis has several flaws,⁷⁴ we find that the results support a reasonable range of rates of return that is below the 11.5 percent ROE proposed by the Company.

Second, the Department has taken into account recent trends in lower Treasury Bond interest rates provided in the Federal Reserve Statistical Release, H.15, "Selected Interest

⁷⁴ For example, the Town Intervenors used spot data to develop their DCF yield and growth estimates and provided minimal information with respect to the relative risk characteristics of the companies in their comparison group (Exh. HH-DFR at 21-23).

Rates.”⁷⁵ We determine that such trends sufficiently rebut the presumption that the Company’s proposed ROE is fair and reasonable. We also note that recent decisions in other states granted ROEs for water companies that averaged 9.28 percent (Exh. Towns Intervenor Att. 1). Finally, we find that the Company’s failure to conduct competitive bidding for each of its outside service consultants and its failure to provide detailed invoices related to rate case expense rebuts the presumption that the Company’s proposed ROE is fair and reasonable. See supra Section IV.E.4; see also D.P.U. 96-90-A at 11; D.P.U. 07-71, 139-140. Accordingly, we conclude that the record provides sufficient support for adjusting the Company’s ROE outside the bandwidth of 220 C.M.R. § 31.03.

The Department must now determine an ROE for the Company that satisfies the standards of Bluefield and Hope. While the results of analytical models are useful, such as those presented by the Town Intervenor, the Department must ultimately apply its own judgment to the evidence to determine an appropriate rate of return. D.P.U. 07-71, at 139. In making this determination, we do not take a formulaic or mechanical approach, but rather apply our judgment and considerable agency expertise to the record evidence. Id. citing D.T.E. 01-56, at 118; Western Massachusetts Electric Company, D.P.U. 18731, at 59 (1977); see also Boston Edison Company v. Department of Public Utilities, 375 Mass. 1, 15 (1978)).

Based on a review of the evidence, argument of the parties and the Department’s judgment and considerable agency expertise, the Department finds that an allowed rate of

⁷⁵ The information contained in H.15 is maintained by the Department on a monthly basis in the normal course of business because the data is used as an input into the optional cost of equity formula at 220 C.M.R. § 31.03.

return on common equity of 10.50 percent is within a reasonable range of rates that will preserve the Company's financial integrity, allow it to attract capital on reasonable terms, is comparable to earnings of companies of similar risk and, therefore, is appropriate in this case. In making these findings, we have considered both qualitative and quantitative aspects of the parties' various methods for determining an appropriate rate of return on equity, as well as the arguments of the parties in this proceeding.

VI. COST ALLOCATION AND RATE DESIGN

A. Rate Structure Goals

Rate structure defines the level and pattern of prices charged to each customer class for its use of utility service. The rate structure for each rate class is a function of the cost of serving that rate class and how rates are designed to recover the cost to serve that rate class. The Department has determined that the goals of designing utility rate structures are to achieve efficiency and simplicity, and ensure continuity of rates, fairness between rate classes, and corporate earnings stability. D.T.E. 03-40, at 365; D.T.E. 02-24/25, at 252; D.T.E. 01-56, at 134; Blackstone Gas Company, D.T.E. 01-50, at 28 (2001); D.P.U. 96-50 (Phase I) at 133. Efficiency means that the rate structure should allow a company to recover the cost of providing the service and should provide an accurate basis for consumers' decisions about how to best fulfill their needs. The lowest-cost method of fulfilling consumers' needs should also be the lowest-cost means for society as a whole. Thus, efficiency in rate structure means that it is cost-based and recovers the cost to society of the consumption of resources to produce the utility service. D.T.E. 03-40, at 365-366; D.T.E. 02-24/25, at 252; D.T.E. 01-56, at 135. In

practice, meeting the goal of efficiency should involve rate structures that provide strong signals to consumers to decrease excess consumption in consideration of price and non-price social, resource, and environmental factors.

The Department has determined that a rate structure achieves the goal of simplicity if it is easily understood by consumers. Rate continuity means that changes to rate structure should be gradual to allow consumers to adjust their consumption patterns in response to a change in structure. Fairness means that no class of consumers should pay more than the costs of serving that class. Earnings stability means that the amount a company earns from its rates should not vary significantly over a period of one or two years. D.T.E. 03-40, at 366; D.T.E. 02-24/25, at 252-253; D.T.E. 01-56, at 135.

There are two steps in determining rate structure: cost allocation and rate design. Cost allocation assigns a portion of the company's total costs to each rate class through an embedded allocated COSS. The COSS represents the cost of serving each class at equalized rates of return given the company's level of total costs. D.T.E. 03-40, at 366; D.T.E. 02-24/25, at 253; D.T.E. 01-56, at 135; D.T.E. 01-50, at 29; D.P.U. 96-50 (Phase I) at 133.

The results of the COSS are compared to the revenues collected from each rate class in the test year. If these amounts are close, then the revenue increase or decrease may be allocated among the rate classes so as to equalize the rates of the return and ensure that each rate class pays the cost of serving it. If, however, the differences between the allocated costs and the test-year revenues are great, then, for reasons of continuity, the revenue increase or decrease may be allocated so as to reduce the difference in rates of return, but not to equalize

the rates of return in a single step. D.T.E. 02-24/25, at 253-254; D.T.E. 01-56, at 136; D.T.E. 01-50, at 29.

As the previous discussion indicates, the Department does not determine rates based solely on costs but also explicitly considers the effect of its rate structure decisions on customers' bills and the Department's goals with respect to rate structures. For instance, the pace at which fully cost-based rates are implemented depends, in part, on the effect of the changes on customers. For example, considering the goals of efficiency and fairness, the Department has also ordered the establishment of special rate classes for certain low-income customers and considers the effect of such rates and rate changes on low-income customers. D.T.E. 03-40, at 367; D.T.E. 02-24/25, at 254; D.T.E. 01-56, at 136-137; D.T.E. 01-50, at 29-30.

In order to reach fair decisions that encourage efficient utility and consumer actions, the Department's rate structure goals must balance the often divergent interests of various customer classes and work to decrease inter-class subsidies unless a clear record exists to support -- or statute requires -- such subsidies. See, e.g., G.L. c. 164, § 1F(4)(i).⁷⁶ The Department reaffirms its rate structure goals that result in rates that are fair and cost-based and enable customers to adjust to changes.

⁷⁶ While G.L. c. 164, § 1F(4)(i) does not apply to water companies, the Department has consistently applied this balancing concept to water companies. See, e.g., Plymouth Water Company, D.T.E./D.P.U. 06-53, at 27 (2006); Milford Water Company, D.P.U. 97-21, at 4-5 (1997).

The second step in determining the rate structure is rate design. The level of the revenues to be generated by a given rate structure is governed by the cost allocated to each rate class in the cost allocation process. The pattern of prices in the rate structure, which produces the given level of revenues, is a function of the rate design. The rate design for a given rate class is constrained by the requirement that it should produce sufficient revenues to cover the cost of serving the given rate class and, to the extent possible, meet the Department's rate structure goals discussed above. D.T.E. 03-40, at 368; D.T.E. 02-24/25, at 254-255; D.T.E. 01-56, at 136-137; D.T.E. 01-50, at 30. Rate design is particularly important with respect to the goals of achieving efficiency in customer consumption decisions.

B. Allocated Cost of Service Study

1. Introduction

In support of its proposed rates, Aquarion conducted a COSS using the base-extra capacity method (Exh. AQR-JFG at 4). The base-extra capacity method, as set forth in the American Water Works Association's Water Rates Manual M-1 ("M-1 Manual") provides for the functional allocation of the cost of service between base or average day demands and the extra capacity required to meet maximum day and peak hour demands (Exh. AQR-JFG-1).⁷⁷ Under this method, costs that are assignable to average day demands are considered to be base costs (Exh. AQR-JFG at 5). Extra-capacity costs are defined as the additional costs incurred as the result of varying system load conditions and the need to meet water demands in excess

⁷⁷ The Department has taken administrative notice of the fifth edition of the M-1 Manual pursuant to 220 C.M.R. § 1.10(2) (Tr. 5, at 737).

of average day requirements; the M-1 Manual divides extra-capacity costs by maximum day and peak hour (id. at 4-5; M-1 Manual). To allocate costs to Aquarion's large industrial class, the Company separated its base costs into two components, Base 1 and Base 2 (Exh. AQR-JFG at 4). The Company also separated its extra-capacity peak-hour costs to account for smaller mains that do not significantly contribute to serving Aquarion's large industrial class (id. at 4-5; Tr. 5, at 754).

As a first step, Aquarion analyzed its total system historic demands in its three districts: (1) Service Area A, (2) Millbury, and (3) Oxford (Exh. DPU 1-28, Att. A; Tr. 5, at 768-772). Based on this information, the Company concluded that the appropriate maximum-day to average-day demand was 1.80, and that the appropriate peak-hour to average-day demand was 2.5 (Exhs. AQR-JFG at 6; DPU 1-28, Att. A).⁷⁸ These maximum-day and peak-hour ratios were disaggregated among the Company's proposed metered rate classes based on a combination of judgment and the experience of other water systems (Exhs. AQR-JFG-1, Sch. 10; DPU 1-36, Att. A). In addition to examining demands associated with metered service, the Company analyzed its fire protection demand and estimated that its fire demand was 5,500 gallons per minute, equating to a maximum day fire flow of 1.32 MG for a duration of four hours and a daily rate of flow of 7.92 MGD (Exh. AQR-JFG at 6-7; Tr. 5, at 790-791).

⁷⁸ Because water meters do not record consumption on a real-time basis, the peak-hour demand is based on estimated data (Tr. 5, at 754, 772-774).

Based on the results of the COSS, the percentage of revenue requirement attributed to each class is presented below:

Residential	72.02 percent
Commercial	9.16 percent
Industrial	0.50 percent
Large Industrial	4.81 percent
Public Authority	2.14 percent
Fire (Public/Private)	11.37 percent

(Exh. AQR-JFG-1, Sch. 1)

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors state that while they only have some minor disagreements with the Company's COSS, they oppose the use of the COSS here (Exh. HH-DFR at 37). The Town Intervenors assert that certain demand ratios used to allocate extra-capacity costs among rate classes are not based on Company-specific data but rather on industry averages that may not closely reflect Aquarion's actual experience (id. at 37-38). The Town Intervenors contend that Aquarion's COSS is, to a significant degree, subjective in nature and relies on industry-wide data that may differ from the Company's actual values (Towns Joint Brief at 12). According to the Town Intervenors, this subjectivity and reliance on industry data could result in a variation among class revenue requirements by some five to ten percent (id.). In recognition of this variability and the magnitude of the overall increase sought by the Company, the Town Intervenors propose that the residential class revenue requirement be reduced by some \$150,000 to \$200,000, with that amount redistributed to other rate classes (id. at 12-13).

b. Oxford

Oxford maintains that the Company's rate proposal results in the residential and other rate classes being forced to subsidize the G4 rate class (Oxford Brief at 26). In support of its position, Oxford argues that the Company has made large capital investments attributable solely to Wheelabrator, in the form of a meter pit upgrade that cost \$174,437 and approximately \$345,000 in improvements at Jacques 1 and 2 in Millbury that were intended to accommodate the demands of Wheelabrator (id. at 26-27, citing Exh. DPU 2-6, Att. A at 139; RR-OXF-6; Tr. 4, at 577; Oxford Reply Brief at 13). Oxford contends that Aquarion inappropriately seeks to recover these costs, as well as purchased water costs used to meet Wheelabrator's demand, from all customers through base rates (Oxford Brief at 26-27, citing Tr. 5 at 903-904; Tr. 7, at 1286).

Specifically, Oxford contends that the Company's proposal constitutes a subsidy to a large industrial customer at the expense of other customers (Oxford Brief at 29). According to Oxford, such subsidies distort efficient price signaling and undermine the economics and market forces necessary to support proper market functioning (id.). Oxford contends that Aquarion's rate design removes the very signals and incentives necessary for Wheelabrator to recognize the real price of water (id.).⁷⁹ Oxford maintains that sending proper price signals to Wheelabrator could yield efficiencies over the long run, foster conservation and DSM, assist in long-term water supply needs, and facilitate cost control for the Company's other customers

⁷⁹ Oxford reasons that Wheelabrator is able to equitably spread its costs out to its own waste-to-energy customers in 35 communities (Oxford Brief at 29-30).

(id. at 29-30; Oxford Reply Brief at 13). Oxford maintains that given Wheelabrator's own significant demand of more than 260 million gallons per year, a failure to recognize the true cost of water will only serve to create greater inefficiencies, inequities, and larger price increases in the future (Oxford Brief at 30; Oxford Reply Brief at 13). Oxford maintains that a failure to redress this issue would be arbitrary and unreasonable (Oxford Reply Brief at 14).

Oxford urges the Department to direct that these Wheelabrator-related costs not be included in the rates for any class other than rate G4 (Oxford Brief at 28; Oxford Reply Brief at 13). In order to effect this directive, Oxford recommends that the Department reopen the evidentiary record to obtain more precise data on identifiable Wheelabrator-related capital and operating costs and ensure that these costs are recovered only through rate G4 (Oxford Brief at 31; Oxford Reply Brief at 14).

c. Company

Aquarion argues that Oxford had ample opportunity in this proceeding to present evidence on the extent to which costs should be attributed to Wheelabrator (Company Reply Brief at 6). The Company argues that reopening this matter for further litigation would be inefficient and costly for ratepayers and would also result in further regulatory lag and erosion of the Company's earnings (id.). The Company urges the Department to reject Oxford's request because it would result in a confiscation of the Company's property (id.).

3. Analysis and Findings

a. Results of COSS

The M-1 Manual is a generally-accepted reference work within the water industry. D.T.E. 01-42, at 25. The base-extra capacity method discussed in the M-1 Manual provides for functional allocation of cost of service between base or average day demands and the extra capacity required to meet maximum day and peak hour demands. D.P.U. 95-118, at 153. The base-extra capacity method is widely used, and the Department has accepted its use as well.

See Id.

Aquarion's system-wide average-day and maximum-day factors are based on the Company's actual experience in its three districts (i.e., Service Area A, Millbury, and Oxford), adjusted to recognize that water systems are designed with a margin above average-day and maximum-day (Exhs. DPU 1-28, Att. A; Tr. 5, at 767-769). The system-wide peak-hour factor, as well as class-specific average-day, maximum-day, and peak-hour factors, however, were based on a combination of the experience of other water companies and the professional judgment of the Company's witness (Exh. OXF 4-15; Tr. 5, at 772-774; see also AQR-JFG at 6; DPU 1-28, Att. A). When a company relies on borrowed load data, whether in the electric, gas, or water industries, the comparability between the subject company and the surrogate company must be established through a showing that the two companies have similar characteristics. Cambridge Electric Light Company, D.P.U. 1015, at 59 (1982); D.P.U. 956, at 69.

The Department has examined the data and underlying assumptions in the Company's COSS. Based on our review, we find that Aquarion's load characteristics are sufficiently similar to the load characteristics of other water utilities to warrant the use of borrowed demand factors.⁸⁰ The Department further finds that the Company has demonstrated appropriate judgment in analyzing the borrowed demand data in determining its proposed system-wide and class-specific demand factors. Accordingly, the Department accepts the use of Aquarion's proposed demand factors.

Aquarion proposes to allocate the costs related to its storage facilities on the basis of a peak-day allocator (Exh. AQR-JFG-1, Schs. 5, 8, at 2; Tr. 5, at 775). The Department has previously directed the Company to allocate its storage facilities and related O&M expense using an average day allocator. D.P.U. 95-118, at 161-162. In this case, we are persuaded that the Company's storage facilities are intended to meet peak-hour demand that would otherwise have to be met through expanded pumping and treatment facilities (Exh. DPU 1-34; Tr. 5, at 776-777). Therefore, the Department accepts, in this instance, Aquarion's proposed use of a peak-hour allocator for storage facilities.

Based on the foregoing analysis, the Department accepts the use of the Company's COSS as a basis for designing rates. We next turn to the proposals of the Town Intervenors regarding the need to reallocate costs among the various rate classes.

⁸⁰ We further note that there has been little load research performed by water utilities (Tr. 5, at 810-811).

b. Allocation to Wheelabrator

As stated above, the Department has accepted the Company's COSS as a basis for designing rates. Nonetheless, in designing rates, we must balance our goal of fairness with our goal of rate continuity. To do this, we have reviewed the changes in total revenue requirements by rate class and bill impacts by consumption level within rate classes.

The Department requires direct assignment of costs when expenses attributable to each customer class are readily and accurately measurable. D.P.U. 95-40, at 127; D.P.U. 93-60, at 345; D.P.U. 89-114/90-331/91-80 (Phase One) at 243. In 2002, the Company increased the pumping capacities of two of Millbury's four groundwater supplies (*i.e.*, Jacques 1 and 2) at a cost of \$345,000 (Exh. DPU 2-6, Att. A at 139). These costs were associated with the upgrade of metering, flow, and pressure control facilities for Wheelabrator and the Company's interconnection with the City of Worcester ("Worcester") (*id.*, Att. A at 139). Increasing the pumping capacities of Jacques 1 and 2 enhances the Company's system ability to serve the water needs of Wheelabrator, its largest customer, especially during times of drought or near-drought conditions (*id.*, Att. A at 139).

The increased pumping capacities for Jacques 1 and 2 ensure that the Company is able to provide water service to Wheelabrator and avoid the need for Wheelabrator to purchase water from Worcester during drought conditions (*id.*, Att. A at 139). Without these increased pumping capacities for those two wells, the Company would be exposed to the possibility of losing annually a significant amount of revenues from Wheelabrator during drought conditions.

Consequently, this could significantly increase the Company's average cost of service to its customers (see id., Att. A at 139).⁸¹

Although the system improvements at Jacques 1 and 2 were incurred primarily to increase the pumping capacities at this wellfield for the benefit of Wheelabrator, this capacity investment also provided some benefits to other customers by preventing increased costs. The COSS, however, does not contain information sufficient to measure such a system-wide benefit that could be netted against the total capital cost and provide a precise calculation of the net costs attributable solely to Wheelabrator. For example, while the Jacques 1 and 2 upgrades were booked to various plant accounts, the Company's COSS allocates plant costs to various rate classes on the basis of base, maximum-day, and peak hour demands (Exh. AQR-JFG-1, Schs. 4, 10). Therefore, it is unclear as to how plant specifically intended to serve a particular customer is being recovered from that specific customer class.

In addition to the system upgrades at Jacques 1 and 2, the Company spent \$174,437 to upgrade the meter pit that serves Wheelabrator (RR-OXF-6). This cost is significant in relation to other meter pits and is attributable to serving Wheelabrator. Therefore, the cost should be directly assigned to rate G4. As with the Jacques 1 and 2 system upgrades, however, we cannot determine how the amount included in the Company's revenue requirement has been assigned or allocated to rate classes.

⁸¹ The above-noted capital cost investment included metering, flow, and pressure control upgrades that were also intended to eliminate a potential public safety hazard by relocating the metering facilities from a public roadway at the entrance to the Wheelabrator complex (Exh. DPU 2-6, Att. A at 139).

The Department's long-standing policy regarding the allocation of class revenue requirements is that a company's total distribution costs should be allocated on the basis of equalized rates of return. D.T.E. 05-27, at 326-327; D.T.E. 03-40, at 384; see D.P.U. 92-210, at 214. This allocation method satisfies the Department's rate structure goal of fairness. The Department, however, must balance its goal of fairness with its goal of continuity. To do this, and to address interclass subsidization, the Department has adopted a general policy that no rate class shall receive an increase greater than 125 percent of the overall distribution rate increase approved. D.T.E. 05-27, at 327; D.T.E. 02-24/25, at 256; D.T.E. 01-56, at 139-140; see D.T.E. 98-51, at 136-138.

Based on the results of the Company's COSS, Wheelabrator's rates will increase by approximately 34 percent (Exh. AQR-JFG-1, Sch. 18, at 1). By assigning all of the costs relating to increasing the pumping capacities of Jacques 1 and 2 and the upgrade to the meter pit that serves Wheelabrator and then recovering those costs from rate G-4, such cost allocation and recovery would result in a rate increase to Wheelabrator that is greater than the proposed 34 percent increase noted above. As discussed above, the Department's policy is to cap the increase to any class at 125 percent of the overall increase. Under the Company's proposed increase, the cap would be set at 32.5 percent. Because the proposed increase to Wheelabrator exceeds the cap, assigning additional costs to Wheelabrator would result in the costs being later reassigned to those rate classes that are below the cap. Accordingly, we will not assign any additional costs to Wheelabrator. See D.P.U. 95-40, at 127.

Regarding Oxford's recommendation to reopen the evidentiary record to obtain additional data on identifiable Wheelabrator-related capital and operating costs in order to ensure that these costs are recovered only through rate G4, the Department notes that reopening the record would likely have little impact on the costs assigned to each rate class. As noted above, increasing the amount of costs allocated to rate G4, in this case, would go beyond the rate cap imposed by the Department and, in this case, would be inconsistent with the rate structure goal of rate continuity. Moreover, Oxford was aware of the issues involving Wheelabrator during the course of the proceeding and, therefore, has failed to demonstrate that there is previously unknown or undisclosed information regarding a material issue that would be likely to have a significant impact on the decision. Accordingly, the Department will not reopen the record. In consideration of our principles of cost causation and fairness, however, the Department directs the Company in its next rate case to develop an allocation study that precisely determines the direct costs attributable to serving Wheelabrator and assign those costs to the rate G4 class.

The Town Intervenors have also proposed shifting between \$150,000 and \$200,000 in revenues from the Company's residential class to other rate classes as a way to mitigate bill impacts on residential customers. To address the goal of rate continuity, we have directed that no rate class shall receive an increase greater than 125 percent of the overall distribution rate increase. The 125 percent cap appropriately balances the often competing rate structure goals of fairness and continuity by ensuring that the final rates to each rate class represent or approach the cost to serve that class, that the limited level of cost subsidization created by the

cap will not unduly distort rate efficiencies, and that the magnitude of change to any one class is contained within reasonable bounds.

C. Consumption Normalization Study

1. Introduction

In addition to the COSS, the Company also conducted a consumption normalization study to determine if the test year level of residential and commercial consumption should be adjusted for the effect of weather and energy efficiency to establish revenues and rates (Exhs. AQR-JFG at 14; AQR-JFG-2). Although the Company is not proposing to adjust its revenues for weather and conservation effects in this proceeding, Aquarion states that it intends to prepare weather normalization studies for future rate filings in order to establish normalized levels of consumption attributable to all factors that affect consumption, including conservation (Exh. AQR-JFG at 14; Tr. 5, at 800).

To determine the effects of weather on water consumption, the Company separated weather-sensitive summer load from non-weather sensitive base load using a method used in New York and by other water engineers in the United States (Exhs. AQR-JFG at 22; DPU 1-33, Att. A). Under this approach, the winter consumption per customer for the quarters ending January, February, and March is annualized for each of five years between 2003 and 2008 (Exh. AQR-JFG at 17). The Company selected these quarters because it bills customers cyclically on a quarterly basis and sought to ensure that the base load eliminated

outdoor use (id. at 18-19; Tr. 5, at 805-806).⁸² The Company then subtracted this annualized base load from total annual consumption per customer, which produced the weather-sensitive load (Exh. AQR-JFG at 17). Through this approach, the Company states that an accurate estimate of base load water consumption and a reasonably accurate estimate of weather-sensitive water consumption can be obtained (id. at 21). According to the Company, an average of total consumption per customer will tend to distort the effects of weather because of averaging and because it would ignore the presence of declining base load (id.).

Aquarion states that the data indicate that base load consumption per customer has exhibited a clear downward trend in recent years, as confirmed by regression analysis (id. at 17). The weather-sensitive water consumption exhibited no trend over this period (id.). Based on this information, the Company concludes that there had been a steady reduction in base load consumption for both residential and commercial customers over this period (id. at 18). Aquarion reports that this result is consistent with the findings in other weather normalization studies performed for several Connecticut water utilities (id. at 20; Exh. AQR-JFG-2, Sch. 3).

2. Town Intervenors Analysis

The Town Intervenors note that the Department's recent decision in Investigation into Rate Structures that will Promote Efficient Deployment of Demand Resources, D.P.U. 07-50-A (2008), prescribes a new approach to ratemaking, in that utilities would be

⁸² Aquarion acknowledged that some minimal level of outdoor water use can be considered as non-discretionary (Tr. 5, at 806-807).

allowed to increase their revenues each year if demand management programs reduce sales such that revenue declines below a predetermined level (Exh. HH-DFR at 8). Given the importance of water resources and ensuring their sustainability, the Town Intervenors recommend that the Department initiate a parallel proceeding that could potentially lead to the decoupling of revenues and sales for all privately-owned water utilities in the Commonwealth (id. at 16; Tr. 6, at 1144-1145).

3. Analysis and Findings

The Department has a long-established policy of adjusting gas company revenues in order to normalize sales for weather. See D.T.E. 02-24/25, at 75; D.P.U. 96-50 (Phase I) at 36-39; Fall River Gas Company, D.P.U. 750, at 7-9 (1981). In contrast, the Department has not recognized weather-related adjustments for water companies. Aquarion has not requested a weather normalization adjustment at this time. Therefore, the Department will not adjust the Company's revenues or billing determinants for weather and conservation effects.

Concerning the Town Intervenors' proposal that the Department open a proceeding to investigate the merits of decoupling for investor-owned water utilities, the Department declines to do so. Just as with gas and electric companies, water systems also face significant challenges in ensuring the sustainability of water resources while earning sufficient revenues to meet their public service obligations. Unlike the Massachusetts gas and electric industries, however, investor-owned water utilities represent only a small percentage of the Massachusetts water industry. Moreover, these investor-owned systems are extremely diverse in nature, ranging between sophisticated operations like Aquarion to small operations serving only a

dozen or so customers. Given this regulatory landscape, the Department finds consideration of specific rate design proposals is better met on a case-by-case basis, tailored to the particular water company's specific needs and circumstances. Therefore, the Department declines to institute a generic investigation into decoupling of investor-owned water systems.

D. Allocation of Revenue Increase

1. Introduction

As noted in Section I., above, Aquarion has two service areas: (1) Service Area A, encompassing Hingham, Hull, northern Cohasset, and part of Norwell; and (2) Service Area B, encompassing Millbury and Oxford. While Service Area A is a fully-integrated system, there is no interconnection between Millbury and Oxford (Exh. AQR-LLB at 5-8).

Notwithstanding this physical arrangement, a single set of rates applies to all customers regardless of their service location. As noted above, the only differences in rates are the Hingham WTP surcharge applicable in Service Area A and the different meters used in each service area.⁸³ Service Area B has been served under a single tariff since 1990, when the then-existing town-specific tariffs were consolidated into a single tariff for Service Area A and a single tariff for Service Area B pursuant to the terms of a settlement agreement.

Massachusetts-American Water Company, D.P.U. 90-146 (1990). A system-wide single-tariff pricing structure was approved by the Department in D.P.U. 95-118.

⁸³ The customer charges vary by meter size and are identical for each meter size across service areas; the only difference in rates is in the volumetric rate, because customers in Service Area A have meters that read in cubic feet, while customers in Service Area B have meters that read in gallons (Tr. 7, at 1283).

2. Proposed Rate Classifications

Aquarion currently has six metered service rates, three in Service Area A and three in Service Area B. The Company's current metered rate classes consist of: (1) residential rate R1; (2) nonresidential rate G1; and (3) large non-residential rate G2 (Exh. M.D.T.E. No. 1, Original Sheet No. 18). Rates R1 and G1 are applicable to residential and nonresidential customers, respectively; rate G2 is applicable to non-residential customers using between 10 million gallons and 40 million gallons per month, and not less than 120 million gallons per year (id.).⁸⁴

Aquarion proposes to add two new metered rate classes: (1) public authority rate G2; and (2) industrial rate G3 (Exh. M.D.P.U. No. 1, First Revised Sheet No. 18). Consistent with the addition of these rate classes, the Company proposes to rename its current rate G2 as rate G4 (id., First Revised Sheet No. 18). Public authority customers are defined as those customers identified on the Company's records as public authorities and industrial customers are defined as those customers identified on the Company's records as industrial customers not otherwise eligible for the G4 rate (id., First Revised Sheet No. 18). Customers to be served under the proposed G2 and G3 rates are presently served under the nonresidential G1 rate (id., First Revised Sheet No. 18).

⁸⁴ Wheelabrator is the only customer on the current rate G2 and would remain the sole customer under the proposed rate G4 (Exh. OXF 2-23; Tr. 2, at 237).

3. Town Intervenor's Proposals

The Town Intervenor's oppose the continued use of a single-tariff rate structure for the Company (Exhs. HH-DFR at 17; OXF-DFR at 20). The Town Intervenor's note that despite the use of a WTP surcharge in Service Area A, the Company's base rates still include significant costs related to treatment facilities in the Millbury district (Exh. HH-DFR at 16-17). Similarly, Oxford notes that customers in Oxford are currently paying more for service than customers in Millbury, because of a betterment fee being used to finance a large portion of the cost of two water storage tanks that are leased by the Company (Exh. OXF-DFR at 20). Oxford also notes that the lack of an interconnection between Millbury and Oxford, as well as the limited capital needs of Oxford, weaken the ongoing rationale for a single-tariff structure (id. at 21).⁸⁵

As a remedy to this perceived inequity, the Town Intervenor's propose that the Department replace the Company's current single-tariff approach with a system of three separate rate structures for Service Area A, Millbury, and Oxford (Exhs. HH-DFR at 17-18; OXF-DFR at 20). The Town Intervenor's state that this rate structure would consist of separate surcharges designed to recover all Millbury- and Oxford-specific capital and operating costs related to treatment facilities, similar to the system currently used in Service Area A for the Hingham WTP (Exh. HH-DFR at 17-18). Common costs, such as distribution and administrative expenses, would continue to be recovered through a single Company-wide tariff

⁸⁵ Oxford notes that the Department's Order in D.P.U. 90-146 merely accepted a settlement agreement and, thus, has no precedential value (Exh. OXF-DFR at 21).

(Exh. OXF-DFR at 19). Oxford proposes that the Millbury and Oxford surcharges be recovered in the form of a volumetric rate, which Oxford estimates would be approximately \$1.23 per thousand gallons (“TG”) in the Millbury district and \$0.55 per TG in the Oxford district (id. at 18-19).

4. Positions of the Parties

a. Hingham and Hull

As noted above, Hingham and Hull propose that the Department replace Aquarion’s current single-tariff approach with a system of three separate rate structures for Service Area A, Millbury, and Oxford (Exh. HH-DFR at 17-18). Nonetheless, they do not address the issues of single-tariff pricing or a proposed Millbury WTP surcharge on brief.

b. Oxford

Oxford argues that substantial and compelling evidence exists for the implementation of a Millbury-specific surcharge to recover the costs of the Millbury WTP (Oxford Brief at 8-9; Oxford Reply Brief at 6). Oxford notes Millbury and Oxford are not interconnected but, instead, physically operate as two separate systems drawing from two separate watersheds (Oxford Brief at 10-11, citing Exh. OXF-RPS-SMD). Oxford also notes that the Millbury and Oxford water systems operated as separate companies until relatively recently and were not subject to rate consolidation until 1990 (Oxford Brief at 11, citing D.P.U. 90-146). Oxford states that neither Millbury nor Oxford were a party to the settlement approved by the Department in D.P.U. 90-146 and, further, that no rate settlement can preclude the

Department from making different findings in future proceedings based on new circumstances (Oxford Brief at 11).

Oxford maintains that the lack of any interconnection between Millbury and Oxford creates a situation where water treatment plants and other capital facilities in Millbury are not and cannot be considered used and useful in Oxford (id.). Nevertheless, Oxford points to the Millbury WTP with its attendant operating costs and the facilities required as a result of the perchlorate contamination at the Jacques Street wellfield as significant capital costs that the Company proposes be recovered from all of Aquarion's customers, including those in Oxford (id. at 12-14).

Oxford contends that the Millbury cost differentials take on more significance when it is considered that Aquarion spent disproportionately more in Millbury than in any other town in its service territory on the basis of customer counts (id. at 18-19, citing Exhs. OXF 1-12; OXF 1-13; Oxford Reply Brief at 7). In addition, Oxford argues that Oxford customers are de facto paying more than other ratepayers because Oxford residents also pay betterment fees to finance the construction of the Sutton Avenue water tank presently under lease to the Company (Oxford Brief at 19-20). Oxford requests that the Department require the Company to submit a certified statement of unreimbursed Millbury-specific capital and operating costs associated with both the Millbury WTP and the Jacques Street wellfield for purposes of developing a reasonable and fair Millbury surcharge (id. at 13).

Oxford contends that any subsidy of the Millbury WTP by Oxford customers serves to deprive customers of meaningful or accurate price signals to differentiate between the real cost

of water service in Millbury relative to other communities, and ultimately causes higher use of the supply-constrained and relatively costly Millbury system (id. at 21-22; Oxford Reply Brief at 10). According to Oxford, if Millbury's customers are undercharged for service, the very price signals and incentives necessary for businesses to make location decisions and use water in accordance with real prices will ultimately undermine market forces and cause market inefficiency (Oxford Brief at 22-23).

Oxford contends that other jurisdictions have found that the lack of a system interconnection combined with significant cost differentials among unconnected systems justified departures from single-tariff pricing (id. at 14-18, citing Re Sunshine Water Company, Docket Nos. 5559 and 5572, Vermont Public Service Board (Sept. 10, 1992); Re Arizona Water Company, Docket W-01445A-02-0619, Decision No. 66849, Arizona Corporation Commission (March 19, 2004); Re California-American Water Company, Application 04-08-012, Decision 05-09-004, California Public Utilities Commission (Sept. 5, 2005); Pennsylvania Public Utilities Commission v. Western Pennsylvania Water Company, Pennsylvania Public Utility Commission, R850096, at 69 (1986); Oxford Reply Brief at 9). While Oxford acknowledges that the Department and other utility commissions have accepted rate uniformity between separate water districts, Oxford argues that departures from this concept have been made based on specific fact patterns (Oxford Brief at 20-21, citing D.P.U. 95-118). Oxford notes that even states that have adopted single-tariff pricing in particular cases have determined that these proposals are best addressed on a case-by-case basis (Oxford Brief at 21, citing Exh. OXF-DFR at 11). By way of example, Oxford cites to the

Department's implementation of the Hingham WTP surcharge in D.P.U. 95-118 (Oxford Reply Brief at 9, 11-12).

In further support of its proposal, Oxford relies on Chapter 193, Acts of 1904 ("Special Act"), which established the Oxford Water Company (Oxford Brief at 23; Oxford Reply Brief at 9). Oxford maintains that the Special Act's plain intent was to authorize the creation of a water company to operate for the benefit of the inhabitants of Oxford and that Aquarion's use of Oxford's water system and customers to subsidize the Millbury WTP is inconsistent with the fundamental legislative purpose of the Special Act (Oxford Brief at 23; Oxford Reply Brief at 9). Moreover, Oxford posits that the use of Oxford's system for the benefit of Millbury may constitute an ultra vires action by Aquarion because the town meeting approval required by Section 10 of the Special Act clearly did not confer onto the Company any right to "syphon money from Oxford" (Oxford Brief at 23-24).

Further, Oxford maintains that its proposal for a Millbury WTP surcharge, to be billed only to Millbury customers and superimposed on an otherwise generally consolidated rate structure, would more equitably and efficiently allocate costs, mitigate subsidies and inefficient price signals, and avert the undermining of market forces and price allocation (id. at 25-26). Oxford argues that Aquarion's objections to a Millbury-specific surcharge are undermined because the Company already relies on the system-specific surcharge to recover the costs of the Hingham WTP and has failed to substantiate its complaints that an administrative burden would result (id.; Oxford Reply Brief at 7-8).

Finally, to prevent what it considers cross-subsidization of customers in Millbury, Oxford urges the Department to direct Aquarion to maintain separate accounts showing Millbury- and Oxford-specific accounts and expenses on both a historic and prospective basis (Oxford Brief at 41; Oxford Reply Brief at 20). Oxford asserts that the maintenance of separate accounts is required by both Section 9 of the Special Act and Chapter 214, Section 8, of the Acts of 1893 authorizing the creation of the Millbury Water Company (Oxford Brief at 41). Oxford argues that while the Company is free to maintain and provide financial statements on a consolidated basis as necessary to implement single-tariff pricing, rate consolidation does not negate Aquarion's obligation to provide separate Millbury and Oxford financial information to these communities (*id.* at 41-42). According to Oxford, separate cost data are now necessary in light of the compelling evidence of cross-subsidization (*id.* at 42; Oxford Reply Brief at 20-21).

c. Company

Aquarion opposes the Town Intervenors' proposal to adopt separate rate structures for Service Area A, Millbury, and Oxford (Company Brief at 36-37; Company Reply Brief at 3). The Company contends that the Department has shown a preference for single-tariff pricing for reasons of administrative efficiency and to improve customer understanding of the rate structure (Company Brief at 34). The Company argues that the Town Intervenors' proposal would increase administrative expense and result in a rate structure that is neither simple nor easily understood (*id.* at 35). Aquarion also contends that Oxford's proposal to impose a

separate treatment facility surcharge on Millbury customers would be unworkable (Company Brief at 35).

Aquarion maintains that because system costs will change in the future, these surcharges would likely change as well, increasing customer confusion and ultimately making it impossible to administer the Company's rates (id.). For example, the Company argues that if a separate surcharge were to be applied to Millbury, it would be necessary to calculate town-specific costs of capital and continuously adjust them with every additional investment made in the system (Company Reply Brief at 3). Aquarion argues that Oxford's reliance on the ratemaking treatment accorded to the Hingham WTP is misplaced because of the sheer enormity of the Hingham WTP, which represents a massive investment of \$37.7 million (Company Brief at 36).

The Company argues that there will always be capital investments made in part of a system that do not benefit all customers, such as mains and services in Oxford that are recovered through system-wide charges (id.). Aquarion contends that there is no certainty that Oxford will be able to avoid substantial capital and operating expenses in the future, as demonstrated by the results of the perchlorate contamination in Millbury (Company Reply Brief at 2). In fact, the Company argues that Oxford is presently benefitting from the zero-cost capital used to construct the Millbury WTP because this debt was included in Aquarion's system-wide cost of capital (id. at 3). The Company contends that single-tariff pricing recognizes the ebbs and flows in plant investment made in different areas from year to year and creates an overall sense of fairness to customers (Company Brief at 36; Company Reply Brief

at 2). Thus, Aquarion urges the Department to maintain the Company's single-tariff pricing structure (Company Brief at 36-37).

Turning to Oxford's proposal that Millbury and Oxford costs be tracked separately, Aquarion argues that this requirement would create a significant administrative expense and burden (Company Reply Brief at 3). The Company contends that because the Department has already adopted single-tariff pricing for Aquarion, the maintenance of separate books by system would serve no useful purpose (*id.* at 4).

5. Analysis and Findings

a. Proposed Rate Classifications

The Department has found that, in determining whether to consolidate or disaggregate customers into new rate classes, rate classes should be defined on the basis of differences in cost of service. Boston Gas Company, D.P.U. 88-67 (Phase II) at 18 (1989). Rate classes should be determined in a way that minimizes cost differences within the class and maximizes cost differences among classes. D.P.U. 89-81, at 58; Colonial Gas Company, D.P.U. 86-27-A at 72 (1988). These differences in cost of service are primarily a function of customer load level and load pattern. Boston Gas Company, D.P.U. 84-236-A at 11 (1986). In developing new rate classes, individual customers should be grouped so that the rates they are paying are reasonably representative of the costs of serving them. D.P.U. 1720, at 138.

Aquarion's commercial customers have an estimated maximum-day factor of 2.0 and a peak-hour factor of 2.8 (Exh. AQR-JFG-1, Sch. 10). In contrast, the Company's non-Wheelabrator industrial customers have an estimated maximum-day factor of 1.75 and a

peak-hour factor of 2.5 (id., Sch. 10). The Department finds that there is sufficient evidence to justify the disaggregation of industrial customers from the Company's current G1 rate. See, e.g., D.P.U. 89-81, at 59-60; D.P.U. 88-67 (Phase II) at 18-19. Therefore, the Department approves the Company's request to institute a separate rate for industrial customers who are not eligible for service under the current G2 rate.

Concerning the Company's proposed public authority rate, public authority customers have an estimated maximum-day factor of 2.0 and a peak-hour factor of 2.8, which is identical to that of commercial customers (Exh. AQR-JFG-1, Sch. 10). Although these identical load factors would suggest disaggregation of these customers is not warranted, the Department recognizes that there may be other benefits to disaggregation of public authority customers from the overall commercial class. Public authority customers will include schools and municipal offices, which may have different operating hours than other commercial facilities and thus may exhibit different demand patterns. In addition, such customers may serve as models for efficient water use in their communities because of their public status (Exh. DPU 2-9, Att. A at 21). The results of efficient water use by these customers may be more readily recognized in future rate filings if they are disaggregated from the general commercial rate class. Therefore, the Department approves the Company's request to institute a separate rate for public authority customers.

Our acceptance of Aquarion's proposal to disaggregate its current commercial rate into commercial, industrial, and public authority service requires changes in the existing rate designations. The Company's proposal to classify public authority customers as rate G2 and

industrial customers as rate G3, as well as to redesignate the current large industrial rate G2 to rate G4, is consistent with the nomenclature system used by Massachusetts gas and electric companies. See D.P.U. 1720, at 197. Therefore, the Department approves the Company's proposed rate designations.

b. Single-Tariff Pricing and Millbury Surcharge

i. Introduction

The Town Intervenors propose that the Department adopt separate rate structures for Service Area A, Millbury, and Oxford with separate surcharges designed to recover all Millbury- and Oxford-specific capital and operating costs related to treatment facilities, similar to the system currently used in Service Area A for the Hingham WTP (Exh. HH-DFR at 17-18). In addition, Oxford requests that the Department implement a separate surcharge mechanism applicable to the Millbury service area in order to recover the costs of the Millbury WTP from those customers who directly benefit from the treatment facility (Oxford Brief at 25-26). Aquarion, however, urges the Department to maintain the current system of single-tariff pricing and reject any separate surcharge for the Millbury WTP (Company Brief at 36-37; Company Reply Brief at 3).

The Department has previously approved of the use of single-tariff pricing for utilities with multiple service areas. D.P.U. 95-118, at 173; Commonwealth Gas Company, D.P.U. 1120, at 83-84 (1982); D.P.U. 243, at 38. Single-tariff pricing provides customers with the benefits of consolidation achieved through common planning and direction from both an operational and functional standpoint. D.P.U. 1120, at 84; Commonwealth Gas

Company/New Bedford Gas and Edison Light Company, D.P.U. 302, at 4 (1980).

Alternately, the Department has approved rates differentiated by zones for rate continuity purposes such as would result from a merger of two or more companies or in recognition of a specific set of circumstances where cost-causation principles justify a departure from the general rationale behind single-tariff pricing. Boston Gas Company, D.P.U. 17885, at 4-5 (1974); Worcester County Electric Company, et al, D.P.U. 13473, at 5 (1960).

Finally, the Department has approved the use of surcharge mechanisms for utilities to recover the costs associated with particular infrastructure items when traditional ratemaking principles were found to be inadequate for the task. These situations have commonly involved the ability of the company to finance the construction of important system upgrades.

D.P.U. 95-118, at 76-79, 147-148; Salisbury Water Supply Company, D.P.U. 91-122, at 2-6 (1992); Salisbury Water Supply Company, D.P.U. 87-215, at 10-11 (1988).

ii. Single-Tariff Pricing

A utility will often be required to make capital expenditures in one section of its service territory that do not benefit customers in other areas. D.T.E. 05-27, at 37-39; see also Petition of Riverdale Mills Corporation, D.P.U. 85-130 (1985); Cooney v. Southern Berkshire Power and Electric Company, D.P.U. 7968 (1947). For example, in this case, mains, meters, and service lines installed in Hingham are included in the Company's rate base and thus paid for by customers across the Company's service territory (Tr. 1, at 99). This treatment spreads the cost of utility operations across the broadest base of customers possible in order to achieve efficiencies of scale through integration of supplies and facilities. Boston Gas Company,

D.P.U. 18264, at 23 (1975). Such treatment also recognizes that there are fluctuations in plant additions from year to year. Some of a utility's operating divisions may experience more capital investment in one year, while investment may be more substantial in other areas of the utility's service territories in later years.

Setting rates on the basis of individual communities requires detailed information on the respective plant and operating expenses on a community-by-community basis. It also requires detailed information related to cost causation. For this purpose, cost causation goes beyond merely assigning plant and operating costs to individual communities, but also includes the relationship of these costs to system demand.

For example, while the weighted cost of capital is generally accepted to be the same across a utility's service area, a significant portion of the Company's capital assets in Millbury were financed through a zero-percent interest loan through the MWPAT. If the capital financed through MWPAT were to be allocated solely to Millbury operations, the weighted cost of long-term debt would increase to approximately 8.2 percent in Service Area A and Oxford and remain at 6.18 percent in Millbury (see Exh. DPU 2-15, Att. A). In addition, customers in Oxford have benefitted from the presence of Wheelabrator on Aquarion's system because Wheelabrator contributes to a more favorable maximum-to-average day demand ratio for the Company's system as a whole (Tr. 5, at 769-770). Because Oxford has no industrial base, a stand-alone Oxford system would have a lower load factor and, thereby, require customers in Oxford to bear the additional costs of meeting these maximum-to-average day demands (Exh. DPU 1-28).

As discussed above, the Department has found that single-tariff pricing provides benefits to customers associated with operational and functional consolidation. In addition, single-tariff pricing is consistent with the goal of administrative simplicity. Although, the Department has, on occasion, departed from this general practice, these exceptions to the general principles behind single-tariff pricing have been based on the specific facts in those proceedings. D.P.U. 86-27-A at 77-85; D.P.U. 17885, at 5. Based on these considerations, the Department finds that there is insufficient basis for reinstating a system of community-specific rates and will retain the existing pricing structure for Aquarion.

iii. Proposed Millbury Surcharge

Oxford requests that the costs associated with the Millbury WTP be allocated solely to the Company's customers in Millbury, in much the same manner as costs associated with the Hingham WTP are allocated to customers in Service Area A. The Hingham WTP was built to provide centralized water treatment for almost all of the Company's sources of supply in Service Area A at a total project cost of approximately \$35,275,000. D.P.U. 95-118, at 7-11. The Hingham WTP is owned by a special-purpose corporation and leased to Aquarion. Had the Hingham WTP been owned directly by Aquarion, this investment would have represented approximately 144 percent of the Company's plant in service at that time. See Id. at 188. Given the magnitude of this project, the Hingham WTP was financed using a project finance approach, through the creation of a special-purpose affiliate and a dedicated stream of revenue intended to cover the debt service associated with the facilities. Id. at 58-65. In contrast, the Millbury WTP represents only about ten percent of the Company's test year-end plant

investment and was financed through a combination of traditional sources of capital and zero-cost financing through MWPAT. As there are significant differences between the Hingham WTP and the Millbury WTP, the existence of surcharge for the Hingham WTP does not, in and of itself, justify imposing a like surcharge for the Millbury WTP.

Because the Millbury and Oxford systems are not interconnected, the Millbury WTP is only able to serve customers in Millbury. In recognition of this fact, the Department has evaluated the potential effects associated with a separate surcharge applicable to customers in Millbury. Aquarion estimates that the annual expenses associated with the Millbury WTP are approximately \$193,000 (Exh. OXF 3-22). This amount represents the total financing costs associated with the Millbury WTP, of which approximately \$3.4 million was financed through a zero cost loan program, plus operating and maintenance expenses associated with the Millbury WTP (Exh. OXF 4-5). If the Company were to implement a surcharge for the Millbury WTP in a manner consistent with the approach used for the Hingham WTP, the Company contends that \$193,000 is representative of the annual surcharge that would have to be billed to customers in Millbury (Exh. OXF 3-22).⁸⁶

The Department has reviewed the effect of reallocating \$193,000 in costs related to the Millbury WTP exclusively to customers in Millbury. Because the Department has found that

⁸⁶ The Department has examined the underlying assumptions behind the Company's estimate. The \$193,000 estimate consists of the return on the Millbury WTP, based upon the lower cost of capital resulting from the MWPAT financing, plus associated income taxes (Exhs. OXF 3-22, OXF 4-5). The Company's calculation does not account for other associated expenses, such as O&M or depreciation expenses. Accordingly, the Department finds that the Company's estimate of \$193,000 significantly understates the actual expense associated with the Millbury WTP.

the \$193,000 estimate understates the cost of the Millbury WTP, the actual bill impacts will potentially be higher than shown by our analysis. Nonetheless, relying on the \$193,000 estimate as representative of the annual surcharge, the resulting rates for Millbury customers would violate the Department's goal of ensuring that no rate class will receive an increase that is greater than 125 percent of the overall increase. In order to achieve this objective, it would be necessary to further reallocate the Millbury WTP surcharge revenues among the Company's other rate classes through an iterative process. As a result, most of the \$193,000 identified as attributable to Millbury would be spread out among all of the Company's customers. This reallocation process would thus defeat the purpose behind a Millbury-only WTP surcharge.

Finally we determine that, Oxford's reliance on the Special Act to support its request for a Millbury WTP surcharge is misplaced. Oxford asserts that the central purpose of the Special Act was to create a corporation to operate a water system for the sole purpose of furnishing water to Oxford's inhabitants and that Aquarion's use of Oxford's water system and inhabitants to subsidize treatment plants beyond its borders is inconsistent with that legislative purpose (Oxford Brief at 23). The Special Act does not delineate a method by which Oxford's inhabitants must receive their water but rather authorizes the creation of a corporation whose business purpose is to supply the inhabitants with water.⁸⁷ Special Act at § 1. Through the various mergers that have resulted in Aquarion acquiring the assets in Oxford, inhabitants no

⁸⁷ Even after Massachusetts established a general incorporation statute in 1855, many investor-owned water systems continued to be organized pursuant to special acts of the General Court into the early 20th century, including the predecessor companies to Aquarion. See, e.g., St. 1879, c. 139; St. 1893, c. 214; St. 1904, c. 193.

longer receive their water from the Oxford Water Company established by the Special Act.⁸⁸ Nonetheless, the purpose of the Special Act continues to be fulfilled, i.e., ensuring that Oxford's inhabitants receive water. Further, there are no provisions of the Special Act that require Aquarion to maintain separate books for each of the districts it serves or to require that it impose a separate surcharge on Millbury. Accordingly, based on the foregoing analysis, the Department will not implement a separate surcharge mechanism to recover the costs of the Millbury WTP.

E. Rate Design

1. Introduction

Aquarion proposes to implement conservation rates consisting of an inclining two-block rate for its residential R1, commercial G1, and public authority G2 rate classes to send a price signal to encourage water conservation (Exhs. AQR-LLB at 14; AQR-LMD at 10; AQR-JFG at 1-2). The Company selected these classes for the conservation rate because it contends that these customers are more likely to respond to a price signal to conserve water (Exh. AQR-JFG at 1-2). Aquarion proposes to set the block break at 1,200 cubic feet per quarter (equivalent to 8,977 gallons) in Service Area A and 9,000 gallons per quarter in Service Area B to recognize a minimum level of indoor domestic use for the majority of residential customers (Exhs. DPU 1-30; M.D.P.U. No. 1, First Revised Sheet Nos. 18, 19). Aquarion proposes to

⁸⁸ Oxford Water Company, along with Massachusetts-American Water Company, was acquired by Hingham Water Company in 1989, pursuant to D.P.U. 89-134, at which time Hingham Water Company adopted the name Massachusetts-American Water Company. Massachusetts-American Water Company changed its name to Aquarion in 2002, after its acquisition by Aquarion Company (Exh. AQR-LLB at 5).

maintain a single-block volumetric rate for its industrial (G3) and large industrial (G4) customers (Exhs. AQR-JFG at 1; M.D.P.U. No. 1, First Revised Sheet Nos. 18, 19).

The Company states the implementation of inclining block rates is in accordance with the final water conservation standards issued jointly in 2006 by the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs and the MWRC (“Water Conservation Standards”) (Exhs. AQR-LLB at 14; OXF 2-9, Att. A). The Water Conservation Standards recommend the adoption of inclining block rates by water systems as a way of more aggressively promoting water conservation (Exhs. AQR-LLB at 14-15; OXF 2-9, Att. A at 15).

Aquarion states that it is unable to predict the changes in customer behavior that may result from the implementation of increasing block rates (Exh. AQR-TMD at 11). Moreover, the Company states that it is concerned that if the implementation of increasing block rate structures spurs customer conservation, Aquarion will be unable to earn its allowed rate of return (*id.*). Thus, Aquarion requests that the Department acknowledge, as was done in the recent Plymouth Water Company decision, that it may be necessary for the Company to seek additional rate relief in the near term (*id.* citing Plymouth Water Company, D.P.U./D.T.E. 06-53, at 36 (2007)).

2. Town Intervenors Analysis

The Town Intervenors propose the use of a block break equal to at least 15,000 gallons per quarter, versus Aquarion’s proposed 9,000 gallons per quarter (Exh. HH-DFR at 39-40). The Town Intervenors further propose that the first block rate be set so that the total increase

to all customers using less than 60,000 gallons per year will not exceed 20 percent and that the second block rate be set so that any residential customer using less than 90,000 gallons per year will receive an increase of no more than 35 percent (id. at 40).

Additionally, the Town Intervenors propose that the same billing units be used in both Service Area A and Service Area B (Exh. HH-DFR at 43). While the Town Intervenors state that they prefer the adoption of TGs as the standard billing unit, either hundred cubic feet (“HCF”) or TG would be acceptable (id.). The Town Intervenors state that is not their intent to require the Company to install a significant number of new meters, but rather to require Aquarion to include both the metered units and converted units on customer bills and to bill customers based on the converted units (Exh. AQRN 1-27).

3. Positions of the Parties

a. Town Intervenors

The Town Intervenors contend that the Company’s proposed block break, as well as its proposed tailblock rate, are set too low to be effective and equitable to customers (Towns Joint Brief at 58). The Town Intervenors argue that a 60,000 gallon block break is appropriate because that level of consumption is approximately equal to the average residential use on the Company’s system (id. at 61). According to the Town Intervenors, a 60,000 gallon per year block break promotes rate continuity, mitigates rate impacts, and provides for essential use by a majority of customers (id. at 58-59).

The Town Intervenors argue that the Company has misconstrued the requirements of the Water Conservation Standards. They argue that the Water Conservation Standards only

support inclining block rates as a general policy to promote water conservation and do not require that all non-discretionary use of water result in higher rates (id. at 60). The Town Intervenor cite to both the Water Conservation Standards and the Company's own testimony as support for their position that water uses that are considered non-discretionary, such as for sanitation, cleaning, and cooking, are far less price-sensitive than water used for discretionary purposes such as lawn watering, car washing, and swimming pools (id. citing Exh. AQR-LLB at 15).

The Town Intervenor argue that the increase to the tailblock rate should be reduced so that customers using less than the breakpoint level of consumption will not have their consumption charges increase by more than 75 percent of the overall percentage increase that may be allowed by the Department (Town's Joint Brief at 59). Additionally, the Town Intervenor contend that customers using more than the breakpoint level of consumption should not see a total consumption charge increase of more than 150 percent of the overall average rate increase that may be ultimately granted (id. at 59-60). According to the Town Intervenor, these general guidelines would allow for a residential class increase that produces all or nearly all of the class revenue requirement without unduly burdening low-use customers, while mitigating rate effects for customers with extremely high use (id. at 60).

b. Company

Aquarion defends its proposed block break as consistent with its analysis of residential water use, as well as consistent with the practice of other water utilities (Company Brief at 37; see Exh. DPU 1-30). The Company contends that the Town Intervenor were unable to define

what amount of water was actually needed for health and sanitary requirements (id. citing Tr. 6, at 995). Aquarion maintains that, because almost all of an average residential customer's water use falls within the Town Intervenor's proposed first consumption block, the Town Intervenor's proposed block breaks will result in no incentive towards conservation (Company Brief at 37). Moreover, the Company contends that the Town Intervenor has put forth no analysis to assess whether their proposed block breaks will prevent Aquarion from earning its full revenue requirement (id. at 38).

In addition, the Company accuses the Town Intervenor of inconsistency, claiming that while they criticize Aquarion for not implementing more DSM programs, they actively resist the adoption of conservation pricing (id.). Aquarion also argues that while the Town Intervenor states their objections to increases in the 40 to 50 percent range, those customers who would experience such rate increases are using more than 300,000 gallons per year and, therefore, are the very customers who the Company should be encouraging to conserve water (id. citing Tr. 6, at 993).

4. Analysis and Findings

The Department is responsible for determining water rates for investor-owned water systems, including ensuring that rates are designed in a way that meets the Department's rate structure principles. G.L. c. 164, § 94; G.L. c. 165, § 1. The DEP, in turn, may impose permit conditions for any new water withdrawals that are deemed necessary to further the

purpose of the Water Management Act at G.L. c. 21G.⁸⁹ The Department recognizes the importance of water conservation and is committed to working cooperatively with DEP to achieve conservation goals. D.P.U./D.T.E. 06-53, at 31.

As noted above, one of the Department's principles for rate design is the goal of encouraging efficiency in utility operations and consumer decisions, a principle that is fully consistent with DEP's underlying goal to adopt water rate designs that promote conservation. Nevertheless, the Department's goals for water rate design balance a number of additional interests, policies, and goals related to rate continuity and stability and revenue adequacy. An increasing block rate structure anticipates recovering a proportionately greater percentage of the revenue requirement at higher levels of consumption. These higher levels tend to be more subject to volatility in demand due to factors such as seasonality and curtailed consumption in response to the increased unit price. In the case of a regulated water utility, this volatility in demand may result in reduced revenues for the company and consequently affect its ability to meet its public service obligation. Dover Water Company, D.P.U. 07-63-B at 12 (2008); D.P.U./D.T.E. 06-53, at 36. Conversely, if demand is less price elastic than anticipated, implementation of an increasing block rate would have less effect on water conservation than anticipated. See D.P.U./D.T.E. 06-53, at 35-36.

⁸⁹ General Laws c. 21G, § 19, specifies that nothing in this chapter shall limit the authority of the Department to rule on the propriety of any rates charged by any public water system subject to its jurisdiction. The statute, however, also provides that Department rulings shall not impose any condition inconsistent with the provisions of any order or permit issued by DEP.

The Water Conservation Standards are intended to set statewide goals on water conservation and water use efficiency, as well as provide policy guidance in the area of conservation measures (Exh. OXF 2-9, at 2). The Water Conservation Standards do not mandate the adoption of inclining block rates in general, much less specify a particular rate design, but merely identify this type of rate structure as one which may be appropriate to reduce non-essential water use (id. at 17). As discussed above, the Department has a statutory obligation to evaluate rate proposals, including those involving increasing block rates, through a balancing of competing rate design, cost causation principles, and the goal of promoting water conservation. D.P.U. 07-63-B at 10-13; D.P.U./D.T.E. 06-53, at 31-32.

The Department has examined Aquarion's proposal to implement an increasing block rate structure, taking into consideration our rate design goals discussed above and the goal of promoting water conservation. The Department has also taken into consideration the Company's operating conditions, such as its customer mix and supply constraints in Service Area A and Millbury. Based on these considerations, the Department finds that Aquarion's existing flat-rate structure fails to provide proper price signals to large-volume customers.

The Department has previously noted that rate structures other than increasing block design, such as seasonally-differentiated rate structures, may be more effective in influencing customer behavior and, thereby, reducing customer demand. D.P.U./D.T.E. 06-53, at 32. Examination of the Company's billing data, however, indicates that seasonality of demand is not as significant a factor for Aquarion as it may be for other water systems (Exh. DPU 6-8, Att. A; RR-DPU-8, Att.). Furthermore, the Company's practice of cycle billing most

accounts on a quarterly basis may weaken the potential benefits of a seasonally-differentiated rate structure (Tr. 5, at 805-806). Based on these considerations, the Department finds that an increasing-block rate design is appropriate in this case.⁹⁰

Aquarion's residential class uses an average of 63,000 to 65,000 gallons per year (Tr. 5, at 781). Specifically, the average consumption for residential customers billed quarterly in Service Area A is about 23.5 CCF per quarter, with a median consumption of about 16 CCF per quarter (see RR-DPU-8, Att.). In Service Area B, the average consumption for residential customers is 15.6 TG in Millbury and 15.4 TG in Oxford, with a median consumption of between 11 TG and 12 TG (see id.). Unlike the situation with other water utilities where a large percentage of residential consumption may be for outdoor irrigation purposes, the Company's weather-sensitive load is only about 10,000 gallons per customer per year (Tr. 5, at 781-782). Cf. D.T.E./D.P.U. 06-53, at 33 (company experiencing summer use of four times winter use warranted adoption of rate structure consisting of customer charge and four increasing rate blocks). Therefore, the demand pattern of Aquarion's customers is relatively unaffected by weather. Moreover, while multiple rate blocks may be appropriate in

⁹⁰ Our approval of an increasing block rate structure in this proceeding should not be construed as a determination that increasing blocks are the only acceptable rate design option for water companies. D.P.U./D.T.E. 06-53, at 33 n.21. Neither should our decision here be construed as a signal that the Department will mandate that all jurisdictional water systems adopt inclining block rates. G.L. c. 164, § 94.

situations when a single metered rate is intended to serve all customer classes, the Company's proposal to divide its metered rate class into residential, commercial, industrial, large industrial, and public authority recognizes the dispersion of use among customers (Exh. DPU 1-31).

Finally, the Department finds that there is no need at this time to apply an increasing block rate to the Company's two industrial rate classes, for reasons of rate continuity and because these customers have adequate incentive to encourage water conservation (see Exh. Hingham/Hull 2-100). Based on these considerations, the Department finds that Aquarion's proposal to apply a two-block increasing block rate structure to the Company's residential, commercial, and public authority rate classes, and a single-block rate structure to its two industrial rate classes, is consistent with the Department's rate design goals.

Turning to the proposed block breaks, Aquarion has proposed setting the block break at 1,200 cubic feet per quarter in Service Area A, and 9,000 gallons per quarter in Service Area B. The Company's proposed first block for each rate class is equal to the current rates multiplied by a percentage factor approximately equal to the overall percentage increase for that rate class (Exh. AQR-JFG at 10). The second block is intended to collect the remaining class revenue requirement, less service charge revenues (id.). The Town Intervenors, alternatively propose setting the block break at 15,000 gallons per quarter, which is equivalent to 20 CCF per quarter. As described above, the Town Intervenors' rate blocks are designed to achieve specific bill impacts, particularly for customers whose consumption falls entirely within the first block.

The selection of block breaks for a water rate schedule raises important issues with respect to cost-based principles and water conservation. If a block break that places too much consumption in the first block is selected, an excessive amount of consumption will fall within the first block. Because there would be no price signal associated with greater use, the rate structure may contribute to excessive use of water. See Granville Centre Water Company, D.P.U. 89-241, at 9-10 (1990); Kings Grant Water Company, D.P.U. 87-228, at 26 (1988).⁹¹ Moreover, if the block break for an increasing block tariff is increased, the proportion of total consumption billed in the headblock rate will increase correspondingly. Consequently, a shortfall in revenues is created that must be recovered through either a higher tailblock rate or from other rate classes so that the utility is still provided with a reasonable opportunity to collect its authorized level of revenues.⁹²

While the Town Intervenors maintain that their proposed block break is intended to ensure that residential customers receive a price break for essential use, there is little evidence about what constitutes essential water use. While most indoor uses of water may arguably be considered essential, water demand varies by individual customer (Tr. 6, at 997-1002). For example, a household consisting of a large family will have more essential use of water than a household with a single person. Moreover, there is no basis to assume that the average

⁹¹ Although these two referenced cases relate to the setting of a minimum use allowance, the general discussion therein is also applicable to the selection of block breaks even if no minimum use is built into the tariff.

⁹² To put it another way, changes in block breaks must take into account the tyranny of arithmetic.

consumption per household (as perhaps distinct from non-discretionary use) is indicative of an appropriate block break. Therefore, the Department finds that there is no basis to establish block breaks using the criteria of essential use.

The Department has examined Aquarion's proposed block breaks using the bill frequency data provided in Record Request DPU-8 and bill tabulation in Exhibit 4, Schedule 4. In Service Area A, approximately 34 percent of total residential bills and 42 percent of total residential consumption would fall within the first block under the Company's proposal (see Exh. 4, Sch. 4, at 1-3; RR-DPU-8, Att.). In the Millbury service area, approximately 36 percent of residential bills and 49 percent of consumption would fall within the first block under the Company's proposal (see Exh. DPU 6-8, exh. 4, Sch. 4-15M; RR-DPU-8, Att.). In the Oxford service area, approximately 36 percent of residential bills and 50 percent of consumption would fall within the first block under Aquarion's proposal (Exh. DPU 6-8, exh. 4, Sch. 4-15O; RR-DPU-8, Att.).

In contrast, approximately 60 percent of total residential bills and 60 percent of total residential consumption in Service Area A would fall within the first block under the Town Intervenors' proposal (see Exh. 4, Sch. 4, at 1-3; RR-DPU-8, Att.). In the Millbury service area, approximately 63 percent of total residential bills and 69 percent of total residential consumption would fall within the first block under the Town Intervenors' proposal (see Exh. DPU 6-8, exh. 4, Sch. 4-15M; RR-DPU-8, Att.). In the Oxford service area, approximately 65 percent of total residential bills and 70 percent of total residential

consumption would fall within the first block under the Town Intervenors' proposal (see Exh. DPU 6-8, exh. 4, Sch. 4-15O; RR-DPU-8, Att.).

The above percentages are also representative of the results of comparing Aquarion's and the Town Intervenors' commercial and public authority rate class proposals (see RR-DPU-8, Att.). Although the percentage of commercial and public authority consumption that falls within the first block is, understandably, far lower than for the residential class, there is still a significant difference between the Company's and Town Intervenors' proposals. In the case of commercial customers, the percentage of consumption that falls within the first block under the Company's proposal ranges between five percent in the Oxford service area and twelve percent in Service Area A; under the Town Intervenors' proposal, the percentage of consumption that falls within the first block ranges between 15 percent in the Oxford service area and 18 percent in Service Area A (see Exh. DPU 6-8, exh. 4, Schs. 4-16, 4-16O; RR-DPU-8, Att.). In the case of public authority customers, the percentage of consumption that falls within the first block under the Company's proposal ranges between 8 percent in Service Area A and 13 percent in the Millbury service area; under the Town Intervenors' proposal, the percentage of consumption that falls within the first block ranges between 13 percent in Service Area A and 20 percent in the Millbury service area (see Exh. DPU 6-8, exh. 4, Sch. 4; RR-DPU-8, Att.).

Based on this analysis, the Department finds that the Company's proposed block breaks strike an equitable balance between the need to recognize the presence of low-volume residential users on Aquarion's system and the need for a price increment that would have a

significant probability of influencing a significant number of residential customers. Moreover, considering the significant dispersion among commercial and public authority customers, the Department finds that the Company's proposed block breaks for these rate classes also strike an equitable balance between low-volume users and the need for a price increment that would have a significant probability of influencing a large number of commercial and public authority customers. Therefore, the Department accepts Aquarion's proposed block break of 1,200 cubic feet per quarter for Service Area A and 9,000 gallons per quarter for Service Area B.

In order to establish its proposed customer charges, Aquarion first derived meter and service capacity ratio data to develop an equivalent residential connections ("ERCs") factor (Exhs. AQR-JFG at 9; AQR-JFG-1, at 12). These ERCs are then used in combination with cost data from the meters/services and billing/accounting functions from Aquarion's allocated COSS to develop the proposed service charge for each meter size (Exhs. AQR-JFG at 9; AQR-JFG-1, Sch. 12). The Department finds that the Company's use of ERCs to develop the proposed customer charges is consistent with cost allocation principles. Consistent with the revenue requirement being approved by this Order, the Department directs Aquarion to develop a set of customer charges based on an equivalent rate of \$13.94 per month for a 5/8-inch meter. The Department finds that this equivalent monthly charge satisfies our continuity goals and produces bill impacts that are moderate and reasonable.

As noted above, Aquarion has proposed an increasing two-block rate structure for rates R1, G1, and G2, along with a single-block rate for industrial rates G3 and G4. The Company

has calculated its proposed headblocks for rates R1, G1, and G2 by increasing the current respective rates by an amount approximately equal to the overall rate increase (Exh. AQR-JFG at 9). The Department finds that a slight modification is warranted to maintain cost allocation principles. Therefore, the Department directs the Company to calculate the headblocks for rates R1, G1, and G2 by multiplying the existing rates R1 and G1 by the overall percentage increase in water revenues (i.e., total revenues less revenues from miscellaneous charges) granted pursuant to this Order. The Company will set the tailblocks for rates R1, G1, and G2 to recover the remaining class revenue requirement. Turning to Aquarion's industrial rates G3 and G4, the Company is directed to design a single-block rate structure for these two rate classes by dividing the respective class revenue requirement, less revenues derived from service charges as calculated above, by the test year adjusted billing determinants for each of these classes. The Department will permit Aquarion to adjust the service charge and tailblocks of each rate if necessary to ensure that Company's rates for water service do not exceed the total allowed revenue requirement.

Concerning the Town Intervenors' proposal to standardize billing units across Aquarion's service territory, the Department is persuaded that this change would result in customer confusion because of the different units used for meter readings versus billing purposes (Tr. 7, at 1283-1284). Moreover, Aquarion's bills currently include a line that explains to customers the difference between HCF and TG (Tr. 7, at 1284). Accordingly, the Department finds that customers are already provided with the information necessary to

convert their bills from cubic feet per gallons or from gallons to cubic feet. Therefore, the Department declines to order Aquarion to implement standardized billing units at this time.

F. Fire Protection Charge

1. Introduction

Aquarion provides water for both public and private fire protection service. The Company's public fire protection service consists of a two-part rate consisting of a community-specific demand charge intended to cover the capacity costs associated with fire protection service, plus a hydrant charge designed to cover the cost of owning and maintaining hydrants (Exh. M.D.T.E. No. 1, Original Sheet No. 21).⁹³ Private fire protection is provided under a uniform rate of \$720.87 per year for hydrants located in Service Areas A and B, with three hydrants located outside the Company's service territory billed at \$905.79 per year (*id.*, Original Sheet No. 20; Tr. 5, at 792-793). Other fire service connections are charged a rate ranging from \$372 per year for a service connection smaller than four inches, up to \$3,348 per year for a twelve-inch service connection (Exh. M.D.T.E. No. 1, Original Sheet No. 20).

Aquarion proposes to increase its public fire protection demand charge across-the-board by approximately 13.25 percent and reduce its hydrant-based charge to \$85.32 per year (Exh. M.D.P.U. No. 1, First Revised Sheet No. 21). The Company proposes to increase its private fire protection charges between approximately 14.5 percent and 30.6 percent, depending on the particular connection (*id.*, First Revised Sheet No. 20). During the

⁹³ Out of 1,218 public hydrants, the Company owns 372 hydrants outright; the remaining hydrants are owned by the respective towns in which they are located (Exh. AQR-JFG-1, Schs. 13, 14; Tr. 5, at 794-795).

proceeding, Aquarion identified an error in its fire protection allocation that resulted in an over-allocation of \$7,432 in costs to private fire service (Exh. Hingham/Hull 2-93). No party commented on the Company's proposal.

2. Analysis and Findings

The Department has long recognized that fire protection service requires maintaining adequate capacity and pressure to deliver large volumes of water at irregular intervals on demand. To take this cost causation into account, fire protection rates are predominantly fixed charges. D.T.E. 01-42, at 26; D.P.U. 95-118, at 180-181. The Department also recognizes the cost distinctions between public and private fire protection service. D.P.U. 88-171, at 50-51; D.P.U. 18070, at 4-5.

The Department has examined Aquarion's proposed fire protection rate design. Based on our review, the Department finds that the proposed rate design recognizes the demand nature of fire protection service as well as the relative cost differentials between Company-owned and non-Company-owned hydrants. Moreover, the Department finds that the structure of the lump sum charges are more closely related to the demands placed on Aquarion by fire protection requirements than a hydrant-based rate. See D.P.U. 95-118, at 181. Therefore, the Department approves the Company's proposed fire protection rate design. The Company is directed to design its public and private fire protection rates based on the revenue requirement and cost allocation approved in this Order, using the same method as detailed in Exhibit AQR-JFG-1, Schedules 13 and 14 and as corrected in Exhibit HIngham/Hull 2-93.

G. Rate G4 Surcharge

1. Introduction

Aquarion proposes to impose a surcharge on customers on the rate G4 class in Service Area B to offset the cost of purchasing water from Worcester in order to serve these customers (Exhs. AQR-LLB at 16; DPU 1-18). Periodically, Jacques 1 and 2 are taken off-line for maintenance (Exh. AQR-LLB at 17). During those times, the Company needs to purchase water from Worcester to supply Wheelabrator,⁹⁴ which is currently the only customer in the rate G4 class in Service Area B and represents 37 percent of system load in that service area (Exhs. 4, Sch. 3; AQR-LLB at 17; Tr. 2, at 237). The proposed surcharge would cover the difference in the cost of the water purchased from Worcester and the volumetric rate paid by Wheelabrator for service from Aquarion (Exh. AQR-LLB at 17).

The Company proposed tariff language for this purchased water surcharge (Exh. DPU 1-22). Under Aquarion's proposal, G4 customers would be billed at the regular G4 rate, plus the rate billed to the Company by Worcester whenever the customer was using water delivered from Worcester (*id.*). Aquarion's proposed tariff language does not address how the Company would notify G4 customers as to when the purchased water surcharge would be in effect.

⁹⁴ Wheelabrator is a limited participant but did not attend evidentiary hearings nor did it file briefs.

2. Positions of the Parties

Oxford supports the surcharge on G4 customers as originally proposed by Aquarion (Oxford Brief at 31). Oxford states that failure to implement such a surcharge would result in inequalities and inefficiencies in rate design, causing residential customers to subsidize costs stemming from large industrial customers (*id.* at 31-32; Oxford Reply Brief at 13).

3. Analysis and Findings

Under the current scenario, all of Aquarion's customers in Service Area B are subsidizing Wheelabrator, the one G4 customer in Service Area B, because the Company would not need to purchase water from Worcester were it not for Wheelabrator. The Department's long-standing precedent is that costs should be borne by those customers that cause a utility to incur those costs. D.P.U. 87-260, at 81; Western Massachusetts Electric Company, D.P.U. 84-25, at 126-130 (1984). Consistent with the Department's ratemaking principle of cost-causation, it is appropriate to implement a surcharge for Wheelabrator. Without this surcharge, customers in Service Area B would continue to subsidize this G4 customer. Therefore, the Department directs the Company to impose a surcharge for water purchased from Worcester on the G4 rate class in Service Area B.

Under G.L. c. 164, § 94, as applicable to water companies pursuant to G.L. c. 165, § 2, a utility's proposed rates must be consistent with the public interest. One component of this standard, applicable to tariff construction, requires that a proposed tariff has sufficient detail to explain the basis for the rate to be charged for the offered service. The sufficiency of a tariff must be judged on its face, and testimony is insufficient to cure a defect or supply a

missing essential term. Boston Gas Company, D.P.U. 92-259, at 47-48 (1993); Dedham Water Company, D.P.U. 13271, at 10 (1961).

The Department has considered Aquarion's proposed tariff language in light of another purchased water surcharge tariff used in Massachusetts and the operating conditions under which the G4 surcharge would be implemented in order to serve a large, sophisticated customer such as Wheelabrator (Exh. DPU 1-22; Tr. 7, at 1264-1269; RR-DPU-6). Based on our review, the Department finds that the Company's proposed tariff language does not meet the need to ensure that customers are properly informed of the rates and terms under which service would be provided. Aquarion contemplates billing rate G4 customers for the difference between the rate the Company pays for water purchased from Worcester and the tariffed G4 rate (Tr. 7, at 1265-1266). The Company must clarify in the tariff that the surcharge will only cover the difference in the cost of the water purchased from Worcester and the volumetric rate paid by the rate G4 customer service from Aquarion. Further, Aquarion must add language to the tariff that requires the Company to notify all G4 customers when the purchased water surcharge is going to be in effect and when the surcharge will be terminated. The Department directs Aquarion to incorporate such language into the revised G4 tariff to be submitted to the Department for review as part of the Company's compliance filing to this Order.

H. Linden Ponds Wheeling Charge

1. Introduction

Linden Ponds is an age-restricted housing development located in southwestern Hingham (Exhs. AQR-LLB at 6; Hingham/Hull 1-2). Although Linden Ponds is within the Company's service territory, Aquarion was unable to provide water service to Linden Ponds because of supply constraints (Exh. Hingham/Hull 1-2). While Cohasset had sufficient water to supply Linden Ponds, Cohasset could not directly connect with Linden Ponds (id.). Therefore, to provide Linden Ponds with a potable water supply, the Company entered into the Wheeling Agreement on October 30, 2003. See D.T.E. 03-WC-1, Wheeling Agreement. The Department approved the Wheeling Agreement on February 11, 2004. Id.

Under the terms of the Wheeling Agreement, Cohasset sells water to Linden Ponds, for which Cohasset directly bills Linden Ponds as a customer. Id., Wheeling Agreement, Articles 2.1, 4.2. In turn, Cohasset delivers the purchased water to the Company's distribution system through an interconnection that was built at Linden Ponds' expense under the terms of a separate agreement. Id., Wheeling Agreement, Article 2.1, Exh. A. Aquarion then delivers the water from Cohasset to Linden Ponds through a displacement arrangement, and bills Linden Ponds at the Company's tariffed charges for fire service, private hydrants and service fees, plus a volumetric wheeling fee (Exh. AQR-LLB at 6-7; Tr. 5, at 800). See D.T.E. 03-WC-1, Wheeling Agreement, Article 1.29.⁹⁵ Consequently, for each gallon of

⁹⁵ The terms "displacement" and "wheeling" are used interchangeable in the evidentiary record (Tr. 3, at 399).

water that Aquarion provides to Linden Ponds, Cohasset delivers an equivalent volume of water to the Company's distribution system through an interconnection that was built at Linden Ponds' expense. Id., Wheeling Agreement, Article 2.1, Exh. A. The Cohasset water is mixed with water from the Hingham WTP to serve customers in northern Hingham and Hull (Exh. AQR-LLB at 7; Tr. 3, at 396).⁹⁶

While Cohasset directly bills Linden Ponds for the volume of water that is delivered into the Aquarion system, Aquarion bills Linden Ponds at the Company's tariffed charges for fire service, private hydrants and service charges, plus a volumetric wheeling charge (Exh. AQR-LLB at 6-7; Tr. 5, at 800). See D.T.E. 03-WC-1, Article 1.29. The wheeling charge paid by Linden Ponds pursuant to the Wheeling Agreement is based on the Company's transmission and distribution expenses and does not include the Hingham WTP Surcharge (Tr. 2, at 228-230; Tr. 3, at 422-423). The terms of the Wheeling Agreement specify that the contract price may be revised to recognize rate changes as may be approved from time to time by the Department. D.T.E. 03-WC-1, Wheeling Agreement, Article 1.29.

The Company proposes to increase the wheeling charge to Linden Ponds from the existing \$1.18 per TG to \$1.233 per TG (Exh. AQR-JFG at 13). Aquarion calculated the proposed wheeling charge by first determining the Company's overall transmission and distribution-related expense (Exh. AQR-JFG-1, Sch. 19). Based on the results of its COSS,

⁹⁶ Customers in the southern part of Hingham, including Linden Ponds, receive their water exclusively from the Hingham WTP because of different hydraulic gradients within Aquarion's system (Exh. Hingham/Hull 3-5, Att. A Supp.; Tr. 3, at 411-412, 419).

the Company determined that its revenue requirement associated with transmission and distribution functions was \$2,652,423 (Exh. AQR-JFG-1, Sch. 19; Tr. 5, at 644-645). From that amount, the Company then subtracted \$10,920 in miscellaneous revenues, \$925,560 in service charge revenues, and \$1,160,259 in fire protection revenues allocated to its transmission and distribution function, thereby producing a net volumetric revenue requirement of \$555,684 (Exh. AQR-JFG-1, Sch. 19). The net volumetric revenue requirement of \$555,624, divided by metered sales of 1,717,921 TG, produces a transmission and distribution rate of \$0.323 per TG (*id.*, Sch. 19). The Company next added \$0.05 per TG to allow for pumping and water sampling costs, plus \$0.86 per TG to represent a 15 percent line loss factor (*id.*, Sch. 19; Exhs. DPU 1-43; DPU 1-44; Tr. 5, at 797). The sum of these components is \$1.233 per TG (Exh. AQR-JFG-1, Sch. 19).

2. Positions of the Parties

a. Town Intervenors

The Town Intervenors assert that it is unfair for customers in Service Area A who receive water from Cohasset as a result of the Wheeling Agreement to pay the full surcharge for the Hingham WTP and that Linden Ponds does not pay the surcharge even though all of its water comes from the Hingham WTP (Towns Joint Brief at 50-52). The Town Intervenors also contend that the proposed wheeling charge fails to recognize all of the costs of providing service to Linden Ponds (*id.* at 50-53). As one potential remedy, the Town Intervenors propose that the Linden Ponds wheeling charge be increased by a factor equal to the overall

percentage increase in water rates that may be approved by the Department in this Order (id. at 53).

The Town Intervenors recommend that the Department direct the Company to hire an independent engineer to determine the amount of water from Cohasset that is added to the Aquarion system and adjust the surcharge to reflect the amount of Cohasset water that Service Area A customers are receiving (id. at 52-53). Alternatively, the Town Intervenors recommend that the Department open a separate proceeding to examine the Company's practice of mixing the Cohasset water with water treated at the Hingham WTP with the goal of reducing the surcharge for those customers that do not receive all of their water from the Hingham WTP (id. at 53).

b. Company

Aquarion opposes the Town Intervenors' suggestion that the Hingham WTP surcharge be modified based on the Wheeling Agreement between the Company, Linden Ponds, and Cohasset (Company Brief at 40). First, the Company claims that adjusting the surcharge to reflect the actual amount of Cohasset water that is used to serve customers in Hull would require an expensive and complex tracer study (id. at 41). Aquarion also states that the amount of water that an individual customer receives from Cohasset can change based on demand (id. citing Tr. 3, at 414). Second, Aquarion argues that there is nothing inequitable about the fact that Linden Ponds does not pay the surcharge that is paid by other customers in Service Area A (Company Brief at 42). The Company states that service to Linden Ponds is entirely dependent on the volume of water supplied by Cohasset, consistent with the Wheeling

Agreement (id.). Aquarion argues that there is no basis on which to assess the surcharge to Linden Ponds or reduce the assessment of the surcharge to other customers in Service Area A (id.).

3. Analysis and Findings

a. Service to Linden Ponds

First the Department must address the Town Intervenors' request to assess Linden Ponds the surcharge for the Hingham WTP because the water used by Linden Ponds comes directly from the Hingham WTP. The service provided to Linden Ponds is provided pursuant to a Wheeling Agreement approved by the Department in 2004. D.T.E. 03-WC-1. Under the terms of that agreement, for every gallon of water purchased from Cohasset by Linden Ponds, Aquarion delivers one gallon of water to Linden Ponds. While Linden Ponds receives water from the Hingham WTP, it is only because a direct interconnection between Linden Ponds and Cohasset does not exist. Accordingly, the Wheeling Agreement is akin to a displacement agreement between Linden Ponds and Cohasset.

As discussed above, the Department approved the Wheeling Agreement and there is no evidence of a significant change in circumstances that would warrant revisiting our approval of the agreement at this time. The need for the Hingham WTP and the resulting surcharge is not driven in any way by the existence of Linden Ponds. If Linden Ponds were to go off-line tomorrow, the Hingham WTP would still be required to serve customers in Service Area A. Also, although Linden Ponds receives water that is treated at the Hingham WTP, the Town Intervenors have not sufficiently demonstrated that the resulting influx of Cohasset water into

the Aquarion system has lead to a deterioration in the quality of the water delivered by the Company to its customers in Service Area A.⁹⁷ The water that Aquarion customers receive from Cohasset as a result of the Wheeling Agreement is treated in Cohasset and must adhere to the same DEP standards for water quality as water from the Hingham WTP before it enters the Aquarion system (Exh. DPU 5-9).⁹⁸ Because the need to construct the Hingham WTP is not related in any way to the Linden Ponds development and the Town Intervenors have not demonstrated any deterioration of water quality as a result of the displacement arrangement with Cohasset, the Department will not revisit our approval of the Wheeling Agreement to direct the Company to charge Linden Ponds a surcharge for the Hingham WTP.

Next, the Department must address the issue of whether to adjust the surcharge for those customers of Service Area A that do not receive 100 percent of their water from the Hingham WTP due to the Wheeling Agreement between Linden Ponds and Cohasset. The Town Intervenors claim that such an adjustment would be proper to more accurately reflect the origin of the water used by these customers. Nonetheless, as discussed above, the Town Intervenors have failed to demonstrate that there are any significant differences in service quality related to the introduction of water from Cohasset into the Aquarion system.

⁹⁷ Although the Town Intervenors questioned the Company about customer complaints of water quality and the timing of the Cohasset interconnection coming on line, they failed to establish that the water entering the Aquarion system from Cohasset was inferior (Tr. 5, at 897-899, 904-917; Tr. 7, at 1211-1214).

⁹⁸ The Department notes that customers in Service Area A also receive water from the Downing Street well in Hingham (Exh. DPU 5-8). This water is also not treated at the Hingham WTP (id.).

Accordingly, for the same reasons we have declined to impose a surcharge for the Hingham WTP on Linden Ponds, we decline to adjust the surcharge for the customers of Service Area A.⁹⁹

For the above-stated reasons, the Department will not direct Aquarion to make any adjustments to the Hingham WTP surcharge based on the presence of Cohasset water in the Company's system.¹⁰⁰ In addition, the Department will not require the Company to change the way Linden Ponds is charged for water under the Wheeling Agreement.¹⁰¹

b. Calculation of Wheeling Charge

The Town Intervenors claim that the Company's calculation of the wheeling charge for Linden Ponds does not include all of the costs to serve Linden Ponds because it does not include any portion of the Hingham WTP surcharge (Towns Joint Brief at 50-53). The

⁹⁹ Further, any reduction in the surcharge for customers in Service Area A would only be appropriate in the context of a finding that Linden Ponds should also pay a surcharge for the Hingham WTP – a finding that the Department declined to make above. Otherwise, any savings achieved by customers of Service Area A as a result of a reduction to the surcharge would result in deferred recovery of the costs related to the Hingham WTP. This deferral would result in the surcharge remaining in place longer than it would have absent the adjustment.

¹⁰⁰ The Department will address other issues pertaining to the Hingham WTP Surcharge, including its calculation and design, in Section VI.I., below.

¹⁰¹ As a means to implement the proposed surcharge reduction, the Town Intervenors have requested that the Department direct the Company to hire an independent engineer to determine the amount of water coming from Cohasset to serve customers in Service Area A or, alternatively, that the Department open a separate proceeding to address the issue of the amount of water coming from Cohasset to serve customers in Service Area A. As the Department has found that an adjustment to the Hingham WTP surcharge is not appropriate, we need not address these recommendations.

Company has calculated its proposed wheeling charge to Linden Ponds in the same manner as it has done since the wheeling charge was put in place in 2004 (Exh. AQR-JFG-1, Sch. 19). The Department approved the calculation of the wheeling charge in 2004 and the Town Intervenor has not provided sufficient evidence to warrant a change in the components of the wheeling charge or the method of its calculation. The Department finds that Aquarion has included all of the appropriate costs in the calculation of the wheeling charge for Linden Ponds (id., Sch. 19).

The Department notes that Aquarion's calculation of the wheeling charge that was presented in Exhibit AQR-JFG-1, Schedule 19 was based on the revenue requirement numbers that the Company presented in its initial filing. In order for the Company to calculate the appropriate wheeling charge for Linden Ponds, Aquarion will need to revise its calculation based on the revenue requirement approved by the Department in this proceeding. The Department will review Aquarion's revised calculation of the wheeling charge as part of the Company's compliance filing.

I. Hingham WTP Surcharge

1. Introduction

In 1995, the Company was in the process of constructing the Hingham WTP. D.P.U. 95-118, at 7-10. At that time, the Company's then-parent, American Water Works Company ("AWW"), formed Massachusetts Capital Resources Company ("MassCapital") as a wholly-owned special-purpose company for the purpose of financing and constructing the Hingham WTP using a project finance approach. Id. at 58; Aquarion Water Company of

Massachusetts, D.T.E. 05-94-A at 2 (2006). On July 1, 1995, MassCapital purchased the partially-constructed Hingham WTP from the Company and obtained access to \$37,700,000 in tax-exempt bonds through the Massachusetts Development Finance Agency to finance construction. D.P.U. 95-118, at 58-59. MassCapital entered into a ground lease with the Company and, in exchange, the Company entered into a 40-year operating lease for the Hingham WTP. D.P.U. 95-118, at 60; D.T.E. 05-94-A at 2.

The Hingham WTP lease expense and associated O&M expenses are recovered through a surcharge (Exh. AQR-LMD at 30). The Hingham WTP Lease consists of a fixed amount required for debt service and a variable amount based on the volume of water treated at the Hingham WTP in excess of 30 million gallons per month multiplied by an annual percentage rate (Exh. 3, Sch. 1, at 1). The Hingham WTP surcharge is designed to collect the annual lease expense through a two-part charge, consisting of (1) a fixed charge that varies by meter size (“Facilities Charge”) and recovers 67 percent of the WTP Lease expense, and (2) a volumetric charge (“Consumption Charge”) that recovers the remaining 33 percent (Exh. AQR-TMD at 9-10). During the test year, the Company booked \$3,294,726 in expenses related to the Hingham WTP (Exh. 3, Sch. 1, at 1). The Company proposes to increase this expense by \$63,726 (id., Sch. 1, at 1).

O&M expenses associated with the Hingham WTP consist of property taxes, chemicals, power costs, waste disposal, and heating expense (id., Sch. 2, at 1). These expenses, plus related cash working capital, are recovered through a volumetric rate (“O&M charge”) (id., Sch. 2; Exh. AQR-TMD at 9-10). During the test year, the Company booked \$914,916 in

O&M expenses related to the Hingham WTP (Exh. 3, Sch. 2, at 1). In its initial filing, Aquarion proposed to increase this expense by \$116,945 (id., Sch. 2, at 1). Subsequently, Aquarion stated that its annual chemical expense at the Hingham WTP had increased from \$321,150 to \$370,512 (Exh. DPU 3-44, Supp. B). Partially offsetting this increase in chemical expense was a decrease in heating expense from \$80,458 to \$62,277 due a decrease in the price of fuel oil (Exh. Hingham/Hull 1-66 Supp.).

2. Positions of the Parties

a. Town Intervenors

In addition to their arguments above concerning the applicability of the WTP Surcharge to Linden Ponds, the Town Intervenors contend that the Hingham WTP surcharge is inconsistent with cost allocation principles (Exh. HH-DFR at 41). The Town Intervenors argue that the WTP Surcharge's reliance on meter size as a proxy for demand is inaccurate and fails to take into account that many of the processes and subprocesses at the Hingham WTP are designed for average load conditions (id.). Taking into consideration the magnitude of the Hingham WTP surcharge in relation to a customer's total bill, the Town Intervenors contend that a shift away from fixed charge recovery to volumetric recovery is consistent with key rate design criteria and would allow customers some measure of control over their bills (id. at 41-42). The Town Intervenors request that the Department direct Aquarion to revise the Hingham WTP surcharge rate design such that two-thirds of the surcharge is recovered through volumetric rates (id.; Towns Joint Brief at 73). The remaining one-third would continue to be recovered through a fixed component (Towns Joint Brief at 73).

b. Company

Aquarion contends that the Town Intervenors' proposal is merely an attempt to relitigate the Department's decision in D.P.U. 95-118, which was upheld by the Supreme Judicial Court (Company Brief at 38-39, citing Town of Hingham v. Department of Telecommunications and Energy, 433 Mass. 198 (2001)). The Company maintains that the Department does not, as a general policy, favor the relitigation of previously-decided issues and only does so in the event of an extraordinary, significant, or material change in circumstances (Company Brief at 39). The Company contends that the Town Intervenors have failed to demonstrate any significant change in circumstances that would warrant a restructuring of the Hingham WTP surcharge (id.).

Furthermore, Aquarion argues that the current structure of the Hingham WTP surcharge, with one-third of the Facility Lease component and all of the Facility O&M costs billed at a volumetric rate, does in effect result in Hingham WTP surcharge revenues being collected on the basis of 50 percent through fixed charges and 50 percent on volumetric charges (id. at 40). Aquarion also contends that the trend towards declining base load consumption, in conjunction with the addition of any conservation impacts resulting from the rates proposed in this case, will put the Company at an increased risk that it will fail to meet its revenue requirement (id.). The Company argues that adjusting the Hingham WTP surcharge towards greater recovery through volumetric rates will only serve to increase Aquarion's risk (id.).

3. Analysis and Findings

a. WTP Expenses

Aquarion has proposed increases to test year amounts for the Hingham WTP lease and operating expenses (Exhs. 2, Schs. 1, 2; see also Hingham/Hull 1-66 Supp., Att. B). A proposed change to test year cost of service requires a finding that the adjustment constitutes a known and measurable change. D.T.E. 05-27, at 129; D.T.E. 02-24/25, at 76; D.P.U. 84-32, at 17-18.

The Department has reviewed Aquarion's calculations and supporting data related to its proposed WTP lease expense. Based on this review, the Department finds that the proposed expense is a known and measurable change to test year cost of service and that the Company had properly calculated the proposed level of WTP lease expense (Exh. 3, Sch. 2, at 2). Additionally, the Department finds that the Company's updated property tax and heating fuel expenses associated with the Hingham WTP represent known and measurable changes to test year cost of service (Exh. Hingham/Hull 1-66 Supp., Att. B). Accordingly, the Department will include these expenses as recoverable costs in Aquarion's WTP Surcharge.

The WTP Surcharge includes a cash working capital component associated with the lease and operating expenses, along with an income tax component associated with the increase in rate base resulting from the additional cash working capital allowance (Exh. 3, Sch. 1, at 1, Sch. 2, at 1). Consistent with the Department's revisions to the Company's cash working capital allowance and income tax expense for Aquarion's non-Hingham WTP expenses described above in Sections II.J.2. and IV.K.2., respectively, the Department has incorporated

a 45/365-day cash working capital allowance and a federal income tax rate of 34 percent into the calculation of the WTP Surcharge. These adjustments are provided in Schedule 10, attached.

Based on the foregoing analysis, the Department finds that the recoverable level of WTP lease expense is \$3,355,796, with a recoverable O&M expense of \$662,810 and a recoverable property tax expense of \$460,991. See Schedule 10, attached.

b. WTP Surcharge Design

The Town Intervenors propose that the WTP Surcharge be modified so that two-thirds of the total surcharge is recovered through a volumetric rate. According to the Town Intervenors, this reallocation would be more consistent with cost causation than the present surcharge structure and would provide customers with additional ability to control their water bills by reducing their consumption (Exh. HH-DFR at 41-42). Aquarion contends that the Town Intervenors have failed to offer any new evidence warranting re-examination of the WTP Surcharge design and argues that customers have ample opportunity to save on their water bills without modifying the surcharge rate design.

Water companies tend to have relatively large fixed costs in relation to their total cost of service and these costs must be met even if an individual customer's total consumption is relatively small. Salisbury Water Supply Company, D.P.U. 84-90, at 9 (1987). Nevertheless, the Department recognizes that many of the processes and subprocesses in a water treatment plant are designed to meet average demand conditions and that there is an imperfect correlation between meter sizes and customer demand (see Exh. HH-DFR at 41). It is precisely for this

reason that the Department has previously rejected the recovery of WTP lease expense through exclusively fixed charges. D.P.U. 95-118, at 174-175. Instead, the Department directed the Company to recover the WTP lease expense through a combination of the facilities charge and the consumption charge, keeping in mind our rate design goals, with particular emphasis on fairness, continuity, and revenue stability. Id. at 175.

The Department has evaluated the bill impacts associated with allocating various portions of the WTP Surcharge between the facilities charge and the consumption charge, including the allocation proposed by the Town Intervenors. The Town Intervenors' proposed WTP Surcharge rate design shifts an excessive level of Hingham WTP costs onto higher-volume users. Therefore, the Department finds that the Town Intervenors' proposed rate design for the WTP Surcharge violates our goals of continuity and fairness.

The current allocation of WTP lease expense between the facilities charge and the consumption charge, combined with the recovery of other WTP operating costs through the volumetric-based O&M charge, results in recovery of approximately 50 percent of WTP-related expenses through a fixed component and the remainder through the volumetric components (RR-DPU-11). The Department finds that this combination of fixed and variable recovery strikes a reasonable balance of the goals of rate continuity, fairness, and revenue stability.

To determine the appropriate level of WTP lease payments to include in the fixed and variable portions of the WTP surcharge, the Department has evaluated the WTP surcharge in view of our rate design goals, with particular concern to fairness, continuity, and revenue

stability. Based on our rate design goals and an analysis of the resulting bill impacts, the Department finds that the WTP surcharge should maintain a per-equivalent meter facilities charge that recovers 66.67 percent of the WTP lease payments, with the remaining 33.33 percent of WTP lease payments recovered through the consumption charge.

Aquarion is directed to calculate the facility charge using the same method used by the Company to design the base customer charges, as contained in Exhibit AQR-JFG-1, Schedule 12 of the Company's allocated COSS, substituting the customer meter data provided in that exhibit with customer meter data for Service Area A. The remaining portion of the WTP lease expense will be recovered through the consumption charge. The other operating expenses associated with the WTP will be recovered through the volumetric O&M charge. The Company is directed to submit the necessary supporting calculations for the WTP Surcharge as part of its compliance filing in this case.

J. Low-Income Assistance Program

1. Introduction

The Company proposed to institute a customer assistance program on a pilot basis to assist customers in financial need (Exh. AQR-LLB at 35). The costs of this pilot program will be borne by shareholders (id.). Eligible customers will receive a one-time voucher for \$50 (id. at 36). Aquarion will partner with a local non-profit community-based organization, Wellspring of Hull, to help administer the program (id.; Tr. 4, at 590). The Company has allocated \$20,000 for the pilot program for distribution to eligible customers during 2009 (Exh. AQR-LLB at 36).

2. Positions of the Parties

a. Oxford

Oxford supports Aquarion's effort to offer a discount to low-income customers but states that the proposed discount will provide a minimal monthly discount to eligible customers (Oxford Brief at 39; Oxford Reply Brief at 18-19). Oxford recommends that the Company provide a monthly percentage discount rather than the one-time discount as proposed (Oxford Brief at 39; Oxford Reply Brief at 18).

b. Company

The Company requests that the Department approve the low-income assistance program as proposed (Company Reply Brief at 10). Aquarion states that the low-income assistance program is voluntary on the part of the Company and will be funded by shareholders (id. at 9-10). Aquarion argues that if the Department were to increase the funds dedicated to the low-income assistance program, then the Department would have to allow for the recovery of those additional monies through rates (id. at 10).

3. Analysis and Findings

While the Department has considerable experience with discounted rates in the gas and electric industries, there is very little corresponding experience with discounted rates in the water industry. In this instance, the Company is proposing to offer a voucher to qualifying low-income customers rather than a discounted rate.

The Department has supported discounted rates for low-income customers. Our commitment to this concept was recently reiterated in Low-Income Consumer Protection and

Assistance, D.P.U. 08-4 (2008). The Department commends Aquarion for proposing a pilot low-income assistance program in its service territory.

The Town Intervenors would prefer that the Company offer a percentage discount to eligible customers rather than the proposed voucher. The Department has found that a particular percentage discount from the customer charge and commodity charge of the corresponding non-subsidized rates provide a reasonable means of establishing a subsidized rate. D.P.U. 92-101, at 66. The revenue shortfall associated with the discount is recovered from the utility's remaining customers by allocating the shortfall to the respective rate classes using a rate base allocator. Essex County Gas Company, D.P.U. 91-107/110/111, at 19 (1991); The Berkshire Gas Company, D.P.U. 90-121, at 218 (1990); D.P.U. 86-27-A at 49.

Because the Company has proposed a pilot low-income assistance program that is funded entirely by shareholders, the Department will not direct Aquarion to modify its proposal. The Company should provide a report on the administration and results of its pilot program to the Department no later than January 31, 2010.

K. System Development Charge

1. Introduction

The Company proposes to implement a system development charge ("SDC") to offset the cost of developing new sources of supply, related treatment, and system improvements to accommodate new customers (Exh. AQR-LLB at 12). The proposed SDC would be charged to only new customers (id. at 12-13).

Aquarion has divided its proposed SDC into two components (Exhs. AQR-LMD at 35; AQR-LMD-1). The first component is intended to recover the costs of developing additional source and treatment projects (Exh. AQR-LMD at 35). The Company estimates that the cost of new source and treatment projects for the three systems will be approximately \$6 million (Exhs. AQR-LLB at 13; AQR-LMD-1). Aquarion further estimates that this investment will produce an increase of 600,000 GPD in average daily capacity, which translates into a new capacity unit factor of \$10.00 (\$6 million divided by 600,000 GPD) (Exh. AQR-LMD-1). This new capacity factor, multiplied by the equivalent residential unit capacity of 175 gallons (64,000 gallons per year for an average residential customer divided by 365 days), produces a cost of developing additional water supplies component of \$1,750 (id.; Exh. DPU 1-15).

The second component is intended to recover the costs of upsizing transmission and distribution mains to address flow constraints (Exhs. AQR-LMD at 35; AQR-LMD-1). The Company divided its total feet of main, 1,490,062, by the number of customers, 18,514, producing an average length of main per customer of 80 feet (Exh. AQR-LMD-1). Next, the Company divided the 80 feet by two to account for the fact that customers are located on both sides of the mains, which resulted in a factor of 40 feet (id.). The Company then determined the price differential associated with upsizing its mains from eight inches to twelve inches (id.; Exh. DPU 1-16). Based on an average cost of \$150 per foot for twelve-inch mains and \$130 per foot for eight-inch mains, the Company multiplied the differential of \$20 per foot by the adjusted number of feet per customer of 40, resulting in a cost of upsizing main component of \$800 (Exh. AQR-LMD-1).

The sum of these two components is \$2,550, representing the proposed SDC for a 5/8-inch meter customer (Exhs. AQR-LLB at 14; AQR-LMD-1). The Company increased the SDC for larger meter sizes using standard American Water Works Association ratios, which produced a range of \$2,550 for a 5/8-inch meter customer to \$63,750 for a four-inch meter customer (Exh. AQR-LLB at 14). According to the Company, the SDC for customers with a meter greater than four inches will be determined on a case-by-case basis because they will not be installed frequently and because these customers would require additional engineering analysis of their demands (Exh. DPU 1-17).

2. Positions of the Parties

a. Oxford

Oxford is concerned that the funds received through the SDC will be spent without regard for the source of the funds (Oxford Brief at 32-33). Specifically, Oxford is concerned that one town may contribute to the SDC funds but these funds could be used to make capital expenditures in another town (*id.* at 33-34; Oxford Reply Brief at 15). Oxford argues that this concern is particularly evident when comparing the recent source of supply needs of Millbury and Oxford (Oxford Reply Brief at 15-16). Oxford avers that Aquarion has spent nearly 15 times as much in Millbury than in Oxford, which suggests that a uniform SDC is unfair to customers located in Oxford (*id.* at 16).

Oxford also argues that the SDC charge is set very high (Oxford Brief at 33). Oxford contends that the magnitude of the SDC could prohibit new customers from locating in Aquarion's service territory (*id.*). Oxford recommends that the Department modify Aquarion's

proposal by ensuring that SDC revenues that are collected from one town be earmarked for use in that town (id. at 36). Alternatively, Oxford proposes that the Department modify Aquarion's proposal by designing an individual SDC for each town served by Aquarion that would be based on the source of supply needs of each town (id.; Oxford Reply Brief at 16-17).

b. Company

Aquarion argues that the SDC is beneficial because it could mitigate future rate increases based on contributed plant (Company Brief at 42). The Company contends that pooling these funds across the entire system will allow for economies of scale and allow the Company to focus investments in high priority areas (id. at 43). In addition, Aquarion states that pooling these funds will ensure that the money is used effectively and is consistent with single-tariff pricing (id.).

3. Analysis and Findings

Water companies often require new customers to contribute towards the cost of providing the facilities necessary to meet the demand of additional customers. The purpose of such a contribution is to prevent existing customers from subsidizing the cost of adding new customers and the associated additional plant costs arising from the demand of new customers.

D.P.U. 89-67, at 22.

In the instant proceeding, Aquarion proposes an SDC that is based upon the incremental costs of adding new customers. As described above, this charge is made up of two components, one to recover the costs of future source and treatment projects and the other to

recover the costs of upsizing transmission and distribution mains (Exh. AQR-LMD-1). These two components are then added together to derive the proposed SDC (id.).

The Company relies on the Tata & Howard Study for its estimate of the future costs of new source and treatment projects (Exhs. AQR-LLB at 13; DPU 1-10). This estimate includes costs relating to engineering, permitting, legal fees, exploration, and construction (Exh. AQR-LMD-1). The Department is concerned that such costs are difficult to estimate with any degree of certainty. Accordingly, the final costs of a project may differ significantly from the estimate. The Department will not incorporate such a significant level of uncertainty in a rate that will be charged to new customers. See, e.g., The Berkshire Gas Company, D.T.E. 03-89, at 20 (2004); D.P.U. 18264, at 2. Consequently, the Department will not allow the component of the SDC that is designed to recover the costs associated with new source and treatment projects.

With respect to the component of the SDC that is designed to recover the costs of upsizing transmission and distribution mains, Aquarion assumes that all of its mains will need to be upsized to at least twelve inches (Exh. AQR-LMD-1). The Company, however, already has in service 292,256 feet of mains that are twelve inches or greater (Exh. DPU 1-14). It is unlikely that these mains will need to be upsized as a result of the addition of the new customers. Consequently, the Department finds that Aquarion has overstated the cost of upsizing its mains in the calculation of this component of the SDC. Substituting the 1,197,806 feet of main of less than twelve inches in diameter for the Company's proposed 1,490,062 feet used in Aquarion's calculations, the Department finds that the appropriate cost of upsizing

transmission and distribution mains is \$640, instead of the proposed \$800. Therefore, the Department finds that the appropriate SDC charge is \$640 for a 5/8-inch meter customer. The Department accepts Aquarion's proposal to base the SDC for larger customers on the American Water Works Association ratios, as well as to determine the SDC for customers requiring a meter larger than four inches on a case-by-case basis.

This revised SDC should alleviate concerns raised by the Town Intervenors. Specifically, with an SDC that is designed only to recover the costs of main upsizing, the mains that will need to be upsized will span the entire service territory. Consequently, there will be minimal subsidization of the customers in one service territory by the customers in another service territory. In addition, the revised SDC will be much lower than that proposed by the Company and, therefore, should not deter new customers from locating in Aquarion's service territory.

VII. QUALITY OF SERVICE

A. Customer Service

1. Introduction

The Company identifies several steps that it has taken since its acquisition by Aquarion Company in 2002 in order to improve customer service (Exh. AQR-LLB at 19-21). Aquarion has opened a call center to make it easier for customers to have concerns addressed or to schedule a service appointment (*id.* at 19). In addition, the Company has implemented the ability to track statistics related to customer calls, such as wait time to speak with a customer service representative and the duration of calls (*id.*). The Company also has instituted a formal

“escalation procedure” to address issues or concerns that cannot be adequately addressed by call center staff, including the hiring of a customer advocate, who is designated as the final authority on escalated calls (id. at 19-20).

In addition, the Company has adopted a policy of making leak adjustments for quarterly bill payers when requested by the customer (id. at 20). This policy allows customers to request a one-time leak adjustment if the customer was not aware of a leak until the most recent meter reading was taken (id. at 20-21). To qualify for this adjustment, a customer’s bill must be three times over the average level of consumption for the same billing periods (id. at 21).

The Company also has implemented a series of programs designed to improve customer service (id. at 23-25). These programs range from having Aquarion employees “walk in the shoes” of call center personnel to help them understand what kinds of issues are raised by customers to programs that recognize outstanding customer service (id. at 23-24).

2. Positions of the Parties

The Town Intervenors contend that the Company’s customer service is inadequate and reflects a lack of prudent management (Towns Joint Brief at 64). Specifically, the Town Intervenors assert that its residents have raised numerous valid concerns regarding customer service and water quality (id.). Consequently, the Town Intervenors recommend that the Department direct the Company to improve its response to customer complaints (id. at 65).¹⁰²

¹⁰² The Town Intervenors, however, did not provide specific examples of the steps the Department should require Aquarion to undertake.

The Town Intervenors also argue that the Department should consider the Company's poor customer service when determining the overall rate relief requested by Aquarion (id.). No other party commented on this matter.

3. Analysis and Findings

The Department has previously placed the Company on notice that continued deficiencies in its customer service would be cause to reconsider the ROE granted to the Company. D.P.U. 95-118, at 184. The Department is concerned about the number of customer complaints that were heard at the public hearings and received through written comments from customers of Aquarion. The Company, however, has taken steps to address many of the concerns raised by the customers. The Company has rated quite high in recent customer satisfaction surveys (Exhs. AQR-LLB at 26-27; AQR-LLB-1 at 6-8; AQR-LLB-2 at 6-8). The Company has also hired a customer advocate to represent the customer in the event that a customer's complaint cannot be resolved through the standard channels (Exh. AQR-LLB at 19-20). The Department finds that Aquarion's efforts represent reasonable measures to improve customer service. The Department will continue to monitor Aquarion's customer service and fully expects that the recent gains will continue in the future. If the Company's initiatives do not result in continued improvements, the Department will consider other measures, including the provisions of G.L. c. 164, § 93.

B. Unaccounted-For Water

1. Introduction

Unaccounted-for water is defined as the residual resulting from the total amount of water supplied to a distribution system as measured by master meters, minus the sum of all amounts of water measured by consumption meters in the distribution system, and minus confidently estimated and documented amounts used for certain necessary purposes as specified by DEP (Exhs. OXF-DFR-2, at 10; OXF 2-9, Att. A at 10). Examples of unaccounted-for water include: (1) leakage; (2) meter inaccuracies; (3) errors in estimation of stopped meters; (4) unauthorized hydrant openings; (5) illegal connections; (6) data processing errors; and (7) undocumented fire fighting uses (Exhs. OXF-DFR-2, at 10; OXF 2-9, Att. A at 10). According to the Water Conservation Standards, the industry standard for unaccounted-for water ranges between ten and 15 percent, depending upon the particular reference source (Exh. OXF 2-9, Att. A at 10). The Water Conservation Standards recommend a goal of ten percent or less for unaccounted-for water (id., Att. A at 11).

2. Positions of the Parties

a. Oxford

Oxford argues that the Company's system in Oxford had an unacceptably high percentage of unaccounted-for water during 2007 (Oxford Brief at 36-37, citing Exh. OXF 2-11, Att.). Oxford notes that although the unaccounted-for water in Oxford appears to have declined to approximately 20 percent, this information is based on less than a full year of experience, has not been certified in the Water Management Act Annual Report,

and is still considerably above the 15 percent industry standard (Oxford Brief at 37; Oxford Reply Brief at 17). Oxford maintains that this level of unaccounted-for water, and the attendant operating expenses related to treatment and purification, is evidence of imprudent actions by the Company (Oxford Brief at 37; Oxford Reply Brief at 17).

Despite its high unaccounted-for water ratio, Oxford argues that Aquarion had only spent \$13,400 for an annual leak detection contractor (Oxford Brief at 37, citing Exh. OXF 3-2; Oxford Reply Brief at 17). Oxford maintains that both the frequency and level of leak detection expenditures by the Company are inadequate (Oxford Brief at 37-38, citing Exh. OXF 4-3). Oxford suggests that leak detection performed on a monthly basis may be more appropriate (Oxford Brief at 37-38).

At a minimum, Oxford proposes that the Department disallow all direct or indirect costs incurred by Aquarion in connection with unaccounted-for water in excess of 15 percent (id. at 38). Going further, Oxford requests that the Department consider requiring that unaccounted-for water costs incurred in excess of a lower ratio, such as the 10 percent goal adopted by DEP, be absorbed by the Company (id.; Oxford Reply Brief at 18). Additionally, Oxford requests that the Department consider the Company's high level of unaccounted-for water in determining the appropriate rate of return (Oxford Brief at 38-39; Oxford Reply Brief at 18).

b. Company

Aquarion argues that the appropriate means to evaluate its leak detection efforts is not the amount budgeted for leak detection but rather its actual performance (Company Reply Brief

at 6-7). Aquarion argues that it has achieved substantial reductions in unaccounted-for water, reducing it from 17.2 percent in its previous rate case to below 15 percent here (Company Brief at 25, citing Exh. AQR-HH 1-9; Tr. 1, at 50; Company Reply Brief at 7). The Company contends that it has achieved this reduction through annual calibration of master meters, expanding its large meter testing program, annual leak detection surveys, repairing leaks within 14 days after their detection, and tracking unmetered water uses (Company Brief at 25-26). Furthermore, Aquarion maintains that it has taken aggressive measures to reduce unaccounted-for water within its specific systems, such as reducing unaccounted-for water in Oxford from 28.65 percent in 2007 to 19.7 percent as of October 31, 2008 (id. at 26, citing Exh. OXF 4-3).

The Company argues that Oxford's own witness agreed that 15 percent unaccounted-for water is the industry norm (Company Brief at 25, citing Exh. HH-DFR at 22). Aquarion contends that if the Department intends to adopt a stricter standard for unaccounted-for water, it should not announce it for the first time in a rate case but rather put utilities on notice that the new standard will be applied prospectively (Company Reply Brief at 6).

The Company contends that it would be inappropriate to penalize Aquarion in its ROE because of the level of unaccounted-for water (Company Brief at 26). Aquarion argues that because rates are based on overall expenses, it would be inappropriate to dissect the Company on a system-by-system basis, ignoring areas where performance is excellent and focusing only on those areas where performance is less so (id.; Company Reply Brief at 6). Moreover, the Company maintains that it would be highly punitive for the Department to penalize the

Company in light of Aquarion's improvement in this area (Company Brief at 26). The Company contends that to reduce its earnings now would send the wrong signal in light of its demonstrated commitment towards reducing unaccounted-for water (id.).

3. Analysis and Findings

The Department has not established a target unaccounted-for water ratio. While a 15 percent factor is generally recognized as a reasonable level of unaccounted-for water in the water industry, there has been a recent trend towards reducing this factor below 15 percent (Tr. 6, at 973-974). The Water Conservation Standards contain an unaccounted-for water goal of ten percent (Exh. OXF 2-9, Att. at 11). As noted in Section VI.E.1., above, the Water Conservation Standards are intended to set statewide goals on water conservation and efficient use of water and provide policy guidance in the area of conservation measures (id., Att. at 2). While the Water Conservation Standards provide useful policy guidance, the record in this proceeding is not sufficient to allow us to adopt a target unaccounted-for water standard at this time. Instead, we will consider the issue of unaccounted-for water on an individual company basis.

To reduce its level of unaccounted-for water, Aquarion has adopted the practices of yearly calibration of master meters, expanding its large meter testing program, biannual leak detection surveys, repairing leaks within 14 days after their detection, and tracking unmetered water uses (Exhs. AQR-RLR at 4-5; OXF 1-31; OXF 4-3; Tr. 4, at 578-580). We acknowledge Aquarion's efforts to reduce unaccounted-for water. Nevertheless, we are concerned that a biannual leak detection survey may be insufficient to control unaccounted-for

water. While we are not convinced that monthly leak detection surveys would be cost-effective as suggested by Oxford, more frequent leak detection surveys may be necessary to further reduce the Company's unaccounted-for water. Hence, the Department directs Aquarion to assess the merits of more frequent leak detection surveys and report to the Department by June 1, 2009, as to whether more frequent leak detection surveys would be appropriate. As part of this report, the Company is directed to evaluate the major causes of unaccounted-for water and describe what specific measures Aquarion is taking, or intends to take, to address these causes. In the interim, we expect the Company to take all steps necessary to aggressively reduce the amount of unaccounted-for water both on a system-wide basis and a service area basis.

C. Hull Infrastructure Replacement and Renewals

1. Introduction

Since Aquarion's previous rate case, the Company has invested a total of \$14,250,536 in sources of supply, pumping and treatment facilities, storage, meters, hydrants, other transmission and distribution plant, and general plant (RR-Hull-3).¹⁰³ Of this amount, \$367,960, or 2.58 percent, was installed in Hull (id.).

2. Positions of the Parties

The Town Intervenors contend that Aquarion has spent a disproportionately smaller amount on capital improvements in Hull versus other communities in the service territory

¹⁰³ This total excludes both service lines and plant financed through contributions in aid of construction (Exh. Hingham/Hull 1-34; RR-Hull-3).

(Towns Joint Brief at 62). The Town Intervenors maintain that although Hull has the second largest customer base in Service Area A and, despite 78 percent of Hull's mains being at least 50 years old, the Company has spent relatively little on capital improvements in Hull since Aquarion's previous rate case (id. citing RR-Hull-3).¹⁰⁴

The Town Intervenors suggest that the age of Hull's system and lack of capital improvements have resulted in a large number of main breaks in Hull over this period (Towns Joint Brief at 63, citing RR-Hull-6). According to the Town Intervenors, the Company's announced intent to begin a several-year capital improvement plan in Hull is driven by the filing of this rate case and a desire to justify a rate increase rather than to improve service in Hull (Towns Joint Brief at 63). The Town Intervenors maintain that the lack of proper capital improvements in Hull demonstrate a lack of prudent actions in Aquarion's stewardship (id.).

The Town Intervenors urge the Department to investigate the Company's planning and prioritization of its replacement and renewal projects (id. at 63-64). In the alternative, the Town Intervenors request that the Department act to ensure that Aquarion's current capital improvement plans for Hull are implemented (id.). The Company did not comment on brief about this issue

3. Analysis and Findings

The Department has examined the evidence in this proceeding, including all of the capital investments made by Aquarion in each town since the last rate case (RR-Hull-3).

¹⁰⁴ The Town Intervenors note that four percent of the system in Hull is between 75 and 100 years old and that 20 percent of the Hull system is greater than 100 years old (Towns Joint Brief at 63, citing RR-Hull-4).

Because there are no sources of supply or treatment plants in Hull, the total investment by community provides an incomplete picture of the Company's replacements and renewals in that community. Nevertheless, the information indicates that there has been relatively little main replacement and renewal in Hull, with most of the main additions consisting of developer-paid contributions in aid of construction intended to serve new customers (Exhs. Hingham/Hull 1-34; OXF 3-17, Att. A; RR-Hull-3). Given the age of the Company's mains in Hull, this lack of main replacement is of concern to the Department.

Aquarion's current five-year capital budget provides for a main replacement program in Hull at an estimated cost of \$1,028,440 (Exhs. DPU 2-5, Att. A; OXF 2-19, Att.). The Company is directed to commence the capital improvement program and accord it necessary priority, taking into consideration the needs in Hull as well as other capital projects elsewhere in the Company's service territory. As part of this directive, the Company is required to consult with Hull officials regarding the specific projects and the timing of such projects. The Department will consider the level of capital improvement in Hull during the next rate case.

VIII. WATER BALANCE PLAN

A. Introduction

The Company's current Water Conservation Plan ("WCP") was first implemented in 1999 (Exh. Hingham/Hull 3-29). The WCP applies to all new or expanded water usages greater than 100,000 gallons of water per year in Service Area A, with the exception of any residential subdivision or residential housing project consisting solely of a single dwelling unit (id.). Under the WCP, any WCP-obligated applicant or customer must offset their new or

additional use through either measures intended to reduce their own consumption or through retrofitting buildings with water-saving appliances (Tr. 5, at 865-866). According to the Company, the WCP has allowed Aquarion to avoid increasing its system demand in Service Area A by 0.326 MGD (Exh. Hingham/Hull 3-29).

The Company proposes two modifications to the WCP. First, Aquarion proposes to make the WCP applicable to Service Area B (Exh. AQR-LLB at 16). Second, the Company proposes to change the name of the WCP to “Water Balance Plan” (id.).

B. Positions of the Parties

The Town Intervenors argue that the benefits of the WCP are greatly reduced by the fact that the projects permitted by the Company are not restricted to those that benefit the public as a whole (Towns Joint Brief at 65). The Town Intervenors cite to a number of private projects that WCP-obligated customers undertook, e.g., paying for water audits for 26 private parties, including condominiums (id. at 65-66, citing RR-Hull-8). The Town Intervenors ask that the Department direct Aquarion to redesign the WCP so that WCP-obligated customers are required to undertake improvements to public properties (e.g., schools) that benefit the public as a whole rather than improvements to businesses and condominiums that benefit private parties (Towns Joint Brief at 66). If private projects continue to be permitted, the Town Intervenors request that the WCP be redesigned so that public improvements are favored over private improvements (id.). The Company did not address the Town Intervenors’ argument on brief.

C. Analysis and Findings

Aquarion's WCP is intended to apply to all new applicants or existing customers seeking to increase their demand by more than 100,000 GPD, whether for public or private use (Exh. Hingham/Hull 3-29). Other than the fact that most of the beneficiaries of the WCP since the program's inception in 1999 have been private ventures (e.g., either residential or commercial establishments), the Town Intervenors have failed to show that the Company's administration of the WCP has discriminated against public projects or that the inclusion of private projects prevents public projects from taking part in the WCP.¹⁰⁵ Moreover, there is no evidence that the public interest is not equally served by the reduction in system demand from a WCP-obligated customer undertaking improvements on private property; a reduction in system demand of 0.1 MGD from improving a residential or commercial property creates the same benefit to customers as it would if that location was public in nature. Therefore, the Department rejects the Town Intervenors' proposal to restrict or curtail the eligibility of WCP-obligated customers to fund improvements on private properties. Nonetheless, the Department directs Aquarion to review the WCP to ensure that public buildings are afforded the same opportunity to benefit from the WCP as would private customers. We anticipate that the Company and Towns will cooperate in this endeavor.

The Department finds that including Service Area B in the WCP would ensure consistent treatment of new and existing customers, regardless of location. Therefore, the

¹⁰⁵ The WCP has benefitted public projects, such as the retrofitting of water-saving appliances at various Hull schools (Exh. Hingham/Hull 3-29).

Department approves of Aquarion's proposal to expand the WCP to serve Service Area B. Concerning Aquarion's request to change the name of the WCP to the Water Balance Plan, the Department finds that this name change is appropriate as it more accurately describes the program and will avoid customer confusion with the Company's drought restriction plan. Therefore, the Department approves of the proposed name change. As part of the compliance filing in this proceeding, Aquarion is directed to submit a revised set of terms and conditions incorporating the necessary changes.

IX. LEAST-COST INTEGRATED RESOURCE PLANNING

A. Introduction

Since the 1980s, water utilities have been challenged by rapid regulatory changes, environmental constraints, changes in consumption, and economic volatility (Exh. HH-DFR at 6). In the face of these changes and the increasing difficulty and cost of traditional supply-based solutions to satisfy growth in demand, water utilities have increasingly relied on demand-based solutions. These solutions include DSM, which is focused on controlling not only the amount of a commodity that is consumed, but how and when it is consumed (id.). Least-cost integrated resource planning ("LCIRP") is a method whereby DSM measures can be incorporated into the water utility planning process, with the goal of minimizing total revenue requirements to the utility and, consequently, reducing costs for customers (id. at 5). Under LCIRP, DSM measures are incorporated into the utility's planning process on an equal footing with traditional supply planning (id. at 5-6).

B. Positions of the Parties

1. Town Intervenors

The Town Intervenors argue that the Company should implement an LCIRP approach (Towns Joint Brief at 10). According to the Town Intervenors, LCIRP has been in use by regulated gas and electric companies in Massachusetts since the early 1980s and is increasingly relied upon by water companies (Exh. HH-DFR at 6-7). As examples of the emphasis on LCIRP, the Town Intervenors cite the recently adopted Water Conservation Standards, which are intended to encourage water conservation and DSM measures (Towns Joint Brief at 11). The Town Intervenors contend that DEP has strongly encouraged water systems to use these standards and has, in some cases, required their implementation (id.; see also Exh. HH-DFR at 7). The Town Intervenors also note that the Department's recent decision in D.P.U. 07-50-A, encourages a new approach to ratemaking, where gas and electric utilities will be allowed to increase their revenues each year if demand management programs reduce sales such that revenue declines below a predetermined level (Towns Joint Brief at 11, citing Exh. HH-DFR at 8). The Town Intervenors state that these regulatory initiatives are likely to lead to a greater use of LCIRP (Towns Joint Brief at 11; see also Exh. HH-DFR at 8-9).

Although Aquarion has implemented a water balancing plan (as discussed above) and has proposed the implementation of increasing block rates, the Town Intervenors state that the Company has yet to adopt a comprehensive LCIRP approach (Exh. HH-DFR at 10). The Town Intervenors state that in order to adopt a comprehensive LCIRP approach, the Company must now begin to develop the means to tie its various conservation measures into its analysis

of future need, so that estimates of future reductions in demand may be considered in the planning process (Tr. 6, at 1154). In the view of the Town Intervenors, Department oversight of Aquarion's LCIRP process could be similar to the Department's procedures used to evaluate gas and electric company programs, with modifications as necessary (id. at 1155).

The Town Intervenors request that the Department direct Aquarion to postpone any current plans to expand supply capacity until the effects of this rate case are known and can be forecast on a forward-looking basis (Exh. HH-DFR at 15). These effects include the consequences of an increasing block rate, system-wide adoption of water banking, and implementation of all conservation programs (id.). In the interim, the Town Intervenors propose that the Company accelerate all distribution system renewal and replacement programs, with particular emphasis on those measures intended to reduce unaccounted-for water, particularly in Hull and Oxford (id. at 15-16).

2. Company

Aquarion argues that the Town Intervenors essentially assert that the Company should focus solely on DSM to the exclusion of other supply planning initiatives (Company Brief at 8-9). The Company maintains that relying solely on DSM is not a prudent utility practice because the permitting process for new sources of supply is a multi-year process that requires pursuit of the necessary permits well in advance of a projected increase in demand (id. at 9, 11). Moreover, Aquarion argues that because it has an obligation to ensure a sufficient supply of water to its customers, it must engage in supply-side planning well in advance of when that anticipated increase in demand will occur (id. at 11). The Company

contends that it must simultaneously engage in DSM and planning for reasonably projected supply needs (id. at 9). The Company also contends that the Town Intervenors' expert witness was not familiar with either the Massachusetts water supply approval process or the requirements of the Interbasin Transfer Act and, therefore, his criticism of Aquarion's supply planning process should not be given any weight (id. citing Tr. 6, at 987).

C. Analysis and Findings

The Department supports all cost-effective efforts on the part of the Company that result in more efficient use of water or forestall the need for additional sources of supply. The Department also recognizes, however, that the procurement of new supply sources can be a multi-year process that cannot simply be abandoned or put on hold while demand-side options are explored. The theory of LCIRP is that the process of reducing demand through demand-side initiatives and the process of seeking out new supply sources work in concert to provide affordable water to customers (Exh. HH-DFR at 5-6). Accordingly, the Department will not direct the Company to postpone the procurement of future supply sources at this time, as suggested by the Town Intervenors.

The Company should pursue all demand-side options that cost less than supply-side alternatives. These options include implementing aggressive measures to reduce unaccounted-for water, continuing Aquarion's water balancing program, and implementing cost-effective DSM programs.¹⁰⁶ Such measures, should be pursued on an on-going basis so

¹⁰⁶ The Department encourages Aquarion to propose cost-effective DSM programs for Department review. Such DSM programs could, for example, provide rebates to
(continued...)

that their impacts will be able to delay the need for new supply options on the Aquarion system in the future. We encourage the Company to consider the experience of other water systems in developing its own LCIRP.

As stated above, the Department also views the implementation of inclining block rates as an important means to encourage conservation by Aquarion's customers. As with other demand-side options, education is a critical component of the implementation of inclining block rates. Aquarion must appropriately inform customers about this new rate structure and how efficiency and conservation measures will play a role in how much customers pay for water.

¹⁰⁶(...continued)

customers that purchase low-flush toilets, low-flow shower heads, or water-saving washing machines.

X. SCHEDULESA. Schedule 1

REVENUE REQUIREMENT CALCULATION				
	Initial	Company	Department	Per
COST OF SERVICE	Filing	Adjustments	Adjustments	Order
Operating and Maintenance Expense	\$5,697,443	\$289,748	(\$261,501)	\$5,725,690
Hingham WTP Lease/O&M Expense	3,953,691	31,299	33,617	4,018,606
Merchandise and Jobbing Revenue	32,314	0	0	32,314
Depreciation/Amortization Expense	1,321,522	(41,185)	(23,890)	1,256,447
Taxes Other Than Income	440,062	814	(9,623)	431,253
Property Taxes - WTP	436,116	24,875	0	460,991
Massachusetts Taxes	156,020	(3,823)	(14,796)	137,401
Federal Taxes	784,632	(19,247)	(94,239)	671,146
Deferred Federal Income Taxes	2,781	13,478	8,629	24,888
Deferred State Franchise Taxes	1,499	2,677	1,437	5,613
Return on Rate Base	2,625,826	(14,678)	(92,950)	2,518,198
Total Cost of Service	\$15,451,905	\$283,959	(\$453,317)	\$15,282,547
OPERATING REVENUES				
Water Revenues	\$12,381,784	\$0	\$1,230	\$12,383,014
Non-Operating Revenue	0	0	0	0
Total Revenues	12,381,784	0	1,230	12,383,014
Revenue Deficiency	\$3,070,121	\$283,959	(\$454,547)	\$2,899,533
As Percentage of Total Revenues	24.80%	2.29%	-1.38%	23.42%
As Percentage of Water Revenues	24.80%	2.29%	-1.38%	23.42%

B. Schedule 2

OPERATING AND MAINTENANCE EXPENSE				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
O&M Per Book	\$4,786,623	\$0	\$0	\$4,786,623
ADJUSTMENTS TO OPERATING EXPENSES				
Salaries and Wages	48,268	10,630	0	58,898
Group Medical/Life/Disability	22,595	0	0	22,595
Post Retirement Healthcare	131,316	(13,761)	(71,040)	46,515
Pension Expense	41,423	15,148	7,362	63,933
Benefits Allocation	(57,474)	0	0	(57,474)
Chemicals Expense	(396)	276,795	0	276,399
Rate Case Expense	83,333	0	(28,733)	54,600
Amort. of Depreciation Study	8,333	0	471	8,804
Amort. of COSS/Rate Design Study	6,667	0	4,157	10,824
Corporate Insurance	49,072	0	0	49,072
Corporate Expenses	(12,953)	0	(86,332)	(99,285)
Shared IT Services	293,928	0	(9,577)	284,351
Shared Customer Services	(94,509)	0	0	(94,509)
Shared Office Costs	(44,639)	0	0	(44,639)
Oxford Water Storage Tank Lease	38,125	0	0	38,125
Amortization of Deferred Expenses	355,139	287	(101,550)	253,876
Customer Billing	(4,417)	0	0	(4,417)
Propane Expense	(7,171)	0	0	(7,171)
Outside Services - Pension and Benefits	11,438	0	0	11,438
Laboratory Testing Fees	4,114	0	0	4,114
Non-recurring Costs	19,241	0	0	19,241
Outside Services - Auditing Expense	6,732	0	0	6,732
Rent Expense	5,596	0	0	5,596
Electric Power Expense	0	0	(811)	(811)
Total Pro Form Adjustments	903,761	289,099	(286,053)	906,807
Uncollectibles Expense	7,059	649	24,552	32,260
Total Adjustments at Proposed Rates	910,820	289,748	(261,501)	939,067
Adjusted Total O&M Expense	\$5,697,443	\$289,748	(\$261,501)	\$5,725,690

C. Schedule 3

DEPRECIATION AND AMORTIZATION EXPENSE				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
Depreciation Expense	\$1,321,522	(\$41,185)	(\$23,890)	\$1,256,447
Amortization Expense	0	0	0	0
Total Expense	\$1,321,522	(\$41,185)	(\$23,890)	\$1,256,447

D. Schedule 4

RATE BASE				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
Plant in Service	\$51,309,415	\$0	\$556,922	\$51,866,337
Depreciation Reserve	10,245,387	0	(3,818)	10,241,569
Net Plant in Service	41,064,028	0	560,740	41,624,768
Post-Test Year Plant Additions	935,437	0	(85,206)	850,231
Post-Test Year Plant Retirements	(8,923)	0	8,923	0
Depreciation Reserve on Retirements	8,923	0	0	8,923
Total Adjustments	935,437	0	(76,283)	859,154
PROFORMA PLANT IN SERVICE	41,999,465	0	484,457	42,483,922
ADDITIONS TO PLANT:				
Materials and Supplies	320,722	0	0	320,722
Cash Working Capital	715,337	36,137	(45,318)	706,156
Total Additions	1,036,059	36,137	(45,318)	1,026,878
DEDUCTIONS FROM PLANT:				
Customer Advances	649,914	0	0	649,914
Contributions in Aid of Construction	6,912,624	0	0	6,912,624
Reserve for Deferred Income Taxes	4,101,112	211,496	0	4,312,608
Pre-1971 ITCs	0	0	0	0
Total Deductions	11,663,650	211,496	0	11,875,146
RATE BASE	31,371,874	(175,359)	439,139	31,635,654
COST OF CAPITAL	8.37%	8.37%	-0.41%	7.96%
RETURN ON RATE BASE	\$2,625,826	(\$14,678)	(\$92,950)	\$2,518,198

E. Schedule 5

COST OF CAPITAL				
Per Company - Initial				
	Principal	Percent	Cost	Rate of Return
Long-Term Debt	\$11,218,897	36.56%	6.18%	2.26%
Short-Term Debt	6,900,000	22.48%	6.22%	1.40%
Common Equity	12,570,841	40.96%	11.50%	4.71%
	\$30,689,738	100.00%		8.37%
Per Company - Revised				
	Principal	Percent	Cost	Rate of Return
Long-Term Debt	\$11,218,897	36.56%	6.18%	2.26%
Short-Term Debt	6,900,000	22.48%	6.22%	1.40%
Common Equity	12,570,841	40.96%	11.50%	4.71%
	\$30,689,738	100.00%		8.37%
Per Order				
	Principal	Percent	Cost	Rate of Return
Long-Term Debt	\$11,218,897	36.56%	6.18%	2.26%
Short-Term Debt	6,900,000	22.48%	6.22%	1.40%
Common Equity	12,570,841	40.96%	10.50%	4.30%
	\$30,689,738	100.00%		7.96%

F. Schedule 6

CASH WORKING CAPITAL ALLOWANCE				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
O&M Expense	\$5,697,443	\$289,748	(\$261,501)	\$5,725,690
Less: Uncollectible Expense	(7,059)	(649)	(24,552)	(32,260)
Add: Merchandising and Jobbing Inc	32,314	0	0	32,314
Net O&M Expense	5,722,698	289,099	(286,053)	5,725,744
	715,337	36,137	(45,318)	706,156
Cash Working Capital	\$715,337	\$36,137	(\$45,318)	\$706,156

G. Schedule 7

TAXES OTHER THAN INCOME TAXES				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
Property Taxes	\$304,185	\$0	(\$9,623)	\$294,562
Payroll Taxes	135,877	814	0	136,691
Other Taxes	0	0	0	0
Total Taxes (NonIncome)	\$440,062	\$814	(\$9,623)	\$431,253

H. Schedule 8

INCOME TAXES				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
Rate Base	\$31,371,874	(\$175,359)	\$439,139	\$31,635,654
Return on Rate Base	2,625,826	(14,678)	(92,950)	2,518,198
Less: Interest Expense	1,148,211	(3,963)	13,617	1,157,865
Net Return on Rate Base	1,477,615	(10,714)	(106,568)	1,360,333
ADD:				
Book Depreciation	1,438,866	(41,185)	(22,112)	1,375,569
Deferred Federal Income Taxes	2,781	13,478	8,629	24,888
Deferred State Franchise Taxes	1,499	2,677	1,437	5,613
Other Timing Differences	21,351	0	0	21,351
Total Additions	1,464,497	(25,030)	(12,046)	1,427,421
DEDUCT:				
Tax Depreciation	1,484,260	0	0	1,484,260
Total Deductions	1,484,260	0	0	1,484,260
Taxable Income Base	1,457,852	(35,744)	(118,614)	1,303,494
Gross Taxable Income	2,398,750	(58,814)	(227,624)	2,112,312
State Franchise Tax	155,919	(3,823)	(14,796)	137,300
Adjustment to Book	101	0	0	101
Total State Franchise Taxes	156,020	(3,823)	(14,796)	137,401
Federal Taxable Income	2,242,731	(54,991)	(212,829)	1,974,911
Federal Income Tax	784,956	(19,247)	(94,239)	671,470
Adjustment to Book	(324)	0	0	(324)
Total Federal Income Taxes	\$784,632	(\$19,247)	(\$94,239)	\$671,146

I. Schedule 9

REVENUES				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
Water Operating Revenues	\$12,275,650	\$0	\$0	\$12,275,650
ADD:				
Unbilled Revenues	101,207	0	0	101,207
Account Reclas sifications	0	0	0	0
Surcharge Credit Adjustm ent	(1,325,290)	0	0	(1,325,290)
Proforma Adjustments	1,265,281	0	0	1,265,281
Bill Analysis Adjustment	11,826	0	0	11,826
Total Adjustments	53,024	0	0	53,024
Adjusted Operating Revenues	12,328,674	0	0	12,328,674
Other Water Revenues	834	0	0	834
ADD:				
Proforma Adjustments	52,135	0	1,230	53,365
Bill Analysis Adjustment	141	0	0	141
Total Adjustments	53,110	0	1,230	54,340
Adjusted Other Revenues	52,276	0	1,230	53,506
Total Operating Revenue	\$12,381,784	\$0	\$1,230	\$12,383,014

J. Schedule 10

TREATMENT PLANT LEASE AND OPERATING EXPENSE				
	Initial	Company	Department	Per
	Filing	Adjustments	Adjustments	Order
Water Treatment Plant Lease Expense	\$3,310,726	\$0	\$0	\$3,310,726
Cash Working Capital Allowance	34,638	0	(463)	34,176
Tax Grossup on Cash Working Capital	12,582	0	(1,688)	10,894
Treatment Plant Lease Expense	3,357,946	0	(2,150)	3,355,796
Property Taxes	436,116	24,875	0	460,991
Chemical Expense	321,150	0	49,362	370,512
Power Expense	140,134	0	0	140,134
Waste Disposal Expense	45,625	0	0	45,625
Heating Expense	80,458	0	(13,793)	66,665
Total WTP Operating Expense	1,023,483	24,875	35,569	1,083,927
Less: Property Tax Expense	436,116	24,875	0	460,991
Operating Expense Subject to CWC	587,367	31,299	35,569	654,235
Cash Working Capital Allowance	6,145	0	277	6,423
Tax Grossup on Cash Working Capital	2,232	0	(79)	2,153
Total Treatment Plant Operating Expense	595,745	31,299	35,767	662,810
Total Treatment Plant Expense	\$3,953,691	\$31,299	\$33,617	\$4,018,606

K. Schedule 11

COST ALLOCATION											
COMPANY PROPOSAL											
RATE CLASS	PRO-FORMA TEST YEAR			Hingham WTP Surcharge Revenue (D)	Bare Revenue at EROR (E)	Total Revenue Increase at EROR (F)	Total Revenue Percent Increase (G)				
	Bare Revenue (A)	Surcharge Revenue (B)	Total Revenue (C)								
Hingham/Hull Service											
Residential R1	\$4,026,411	\$3,522,053	\$7,548,464	\$3,837,436	\$5,481,595	\$1,770,557	23.46%				
Commercial G1	\$387,093	\$406,936	\$794,029	\$444,621	\$551,536	\$202,408	25.45%				
Industrial G3	\$22,271	\$23,600	\$45,871	\$25,750	\$27,930	\$7,709	6.77%				
Public Authority G2	\$114,903	\$26,060	\$240,963	\$137,244	\$51,696	\$47,977	19.91%				
Linden Ponds	\$49,892	\$0	\$49,892	\$0	\$54,887	\$4,995	10.01%				
Private Fire	\$254,771	\$0	\$254,771	\$0	\$306,338	\$51,547	20.23%				
Public Fire	\$464,780	\$0	\$464,780	\$0	\$526,569	\$61,789	13.29%				
	\$5,320,221	\$4,078,649	\$9,398,870	\$4,445,051	\$7,700,501	\$2,146,682	22.84%				
Milbury Service											
Residential R1	\$1,018,168		\$1,018,168		\$1,272,803	\$254,635	24.83%				
Commercial G1	\$60,275		\$60,275		\$230,449	\$170,174	43.78%				
Industrial G3	\$30,297		\$30,297		\$36,038	\$5,641	18.56%				
Jumbo Industrial G4	\$386,483		\$386,483		\$520,178	\$133,695	34.59%				
Public Authority G2	\$37,266		\$37,266		\$48,912	\$11,546	30.90%				
Private Fire	\$73,864		\$73,864		\$87,051	\$13,187	17.85%				
Public Fire	\$146,160		\$146,160		\$164,230	\$18,070	12.36%				
	\$1,852,713		\$1,852,713		\$2,459,661	\$606,948	32.76%				
Oxford Service											
Residential R1	\$753,466		\$753,466		\$1,011,443	\$257,977	34.24%				
Commercial G1	\$156,991		\$156,991		\$225,466	\$68,475	43.62%				
Public Authority G2	\$26,598		\$26,598		\$35,044	\$8,446	31.75%				
Private Fire	\$36,932		\$36,932		\$42,526	\$5,594	17.85%				
Public	\$103,104		\$103,104		\$118,770	\$15,666	15.19%				
	\$1,077,091		\$1,077,091		\$1,434,249	\$357,158	33.16%				
Total Water Sales	\$8,250,025	\$4,078,649	\$12,328,673	\$4,445,051	\$10,994,411	\$3,110,789	25.23%				
Other Water Revenue		\$53,110	\$53,110		\$63,616	\$10,506	0.34%				
Total Operating Revenue	\$8,250,025	\$4,131,759	\$12,381,783	\$4,445,051	\$11,058,027	\$3,121,295	25.57%				
PER DEPARTMENT ORDER											
	Allocation of Hingham WTP Surcharge (H)	Bare Revenue Increase at EROR (I)	Total Revenue Increase at EROR (J)	Total Revenue % Increase at EROR (K)	Total Revenue Increase at EROR % Cap (L)	Revenue to be Reallocated (M)	Year Revenue for Reallocation (N)	Final Revenue Reallocated (O)	Final Revenue Increase (R)	Final Total Revenue Increase (R)	Final Revenue (S)
Hingham/Hull Service											
Residential R1	\$3,894,411	\$1,224,750	\$5,119,161	21.16%	\$2,230,866	\$0	\$0	\$0	\$1,224,750	\$1,597,108	\$5,251,861
Commercial G1	\$450,079	\$23,225	\$473,304	20.95%	\$232,486	\$0	\$0	\$0	\$23,225	\$496,529	\$510,218
Industrial G3	\$26,099	\$6,240	\$32,339	19.01%	\$16,460	\$0	\$27,930	\$533	\$6,774	\$9,272	\$29,445
Public Authority G2	\$69,277	\$33,893	\$103,170	19.59%	\$70,552	\$0	\$0	\$0	\$33,893	\$47,211	\$148,796
Linden Ponds	\$0	\$2,263	\$2,263	24.58%	\$14,608	\$0	\$54,887	\$1,048	\$3,311	\$8,311	\$63,203
Private Fire	\$0	\$68,441	\$68,441	26.86%	\$74,595	\$0	\$306,338	\$5,849	\$74,289	\$74,289	\$329,060
Public Fire	\$0	\$117,651	\$117,651	25.21%	\$16,084	\$0	\$526,569	\$10,554	\$27,705	\$27,705	\$592,485
	\$4,509,966	\$1,586,464	\$6,096,430	21.47%	\$3,084,634	\$0					
Milbury Service											
Residential R1		\$306,725	\$306,725	30.13%	\$298,112	\$8,613	\$0	\$0	\$298,112	\$298,112	\$136,280
Commercial G1		\$51,489	\$51,489	32.13%	\$46,927	\$4,562	\$0	\$0	\$46,927	\$46,927	\$207,202
Industrial G3		\$3,052	\$3,052	26.49%	\$8,900	\$0	\$36,038	\$688	\$8,740	\$8,740	\$39,137
Jumbo Industrial G4		\$116,223	\$116,223	30.07%	\$118,599	\$3,064	\$0	\$0	\$113,159	\$113,159	\$499,642
Public Authority G2		\$10,928	\$10,928	29.25%	\$10,940	\$0	\$0	\$0	\$10,928	\$10,928	\$48,294
Private Fire		\$19,450	\$19,450	26.33%	\$21,627	\$0	\$87,051	\$1,662	\$21,112	\$21,112	\$94,976
Public Fire		\$36,694	\$36,694	25.11%	\$42,795	\$0	\$164,230	\$3,356	\$39,830	\$39,830	\$185,990
		\$549,562	\$549,562	29.66%	\$516,239	\$16,239	\$287,339	\$5,486			
Oxford Service											
Residential R1		\$225,987	\$225,987	29.99%	\$220,609	\$5,377	\$0	\$0	\$220,609	\$220,609	\$974,075
Commercial G1		\$50,376	\$50,376	32.09%	\$45,966	\$4,410	\$0	\$0	\$45,966	\$45,966	\$202,957
Public Authority G2		\$7,830	\$7,830	29.44%	\$7,788	\$42	\$0	\$0	\$7,788	\$7,788	\$34,386
Private Fire		\$9,725	\$9,725	26.33%	\$10,313	\$0	\$42,526	\$821	\$10,556	\$10,556	\$47,488
Public Fire		\$26,537	\$26,537	25.74%	\$30,188	\$0	\$118,770	\$2,268	\$28,804	\$28,804	\$131,908
		\$320,454	\$320,454	29.78%	\$314,829	\$5,625	\$162,296				
Company-Wide											
Residential R1	\$3,894,411	\$1,757,462	\$5,651,873	22.85%	\$3,139,990	\$13,990	\$0	\$0	\$1,743,472	\$2,115,830	\$7,541,517
Commercial G1	\$450,079	\$225,090	\$675,169	24.14%	\$397,212	\$77,957	\$0	\$0	\$225,090	\$259,261	\$920,477
Industrial G3	\$26,099	\$14,292	\$40,391	21.99%	\$21,999	\$18,392	\$63,968	1,221	\$15,514	\$18,012	\$68,282
Jumbo Industrial G4	\$0	\$116,223	\$116,223	30.07%	\$118,599	\$3,064	\$0	\$0	\$113,159	\$113,159	\$499,642
Public Authority G2	\$69,277	\$52,652	\$121,929	21.63%	\$121,929	\$42	\$0	\$0	\$52,610	\$65,927	\$231,477
Linden Ponds	\$0	\$2,263	\$2,263	24.58%	\$14,608	\$0	\$54,887	1,048	\$3,311	\$8,311	\$63,203
Private Fire	\$0	\$97,615	\$97,615	26.70%	\$105,957	\$7,342	\$436,895	\$3,342	\$105,957	\$105,957	\$471,524
Public Fire	\$0	\$180,882	\$180,882	25.33%	\$209,569	\$28,687	\$809,569	\$5,457	\$186,339	\$186,339	\$910,383
	\$4,509,966	\$2,456,480	\$6,966,446	23.42%	\$5,126,068	\$1,265,378	\$2,608	\$2,608	\$2,456,480	\$2,887,797	\$10,706,505
Other Water Revenue		\$11,736	\$11,736	22.10%	\$11,736	\$0	\$0	\$0	\$11,736	\$11,736	\$64,846
Total Operating Revenue		\$2,899,533	\$9,885,981	23.42%	\$8,126,068	\$1,265,378	\$0	\$0	\$2,456,480	\$2,899,533	\$10,771,351

Note: Schedule 11 is for illustrative purposes only.
 Note: Service Area B private fire protection revenue allocated 2/3 to Milbury and 1/3 to Oxford (Exh. ORF 419)
 Note: Four-inch meters have been imputed to Rate G4

XI. ORDER

Accordingly, after due notice, hearing and consideration, it is

ORDERED: That the tariff M.D.P.U. No. 1 filed by Aquarion Water Company of Massachusetts on May 14, 2008, to become effective June 1, 2008, is DISALLOWED; and it is

FURTHER ORDERED: That Aquarion Water Company of Massachusetts shall file new schedules of rates and charges designed to increase annual water rates by \$2,899,533; and it is

FURTHER ORDERED: That Aquarion Water Company of Massachusetts shall file all rates and charges required by this Order and shall design all rates in compliance with this Order; and it is

FURTHER ORDERED: That Aquarion Water Company of Massachusetts shall comply with all other directives contained in this Order.

By Order of the Department,

/s/
W. Robert Keating, Commissioner

/s/
Tim Woolf, Commissioner

An appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. G.L. c. 25, § 5.