The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 17-90 October 31, 2018

Petition of Aquarion Water Company of Massachusetts, Inc., pursuant to G.L. c. 164, § 94, and G.L. c. 165, § 2, for Approval of a General Rate Increase as set forth in M.D.P.U. No. 3.

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I. INTRODUCTION

On April 13, 2017, 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 $2,346,708. The Company based its proposed increase on a test year ending December 31, 2016 (Exh. TMD at 8; Petition, ¶ 4). During the proceeding, Aquarion revised its requested increase to $2,229,727 (Exh. 2 (Rev. 3), Sch. 1). The Department docketed the petition as D.P.U. 17-90 and suspended the effective date of the Company's proposed tariff until March 1, 2018, for further investigation. The Department further suspended the effective date of the Company's proposed tariff until November 1, 2018, as a result of subsequent filings. D.P.U. 17-90, Suspension Order (April 18, 2018); D.P.U. 17-90, Suspension Order (November 3, 2017); D.P.U. 17-90, Suspension Order (August 24, 2017).[1] Aquarion's last general rate increase was approved by the Department on March 30, 2012. Aquarion Water Company of Massachusetts, D.P.U. 11-43 (2012).

II. PROCEDURAL HISTORY AND BACKGROUND

On November 28, 2017, the Department approved a petition filed by Eversource Energy ("Eversource") and Macquarie Utilities, Inc. ("MUI"), pursuant to G.L. c. 165, § 2,

[1] In its initial filing, the Company submitted a proposed tariff M.D.P.U. No. 3 to replace its current tariff, M.D.P.U. No. 2-A. During the course of this proceeding, the Company twice replaced the proposed tariff with M.D.P.U. No. 3-A and M.D.P.U. No. 3-B, respectively, to facilitate extensions of the procedural schedule and the effective date of the proposed rates, but made no other changes to the proposed language or rates. The Department will refer to proposed M.D.P.U. No. 3 throughout this Order.

and G.L. c. 164, § 96, for a change of control of MUI to Eversource. See D.P.U. 17-90, Interlocutory Order at 1-2 (March 9, 2018); Eversource Energy/Macquarie Utilities, Inc., D.P.U. 17-115, at 75-76 (November 28, 2017). Beginning in 2007, MUI held a controlling interest in Aquarion Company, Aquarion Water Company, Aquarion and related subsidiaries. D.P.U. 17-115, at 3. On December 4, 2017, Aquarion Water Company became a wholly-owned subsidiary of Eversource, and MUI was subsequently renamed Eversource Aquarion Holdings, Inc. (Exhs. AG 3-98; AG 8-3, Atts. A&B). See also D.P.U. 17-115, at 6.[2]

Aquarion serves approximately 19,772 customers in five communities comprising two service areas (Exh. Towns 7-20, Att. A at 101-103). Service Area A includes a portion of the Town of Cohasset ("Cohasset") with approximately 334 customers; the Town of Hingham ("Hingham") with approximately 8,196 customers; and the Town of Hull ("Hull") with approximately 4,638 customers (Exh. Towns 7-20, Att. A at 101). Service Area B consists of the Town of Millbury ("Millbury") with approximately 3,930 customers and the Town of Oxford ("Oxford") with approximately 2,674 customers (Exh. Towns 7-20, Att. A at 102-103).

On May 1, 2017, the Attorney General of the Commonwealth of Massachusetts ("Attorney General") filed a notice of intervention pursuant to G.L. c. 12, § 11E(a). On

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2 Aquarion Company is the parent company of Aquarion Water Company, and Aquarion Water Company is the parent company of Aquarion, Aquarion Water Capital of Massachusetts, Inc., and affiliates in Connecticut and New Hampshire (Exhs. JPW; JPW-1; AG 3-98).

July 13, 2017, the Department granted intervenor status to Hingham, Hull, and Oxford.[3] Pursuant to notice duly issued, the Department conducted two public hearings in the Company's service areas: (1) in Hull on July 13, 2017; and (2) in Oxford on July 19, 2017.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 ("2017 Tax Act") was signed into law. Among other things, the 2017 Tax Act reduced the federal corporate income tax rate from 35 percent to 21 percent, effective January 1, 2018. On February 2, 2018, the Department opened an investigation into the effect of the decrease in the federal corporate income tax rates on the rates charged by investor-owned electric, gas, and water companies, based on the finding that it was appropriate to promptly adjust rates so that ratepayers would receive the benefits from the decrease in the federal corporate income tax. Investigation by the Department of Public Utilities, on its own Motion, into the Effect of the Reduction in Federal Income Tax Rates on the Rates Charged by Electric, Gas, and Water Companies, D.P.U. 18-15, Order Opening Investigation at 1-2 (February 2, 2018). In its Order Opening Investigation in D.P.U. 18-15, the Department directed affected companies to (1) account for any revenues associated with the difference between the previous and current corporate income tax rates as of January 1, 2018, and (2) account for excess recovery in rates of accumulated deferred income taxes ("ADIT") resulting from the lower federal corporate income tax as of January 1, 2018. The Department directed the affected companies to book such amounts as regulatory liabilities, effective January 1, 2018, to be refunded to

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

ratepayers in a manner to be determined by the Department. D.P.U. 18-15, Order Opening Investigation at 5.

The Department also directed the affected companies to file, on or before, May 1, 2018,[4] a proposal, accompanied by testimony and supporting documentation, to address the effects of the 2017 Tax Act and, in particular, a proposal to reduce rates, effective July 1, 2018, through the establishment of a revised cost of service incorporating the lower federal corporate income tax rate in effect as of January 1, 2018, and holding all other components used to design rates constant. D.P.U. 18-15, Order Opening Investigation at 5-6. The Department directed the companies to address in their respective proposals the adjustment of rates going forward and also incorporate the timely refund of revenues associated with the lower tax expense on current income and excess ADIT, and any other related adjustment necessitated by the 2017 Tax Act. D.P.U. 18-15, Order Opening Investigation at 5. Recognizing Aquarion's pending rate proceeding, the Department directed the Company to submit supplemental testimony and exhibits addressing these issues in the instant docket as well. D.P.U. 18-15, Order Opening Investigation at 7.

On February 9, 2018, Aquarion filed a Motion for Amendment of Filing and Procedural Schedule as well as supplemental testimony and exhibits ("amended filing"). Aquarion proposed to make the following amendments to its filing: (1) revise its cost of service to incorporate changes associated with the Department's findings in D.P.U. 17-115

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[4] The Department established the May 1, 2018 deadline to provide the affected companies sufficient time to conduct a comprehensive review of the 2017 Tax Act. D.P.U. 18-15, Order Opening Investigation at 5 n.6.

that approved the Eversource acquisition; (2) incorporate changes associated with the reduction of the federal corporate income tax rate from 35 to 21 percent as a result of the 2017 Tax Act, also under review in the Department's open D.P.U. 18-15 docket; and (3) propose a capital investment cost recovery mechanism ("Mechanism"). D.P.U. 17-90, Interlocutory Order at 3, 14. Additionally, in its amended filing, the Company made other corrections and updates, arising primarily from the discovery process (Exhs. AWC-TMD-1, at 6-7; AWC-TMD-5, at 1-2). The Company proposed to modify the procedural schedule and extend the effective date of the proposed rate increase an additional 30 days in order to accommodate its amended filing with respect to these changes. D.P.U. 17-90, Motion for Amendment of Filing and Procedural Schedule at 1, 2 (February 9, 2018); see also D.P.U. 17-90, Interlocutory Order at 4.

On February 16, 2018, the Attorney General, Oxford, and Hingham and Hull filed oppositions to the Company's Motion.[5] On February 22, 2018, the Company filed a reply to the intervenors' oppositions.

On March 9, 2018, the Department issued an Order allowing Aquarion to amend its filing, subject to certain findings. D.P.U. 17-90, Interlocutory Order at 21. Specifically, the Department allowed the following aspects of the amended filing: (1) the changes associated with the Department's findings in D.P.U. 17-115; (2) corrections and revisions that arose during the course of the proceeding; (3) the effects of the reduced federal corporate income tax rate on the Company's proposed revenue requirement and on the surcharge associated

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5 Hingham and Hull filed a joint opposition.

with the Hingham/Hull Water Treatment Plant; and (4) the proposed Mechanism for Department consideration. D.P.U. 17-90, Interlocutory Order at 15-17, 19-20, 21. However, the Department determined that it would investigate the Company's proposal to pass excess ADIT back to customers through an annual rate credit[6] and the effect of the federal corporate income tax change for the period January 1, 2018, through the effective date of the Company's proposed rates[7] within its investigation in D.P.U. 18-15. D.P.U. 17-90, Interlocutory Order at 17; D.P.U. 18-15, Order Opening Investigation at 5-6, 7.

Additionally, the Department determined that the Company's proposed extension to the procedural schedule was insufficient to accommodate review of the proposed Mechanism within this proceeding. The Department directed the Company to confirm whether further suspension of the effective date of its proposed rates and extension of the procedural schedule would be reasonable to accommodate review of the Company's base rate case proceeding

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6 As discussed in Section VIII.Q.3., below, the Department issued an Order on September 24, 2018, addressing the return to ratepayers of excess ADIT related to the 2017 Tax Act. Investigation by the Department of Public Utilities, on its own Motion, into the Effect of the Reduction in Federal Income Tax Rates on the Rates Charged by Electric, Gas, and Water Companies, D.P.U. 18-15-D at 13-17 (September 24, 2018).

7 The Department will address the refund of tax savings that have accrued between January 1, 2018, and June 30, 2018, in phase two of D.P.U. 18-15. Investigation by the Department of Public Utilities, on its own Motion, into the Effect of the Reduction in Federal Income Tax Rates on the Rates Charged by Electric, Gas, and Water Companies, D.P.U. 18-15-A at 38 (June 29, 2018). That matter remains pending. Aquarion shall continue to book these amounts as regulatory liabilities pending resolution of that investigation.

with the inclusion of the proposed Mechanism. D.P.U. 17-90, Interlocutory Order at 20. The Department directed the Company to confer with the other parties prior to submitting any such proposed procedural schedule. D.P.U. 17-90, Interlocutory Order at 21.[8] On March 27, 2018, Aquarion and the Attorney General jointly filed a motion to amend the procedural schedule.[9] Due to scheduling issues identified by the Department, on April 6, 2018, Aquarion submitted a proposed revised procedural schedule on behalf of all of the parties, withdrawing the prior motion. The Department established a revised procedural schedule on April 11, 2018. D.P.U. 17-90, Procedural Memorandum at 1-2 (April 11, 2018). Also on April 11, 2018, the Department issued a Notice of Amended Filing and Public Hearings.

On May 3, 2018, the Department granted limited participant status to Mountain Water Systems, Inc. The Department conducted two additional public hearings in the Company's service areas to receive comment on Aquarion's proposed Mechanism: (1) in Oxford on May 14, 2018; and (2) in Hull on May 23, 2018.

In support of its initial filing, Aquarion sponsored the testimony of the following witnesses: (1) John P. Walsh, vice president of operations for Aquarion Water Company; (2) Troy M. Dixon, director of rates and regulation for Aquarion's affiliate, Aquarion Water

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8 The Department found that any procedural schedule must provide adequate time for publication of notice, public hearing, a comment period, and a further opportunity to intervene, followed by adequate time for investigation.

9 Hingham, Hull, and Oxford assented to the motion.

Company of Connecticut ("Aquarion-CT");[10] (3) Stephen C. Olson, director of operations for Aquarion; (4) Joshua A. Unger, senior regulatory compliance specialist for Aquarion-CT; (5) McKinley L. Rowe, senior regulatory compliance specialist for Aquarion-CT;[11] and (6) John Guastella, president of Guastella Associates, LLC. In support of its amended filing, Aquarion sponsored the supplemental testimony of Troy M. Dixon.

The Attorney General sponsored the testimony of the following witnesses: (1) J. Randall Woolridge, Ph.D., professor of finance, Pennsylvania State University; (2) David J. Effron, consultant, Berkshire Consulting Services; and (3) Timothy Newhard, analyst, Attorney General's Office of Ratepayer Advocacy. Hingham and Hull jointly sponsored the testimony of David F. Russell, consultant, Russell Consulting, LLC.

The Department held five days of evidentiary hearings between June 20, 2018, and June 27, 2018. On July 20, 2018, the Attorney General submitted an initial brief ("Attorney General Brief"), and Hingham and Hull submitted a joint initial brief ("Hingham/Hull Brief"). On July 27, 2018, Aquarion submitted an initial brief ("Company Brief"). On August 3, 2018, the Attorney General submitted a reply brief ("Attorney General Reply"),

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10 As of March 1, 2018, Mr. Dixon transferred to a similar role within Eversource (Tr. at 24).

11 McKinley L. Rowe left the employment of Aquarion-CT prior to the evidentiary hearings in this proceeding. On June 20, 2018, the Hearing Officer granted the Company's motion for Mr. Dixon to appear as a substitute for Mr. Rowe and adopt Mr. Rowe's testimony, exhibits, and responses to information requests.

and Hingham and Hull submitted a joint reply brief ("Hingham/Hull Reply").[12] On August 10, 2018, Aquarion submitted a reply brief ("Company Reply"). The evidentiary record consists of 1,455 exhibits and responses to 29 record requests.

III. COMPLIANCE WITH DEPARTMENT'S DIRECTIVES IN D.P.U. 18-15-A

A. Introduction

On June 29, 2018, the Department issued an Order that determined Aquarion's rates should be adjusted to account for the reduced federal corporate income tax rate. Investigation by the Department of Public Utilities, on its own Motion, into the Effect of the Reduction in Federal Income Tax Rates on the Rates Charged by Electric, Gas, and Water Companies, D.P.U. 18-15-A at 35-37 (June 29, 2018). The Department set a revised overall annual revenue requirement of $16,153,419, a decrease of $399,362 from the revenue requirement approved in D.P.U. 11-43-A. D.P.U. 18-15-A at 36-37, citing D.P.U. 11-43-A at 15. Additionally, the Department calculated an additional decrease of $4,816 associated with Aquarion's Hingham/Hull water treatment plant ("Hingham/Hull WTP") surcharge. D.P.U. 18-15-A at 37, citing Aquarion Water Company of Massachusetts, D.P.U. 11-43-A at 17 (2012). Thus, the Department found that Aquarion Water's revenue requirement should be reduced by a total of $404,178, or 2.44 percent, to account for the impact of the 2017 Tax Act. D.P.U. 18-15-A at 37.

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12 Oxford joined the portions of the briefs filed by the Attorney General and Hingham/Hull addressing the Company's proposed Mechanism.

As a result of these findings, the Department directed Aquarion to adjust its rates effective July 1, 2018, to incorporate the reduction in the federal corporate income tax rate. D.P.U. 18-15-A at 37. In the alternative, due to the pendency of the instant base rate proceeding, the Department determined that the Company may delay this rate change until the effective date of new rates in this proceeding provided Aquarion take the following actions: (1) book as a regulatory liability the tax savings[13] associated with the lower federal corporate income tax expense from July 1, 2018, through the effective date of new rates, with interest at the prime rate; and (2) agree to return the regulatory liability amount to ratepayers, with interest at the prime rate, through a distribution rate credit that will commence on the date that new rates are established in the Company's pending rate case and will terminate one year from that date, unless otherwise directed by the Department.[14] D.P.U. 18-15-A at 37. In doing so, the Department found that allowing Aquarion the option to defer the return of tax savings associated with the period July 1, 2018, through October 31, 2018, with interest at the prime rate, would ensure that ratepayers are not harmed by a delay in the implementation of the tax change beyond July 1, 2018, and was

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13 Tax savings for the period are based on a revised cost of service incorporating the lower federal corporate income tax rate (from 35 percent to 21 percent) and holding all other components used to design rates constant. See D.P.U. 18-15-A at 36-37.

14 The Department determined that Aquarion shall return the entire regulatory liability to ratepayers and, to the extent there is a remaining balance after a year, the Company shall book the remaining balance to Account 317, Other Unadjusted Credits. D.P.U. 18-15-A at 37 n.34.

otherwise in the public interest because it would minimize the number and magnitude of rate changes experienced by customers. D.P.U. 18-15-A, at 37-38.

The Department directed Aquarion, within seven days of that Order, to either (1) submit new schedules of rates and charges effective July 1, 2018, designed to decrease its annual water revenue requirement by $404,178, and design new rates based on the rate design approved in the Company's most recent base rate case, or (2) notify the Department that it intended to defer the July 1, 2018, rate change, fully consistent with all conditions described above. D.P.U. 18-15-A at 38. The Company neither submitted new schedules of rates and charges for effect July 1, 2018, nor notified the Department that it intended to defer the effect of the July 1, 2018, rate change until November 1, 2018. On July 19, 2018, Aquarion filed a motion for reconsideration of the Department's decision. That motion is under consideration by the Department in D.P.U. 18-15.[15]

B. Analysis and Findings

The Department's regulations define three types of motions that may be filed by the parties after a final Order of the Department: (1) a motion for recalculation; (2) a motion for reconsideration; and (3) a motion for an extension of the judicial appeal period. See 220 CMR 1.11. A final Department Order remains in effect even when a party files one of these three motions. New England Telephone and Telegraph Company, D.T.E. 98-57, at 8 (2000). A party must request and be granted a stay of a Department Order if the Order is

15 To the extent that the parties addressed issues under consideration in D.P.U. 18-15 in the briefs filed in the instant proceeding, we will not address those arguments here.

not to become effective while a post-Order motion is addressed by the Department. D.T.E. 98-57, at 8. A substantial showing is required by the moving party to obtain a stay and such stays are not routinely granted.[16]

Aquarion did not request a stay of the D.P.U. 18-15-A Order and, therefore, the Department's directives in D.P.U. 18-15-A remain in effect. Accordingly, Aquarion was required to either (1) adjust rates effective July 1, 2018 (based on a $404,178 reduction of its revenue requirement) to include the change in the federal corporate income tax rate, or (2) book as a regulatory liability the tax savings associated with the lower federal corporate income tax expense from July 1, 2018, through October 31, 2018, with interest at the prime rate, and return the regulatory liability amount to ratepayers, with interest at the prime rate, through distribution rate credit over one year, starting November 1, 2018. D.P.U. 18-15-A at 36-38.

As noted above, Aquarion did not adjust its rates on July 1, 2018 based on the revenue requirement reduction approved by the Department. Accordingly, in compliance

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16 Neither the enabling statutes nor the Department's procedural rules provide explicitly for a stay pending reconsideration of a Department Order. Boston Gas Company/Colonial Gas Company, D.P.U. 15-138-B/D.P.U. 16-163-C at 5 (2017); Fitchburg Gas and Electric Light Company, D.T.E. 99-66-B at 3 (2001); Western Massachusetts Electric Company, D.T.E. 00-110-C at 8 (2000); CTC Communications Corp., D.T.E. 98-18-A at 4 (1998). Because there is no specific guidance from the Legislature or the Department's regulations, the Department has analyzed these requests under its standard of review governing stays of Department orders pending judicial appeals. See D.P.U. 15-138-B/D.P.U. 16-163-C at 5; MediaOne Telecommunications of Massachusetts, Inc. and New England Telephone and Telegraph Company, D.T.E. 99-42/43/D.T.E. 99-52, at 44 n.30 (2000); D.T.E. 99-66-B at 3; see also D.T.E. 00-110-C at 18.

with D.P.U. 18-15-A at 36-38, Aquarion shall return to ratepayers all amounts associated with the lower federal corporate income tax expense from July 1, 2018, through October 31, 2018, with interest at the prime rate. In D.P.U. 18-15-A at 37, the Department found that Aquarion's revenue requirement shall be reduced by $404,178, effective July 1, 2018, to account for the impact of the 2017 Tax Act. To determine the amount of tax savings to be returned to ratepayers for the period July through October 2018, it is necessary to multiply the decrease in base distribution rates that would have been implemented on July 1, 2018, by the volumes billed to all customers between July 1, 2018, and October 31, 2018, as well as multiply the decrease in the Hingham/Hull WTP surcharge that would have been implemented on July 1, 2018, by the volumes billed to all customers in Service Area A between July 1, 2018, and October 31, 2018. Aquarion shall provide these calculations, including interest at the prime rate, for Department review as part of its compliance filing to be submitted pursuant to this Order.[17] See Boston Gas Company/Colonial Gas Company, D.P.U. 17-170, at 183 (September 28, 2018); D.P.U. 17-170, Stamp-Approved Compliance Filing, Exh. NG-PP-13(C) (October 31, 2018).

Further, consistent with our findings in D.P.U. 18-15-A at 37, Aquarion shall return this amount to ratepayers with interest at the prime rate, through rate credits that will

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17 Aquarion shall provide complete and detailed documentation supporting the calculation.

commence on November 1, 2018, and terminate one year from that date.[18] The Company shall compute separate rate credits for its base distribution rates and its Hingham/Hull WTP surcharge rate. With its compliance filing, Aquarion shall file for Department review an appropriate tax credit tariff consistent with the above directives.

IV. ATTORNEY GENERAL'S MOTION TO STRIKE

A. Introduction

On August 17, 2018, the Attorney General filed a motion to strike a portion of the Company's reply brief and related portions of revised schedules pursuant to 220 CMR 1.11(8) and 1.04(5) ("Motion to Strike"). The Attorney General specifically seeks to strike the analysis of the Company's pro forma purchased power expense that the Company submitted in its reply brief and within the third revisions of Exhibit 2, Schedule 9, and Exhibit 3, Schedule 2, submitted on August 10, 2018 (Motion to Strike at 1, citing Company Reply at 20).[19]

B. Positions of the Parties

The Attorney General asserts that the Department should strike the Company's final cost analysis regarding its purchased power expense submitted for the first time in the Company's reply brief because the cost analysis is based on extra-record information (Motion to Strike at 1, citing Company Reply at 20). The Attorney General contends that the

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[18] As noted above in Section III.A., n.14, to the extent there is a remaining balance after a year, the Company shall book the remaining balance to Account 317, Other Unadjusted Credits. D.P.U. 18-15-A at 37 n.34.

[19] The Company submitted bills supporting Hingham Municipal Light Plant's rates effective July 2018 as an attachment to Exhibit 2, Schedule 9.

Department's rules provide that "[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" (Motion to Strike at 2, quoting 220 CMR 1.11(8)). The Attorney General argues the Company failed to (1) file a motion to reopen the evidentiary record; (2) demonstrate good cause to introduce the late-filed evidence; and (3) attach a witness affidavit (Motion to Strike at 1, 3). Further, the Attorney General argues that purchased power expense is not the sort of routine update (such as property tax bills) the Department allows after the close of the record in a rate case (Motion to Strike at 2).

Additionally, the Attorney General argues that parties may not testify in brief to factual matters not supported on the record (Motion to Strike at 1-2, citing Western Massachusetts Electric Company, D.P.U. 86-8C-1, at 23 n.5 (1986); AT&T Communications of New England, D.P.U. 85-137, at 49 (1985) (additional citations omitted)). Finally, the Attorney General asserts that the Company's calculations based on this information appear to contain errors, such that if the Department were to reopen the record and allow any new information, the Department would need to fully investigate these discrepancies in new hearings (Motion to Strike at 3, citing G.L. c. 30A, § 11). No party filed a response.

C. Analysis and Findings

It is axiomatic that a party's post-hearing brief may not serve the purpose of presenting facts or other evidence that are not in the record. New England Gas Company, D.P.U. 10-114, at 7-8 (2011); New England Gas Company, D.P.U. 08-35, at 15 (2009). Argument and comment filed on brief are not evidence in a case, as there is no opportunity for cross-examination or rebuttal testimony and evidence. D.P.U. 10-114, at 8. A party's presentation of extra-record evidence to the fact-finder after the record has closed is an unacceptable tactic that is potentially prejudicial to the rights of other parties even when the evidence is excluded. D.P.U. 10-114, at 8; Boston Gas Company, D.P.U. 88-67 (Phase II) at 7 (1989).

The Department routinely permits the record to remain open after the end of hearings for receipt of updated information on certain non-controversial cost of service items such as rate case expense and property tax. See D.P.U. 10-114, at 8; Fitchburg Gas and Electric Light Company, D.T.E. 02-24/25, at 11 (2002). In this case, at the close of the evidentiary hearings, the Hearing Officer stated that the record would remain open for the limited purpose of receiving responses to record requests and updates to certain information requests, for example, those related to updated rate case expense and any updated property tax information (Tr. 5, at 766-777).[20] Additionally, unlike the updated rate case invoices and property tax bills that the Department routinely accepts, the purchased power expense information submitted by the Company included not only updated invoices, but also an analysis and calculations based on the updated invoices (Company Reply at 20; Exhs. 2

[20] See Exh. DPU 5-13 ("This is an ongoing information request; the Company is required to update its response throughout the proceeding, with an update filed at least one week prior to the start of the evidentiary hearings, and the final update provided no later than the date of the Company's reply brief"); RR-DPU-16.

(Rev. 3), Sch. 9; 3 (Rev. 3), Sch. 2).[21] Accordingly, we find that the invoices and additional analysis submitted by the Company do not fall into this limited exception.

The Department's regulations provide that no person may present additional evidence after having rested, except upon motion and a showing of good cause. 220 CMR 1.11(8). The Department's "good cause" standard provides that good cause is a relative term, and it depends on the circumstances of an individual case. D.P.U. 08-35, at 15. Good cause is determined in the context of any underlying statutory or regulatory requirement and is based on a balancing of the public interest, the interest of the party seeking an exception, and the interests of any other affected party. D.P.U. 08-35, at 15; Nunnally d/b/a L & R Enterprises, D.P.U. 92-34-A at 3 (1993), citing Boston Edison Company, D.P.U. 90-335-A at 4 (1992). Here, the Company did not file a motion to reopen the record pursuant to 220 CMR 1.11(8) or otherwise address whether good cause exists to reopen the record. See New England Gas Company, D.P.U. 10-118-A at 15-16 (2014) (motion to strike granted where party failed to file motion to reopen record). As a result, we find that the Company has failed to demonstrate good cause to reopen the record. Accordingly, the Department grants the Motion to Strike.

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[21] Given the timing of the filing, however, no party had the ability to respond to or conduct cross-examination on the bills or the calculations or analysis derived from them. But see D.P.U. 10-114, at 9 (denying motion to strike where challenged invoices were provided in supplemental responses to information requests and submitted prior to the conclusion of hearings).

V. CAPITAL INVESTMENT COST RECOVERY MECHANISM

A. Company Proposal

The Company proposes a capital investment cost recovery mechanism ("Mechanism" as memorialized above) to recover the revenue requirement for eligible incremental capital additions, termed the Water Reliability Improvement Mechanism (Exhs. AWC-TMD-1; AWC-TMD-2, at 1). The Company proposes the Mechanism to enable the accelerated replacement and rehabilitation of water mains and system upgrade activities and to increase annual investment on reliability-related capital work by over $1.0 million a year (Exh. AWC-TMD-1, at 4, 17, 15). Eligible capital additions would include all transmission and distribution ("T&D") infrastructure except main extensions, new meters, and new services (Exhs. AWC-TMD-1, at 1, 21; AWC-TMD-2, at 1). Specifically, eligible capital additions would include meters, pressure-reducing valves, non-revenue producing mains, replacement valves, main cleaning and relining projects, non-reimbursable relocation projects, the maintenance and replacement of water storage tanks, company owned segments of services, and company owned and non-functional hydrants (Exhs. AWC-TMD-1, at 1, 21; AWC-TMD-2, at 1).

Under the proposed Mechanism, the Company would submit an annual filing to the Department no later than 60 days after the end of the calendar year, reporting the eligible capital investments completed and in service in the previous calendar year

(Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2, 3).[22] In this filing, the Company would propose a rate factor based on the revenue requirement associated with the eligible plant additions from the prior calendar year, as well as the reconciliation of prior year Mechanism revenues collected to the revenues authorized (Exhs. AWC-TMD-2, at 3; DPU 20-14; AG 13-63). The Company proposes to calculate the revenue requirement using the Company's authorized rate of return, grossed up for income taxes, plus associated depreciation and property tax expense on eligible plant additions (Exhs. AWC-TMD-1, at 22; AWC-TMD-2, at 2-3). The rate factor would be calculated by determining the percentage increase in revenue from the Mechanism compared to the total base retail water revenues approved in the most recent rate filing (Exhs. AWC-TMD-1, at 22; AWC-TMD-2, at 3). The Company proposes to apply the rate factor to the total amount billed to each customer, excluding amounts associated with miscellaneous charges and with the surcharge associated with the Hingham/Hull WTP (Exh. AWC-TMD-2, at 3). The Company proposes an annual effective date of September 1st for the rate factor, after review and approval by the Department (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2). In its initial filing, for a rate factor proposed for effect September 1, 2019, the Company proposes to include all eligible capital additions placed into service from January 1, 2017, through December 31, 2018 (Exh. AWC-TMD-2, at 2). The Company states that it designed the Mechanism to follow

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22 The Company's proposed tariff identifies an annual filing date of March 1st, rather than February 28th, as stated in testimony (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2, 3).

the model set by Department-approved infrastructure mechanisms for natural gas companies (Exh. AWC-TMD-1, at 22).

The Company proposes to (1) cap the annual increase in revenue requirement through the Mechanism to five percent of the total sales revenue in the prior calendar year and (2) set a ten percent[23] cap on the total revenue increase between rate cases (Exhs. AWC-TMD-1, at 22, 23; AWC-TMD-2, at 4). Any revenue requirement associated with eligible plant additions approved by the Department but in excess of the annual cap may be deferred for recovery the following year to the extent there is room under the cap (Exh. AWC-TMD-2, at 4). In the Company's next rate case, the rate base recovered through the Mechanism would be transferred to the rate base recovered in base rates, and the Mechanism would be reset to zero (Exhs. AWC-TMD-1, at 23-24; AWC-TMD-2, at 4).

The Company states that if the Mechanism is approved, it will file an infrastructure assessment report, identifying projects selected for acceleration and addressing the factors considered in prioritizing those projects (Exh. AWC-TMD-1, at 24; Tr. at 150). Specifically, the factors would include break history, size of pipe (i.e., main), material, water quality, soil type, age, location, municipal paving projects, hydraulic improvements, and the need for redundancy (Exh. AWC-TMD-1, at 24; Tr. at 150). Additionally, the Company proposes that each annual filing will include a three-year work-plan developed in collaboration with stakeholders (Exhs. AWC-TMD-1, at 24; DPU 20-14; Tr. at 163).

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[23] The Company's proposed tariff, provided as Exhibit AWC-TMD-2, does not address the ten percent cap between rate cases.

The Company retained a consultant to assess the appropriate replacement rate of the Company's water mains ("KANEW study")[24] (Exhs. AWC-TMD-1, at 18; AWC-TMD-4). The consultant used software that enables the user to simulate investment scenarios to identify the optimum replacement plan based on the mains reaching the end of their useful life each year and other constraints, including costs, length of work per year, and acceptable break rate (Exh. AWC-TMD-1, at 18 n.1). The Company states that the KANEW study identified an annual target investment level of $2.6 million in mains replacements and rehabilitation on the Company's system, or 1.8 miles replaced each year (Exh. AWC-TMD-1, at 18).[25] The Company states that it is unable to invest $2.6 million per year for mains replacements within its current capital budget and that this level of investment would exceed the Company's depreciation levels and impair its ability to make other capital investments for treatment, supply, pumping, meters, hydrants, service lines, and water tanks (Exh. AWC-TMD-1, at 19). The Company states that the Mechanism will enable the increased spending levels necessary to ensure long-term reliability of the water system (Exh. AWC-TMD-1, at 26-27).

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[24] KANEW refers to the software company, and the KANEW model is the proprietary software package utilized by the Company's consultant to develop the KANEW study (Exhs. AWC-TMD-1, at 18 n.1; AWC-TMD-4, at 5, 11; AG 13-31).

[25] Based on an average replacement cost of $275 per linear foot (Exh. AWC-TMD-1, at 18).

B. Positions of the Parties

1. Attorney General

a. Introduction

The Attorney General argues that the Company's proposed Mechanism is unwarranted and should be rejected because the Company has sufficient financial strength to maintain its system under traditional ratemaking principles and because the Company's projected mains replacements are based on a flawed study (Attorney General Brief at 5). Additionally, the Attorney General asserts that the proposed Mechanism would (1) incentivize needless overspending on plant, (2) increase rates annually with no review for reasonableness, and (3) recover costs already recovered through base rates (Attorney General Brief at 4-5).

b. Need for Mechanism

The Attorney General argues that the Company's proposal does not satisfy the requirements to create a new rate mechanism and that the Company has not provided support to justify the addition of a new charge to customer bills (Attorney General Brief at 7, citing Exh. AG-TN at 6-7). Specifically, the Attorney General contends that the costs the Company proposes to recover are not new, special, or large, and they do not vary significantly from year to year (Attorney General Brief at 7, citing Exh. AG-TN at 6-7). Additionally, she asserts that the costs are not required by any financial emergency and are well within the Company's control (Attorney General Brief at 7, citing Exh. AG-TN at 6-7).

The Attorney General argues that the KANEW study is fatally flawed in both inputs and design, and it should not be relied upon for any investment planning or as support for a mechanism (Attorney General Brief at 12). Specifically, the Attorney General asserts that the KANEW model is not publicly available and, as a result, there was no way to verify its accuracy, veracity, and reliability (Attorney General Brief at 12, citing Exh. AG 3-31). Additionally, she asserts that for two required inputs, effective useful life ("EUL") of mains and aging factors, the study relied upon data from Connecticut water companies, without demonstrating that the inputs were reasonable proxies for the Massachusetts system (Attorney General Brief at 12-13, citing Exh. AWC-TMD-4, at 5-6). The Attorney General argues that the EUL and aging factors used in the study were improper because the relative average ages of mains demonstrate that the Company's mains have longer lives and slower replacement rate needs than those on the Connecticut system (Attorney General Brief at 13).

Further, the Attorney General asserts that the break rate benchmark used in the KANEW study of 0.12 breaks per mile per year is significantly lower than the industry average of 0.23 breaks per mile per year and, thus, will result in needless investment (Attorney General Brief at 13, citing Tr. at 119; Tr. 3, at 438; Attorney General Reply at 4). She recognizes that improving the break rate is a desirable goal, but argues that because a break rate nearly 50 percent below the industry average is not an emergency, an extraordinary measure such as a cost recovery mechanism is not warranted (Attorney General Brief at 13; Attorney General Reply at 4).

Additionally, the Attorney General contends that the study recognizes the different break rates for different types of mains, but fails to prioritize mains with higher break rates (Attorney General Brief at 13). She argues that the study replaces mains proportionally at historic rates across the Company's three systems (i.e., Hingham/Hull/North Cohasset, Millbury, and Oxford) and contends that this approach does not target the worst mains first to get the maximum reduction in leaks for the lowest cost (Attorney General Brief at 14, citing Exh. AWC-TMD-4, at 34, 57).

The Attorney General disputes the relevance of the Company's contention that it has not earned its allowed rate of return, maintaining that the allowed rate of return is not the same as its cost of capital (Attorney General Brief at 11, citing Exh. TMD at 3-5). She asserts that the cost of capital for all utilities has decreased significantly since the Company's last base rate case and that the lower cost of debt and equity reduced the Company's need for additional revenue (Attorney General Brief at 11, citing Exh. AG-JRW-3, Panel A). She contends that if the Company truly needed additional resources it would have filed for a rate increase earlier and worked to have new rates become effective as soon as possible rather than further delaying rate relief by requesting to amend its filing (Attorney General Brief at 11; Attorney General Reply at 5). The Attorney General argues that the increase in base rates resulting from this proceeding should provide Aquarion with sufficient funds for the rate year and beyond (Attorney General Reply at 5, 6).

The Attorney General disputes the Company's assertion that because its revenue base is not growing the Company cannot rely on increased revenues in the future (Attorney General Reply at 2, citing Company Brief at 78-79). She maintains that Aquarion's revenues have increased by over $1.0 million a year since its last rate case due to the addition of new customers (Attorney General Reply at 2-3, comparing Exh. 2, Sch. 1, with D.P.U. 11-43, at 276).[26] The Attorney General contends that there is no reason to believe this growth will not continue and provide more funds for the Company's operations (Attorney General Reply at 3).

The Attorney General disputes the Company's argument that it is a small company with few resources and asserts that the Company now has significant financial and operations resources as a result of its acquisition by Eversource, which should result in increased efficiencies and lower costs (Attorney General Brief at 11-12, citing Company Brief at 70, 74, 80-81; Attorney General Reply at 1-2). Specifically, the Attorney General contends that Eversource Service Company can provide common and back office functions, providing significant operational savings due to economies of scale, in the range of three to five percent (Attorney General Brief at 12, citing Exh. AG-TN at 10–12). She contends that Eversource, one of the 20 largest investor-owned utilities in the United States, has one of the highest credit ratings in the industry nationally, and access to Eversource's money pool should reduce the Company's financial costs for short-term borrowing and working capital (Attorney General Brief at 12, citing NSTAR Electric Company/Western Massachusetts Electric Company, D.P.U. 17-05, at 634-635 (November 30, 2017); Attorney General Reply at 1-2).

Additionally, the Attorney General disagrees with the Company's assertion that its proposed tracker is similar to the Gas System Enhancement Plans ("GSEPs") for the gas distribution companies, contending that it is neither required by statute, targeted, nor limited

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26 The Attorney General maintains that the Company's customer base grew from 18,960 in its last rate case to 19,722 in 2017 (Attorney General Reply at 3, citing Exhs. AG 3-2, Att. B (2011) through Att. B (2017), at 415).

(Attorney General Reply at 3, citing Company Brief at 77; G.L. c. 164, § 145). Specifically, the Attorney General contends that unlike the GSEPs, there is no statute pertaining to a capital recovery mechanism for a water company, that the same safety issues (i.e., those associated with methane gas leaks) are not implicated here, and that the proposed Mechanism does not target specific assets for replacement (Attorney General Brief at 7; Attorney General Reply at 3-4).

c. Ratepayer Impacts

The Attorney General disputes the Company's contention that the proposed Mechanism will "mute" the impact of rate increases on customers (Attorney General Reply at 4, citing Company Brief at 82-83). The Attorney General asserts that the proposed Mechanism would permit rate increases of five percent annually, in addition to any base rate increases that the Company may file over time, and she contends that the proposed cap of five percent is more than twice the rate of inflation (Attorney General Brief at 8, citing Exh. AWC-TMD-1, at 23; Attorney General Reply at 4-5). Thus, according to the Attorney General, a five percent annual increase in rates does not "mute" the impact on customers and, instead, results in unreasonable shareholder profits at the expense of ratepayers (Attorney General Reply at 4-5).

d. Implementation of Mechanism

The Attorney General contends that regulatory lag under traditional ratemaking provides an incentive to companies to control costs and encourages efficiency, while enabling companies to retain any higher profits resulting from superior performance (Attorney General

Brief at 6, citing ALFRED KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS Vol. 2, 48 (MIT Press, 1988 (1970)). The Attorney General maintains that mechanisms, such as the one proposed here, remove regulatory lag and, thus, the incentive for utilities to minimize the costs associated with capital projects (Attorney General Brief at 6, citing Exh. AG-TN at 5).[27] Additionally, the Attorney General argues that because the proposed Mechanism includes a return on equity, the Company would have the incentive to grow its rate base as quickly as possible and pass those investments through the capital tracker to increase shareholder earnings (Attorney General Brief at 6, citing Exh. AG-TN at 5). The Attorney General contends that the Company will have the incentive to make investments that are not necessary to provide safe or reliable service and that this "gold plating" of the system will cause unnecessary increases in the cost of service (Attorney General Brief at 6-7, citing Exh. AG-TN at 5).

Further, the Attorney General asserts that, as proposed, the Mechanism contains many flaws (Attorney General Brief at 8). Specifically, the Attorney General contends that the Mechanism is not targeted to a particular asset or problem on the Company's system and, instead, would recover essentially all distribution system investments, with over 88 percent of its plant eligible under the Mechanism based on a comparison with the Company's test year investments (Attorney General Brief at 7-8, citing Exhs. AWC-TMD-1, at 21; AG 3-2,

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[27] The Attorney General argues that the incentive to minimize costs within traditional ratemaking also permits a commission to have more confidence that utility management decisions are more consistent with ratepayer interests (Attorney General Brief at 7).

Att. B (2016) at 202). She argues that the proposed Mechanism does not include a test to ensure that overhead and indirect costs already included in base distribution rates are not also recovered through the Mechanism (Attorney General Brief at 9, citing Exh. AWC-TMD-1, at 8). Additionally, she contends that the Mechanism does not include an earnings test to demonstrate that the Company's overall rates would be just and reasonable when the Mechanism revenues are combined with base distribution rates (Attorney General Brief at 8, citing Exh. AWC-TMD-1, at 23). Further, the Attorney General argues that the Mechanism does not account for the savings in operations and maintenance ("O&M") expense associated with the reduction in leaks and repairs that would result from the mains replacements (Attorney General Brief at 9, citing Exh. AG-TN at 9). Additionally, the Attorney General maintains that a reduction in leaks and breaks should reduce the electric and chemical costs associated with the water supply (Attorney General Brief at 9). According to the Attorney General, the Mechanism does not adjust for sales growth resulting from the installation of larger mains and additional meters under the Mechanism, and this would unfairly benefit the shareholders at the expense of ratepayers (Attorney General Brief at 8, citing Exh. AWC-TMD-1, at 21).

The Attorney General asserts that the proposed Mechanism does not adjust or account for the annual recovery of capital investments through the inclusion of depreciation expense in base rates (Attorney General Brief at 8, citing Exh. AWC-TMD-1, at 23). Additionally, the Attorney General states that depreciation reduces rate base and, consequently, reduces the required return that the Company recovers each year subsequent to a rate case proceeding

(Attorney General Brief at 8-9, citing Exh. AWC-TMD-1, at 23). She argues that allowing the Company to recover the return on the plant additions through the Mechanism and on the net plant approved in the Company's last rate case without adjusting for accumulated depreciation amounts to double recovery (Attorney General Brief at 9, citing Exh. AWC-TMD-1, at 23).

Lastly, the Attorney General contends that implementation of the proposed Mechanism will create an unnecessary administrative burden (Attorney General Reply at 5-6). She maintains that the existence of capital cost recovery mechanisms for numerous electric and gas distribution companies has not reduced the number of base rate proceedings before the Department (Attorney General Reply at 6). The Attorney General argues that approval of this proposal will provide an opportunity for the 16 rate-regulated water distribution companies in Massachusetts to seek a similar mechanism (Attorney General Reply at 6).

2. Hingham, Hull, and Oxford

a. Introduction

Hingham, Hull, and Oxford (collectively, "Towns") dispute the need for the Mechanism and, additionally, oppose its implementation based on the level of expenditure and the proposed recovery method (Hingham/Hull Brief at 10, 16; Hingham/Hull Reply at 4). In the alternative, the Towns argue that if the Mechanism is approved, the Department should impose certain conditions and limitations, including limiting the surcharge to only the approximate $1.0 million in accelerated investment or phasing in the level of investment recovered through the Mechanism (Hingham/Hull Brief at 16; Hingham/Hull Reply at 4).

b. Need for Mechanism

The Towns assert that the Company's stated reason for proposing the Mechanism (i.e., a need to increase investments in aging infrastructure) is a problem of the Company's own making (Hingham/Hull Brief at 10). The Towns assert that between 2011 and 2014, the Company invested only $500,000 per year in mains, and that the Company now claims that it needs to increase its level of investment in plant by nearly five times that level, with ratepayers paying all related costs (Hingham/Hull Brief at 10, citing Exh. AWC-TMD-1, at 14). The Towns argue that the Company was aware of the need to increase its infrastructure investments, prior to its initial filing, and should have proposed increasing its investment at that time (Hingham/Hull Brief at 10). Further, the Towns contend that if the Company was concerned with rapid deterioration of aging infrastructure, the Company could have accelerated replacement prior to this case without changing the recovery method (Hingham/Hull Brief at 6). The Towns maintain that lack of sufficient investment in the system has been an issue in all prior rate cases (Hingham/Hull Brief at 6 n.2). The Towns maintain that an unstated reason the Company proposed the Mechanism is that the recovery method is a major benefit to the Company and its shareholders by reducing the lag for recovery of such investments and reducing shareholders' financial risk (Hingham/Hull Brief at 12).

The Towns argue that a major proposal like the Mechanism should be evaluated as a stand-alone program against traditional recovery methods and reasonable alternative cost recovery methods, by examining all direct costs and benefits (both monetary and non-monetary), as well as all significant externalities (Hingham/Hull Brief at 12).[28] The Towns assert that the Company either failed to evaluate alternative cost recovery methods or chose not to present the results of any such evaluations (Hingham/Hull Brief at 13). The Towns argue that the Company could initiate the incremental investments in its capital plan under traditional recovery methods over the next year or two to provide sufficient time to comprehensively evaluate the Mechanism against any alternatives (Hingham/Hull Brief at 13).[29]

c. Ratepayer Impacts

The Towns contend that the impact of the Mechanism to ratepayers would be significant, with total annual investment in mains replacements of approximately $2.6 million, or $1.1 million over the amount identified in the Company's initial filing (Hingham/Hull Brief at 10, 11). The Towns maintain that the bill impacts will not be minimal, with average increases of three percent per year, or as high as five percent in a particular year, without the safeguards associated with the traditional method of recovering those costs (Hingham/Hull Brief at 10, 11).[30] The Towns argue that with annual increases

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28 Additionally, the Towns contend that the Company biased the evaluation of the Mechanism by including the unrelated benefits of the ADIT credit in the analysis, and they contend that the effect of the tax credit would be minimal (Hingham/Hull Brief at 11-12, citing Exhs. Towns 5-1; Towns 6-27).

29 The Towns contend that this would also allow for any incentives included in possible infrastructure improvement legislation to be included in the evaluation (Hingham/Hull Brief at 13).

30 The Towns maintain that the average surcharges for the first four years, of approximately three percent, are much higher than the average of 1.5 percent that the

over as many as 26 years, the cumulative impact would be significant (Hingham/Hull Brief at 11). The Towns assert that after five years, typical customers in Service Area A would see a cumulative increase of $58.17 to $63.20 in their annual bill, depending on the application of the Company's proposed ADIT credit (Hingham/Hull Brief at 11, citing Exh. Towns 6-27).

d. Implementation of Mechanism

The Towns argue that, while the purpose of the Company's proposal is to accelerate mains replacements, the Mechanism would recover the costs associated with all other distribution infrastructure investments (Hingham/Hull Brief at 13). The Towns contend that this would result in the recovery of approximately $3.0 million on average annually, rather than the approximately $1.0 million in accelerated mains replacements (Hingham/Hull Brief at 13). The Towns argue that if approved, cost recovery through the Mechanism should be limited to only the $1.0 million in accelerated mains replacements a year, and it should exclude all other capital improvements (Hingham/Hull Brief at 16; Hingham/Hull Reply at 4). The Towns contend that the Company failed to provide evidence to justify cost recovery for any other facilities (i.e., non-mains) in the Mechanism (Hingham/Hull Reply at 4). The Towns assert that pump stations, storage tanks, and meters particularly should continue to be funded through the traditional ratemaking process (Hingham/Hull Brief at 16).

Company identified in its proposal (Hingham/Hull Brief at 13-14, citing Exhs. AWC-TMD-1, at 4; DPU 20-11; AG 13-14).

In the event that a mechanism is implemented, the Towns recommend phasing in the level of additional mains replacements over time to mitigate customer bill impacts (Hingham/Hull Reply at 4). The Towns argue that a phase in would provide additional time to see how the Mechanism works and determine whether another method would be more appropriate (Hingham/Hull Reply at 4).

In testimony, Hingham and Hull also propose an alternative mechanism for Department consideration to the extent that the Department determines implementation of a mechanism is appropriate (Exh. TOWNS-DFR (Supp.) at 11-12). Specifically, Hingham and Hull suggest that the Department determine the level of additional incremental investment and specific projects for the subsequent project year after an abbreviated public hearing process, including opportunities for input from affected municipalities and the public (Exh. TOWNS-DFR (Supp.) at 11).[31] Hingham and Hull maintain that the abbreviated hearing process would be "very limited" in scope and duration to the extent that the parties agree to the list of projects to be included for Department review (Exh. TOWNS-DFR (Supp.) at 11-12).[32] Additionally, Hingham and Hull propose that the determination of which

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[31] Hingham and Hull propose that the Company would prepare its preferred list of projects for the next project year in consultation with the municipalities and provide its best estimates for projects intended for two to four years after the project year under consideration (Exh. TOWNS-DFR (Supp.) at 11).

[32] Hingham and Hull propose that the specifics of the hearing process would be negotiated by the parties in this proceeding and approved by the Department at the conclusion of this case (Exh. TOWNS-DFR (Supp.) at 11).

projects and what portion of the associated costs would be included in rate base would be addressed in subsequent base rate proceedings (Exh. TOWNS-DFR (Supp.) at 11).

Finally, the Towns join in many of the arguments presented by the Attorney General, summarized above (Hingham/Hull Brief at 14).

3. Company

a. Introduction

The Company argues that the proposed Mechanism meets the Department standard for approval of a new capital cost recovery mechanism and is necessary to address the increasing need to replace its aging infrastructure (Company Brief at 80, 86-89; Company Reply at 4-5). Additionally, the Company asserts that the proposed Mechanism is sufficiently targeted and agrees that mechanics of the Mechanism could be adjusted such as through the implementation of an earnings test and an O&M offset (Company Brief at 94-97). Further, the Company argues that the KANEW model is appropriately designed (Company Brief at 99-102).

b. Need for Mechanism

The Company contends that it has demonstrated that the proposed Mechanism is reasonable and warranted because of (1) a need for incremental capital investment that cannot be addressed under traditional ratemaking without severe impact to earned returns; (2) a lack of growth in sales revenues despite increasing customer base to offset the cost of investment, directly resulting from conservation efforts and limits on sales volumes required by the Massachusetts Department of Environmental Protection ("MassDEP"); and (3) the

Company's inability to meet its coverage ratios for long-term debt, preventing it from entering into additional long-term debt (Company Brief at 89, citing Exhs. DPU 7-7; DPU 7-26; Towns 6-5; RR-HH-3; Tr. at 56-58, 123-124, 138; Tr. 2, at 324, 341; Tr. 3, at 413-414; Tr. 4, at 646-647; Company Reply at 4).[33] The Company contends that the Mechanism is necessary to its mains replacements efforts and is designed to enable the Company to reduce main breaks and unaccounted-for water ("UAW"), address customer concerns about water reliability and water quality, and reduce O&M expenses associated with repairs, while continuing to comply with the MassDEP's regulations regarding the Company's water consumption limitations (Company Brief at 2-3, citing Exhs. AWC-TMD-1, at 17, 26; DPU 20-7; Tr. 3, at 41).

Aquarion argues that based on the Company's current level of spending, the KANEW study predicted an increase in breaks and O&M expenses related to repairs (Company Brief at 81, citing Tr. 3, at 431). The Company contends that the average life of water mains would need to be 465 years, rather than the depreciable life of 70 years, for the Company to continue at its current rate of replacement (Company Brief at 80-81, citing Exh. AWC-TMD-1, at 17, 20). The Company maintains that the KANEW study

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33 The Company contends that the Attorney General relies on the wrong standard for establishment of a new capital cost recovery mechanism and that the Department has authorized capital cost recovery mechanisms when a company adequately demonstrates its need to recover incremental costs associated with capital expenditure programs between rate cases (Company Brief at 93, citing Boston Gas Company/Essex Gas Company/Colonial Gas Company, D.P.U. 10-55, at 121-122, 132-133 (2010); Massachusetts Electric Company/Nantucket Electric Company, D.P.U. 09-39, at 79-80, 82 (2009); Bay State Gas Company, D.P.U. 09-30, at 133-134 (2009)).

recommended an annual investment in mains replacements and rehabilitation of at least $2.6 million in order to minimize issues and maximize savings, and the Company contends that approval of the Mechanism will allow for an annual increase in reliability-related capital work of more than $1.0 million (Company Brief at 77, 81, citing Exh. AWC-TMD-1, at 15, 18; Tr. at 88). The Company states that the Mechanism will focus mainly on the replacement of water mains (approximately 81 percent of expenditures) but that other distribution projects will be prioritized as well to reduce UAW as a result of leaks (Company Brief at 80, 82-83, citing Exh. AG-13-53, at 21; Tr. at 26, 27, 44; Company Reply at 10).

In response to the Attorney General's arguments regarding the validity of the KANEW study, the Company asserts that the water mains in Connecticut are an excellent proxy for those in Massachusetts because both systems experience the same variety of soil conditions, same weather pattern, and are the same general age (Company Brief at 100). The Company contends that the average service life of 63 years for Aquarion-CT is not statistically different than the average service life of 70.4 years for the Company (Company Brief at 100). Further, the Company disputes the Attorney General's contention that this difference in average service lives means that the Massachusetts mains will last longer (Company Brief at 100). Specifically, the Company contends that the reason Connecticut mains have a slightly lower average service life is because Aquarion-CT has had a capital cost recovery mechanism in place, enabling a faster rate of replacement (Company Brief at 100). Finally, the Company contends that the KANEW study included a sensitivity analysis to consider optimistic and pessimistic EULs, in addition to the medium EUL values used for planning purposes (Company Brief at 100).

The Company contends that while the KANEW study predicts when mains are likely to reach the point that they require replacement, it is not a prioritization tool to select which mains to replace first (Company Brief at 101). The Company asserts that it will replace mains based upon their actual performance, not the KANEW study, and that the mains to be replaced will be the ones with the worst performance (Company Brief at 101-102). Additionally, the Company contends that it intends to update the KANEW study periodically as replacement efforts progress (Company Brief at 101).

The Company contends that the Mechanism will benefit ratepayers because it is designed to address the increasing need for infrastructure investments in mains and the distribution system to address increasing leaks and water discoloration and interruptions resulting from aging infrastructure (Company Brief at 80, citing Exhs. AWC-TMD-1, at 16-17; Towns 7-13; Tr. at 26). Aquarion asserts that customers expressed support for more investment in infrastructure to improve reliability and water quality (Company Brief at 80-81, citing Exh. AWC-TMD-1, at 5, 25, 26). The Company asserts that Mechanism investments will produce O&M savings over time, which will be passed back to the customers in future rate cases as those savings are incorporated into the Company's operations (Company Brief at 83, citing Exh. DPU 20-13). Further, the Company contends that the KANEW study shows that many mains will reach a point where they are continually breaking and will need to be removed from service simultaneously, thus, requiring a large investment over a short time period (Company Brief at 82, citing Tr. 3, at 432, 433). The Company claims that the Mechanism will enable it to invest in incremental mains replacements over a long period of time, thus muting the impact to ratepayers (Company Brief at 82, citing Exh. AG 13-53; Tr. 3, at 432, 445).

The Company argues that its awareness of the need to accelerate replacement ahead of the rate case filing is not justification for rejection of the proposed Mechanism and challenges the Towns' argument that the need to invest in aging water mains is a problem of the Company's own making (Company Brief at 102, 103, citing Hingham/Hull Brief at 10). Aquarion claims that the record shows that the average break rate for the Company is well below the industry average, and it argues that the purpose of the Mechanism is to maintain replacement at a rate that will assure that the break rate can be maintained in the future (Company Brief at 103, citing Tr. 3, at 587). Further, the Company contends that, historically, it has focused its investments on building water treatment plants, because during that time the mains were providing service to customers and break rates did not indicate a need for accelerated replacement (Company Brief at 82, citing Tr. at 103; Tr. at 2, at 390). The Company maintains that circumstances now have changed as a large portion of the mains inventory exceed their reasonable useful life and the number of main breaks is going to increase over time (Company Brief at 82, citing Tr. 3, at 431).

The Company maintains that water consumption, which represents the bulk of its revenue, has been relatively flat since its last rate case despite continuous growth in the number of customers, due to conservation efforts and implementation of its Water Balance

Program ("WBP") (Company Brief at 3, 77-78, 89, 94, citing Exhs. DPU 1-26; DPU 7-7; DPU 7-26; DPU 22-6; DPU 24-11; Tr. at 75, 134-135, 138; Tr. 2, at 322, 324, 341).[34,35] The Company asserts that as a result Aquarion is not experiencing the growth in sales revenue that would normally come from an expanding customer base and, without such revenue growth, the proposed Mechanism is needed to support capital investment between rate cases and facilitate acceleration of replacements (Company Brief at 3, 79, 89, citing Tr. at 75-76, 138; Tr. 3, at 413-415; Company Reply at 4). The Company disputes the Attorney General's argument that the Mechanism should be rejected because it does not account for the impact of sales growth and asserts that Aquarion has demonstrated there is no sales growth (Company Brief at 95, citing Exh. DPU 7-26; Tr. at 75-76, 138).[36] The Company argues that further justification of the need for the Mechanism is that revenues are not sufficient to maintain debt coverage ratios (Company Brief at 94, citing Fitchburg Gas

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34 The Company contends that the amount of water sold in 2017 was half a billion gallons less than the amount sold during the test year for D.P.U. 11-43 and is further evidence that revenue is flat despite modest customer growth (Company Reply at 6-7, citing Tr. at 134-135).

35 Aquarion contends that under its Water Management Act Registration limit, the Company has a finite supply of water and, without new sources, would potentially be forced to deny service to new customers (Company Brief at 78, citing Exh. DPU 24-11). The Department addresses the Company's WBP in Section XIII., below.

36 The Company contends that the Attorney General's assertion that the Company has experienced a $1.0 million increase in annual revenues since its last rate case is based on the test year amount prior to the Company's last rate case (Company Reply at 6).

and Electric Light Company, D.P.U. 15-80/D.P.U. 15-81, at 49-50 (2016); Company Reply at 4-5).

The Company argues that the Attorney General's assertion that the Company could have sought relief through a base rate case proceeding earlier if it was truly in need of additional revenues, fails to address the demonstrated need for recovery of costs related to capital expenditures between rate cases, evidence of lost growth in sales, and the extraordinary circumstances that prevented it from acquiring the capital necessary to make required investments (Company Brief at 98-99).

The Company argues that its acquisition by Eversource does not change the Company's circumstances or the fact that Aquarion is entitled to recovery of reasonable and prudently incurred operating costs, including a fair and reasonable return (Company Brief at 99, citing RR-AWC-3; Company Reply at 3). The Company disputes the Attorney General's claim that merger synergies achieved by the NSTAR/Northeast Utilities merger could be assumed to apply to the acquisition of Aquarion by Eversource as unsupported, particularly because the water company operates on a standalone basis from Eversource's gas and electric utilities (Company Brief at 91, 99). The Company further contends that the Attorney General's calculation of this asserted increase in the return of two to three hundred basis points (two to three percent) would still leave a gap of several hundred basis points between the achieved return and the allowed return (Company Brief at 91).[37]

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37 The Company argues that the Attorney General's witness was unable to produce evidence of cost cutting opportunities sufficient to yield an increase of one hundred basis points to the earned return (Company Brief at 91).

c. Ratepayer Impacts

The Company argues that its proposed Mechanism includes a bill-impact cap to limit the annual change in revenue requirement and prevent large relative bill impacts (Company Brief at 83, citing Exhs. AWC-TMD-1, at 22; AG 13-53). The Company contends that a cap of five percent per year and ten percent total between rate case proceedings would limit the impact on customers (Company Brief at 83, citing Tr. at 52-53). The Company argues that the cap will ensure the increase is gradual while still enabling Aquarion to invest in necessary water mains replacements (Company Brief at 83-84, citing Exh. AG 13-15).

d. Implementation of Mechanism

The Company contends the Attorney General's claim that, by reducing regulatory lag, the Mechanism will undermine the incentive to control costs and, therefore, allow the Company to "gold plate" the system is unsupported (Company Brief at 89-91, citing Attorney General Brief at 6).[38] The Company contends that with its annual bill impact cap and limited increase of $1.0 million in new expenditures, the Attorney General has failed to demonstrate that the Mechanism would enable the Company to "gold plate" its system (Company Brief at 92). Further, the Company contends that its earned return on equity of under five percent since the Company's last rate case and its current earnings of negative three percent demonstrate that it is unlikely the Mechanism would provide a level of cost recovery that eliminates cost control incentives (Company Brief at 90, citing Exh. AG 3-12; Tr. at 75).

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38 The Company argues that the record demonstrates the need for increased investment, and that the Attorney General's witness could not identify any unnecessary capital investments made to date (Company Brief at 92, citing Tr. 4, at 646).

The Company contends that the Mechanism will not provide relief for increases in O&M expenses (Company Brief at 90).

Aquarion asserts that it is committed to stakeholder collaboration and maintains that it would work closely with the municipalities located within its service territory ("municipalities") to obtain their input on replacement priorities and schedules, with the results of stakeholder collaborations included in the annual filings (Company Brief at 85, citing Exh. AWC-TMD-1, at 24-26). Additionally, the Company asserts that it has proposed a process that will include annual meetings with the municipalities to obtain feedback, development of a written plan taking that feedback into consideration, and submission of the written plan to the municipalities prior to filing with the Department (Company Brief at 85, citing Tr. at 61-62). The Company anticipates that this coordination will help mitigate construction costs due to paving coordination and will allow for fewer roads to be under construction at any given time (Company Brief at 85-86, citing Tr. at 203).

The Company disputes the Attorney General's assertion that the Mechanism is not targeted to a particular asset or problem on the Company's system and contends that the proposed Mechanism is focused on capital investment that will prevent breaks and water leaks (Company Brief at 94, citing Attorney General Brief at 7-8; Company Reply at 3, 5). Further, the Company contends that it has appropriately structured the Mechanism consistent with Department precedent to encompass incremental capital investments (Company Brief at 92-94; Company Reply at 5). The Company argues that the Mechanism was modeled on the infrastructure investment mechanisms that the Department has approved for gas distribution companies as well as those of water companies in other jurisdictions (Company Brief at 77, citing Exh. AWC-TMD-1, at 22; Tr. 3, at 410). The Company asserts that it is the recovery of all incremental investments that will enable it to accelerate replacement and that recovery of only the $1.0 million in accelerated investments as proposed by the Towns would render the Mechanism meaningless (Company Reply at 5).

In response to Attorney General's criticism of the mechanics of the Mechanism, the Company asserts that it is willing to include the following: (1) an earnings test that would allow for recovery through the Mechanism as long as earnings are below the authorized return on equity; and (2) an O&M offset, calculated on the same basis as the O&M offsets found in the gas company GSEP mechanisms (Company Brief at 96-97, citing Massachusetts Electric Company/Nantucket Electric Company, D.P.U. 09-39, at 92 (2009)).[39] However,

[39] The Company proposed the following language to implement the O&M offset:

> [Mechanism] Offsets represent the reduced [O&M] expense associated with the elimination of water leaks through Eligible Infrastructure Replacement Projects. [Mechanism] Offsets are determined by multiplying Eligible [Mechanism] Savings by the total miles of water mains replaced or abandoned by the Company in the period January 1 through December 31 of the respective [Mechanism] Investment Year.
>
> Eligible [Mechanism] Savings are the cumulative reduction in [O&M] leak repair expense achieved with the replacement of leak-prone main. Eligible [Mechanism] Savings shall be equal to the most recent three-year average of leak repair cost-per-mile for water mains, updated annually in the [Mechanism] Plan submitted to the Department on March 1st of each year for the subsequent construction year. The costs associated with leak repair expense shall be determined in accordance with the Uniform System of Accounts for Water Companies, 220 C.M.R. § 52, [O&M] Expense Accounts, in use during the test year of its previous base rate case filed pursuant to G.L. c. 164, § 94.

(Company Brief at 97).

the Company asserts that the Department has found that the "depreciation net out" proposed by the Attorney General is not an appropriate ratemaking approach (Company Brief at 96). The Company contends that the Department has been consistent in finding that the funds from depreciation expense, generated through rates, are intended to allow a company to recover its capital investments in a timely and equitable fashion over the service lives of the investments (Company Brief at 96, citing Boston Gas Company/Colonial Gas Company, D.P.U. 14-132, at 63 (2015); Hingham Water Company, D.P.U. 1590, at 22-23 (1984)).

Finally, the Company asserts that the Attorney General's arguments that implementation of the Mechanism (1) is neither mandated by statute, nor targeted; (2) would result in "gold plating" of the system resulting in "unreasonable shareholder profits"; and (3) would unnecessarily burden the Department are not probative of the standard of review (Company Reply at 3, citing Attorney General Reply at 6).

C. Analysis and Findings

1. Introduction

The Department has previously addressed proposals for capital cost recovery mechanisms for electric distribution companies in the context of revenue decoupling and for gas distribution companies regarding targeted infrastructure replacements for leak-prone mains.[40] See, e.g., Massachusetts Electric Company/Nantucket Electric Company,

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[40] The Department approved the first targeted infrastructure replacement factor ("TIRF") mechanism in 2009, recognizing that there were public safety, service reliability, and environmental issues associated with the continued existence and aging of leak-prone facilities in gas companies' distribution systems. D.P.U. 09-30, at 133. The Department found that approval of a TIRF mechanism was likely to provide an

D.P.U. 15-155, at 51 n.29 (2016), citing D.P.U. 09-39, at 80-84; D.P.U. 15-80/D.P.U. 15-81, at 49-55; Bay State Gas Company, D.P.U. 09-30, at 129-135 (2009). In evaluating capital cost recovery mechanisms for electric distribution company proceedings, the Department's standard of review examines whether the Mechanism is warranted and is in the best interest of ratepayers. D.P.U. 15-155, at 51; Fitchburg Gas and Electric Light Company, D.P.U. 13-90, at 36 (2014); Fitchburg Gas and Electric Light Company, D.P.U. 11-01/D.P.U. 11-02, at 111 (2011); Western Massachusetts Electric Company, D.P.U. 10-70, at 51-52 (2011); D.P.U. 09-39, at 80-84.[41] The Department has allowed capital cost recovery mechanisms in cases where a company has adequately demonstrated the need to recover incremental costs associated with capital expenditure programs between base distribution rate cases. D.P.U. 15-155, at 51-52; Boston Gas

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incentive for more sustained and aggressive replacement of aging infrastructure, while lessening the impediment of current capital constraints. D.P.U. 10-55, at 122. On June 26, 2014, the Legislature passed An Act Relative to Natural Gas Leaks, St. 2014, c. 149 (eff. October 1, 2014) which permitted gas distribution companies to propose Gas System Enhancement Plans ("GSEP"), including a timeline for removing all leak-prone infrastructure on an accelerated basis and for recovery of the associated revenue requirement after Department approval. The GSEPs have replaced TIRF mechanisms for eligible gas infrastructure replacements made after January 1, 2015.

[41] The Attorney General argues that the costs the Company proposes to recover are neither new, special, large, nor required by any financial emergency; additionally, she contends that the costs do not vary significantly from year to year, are within the Company's control, and, thus, do not satisfy the requirements to create a new mechanism. The Attorney General bases this argument on the requirements applicable to establishing other types of cost recovery mechanisms, and not a capital investment cost recovery mechanism. See, e.g., D.P.U. 10-55, at 66 n.43 (rejecting a proposed inflation adjustment mechanism); D.P.U. 09-39, at 220-223 (approving a pension and payment of benefits other than pensions expenses mechanism).

Company/Essex Gas Company/Colonial Gas Company, D.P.U. 10-55, at 121-122, 132-133 (2010); D.P.U. 09-39, at 79-80, 82; D.P.U. 09-30, at 133-134. Conversely, without compelling evidence of lost growth in sales, the Department has declined to approve a capital cost recovery mechanism as an element of decoupling. See D.P.U. 11-01/D.P.U. 11-02, at 109-111; D.P.U. 10-70, at 47; see also Investigation into Rate Structures that will Promote Efficient Deployment of Demand Resources, D.P.U. 07-50-A at 50 (2008). The Department has found that, where a company failed to demonstrate that there were extraordinary circumstances preventing the company from acquiring the capital necessary to make required investments in its infrastructure, approval of a capital cost recovery mechanism was neither warranted nor in the best interests of ratepayers. D.P.U. 11-01/D.P.U. 11-02, at 111; D.P.U. 10-70, at 50-52.

In reviewing targeted infrastructure replacement factor ("TIRF") mechanisms, the Department has found a proposed mechanism to be an appropriate exception to traditional ratemaking where the infrastructure replacement subject to special ratemaking treatment is limited in both its scale and scope, with a revenue cap to provide sufficient protection for rate payers by limiting the annual rate increase and addressing rate continuity concerns, and where the program was designed to expedite replacements. D.P.U. 10-114, at 34, 56-57, 66; D.P.U. 10-55, at 121-122, 133; D.P.U. 09-30, at 119, 133-135; see also D.P.U. 11-01/D.P.U. 11-02, at 140 (rejecting a TIRF because it did not include an adequate plan for accelerated infrastructure replacement). The Department finds that these standards are equally applicable to the Mechanism proposed here.

To determine whether Aquarion's proposed Mechanism is reasonable, the Department will first consider whether the Company has experienced extraordinary circumstances preventing it from acquiring the capital necessary to make required investments in its infrastructure. If the Department determines that is the case, the Department will consider whether the Mechanism is reasonably designed to achieve its intended goal and how its implementation will affect ratepayers and the Company's financial well-being. D.P.U. 15-80/D.P.U. 15-81, at 48, citing D.P.U. 10-55, at 66.

2. Need for Acceleration of Mains Replacements

The Company's service territory includes 286 miles of main in Hull, Hingham, Cohasset, Oxford, and Millbury (Exh. AWC-TMD-1, at 17). The average age of the Company's distribution mains is 64 years in the Hingham, Hull, Cohasset area, 60 years in Millbury, and 49 years in Oxford (Exh. AWC-TMD-1, at 17). The Company's current depreciable life of water mains is 70 years (Exh. AWC-TMD-1, at 17). Over 32 percent of the Company's mains are greater than 70 years of age, and 18 percent are greater than 100 years old (Exh. AWC-TMD-1, at 17). The Company testified that it is currently experiencing a gradual increase in service needs and maintenance (Tr. at 103).

As the Department noted in Aquarion's last rate case, the age of the Company's infrastructure has long been of concern. D.P.U. 11-43, at 263, citing Aquarion Water Company of Massachusetts, D.P.U. 08-27, at 221 (2009). In that proceeding, Hingham and Hull requested the Department to direct the Company to develop and implement a plan for examining old mains and those affected by surface or subsurface flow, and a plan for the replacement of older mains and mains affected by soil erosion. D.P.U. 11-43, at 262-263. In that proceeding, the Department found that the Company had made progress in its mains replacements program, acknowledging several mains replacements projects in Hingham, but recognized that other sections of the Company's distribution system were in need of replacement. D.P.U. 11-43, at 264.

In 2016, the Company commissioned a consultant to develop a study using the KANEW model to analyze the investments needed in mains replacements for its system and to provide guidance on the Company's input data and assumptions (Exhs. AWC-TMD-1, at 18; AWC-TMD-4, at 5, 11; AG 13-31). In developing the KANEW study, the consultant analyzed the available data for each of three Massachusetts systems (i.e., Hingham-Hull, Millbury, and Oxford); specifically, the consultant analyzed the material, diameter, year of installation, and break rate information for the Company's mains and whether those mains were listed as "active" or "abandoned" (Exh. AWC-TMD-4, at 5, 12-13). The consultant then organized the data into cohorts, or groupings, similar to ones previously created for the Aquarion-CT systems and categorized by mains of similar size (e.g., small and large diameter), material (e.g., asbestos cement, ductile iron, pit cast iron, spun cast iron), and aging characteristics (Exhs. AWC-TMD-4, at 5, 11; AG 13-32; DPU 20-17(b); RR-DPU-10; Tr. at 116, 179). For each cohort, the consultant developed survival curves, which predict how much of each type of main will need to be replaced in any given year to keep the maximum break rate (i.e., breaks per mile per year) for that cohort below a defined level (Exh. AG 13-32).

The consultant determined that the Company's water main year of installation and break rate history data, including water main material and age at time of break, was inadequate for performing predictive break rate and EUL analyses specific to the Company's water main data set (Exhs. AWC-TMD-4, at 5, 6, 11; DPU 20-17). As a result, the consultant relied upon EULs, aging factors,[42] and predicted break rates for each cohort based on data derived from a 2015 KANEW study conducted on the Aquarion-CT systems (Exhs. AWC-TMD-4, at 6, 11; DPU 20-17(c); Tr. at 180, 183; Tr. 3, at 446-447).

The KANEW model simulates investment scenarios to identify the optimum replacement plan based on the mains reaching the end of their useful life each year and other constraints, including costs, length of work per year, and acceptable break rate (Exhs. AWC-TMD-1, at 18 n.1; AWC-TMD-4, at 11).[43] For an analysis period of the years 2016 through 2100, the consultant utilized the KANEW model to generate (1) the replacement rate per year during the analysis period, (2) the replacement rate after the planning horizon, (3) future break rate, and (4) future investment cost (Exh. AWC-TMD-4, at 34).[44] The KANEW study also includes results for pessimistic, medium, and optimistic

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42 The aging factor is the percent annual increase in the rate of main breaks for a cohort of mains (RR-AG-1). For example, an aging factor of 3.35 means that the break rate (i.e., breaks per mile per year) is expected to increase as a rate of 3.35 percent each year (RR-AG-1).

43 The KANEW study included scenarios for the Hingham/Hull/North Cohasset, Oxford, and Millbury systems individually, and scenarios for the three systems together.

44 The KANEW study also uses an efficiency factor to account for the efficiency of targeting certain mains for replacement (Exh. AWC-TMD-4, at 33). An efficiency factor of one indicates the replaced mains would have a break rate within the average

EULs (Exh. AWC-TMD-4, at 32, 35). This provided scenarios that balance maintaining an acceptable break rate and avoiding an unmanageable backlog against the associated investment costs (Exh. AWC-TMD-4, at 36-58).

Based on its existing capital investment plan, the Company plans approximately $2.1 million of distribution system investment a year, including approximately $1.5 million in mains replacements (equivalent to approximately 0.97 miles or 5,100 feet) (Exh. AWC-TMD-1, at 16). To project the results of continuing this level of investment, the KANEW model generated a scenario based on a budget of $1.75 million per year (or 1.2 miles per year), using EULs corresponding to a maximum break rate for each cohort of 0.25 breaks per mile per year (0.12 breaks per mile per year system wide), resulting in an increase to 0.17 breaks per mile per year system wide and a backlog of nearly six miles by 2061 (Exhs. AWC-TMD-4, at 34, 57-58; AG 13-32, at 2; Tr. 2, at 389-390). The KANEW model also identified a scenario based on a budget of $2.6 million (or 1.8 miles) per year, using EULs corresponding to a maximum break rate for each cohort of 0.25 breaks per mile per year (0.12 breaks per mile per year system wide),[45] resulting in a consistent system wide

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range for their cohort if not replaced (Exh. AWC-TMD-4, at 33). An efficiency factor greater than one means that the replaced mains would otherwise have a break rate above the average for their cohort if not replaced (Exh. AWC-TMD-4, at 33).

45 Based on a historic ten-year average, replacement cost is $275 per linear foot of main (Exhs. AWC-TMD-1, at 18; AG 13-26; DPU 20-4). The KANEW study identifies a weighted average of $277 per linear foot replaced, but relies on the $275 figure in calculating necessary investment amounts under the different scenarios (Exhs. AWC-TMD-1, at 18; AWC-TMD-4, at 7, 33, 40, 45, 50, 57; DPU 20-4; Tr. 3, at 573-574).

break rate that does not exceed 0.12 breaks per mile per year and avoids an unmanageable backlog through 2070 (Exhs. AWC-TMD-1, at 18; AWC-TMD-4, at 54; AG 13-32, at 1-2; Tr. 3, at 577-578). The projected necessary minimum investment would increase to $2.8 million per year at that time (Exhs. AWC-TMD-1, at 54; AG 13-32, at 1). The Company bases its proposed level of accelerated mains replacements on this scenario (Exhs. AWC-TMD-1, at 18-19; AG 13-25; AG 13-32, at 1-2; Tr. at 118-119).

The Attorney General contends that the KANEW model is not publicly available and, thus, its accuracy and reliability could not be verified (Attorney General Brief at 12, citing Exh. AG 3-31). The Attorney General additionally contends that the KANEW study relied upon data from Connecticut water companies for EULs and aging factors without demonstrating that those inputs were reasonable proxies for the Massachusetts system (Attorney General Brief at 12-13, citing Exh. AWC-TMD-4, at 5-6). While the underlying KANEW software was not provided, the consultant's report summarizing the KANEW model's outputs included a detailed description of the method used (Exh. AWC-TMD-4, at 11, 32-35; see also Exh. DPU 20-17; RR-AG-1; RR-DPU-10). The Department has reviewed the record and finds that the Company provided sufficient evidence to evaluate the method and resulting KANEW study.

Further, we find the Attorney General's arguments unpersuasive regarding the use of EULs and aging factors based on the Aquarion-CT system as inputs to the KANEW model. The consultant identified that there was inadequate data for the Massachusetts system to generate certain input values. Thus, in developing the KANEW study, the consultant organized the Massachusetts mains into cohorts similar to those in Connecticut, categorized by mains of similar size, material, and aging characteristics, and applied the EULs and aging factors to those cohorts (Exhs. AWC-TMD-4, at 5-7, 11, 26; AG 13-32; DPU 20-17(b)&(c); RR-AG-1; RR-DPU-10; Tr. at 116, 179-180, 183; Tr. 3, at 446-447). We find the EULs and aging factors from Aquarion-CT to be reasonable proxies for the Aquarion system in Massachusetts because both systems are of a similar age, with the same variety of soil, weather, and environmental conditions (Exh. DPU 20-17(b); RR-AG-1). We determine this approach was reasonable, but as addressed in Section V.C.4.m., below, direct the Company to continue implementing the recommendations set forth in the KANEW study regarding mains and breaks data for purposes of future analyses (Exhs. AWC-TMD-4, at 9, 21, 24-25; DPU 20-16; RR-DPU-11; Tr. 3, at 447-453).

Finally, the Attorney General asserts that the industry average break rate is 0.23 per mile per year and that reliance on a maximum break rate of 0.12 breaks per mile per year as an input in the KANEW model would result in needless investment (Attorney General Brief at 13, citing Tr. at 119; Tr. 3, at 438). However, while the scenario relied upon by the Company projects a system-wide break rate of 0.12 per mile per year through the analysis period and based on a maximum break rate of 0.25 per mile per year for each cohort, the analysis also was based on avoiding an unmanageable backlog through 2070 (Exhs. AWC-TMD-1, at 18; AWC-TMD-4, at 34, 54; AG 13-25; AG 13-32, at 1-2; Tr. at 118-119; Tr. 3, at 575-578). In comparison, the scenario based on the current rate of mains replacements showed a backlog of nearly six miles as of 2061 (Exhs. AWC-TMD-4, at 34, 57-58; AG 13-32, at 2; Tr. 2, at 389-390).

Based on our review, we accept the KANEW study as support for the Company's need to accelerate its mains replacements activities to ensure that it will continue to meet its service obligations over the long term.[46] Based on the factors addressed above, the Department determines that the Company has demonstrated a need for acceleration of mains replacements and rehabilitation on its system. The Department finds that acceleration of mains replacements will enable the Company to avoid an unmanageable backlog of necessary mains replacements, thus minimizing the potential for a future significant financial impact on ratepayers (see Exhs. AWC-TMD-1, at 18, 25; AWC-TMD-4, at 34, 54; AG 13-32, at 1-2; Tr. at 40; Tr. 3, at 431-434). Further, the Department finds that accelerating replacement of water mains will increase system reliability, reduce water loss due to leakage, improve service to customers by reducing water discoloration and service interruptions, and improve flow capacity and pressure (Exhs. AWC-TMD-1, at 4, 15-16, 25-27; DPU 20-15;

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46 The Attorney General contends that the KANEW model fails to prioritize mains with higher break rates and replaces mains proportionally across the three systems and, as a result, does not target the worst mains first to get the maximum reduction in leaks for the lowest cost (Attorney General Brief at 14). However, the KANEW model and corresponding study is intended to identify the appropriate level of mains replacements, not identify individual mains for replacement. The Company will prioritize specific mains for accelerated replacement or rehabilitation based on asset management (break history, main size, material, water quality, soil type, age, location, and town paving projects), hydraulic improvements, and the need for redundancy, while balancing the investments across the Company's service territory, as well as the input from stakeholders, as addressed in Section V.C.4.l., below (Exhs. AWC-TMD-1, at 20; DPU 20-14; Towns 6-12; Towns 7-6; Tr. at 60-62, 99-101, 103, 171, 202-208).

Towns 5-10; Tr. at 44-45, 88-89). We now consider whether the Company has demonstrated the need to recover incremental costs associated with mains replacements between rate cases.

3. Need to Recover Incremental Capital Costs Between Rate Cases

Beginning November 1, 2018, the Company will recover approximately $2,003,779 annually through its depreciation expense in base rates (see Section VIII.P., below). In the capital plan submitted with its initial rate filing, the Company identified an average of $3,308,799 in annual capital expenditures from 2019 through 2021, including investments in mains, T&D, information technology ("IT"), meters, source of supply, treatment, pumping, and general plant (Exh. SCO-1). Planned capital expenditures for mains alone averaged $1,510,799 for the same time period (Exh. SCO-1; see also Exh. AWC-TMD-1, at 16). In proposing the Mechanism, the Company identified a series of mains replacements projects that could be accelerated with implementation of the proposed Mechanism, representing an increase in average annual investment of $1,073,875 over the Company's existing capital plan for 2019 through 2021 (Exhs. SCO-1; AWC-TMD-1, at 20, 21; AWC-TMD-3; Towns 6-3). This results in projected average annual capital expenditures of $4,382,674 with the inclusion of the projected accelerated mains replacements expenditures alone (Exhs. SCO-1; AWC-TMD-3).[47] Accordingly, the Company would be unable to fully fund its projected capital expenditures, including accelerated mains replacements activities in 2019 through the level of depreciation expense allowed to be recovered in base rates.

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47 The three years of accelerated investment identified by the Company for 2019 through 2021 included only mains (Exh. TWC-TMD-3).

Additionally, the Company has demonstrated that its potential to collect additional revenue resulting from growth in sales is limited (see, e.g., Exhs. DPU 7-7; DPU 15-21, Att. A; DPU 19-12; DPU 24-10; DPU 24-11; AG 3-2, Att. B (2012) at 11, 95-97; AG 13-10; Towns 7-20, Att. A at 11, 101-104; Tr. at 75-76, 134-135, 137-138; Tr. 3, at 413-415). Specifically, the Company provided evidence that its conservation efforts have resulted in the loss of sales growth and flat consumption since its last rate case (Exhs. DPU 7-7; DPU 15-21, Att. A; DPU 19-12; DPU 24-10; DPU 24-11; AG 3-2, Att. B (2012) at 11, 95-97; AG 13-10; Tr. at 75-76, 134-135, 137-138, Tr. 3, at 413-415). Here, the Company has demonstrated that as a result of conservation measures and the water withdrawal limits established by MassDEP, the addition of new customers does not provide a significant increase in earnings (Exhs. DPU 7-7; DPU 15-21, Att. A; DPU 19-12; DPU 24-10; DPU 24-11; AG 3-2, Att. B (2012) at 11, 95-97; Towns 7-20, Att. A at 11, 101-104; Tr. at 75-76, 134-135, 137-138; Tr. 3, at 413-415). The Department recognizes that this loss of sales growth resulting from MassDEP's consumption limits and related conservation efforts is similar in effect to that experienced by the electric distribution companies under decoupling. D.P.U. 15-80/D.P.U. 15-81, at 48-49. The Department finds that this lack of sales growth eliminates a source of revenues that may otherwise be used to fund capital investments.

The Company argues that the Mechanism is further justified because the Company's revenues are not sufficient to maintain debt coverage ratios (Company Brief at 94, citing D.P.U. 15-80/D.P.U. 15-81, at 49-50; Company Reply at 4-5). Aquarion's current note purchase agreements on its outstanding long-term debt prohibit the Company from issuing new debt if the debt/capitalization ratio exceeds 65 percent, or if the debt coverage ratio, measured as earnings before interest and taxes to interest expense, is less than one and a half times the level of interest expense (RR-HH-3; Tr. 4, at 700, 702). If the Company surpasses its level of interest expense, then it may only seek additional financing with the consent of two thirds of the Company's existing bondholders (RR-HH-3; Tr. 4, at 700, 707). During calendar years 2016 and 2017, the Company did not meet its debt coverage ratio (RR-HH-3; Tr. 4, at 700). However, the Company's projected interest coverage ratio for the twelve months ending December 31, 2018, is 2.27 percent (Exh. AG 13-1, Att. A at 4). Thus, the Department is not convinced that the covenants on the Company's existing debt will continue to significantly restrict the Company's ability to raise capital. Further, we find that as a result of Aquarion being a part of Eversource, which has a high market value and a high bond rating, the Company will have the ability to finance at a lower cost of capital (Exhs. AWC-TMD-1, at 8-9; DPU 9-4; DPU 9-8; AG 13-1, Att. A at 4). See D.P.U. 17-115, at 30-31 (recognizing strong potential for Aquarion to receive a higher credit rating and have access to more favorable interest rates after the acquisition).[48] However, while the Company likely will have some ability to issue long-term debt going forward, the Company will remain limited by the need to maintain the balance of its capital structure at an

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48 The Attorney General additionally asserts significant operational savings due to economies of scale, on the scale of three to five percent (Attorney General Brief at 12, citing Exh. AG-TN at 10–12). While some amount of operational savings are likely as Eversource becomes familiar with the Company and its water operations, the level of any such savings are speculative at this time. See D.P.U. 17-115, at 33-34.

appropriate level (Exhs. AWC-TMD-1, at 19; Towns 7-3; RR-HH-3; Tr. at 56-58, 123-125; Tr. 4, at 700-704).

The record demonstrates that the need for accelerated mains replacements is unrelated to growth in the number of customers that the Company serves and is related to the need to upgrade existing infrastructure (Exhs. AWC-TMD-1, at 18-20; 25-27; AWC-TMD-4, at 18, 25; DPU 15-21, Att. A; DPU 19-12; DPU 24-10; DPU 24-11; AG 13-32; Tr. at 26, 40, 103; Tr. 3, at 431-434). The Company provided evidence to support its position that the rate of mains replacements would be greater with the Mechanism than without it (Exhs. AWC-TMD-1, at 16, 20, 25; AWC-TMD-4, at 6-7, 54-57; AG 13-32; DPU 20-3; DPU 20-9; Tr. at 40; Tr. 2, at 380-381; Tr. 3, at 431-434). Without the proposed Mechanism, the Company would continue to deliver on its service obligations through O&M activities and continue to invest in mains replacements at a rate of approximately one mile per year, with those investments and any additional investments in mains replacements affected by the need for other capital investments and pressure on earnings (Exhs. SCO at 4-5; SCO-1; AWC-TMD-1, at 16; Towns 6-11; Tr. at 99-105; Tr. 2, at 381; Tr. 3, at 428-436). See D.P.U. 09-30, at 132. The record demonstrates that this likely will result in increased O&M activities over an extended period, as well as a significant increase in the need for mains replacements by 2061 (Exhs. AWC-TMD-1, at 18, 20, 27; AWC-TMD-4, at 54-58; AG 13-32, at 2; Towns 6-11; Tr. 2, at 389-391).

Based on the considerations addressed above, the Department finds the Company has adequately demonstrated its need to recover incremental costs associated with mains replacements between rate cases. We now consider whether the proposed Mechanism is reasonably designed to achieve its intended goal of accelerating investment in mains replacements and rehabilitation, and other reliability-related capital work and how its implementation will affect ratepayers and Aquarion's financial wellbeing.

D.P.U. 15-80/D.P.U. 15-81, at 50, citing D.P.U. 10-55, at 66.

4. Design of Mechanism

a. Introduction

Under traditional ratemaking, a distribution company's cost of service includes neither a return of (through depreciation expenses) nor return on (through return on equity ("ROE")) the capital expenditures it has made since the test year used in its most recent base rate proceeding. D.P.U. 15-80/D.P.U. 15-81, at 50; D.P.U. 09-39, at 80. A company is allowed to include those capital expenditures in its cost of service as a component of rate base during its subsequent base rate proceeding, and it begins to recover a return of those investments through depreciation expense and a return on those investments based on their depreciated value as of the end of the test year when the base rates approved by the Department in that proceeding take effect. D.P.U. 15-80/D.P.U. 15-81, at 50; D.P.U. 09-39, at 80. The delay between when a company incurs capital expenditures and when it includes a return of and on such expenditures in its base rates is referred to as regulatory lag. D.P.U. 15-80/D.P.U. 15-81, at 50; D.P.U. 09-39, at 80. In satisfying their obligation to provide safe and reliable service to their ratepayers, absent regulatory lag, companies have the incentive to invest in capital improvements rather than O&M expenses, even if a capital improvement represents a sub-optimal solution as compared to non-capital production factors. D.P.U. 15-80/D.P.U. 15-81, at 50-51; D.P.U. 09-39, at 80. Unlike O&M expenses, capital expenditures provide a return to their shareholders when ultimately included in rate base; this bias toward capital investment is known as the Averch-Johnson effect. D.P.U. 15-80/D.P.U. 15-81, at 51; D.P.U. 09-39, at 80-81.[49] The existence of regulatory lag provides an important counterbalance to the Averch-Johnson effect because companies will not earn a return on their investments until their next rate case proceeding. D.P.U. 15-80/D.P.U. 15-81, at 51; D.P.U. 09-39, at 81. As such, regulatory lag provides the incentive for companies to pursue a more balanced strategy between capital expenditures and O&M expenses in their provision of safe and reliable service to their ratepayers. D.P.U. 15-80/D.P.U. 15-81, at 51; D.P.U. 09-39, at 81.[50]

As addressed above, the Company plans to significantly increase its capital expenditures under its proposed Mechanism in order to accelerate mains replacements and rehabilitation, and other reliability-related capital work across its systems (see, e.g., Exhs. SCO-1; AWC-TMD-1, at 21, 25, 26; AG 13-14, Att. A at 2; Tr. at 43-48; Tr. 2, at 372; Tr. 3, at 425-434). Further, the Company would recover a return on (and of) all of its eligible capital expenditures beginning the year after the Company incurs the expenditures (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2). As proposed, eligible capital expenditures

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49 Harvey Averch & Leland L. Johnson, Behavior of the Firm under Regulatory Constraint, 52 AM. ECON. REV. 1052, 1069 (1962).

50 This incentive applies most acutely to the period of time between a company's base distribution rate proceedings.

would include meters, pressure-reducing valves, non-revenue producing mains, replacement valves, main cleaning and relining projects, non-reimbursable relocation projects, the maintenance and replacement of water storage tanks, company-owned segments of services, and company-owned and non-functional hydrants, representing 68 percent of total annual capital expenditures (Exhs. AWC-TMD-1, at 21; AWC-TMD-2, at 1; AG 13-51; Tr. at 26-27, 43-49, 167; Tr. 2, at 387-388). As such, the proposed Mechanism significantly reduces and potentially eliminates the important incentive that regulatory lag provides to the Company to maintain an appropriate balance between investing in capital improvements and incurring O&M expenses.

The Attorney General and the Towns argue that the elimination of regulatory lag will incentivize the Company to make investments that are not necessary to provide safe or reliable service, for the benefit of shareholders (Attorney General Brief at 6-7; Hingham/Hull Brief at 12). The Attorney General also argues that the elimination of regulatory lag will remove the incentive to minimize the costs associated with capital projects (Attorney General Brief at 7). The Company contends that with the limited increase of $1.0 million in additional capital expenditures the Mechanism would not result in overinvestment in its system (Company Brief at 92). As noted above, the average accelerated level of mains investment alone over the next three years is $1,073,875 over the Company's originally planned level.[51] However, the Mechanism does not contain any provision that would limit recoverable investment to this level.

The Department concludes that, as proposed, the Company's proposed Mechanism does not strike an appropriate balance between (1) providing the Company with sufficient funds to increase investment to accelerate capital investments to the required level to ensure reliable service to its ratepayers and (2) protecting its ratepayers against the incentive the Company has to overinvest in capital infrastructure in order provide earnings to its shareholders. To reach a balance between these opposing incentives, the Department finds it appropriate to require several modifications to the proposed Mechanism, including limiting the type of capital expenditures that are recoverable through the Mechanism and decreasing the revenue cap, which limits the annual rate increase and ensures rate continuity. Further, the Department will evaluate the prudence of each project proposed for recovery in a Mechanism proceeding on a case-by-case basis within the Company's annual filing.[52] With

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[51] The Company states that it expects to complete a total of two to four projects under the Mechanism each year (Tr. 3, at 592).

[52] A prudence review must be based on how a reasonable company would have responded to the particular 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); Western Massachusetts Electric Company, D.P.U. 85-270, at 22-23 (1986); 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 modifications addressed below, the Department finds that the Mechanism will effectively expedite mains replacements, while providing sufficient protections for ratepayers.

b. Scope of Mechanism: Eligible Investments

The Company proposes eligible capital investments including meters, pressure-reducing valves, non-revenue producing mains, replacement valves, main cleaning and relining projects, non-reimbursable relocation projects, the maintenance and replacement of water storage tanks, company-owned segments of service lines, and company-owned and non-functional hydrants (Exhs. AWC-TMD-1, at 1, 21; AWC-TMD-2, at 1). The Company maintains that 81 percent of the Mechanism expenditures would be for the replacement of mains and services with the remainder of the Mechanism capital spending targeting hydrants, meters and tanks, facilities that account for water leakage (Company Brief at 95, citing Tr. at 26, 43-49; Company Reply at 5). In allowing implementation of TIRF mechanisms for certain gas distribution companies, the Department found that mechanism to be an appropriate exception for traditional ratemaking because the infrastructure replacement subject to special ratemaking treatment was limited in both its scale and scope. See Bay State Gas Company, D.P.U. 12-25, at 45 (2012), citing D.P.U. 10-114, at 56-57; D.P.U. 10-55, at 122; D.P.U. 09-30, at 133. Here, we determine that the Mechanism must be limited in scope to justify special ratemaking treatment. See D.P.U. 12-25, at 45, citing D.P.U. 10-114, at 56-57; D.P.U. 10-55, at 122; D.P.U. 09-30, at 133.

As addressed above, the KANEW study evaluated long-term replacement scenarios for the Company's water mains (Exh. AWC-TMD-4, at 5). However, the KANEW study did not address the need for accelerated investments in other infrastructure (Exh. AWC-TMD-4, at 5; Tr. 3, at 419). Further, the Company states that water mains represent the most significant category of assets within its system and are where most investment is needed (Exh. AWC-TMD-1, at 17; Tr. at 26-27).[53] The Company attributes significant leakage and high UAW to service line leaks and breaks (Tr. at 43-46).[54] When replacing water mains, the Company also replaces connected service lines, valves, and hydrants[55] (see Tr. at 44, 47-48; Tr. 2, at 368; Tr. 3, at 419-421). However, the Company did not otherwise provide further support or conduct further analysis for the need to accelerate investments in service lines or the other proposed categories of eligible plant, other than mains (see Exhs. AWC-TMD-1, at 21; AWC-TMD-2, at 1; Tr. at 43-44; Tr. 2, at 368, 370-371; Tr. 3, at 419). Accordingly, the Department determines that the infrastructure replacement subject to this special ratemaking treatment should be limited to mains replacements and rehabilitation and that it is appropriate to include in eligible plant any connected service lines, valves, and hydrants replaced as a result of the mains replacements. As a result, we find that the Mechanism is more appropriately termed the Mains Replacements Adjustment Mechanism.

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53 As of December 31, 2016, T&D plant represented two thirds of the Company's system, with mains comprising 74 percent of T&D plant (Exh. AWC-TMD-1, at 17).

54 Company service lines connect the Company's main to the curb box on each customer's property (Tr. at 48-49; Tr. 2, at 374-376).

55 While hydrants in Service Area A are owned by the respective municipalities, these hydrants are replaced by Company-owned hydrants when an associated main is replaced (Tr. at 47-48; Tr. 3, at 421-422).

The Towns assert that recovery under the Mechanism should be limited to only the $1.0 million in accelerated investments (Hingham/Hull Brief at 16; Hingham/Hull Reply at 4). The Company contends that the recovery of all incremental investments would enable it to accelerate replacements, while recovery of only the $1.0 million in accelerated investments would render the Mechanism meaningless (Company Reply at 5). We decline to limit the investments recoverable under the Mechanism to the accelerated investments, and we will allow recovery of incremental investment consistent with other mechanisms and Department precedent. See, e.g., D.P.U. 15-155, at 54; D.P.U. 09-39, at 82; D.P.U. 09-30, at 130.

c. Investment Threshold

The purpose of the approved Mechanism is to enable acceleration of investment in mains replacements and rehabilitation. Accordingly, we will establish a performance standard to ensure that the benefits of accelerated mains replacements are realized. D.P.U. 12-25, at 52. We find that it is reasonable and appropriate for there to be a direct correlation between the metric and the Company's mains replacements activities. We determine that it is reasonable and appropriate to establish a threshold level of miles of mains replacements that the Company must complete each year in order to recover under the Mechanism. We recognize that the threshold level must strike a reasonable balance between ensuring an accelerated level of mains replacements and providing the Company a reasonable opportunity to achieve the threshold. D.P.U. 12-25, at 53. In establishing the threshold, we find the Company's historical replacement rate as well as the Company's planned mains replacements with and without the Mechanism, as identified in this proceeding, to be relevant. Additionally, we considered the target replacement rate identified by the KANEW study and adopted by the Company to be instructive. From 2014 to 2016, Aquarion replaced an average of 1.11 miles of main per year without a mechanism (Exh. AG 13-26).[56] In its initial filing, the Company budgeted an average of $1,470,799 toward planned mains replacements for 2019 through 2022, or an average of 1.05 miles of planned mains replacements per year (Exhs. SCO 1; DPU 4-21(b)). In proposing the Mechanism, the Company states that it will be able to replace an additional 0.76 miles of main per year[57] if the Mechanism is implemented (Exh. AWC-TMD-1, at 16).

Based on these considerations, we expect the Company can achieve a threshold level of mains replacements of 1.25 miles per year. We find that this level of threshold for mains replacements will ensure a sustained and accelerated rate of mains replacements. Setting a threshold level of mains replacements would be ineffective in the absence of an enforcement consequence. D.P.U. 12-25, at 54. As such, we find that if the Company fails to achieve the threshold level of 1.25 miles of mains replacements during a Mechanism year, it is reasonable and appropriate to suspend the Company's recovery until its next rate case of the costs associated with that year's otherwise Mechanism-eligible investments. That is, if the Company fails to achieve the threshold level of mains replacements in a year, it would not

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56 This period excludes those years during which the Company was subject to good husbandry obligations in Oxford (i.e., 2009-2013) (Exhs. SCO at 9; DPU 20-23; Tr. 3, at 445-446).

57 Calculated as ((9,100 – 5,100)/5,280) (see Exh. AWC-TMD-1, at 16).

receive the benefit of accelerated recovery of costs that the Mechanism provides for that year. D.P.U 12-25, at 55.

d. Revenue Cap

The Company proposes a cap on the annual change in revenue requirement recovered through the Mechanism that is five percent of prior calendar year revenues (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 4). Additionally, the Company proposes a cap of ten percent on the total revenue requirement increase between rate cases (Exh. AWC-TMD-1, at 23). The Company proposes to base the ten percent revenue cap on the revenues approved in the Company's last rate proceeding, less amounts related to miscellaneous charges, surcharges related to the Hingham/Hull WTP, and any purchased water surcharge revenues (Exh. AG 13-61). The Attorney General contends that the Company's proposed revenue cap is twice the rate of inflation and would permit rate increases of five percent annually without end (Attorney General Brief at 8). Similarly, the Towns assert that the annual bill impacts would not be minimal, and the cumulative increase over years would be significant (Hingham/Hull Brief at 10-11). The Department finds that a five-percent cap applicable to the annual increases in revenues does not adequately protect ratepayers from excessive annual increases in distribution rates. Therefore, the Department finds it appropriate to limit the change in the annual Mechanism revenue requirement to two percent of annual revenues, less amounts related to miscellaneous charges, surcharges related to the Hingham/Hull WTP, and any purchased water surcharge revenues. To the extent that application of the cap results in a Mechanism revenue requirement that is less than that calculated, the Company shall defer the difference and include it in the reconciliation for recovery in the subsequent year to the extent there is room under the cap. Carrying charges shall be calculated on the average deferred balance using the customer deposit rate. See D.P.U. 15-155, at 55; D.P.U. 15-80/D.P.U. 15-81, at 53. Such deferred amounts may be included in reconciliation for recovery in the subsequent year to the extent there is room under the cap, but may not be included in meeting the Company's investment threshold.

Regarding the arguments about the effect of the cumulative effect of the Mechanism, the cap of ten percent on the total revenue increase between rate cases will ensure that the Mechanism's effects are evaluated within the context of a base rate proceeding before the total increase under the Mechanism exceeds ten percent. The Department finds this is an appropriate safeguard. However, the Company's proposed tariff does not address this proposed cap. Accordingly, the Department directs the Company to revise Section IV of its Mechanism tariff to provide for a ten percent revenue cap on the revenues approved in the Company's last rate proceeding, less amounts related to miscellaneous charges, surcharges related to the Hingham/Hull WTP, and any purchased water surcharge revenues (see Exhs. AWC-TMD-2, at 4; AG 13-61).

The Towns suggest that if the Mechanism is approved it should be phased in over time (Hingham/Hull Reply at 4). However, the Towns did not provide a specific proposal for a phase in. Additionally, the Department finds that with the revenue caps, the Mechanism will adequately protect ratepayers from excessive increases in distribution rates and ensure rate continuity. Thus, the Department declines to implement a phase in for the Mechanism.

e. Reduced O&M Expense

The Attorney General asserts that the Mechanism does not account for the savings in O&M expense associated with the reduction in leaks and repairs that would result from the mains replacements projects (Attorney General Brief at 9). The Company states that it incurs ongoing O&M expense to maintain aging mains and agrees that replacement of older mains would reduce these expenses (Exhs. AWC-TMD-1, at 18; DPU 20-13; RR-DPU-9; Tr. 2, at 394-399; Tr. 3, at 410-411).

An O&M offset is meant to represent the amount of associated reductions in O&M leak repair costs that are achieved when aging mains are replaced. D.P.U. 12-25, at 59; D.P.U. 09-30, at 130. The Department has found in GSEP and TIRF proceedings that calculating O&M offsets based on a three-year rolling average of costs of repairs per mile and leaks per mile data is appropriate. D.P.U. 14-132, at 82. The Company proposes an O&M offset based the most recent three-year average cost of leak repair per mile, applied to the miles of water mains replaced or abandoned within the Mechanism year (Company Brief at 97). We find that inclusion of this O&M offset in the Mechanism is reasonable and appropriate. We direct the Company to update its O&M offset with the most recent three-year averages in its annual Mechanism filing.

The Attorney General additionally contends that this reduction in leaks and breaks should reduce the power and chemical costs associated with the water supply (Attorney

General Brief at 9). However, the Attorney General does not quantify or propose a method to account for reductions to power or chemical expense. Any such savings cannot be quantified based on the record of this proceeding. Accordingly, the Department declines to adopt the Attorney General's recommendation to require an offset associated with power or chemical expense.

f. Earnings Test

The Attorney General contends that the Mechanism does not include an earnings test to demonstrate that the Company's overall rates would be just and reasonable when the Mechanism revenues are combined with base rates (Attorney General Brief at 8). In response, the Company asserts that it does not object to including a test that would allow for recovery through the Mechanism as long as earnings are below the authorized return on equity (Company Brief at 96-97).

An earnings test would halt recovery from ratepayers of the revenue requirement associated with the Mechanism in the event of excessive earnings by the Company. The Department finds that such test is appropriate here. Accordingly, the Company is directed to revise its tariff to include a provision implementing such an earnings test within the Mechanism. The Company shall calculate its actual annual earnings and include this calculation in its annual Mechanism filing.

g. Overhead and Indirect Costs

The Attorney General contends that the Mechanism does not include a test to ensure that the overhead and indirect costs included in base rates are not also recovered through the

Mechanism (Attorney General Brief at 9). The Department has previously required companies to demonstrate that O&M labor overhead and clearing account burden costs recovered through a capital cost recovery mechanism are incremental to the O&M labor overhead and clearing account burden costs being recovered in base rates. D.P.U. 14-132, at 78-79; D.P.U. 12-25, at 56, citing D.P.U. 10-114, at 73-73; D.P.U. 10-55, at 141-142. We determine that it is appropriate to establish a similar requirement here. We direct Aquarion to demonstrate as part of its annual Mechanism filing that O&M labor overhead and burden costs are not recovered in both base rates and the Mechanism revenue requirement and allocated equally to all capital projects in a given year. Further, we direct Aquarion to include in its compliance filing to this Order schedules showing the O&M level of labor overheads and clearing account burdens recovered through base rates.

h. Property Taxes

For purposes of the Mechanism's revenue requirement calculation, the Company proposes to determine property tax expense using the actual property tax rate in effect for each town at the end of the most recent Mechanism year completed, applied to the cumulative Mechanism year ending net book value of all eligible plant additions from the first Mechanism year through the end of the most recent Mechanism year (Exh. AWC-TMD-2, at 2).

While municipalities and other taxing authorities operate on a fiscal year basis running from July 1st through June 30th, property valuations used to establish property tax rates are based on a taxpayer's assets in place as of January 1st. D.P.U. 14-132, at 71, citing Milford

Water Company, D.P.U. 12-86, at 239 (2013). Consequently, taxing authorities customarily bill the first and second fiscal quarter property taxes during the third and fourth calendar quarters of the year being assessed based on one fourth of the prior fiscal year's total final tax amount. D.P.U. 14-132, at 71-72, citing D.P.U. 10-114, at 263. As a result, the total property tax expense on Mechanism-eligible plant additions will not be fully realized until the third year of the revenue requirement calculation for that eligible plant. See D.P.U. 15-155, at 58-59. In view of this timing difference, the Department finds that for the purpose of calculating the Mechanism's revenue requirement, the Company's property tax expense on the first year of investment shall be zero. The property tax expense for the second year of investment shall be one half of the Company's annual property tax expense for eligible net plant for the prior Mechanism year. D.P.U. 14-132, at 72. Specifically, the property tax expense for the second year of investment shall be calculated first by applying the effective tax rate to the Mechanism-eligible net plant as of December 31st of the prior year, and taking one half that amount. D.P.U. 14-132, at 72. For subsequent years, property tax expense shall be calculated based on each investment year's Mechanism-eligible plant additions.

i. Depreciation Expense Offset

The Attorney General asserts that the proposed Mechanism does not account for annual recovery of capital investments in base rates (Attorney General Brief at 8-9). The Attorney General argues that, holding all else equal, because depreciation reduces rate base, it reduces the required return the Company recovers each year subsequent to a rate case, and allowing the Company to recover the return on test year-end plant balances in base rates and plant additions through the Mechanism constitutes double recovery (Attorney General Brief at 9). The Company asserts that a "depreciation net out" is not an appropriate ratemaking approach and contends the Department has consistently found that the funds from depreciation expense are intended to allow a company to recover its capital investments in a timely and equitable fashion over the service lives of the investments (Company Brief at 96, citing D.P.U. 14-132, at 63; D.P.U. 1590, at 22-23).

A depreciation offset is warranted when a company has a capital recovery mechanism that recovers the revenue requirement for all capital investment in service after the test year of its last rate case because under such a capital recovery mechanism, there are no unrecovered capital costs to offset the lower required return caused by the depreciation of rate base. As such the capital recovery mechanisms approved for Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, and Fitchburg Gas and Electric Light Company d/b/a Unitil's electric division, which recover the revenue requirement for all capital expenditures in service after the test year, include a depreciation offset. D.P.U. 09-39, at 79; D.P.U. 15-80/D.P.U. 15-81, at 55. However, in approving certain capital cost recovery mechanisms such as the TIRF, which limit the expenditures eligible for recovery, the Department has not required companies to net out its depreciation expense in calculating their revenue requirements. D.P.U. 12-25, at 58-59. Similarly, the Department did not require an adjustment or offset for the depreciation expense in base rates in calculating the revenue requirement for the GSEPs. D.P.U. 14-132, at 54, 64-65.

The Department finds a depreciation offset is not warranted for the Mechanism at issue in this proceeding because, as approved in Section V.C.4.b., we have limited the investments eligible for recovery to mains replacements and connected service lines, valves, and hydrants replaced as part of a main replacement. In addition, the earnings test, approved in Section V.C.4.f., will prevent the Company from recovering over its allowed return because of the Mechanism. Therefore, we decline to accept the Attorney General's request to include a depreciation offset in the Mechanism.

j. Offset for Revenues from Water Balance Program and System Development Charge

The Company collects revenues from its Water Balance Program ("WBP") (addressed in Section XIII., below) and through the System Development Charge ("SDC"). Revenues from these sources are used to offset the costs of connecting new customers to the system and to accommodate for increased system demands (Exhs. DPU 6-13; DPU 22-12; Towns 7-16, Att. A at 3, 13; Tr. 2, at 322). The Company stated that, while WBP revenues have not previously been used for mains replacements, it acknowledged a possible overlap between Mechanism-eligible capital projects and WBP-eligible projects (e.g., to fund bleeder[58] mains replacements projects) (Exhs. DPU 22-12; DPU 24-11, Att. A (Supp.) at 3; Tr. 2, at 320-327).[59] Similarly, the Company acknowledged that overlap exists between

58 Bleeders are shallow mains that would freeze in winter unless water is continuously flowing through them (Exh. DPU 22-3, at 2; Tr. 2, at 326-327).

59 Because the WBP is intended, in part, to fund water conservation activities, the Company is contemplating use of these funds towards the replacement of shallow

Mechanism-eligible capital projects and projects where mains are replaced using SDC revenues (Exh. DPU 22-12; Tr. 2, at 327-328).[60] The Company also acknowledged that the proposed tariff language fails to account for an offset for these alternate sources of funding (see Exh. AWC-TMD-2, at 3; Tr. 2, at 330-331). The Department determines that Mechanism-eligible mains projects fully funded through either WBP and/or SDC revenues are not eligible for recovery through the Mechanism. However, otherwise eligible mains projects that are partially funded using WBP and/or SDC funds remain eligible for partial funding under the Mechanism for amounts incremental to costs already recovered through base rates, the WBP, and the SDC. Accordingly, to account for those eligible projects that are partially funded using WBP and/or SDC revenues, the Department directs the Company to include a rate base offset in its Mechanism revenue requirement calculation to account for these alternate funding sources (see Exh. AWC-TMD-2, at 3; Tr. 2, at 330-331). In addition, the Department requires the Company to include in its annual Mechanism filing a detailed accounting of all SDC and WBP-funded mains projects completed during the Mechanism year.[61] Further, the Department directs the Company to submit detailed reports of all (1) WBP-funded mains projects and (2) SDC-funded mains projects conducted during the year.

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bleeder mains in addition to the Company's other water conservation activities (Tr. 2, at 323-324, 329-330)

60 The Company primarily uses SDC revenues to upsize existing mains (Exh. DPU 22-12; Tr. 2, at 327-328).

61 Accounting requirements for WBP funds are addressed in Section VI.D.2.b., below.

k. Additional Tariff Revisions

During the course of the proceeding, the Company acknowledged that the provision of the tariff addressing the annual reconciliation should be revised to clarify that prior year Mechanism revenues are reconciled against authorized Mechanism revenues, rather than all revenues (see Exh. AG 13-63). Specifically, the definition for reconciliation should be revised to: "[r]econciliation of prior year [Mechanism] revenues equivalent to the shortfall or surplus of Mechanism revenue actually collected as compared to those authorized by the Department" (see Exhs. AWC-TMD-2, at 3; AG 13-63 (emphasis added)). Accordingly, we direct the Company to incorporate this revision in its compliance filing.

l. Coordination with Municipalities

The Company proposes a stakeholder process under which Aquarion will work with the municipalities to select projects that have the biggest impact on reliability and water quality and that may be completed in coordination with municipal paving work (Exhs. AWC-TMD-1, at 21; Towns 7-6; Tr. at 203). The Company contends that the municipalities within its service territory will benefit from increased visibility and input into the projects to be completed, as well as increased transparency regarding the rate impact associated with the investments (Exhs. AWC-TMD-1, at 26; Towns 6-15).

The Company states that it is committed to making sure the annual process operates smoothly and in coordination with the municipalities, and it proposes to summarize the results of this stakeholder process within its annual Mechanism filing (Exhs. AWC-TMD-1, at 24-25; Towns 6-12; Towns 6-15; Towns 7-6). Specifically, the Company will develop a preliminary list of Mechanism-eligible projects at least one year in advance of anticipated construction that identifies the prioritization for the upcoming three years based on factors such as break history, age, material type, soil condition, water quality, and capacity (Exh. Towns 7-6). The Company proposes to meet with the municipalities before October 1st each year to review paving projects and underground work on the roadways to identify any areas of overlap between the Company's priority mains replacement projects and work planned by the municipalities (Exh. Towns 6-12; Tr. at 61-62, 203). The Company intends to hold one or more meetings to discuss the preliminary list of projects, with the goal of arriving at a mutually agreed-to project plan for the Mechanism (Exh. Towns 7-6, at 2). The Company will incorporate the municipalities' feedback into a preliminary written plan, to be submitted to the municipalities by November 1st (i.e., 90 days prior to its filing with the Department) each year that seeks input on replacement priorities and scheduling issues (Exhs. AWC-TMD-1, at 24; AWC-TMD-2, at 4; Tr. at 61-62).[62] The Company would submit a finalized plan in the Company's March 1st Mechanism filing to the Department (Exh. Towns 6-12; Tr. at 61-62).[63] Further, in the event that the Company needs to modify the plan, the Company would address such need as far in advance as possible with the municipalities, including any schedule adjustments (Exh. Towns 7-6, at 2).

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62 To the extent that the Company and municipalities cannot reach consensus regarding a project, the Company would address the need and rationale for including that project in the plan submitted to the Department (Exh. Towns 6-12).

63 The filing will include a computation of the rate factor that would result from completion of the projects based on estimated costs, as well as customer bill impacts (Exh. AWC-TMD-2, at 3).

The Department finds that the stakeholder process proposed by the Company appropriately balances between obtaining and incorporating municipal input and preserving the Company's management discretion over the capital investments required to maintain its system. Additionally, the Department finds the coordination and consultation in the proposed stakeholder process will provide the potential to reach consensus on the projects to be completed and reduce the scope of issues within the Department's review of annual filings.

Hingham and Hull propose establishing an annual process in which the Department would determine the level of additional incremental investment and specific projects for the subsequent project year (Exh. TOWNS-DFR (Supp.) at 11-12). Under Hingham and Hull's proposal, the Department would establish criteria and procedures for prioritizing projects, and the review and evaluation of four year project plans, and municipalities would be given some authority to adjust project priorities and the timing of construction (Exh. TOWNS-DFR (Supp.) at 13). Additionally, Hingham and Hull propose that the determination of which projects and what portion of the associated costs would be included in rate base would be reserved for subsequent base rate proceedings (Exh. TOWNS-DFR (Supp.) at 11).

Within a substantial range, utility business decisions are a matter of determination by company management. See, e.g., D.P.U. 17-05, at 85-86, citing Attorney General v. Department of Public Utilities, 390 Mass. 208, 229-230 (1983); Bay State Gas Company, D.P.U. 13-75, at 37 (2014); Abbey Province, LLC, D.T.E./D.P.U. 06-72, at 13-14, citing Fitchburg Gas and Electric Light Co. v. Department of Public Utilities, 375 Mass. 571, 578 (1971); Western Massachusetts Electric Company, D.T.E. 03-82, at 17 (2004). The

Department declines to implement a process that would infringe on that discretion with respect to capital planning, including the level of investment, and prioritization and scheduling of specific projects. Further, the Department will review projects proposed for recovery in the Company's annual filings to determine whether the projects were prudently incurred and the resulting plant is used and useful. Massachusetts Electric Company/Nantucket Electric Company, D.P.U. 16-91-A at 15-16 (April 19, 2018); Fitchburg Gas and Electric Light Company, D.P.U. 16-106-B at 6-7 (2017); Bay State Gas Company, D.P.U. 10-52, at 25-26 (2012). Because our review in the annual filings will address the Department's long-standing standard for the inclusion of plant additions in rate base, any project determined to be prudently incurred within the Department's review of the Company's annual Mechanism filing will be eligible to be included in rate base in the Company's next rate case without further prudence review. See D.P.U. 17-170, at 40 n.25; D.P.U. 12-25, at 76 (TIRF capital additions deemed prudent and used and useful in an annual TIRF filing did not require further prudence review); The Berkshire Gas Company, D.P.U. 92-210-B at 14 (1992) (the Department will not generally relitigate the prudence of an investment unless extraordinary circumstances are found to exist).

m. Annual Filing and Data Requirements

The Company proposes to submit an annual filing for approval of a rate factor based on the revenue requirement associated with the eligible plant additions placed into service the previous calendar year, as well as the reconciliation of prior year Mechanism revenues collected to the revenues authorized (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2, 3;

DPU 20-14; AG 13-63; DPU 20-14). The Company's filing would include detailed documentation of the actual costs of completed projects, and variance reports for projects with overruns beyond 20 percent (Exh. DPU 20-14). Additionally, the Company would include a three-year work plan of the projects selected, as well as an infrastructure assessment report addressing the factors considered in prioritizing those projects (Exhs. AWC-TMD-1, at 24; Towns 6-12; Towns 6-15; Towns 7-6; DPU 20-3). The Company proposes to submit its filing no later than 60 days from the end of the calendar year, by March 1st, for a Mechanism surcharge effective September 1st each year (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2, 3-4).

The Department finds that a single annual filing is consistent with the process for other reconciling mechanisms and that a March 1st filing date will provide adequate time for the Department's review (see Exh. AWC-TMD-2, at 2, 3-4).[64] In addition to the information the Company proposes to include in its filing, the Department finds that the documentation to demonstrate the eligibility of each individual project included in the annual filing shall include, but not be limited to, a project summary sheet, project cost summary, capital authorizations, closing reports, and an itemization of all connected service lines, valves, and hydrants replaced as part of that project. While the Company proposes to submit variance reports for projects with overruns beyond 20 percent (Exh. DPU 20-14), the Company currently reviews and reauthorizes projects based on a target variance of ten percent

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64 As noted above, the Company's proposed tariff identifies an annual filing date of March 1st, whereas the testimony identifies the filing date as February 28th (Exhs. AWC-TMD-1, at 23; AWC-TMD-2, at 2, 3).

(Exh. DPU 20-24, Att. A at 5-6; see Exh. SCO-2, at 1-3). Accordingly, we determine that the Company shall provide narrative reports of any cost variances that exceed ten percent. To the extent that there are any changes to the Company's capital planning and approval process subsequent to this proceeding, the Company shall include a summary of those changes.

Additionally, the Company shall include detailed annual summaries of mains replacements, by size and type, the cost associated with each segment of main replaced, leak rates in total and per mile, and explanations for any accelerated or decelerated rate of mains replacements. We also direct the Company to include a detailed explanation of all leak reduction activities for the year in its filing, as well as non-revenue water and UAW by month for the prior year. In addition, we direct Aquarion to include in its filing the MassDEP-approved UAW for the prior calendar for each service area.[65]

Finally, the KANEW study provided numerous recommendations involving Aquarion's data collection and management within the Company's geographic information system ("GIS"), in order to improve EULs and aging curves for future similar studies (Exhs. AWC-TMD-4, at 5, 9, 21, 24-25; DPU 20-16; Tr. at 201; Tr. 3 at 449).[66] This

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65 If the prior calendar year MassDEP-approved UAW is not available at the time of filing, the Company shall provide any preliminary figures available and shall supplement its filing within seven days of receiving MassDEP-approved UAW figures.

66 The Company enters break data into the Company's System Analysis and Program Development software system, which is intended to link into the Company's GIS system (Tr. 3, at 451; see also Exh. DPU 2-10(a)&(b)). The Company intends to

includes recommendations to improve data quality for both mains and breaks, including updating the Company's mains and break-related data, implementing identification and reporting improvements, and reconciling discrepancies in existing data (Exh. AWC-TMD-4, at 5, 9, 21, 24-25). The Company has been implementing these changes and plans to continue doing so (Exh. DPU 20-16; RR-DPU-11; Tr. 3 at 449-452). The Company intends to rely upon this updated data when it reruns the KANEW model in three to five years (Tr. 3, at 447-448). We direct the Company to continue implementing the recommendations set forth in the KANEW study regarding mains and breaks data for purposes of future analyses and require the Company to submit a new KANEW study, based on this updated data, no later than its next rate case filing. In doing so, the Department emphasizes the importance of a comprehensive analysis such as the KANEW study in demonstrating a need for acceleration of mains replacements and rehabilitation. The Department will closely evaluate future such studies in determining whether the Company has demonstrated a continuing need for the Mechanism.

5. Potential Municipal Acquisition

Pursuant to the terms of Aquarion's 1879 charter to serve Hingham, the town has the right to purchase the water system based on a formula in the charter (Exh. JPW at 34). In 2012, Hingham voted to spend funds to evaluate purchasing Aquarion's system serving Hingham, Hull, and North Cohasset (i.e., Service Area A) (Exh. JPW at 34). Between 2013

confirm that the break data is entered in a way that also enters the information in the GIS system (Tr. 3, at 452).

and March 29, 2018, the Company and Hingham remained in litigation over interpretation of the charter language and a valuation of the Company (Exhs. JPW at 34-35; AG 3-81). Town of Hingham v. Aquarion Water Company of Massachusetts, 33 Mass.L.RpTr. 334 (2016) ("Hingham"); aff'd 92 Mass.App.Ct. 430 (September 7, 2017); rev. denied 479 Mass. 1104 (March 29, 2018). The Court entered a final judgment on a valuation of $88,585,821 as of December 31, 2013, subject to interest until the final purchase date. Hingham, 33 Mass.L.RpTr. 334. The possible acquisition by the town is an active discussion in Hingham among local officials and the community. See, e.g., Carol Britton Meyer, Hingham Selectmen Seek Review of Water Company Purchase, PATRIOT LEDGER, October 10, 2018, available at http://www.patriotledger.com/news/20181010/hingham-selectmen-seek-review-of-water-company-purchase; Town of Hingham, Water Company Acquisition Documents, https://www.hingham-ma.gov/477/Documents (last visited October 29, 2018).

Once a town has voted to acquire a private water utility, the Supreme Judicial Court ("SJC") has determined that the obligation of "good husbandry" applies to that company. According to the SJC, good husbandry requires that the plant is preserved and kept in repair, with replacements made as required to ensure that a necessary public service should not suffer interruption or impairment during the period of transfer. Cohasset Water Company v. Cohasset, 321 Mass. 137, 146-147 (1947) ("Cohasset"); see also Aquarion Water Company of Massachusetts, Inc. v. Oxford, 26 Mass.L.RpTr. 147, Memorandum of Decision and

Order on Plaintiff's Motion for a Preliminary Injunction (September 8, 2009) ("Oxford").[67] However, a town that has voted to acquire the system is required to pay for investments made while a company is under good husbandry obligations, as long as those investments were authorized in appropriate legal proceedings or by voluntary contract between the parties. Cohasset, 321 Mass. at 146-147; see also Oxford, 26 Mass.L.RpTr. 147. To recover for investments made during this period from the acquiring town, Aquarion would have to demonstrate the investments were "clearly required to preserve the plant or to prevent interruption of service." Cohasset, 321 Mass. at 146.

Aquarion was previously subject to good husbandry limitations in Oxford from 2009 to 2013 and, thus, limited its capital investments in the town during that time period (Exhs. SCO at 9; DPU 20-23; Tr. 3, at 445-446).[68] See also Oxford, 26 Mass.L.RpTr. 147. In the event of a town vote to acquire the portion of Aquarion's water system in Hingham, Hull, and North Cohasset, and during the pendency of finalizing any resulting acquisition, the Company's further investment in the system in Service Area A[69] would likely be subject to good husbandry obligations. The Department will not speculate as to how those obligations might apply to the continued acceleration of mains

67 The SJC also found that service may be extended to new customers in the ordinary way, including necessary laying of new mains to a reasonable extent. Cohasset, 321 Mass. at 146.

68 Although the citizens of Oxford initially voted to acquire the system in 2009, Oxford subsequently did not pursue acquisition (Exhs. SCO at 9; DPU 20-23).

69 Service Area A represents a significant portion of the Company's service territory.

replacements throughout the Company's service territory and recovery of the associated revenue requirement from all ratepayers through the Mechanism. However, we recognize that this circumstance would potentially implicate issues of fairness regarding continued Mechanism investment and the recovery of the associated Mechanism revenue requirement from ratepayers in Aquarion's other service area. If a town vote to acquire does occur, the Department requires that the Company immediately notify the Department and, within 30 days, submit a filing to address any adjustments to the Mechanism that would be required under the Company's obligation of good husbandry.

6. Conclusion

The Department allows the Company's proposal to implement a Mains Replacements Adjustment Mechanism, as modified above. In compliance with this Order, the Department directs the Company to modify its proposed tariff according to the foregoing directives.

VI. RATE BASE

A. Overview

Aquarion's test year rate base was $37,561,662 (Exh. 5 (Rev. 3), Sch. 1, line 22). To this amount, the Company proposes to add $1,210,088 in adjustments, including an increase to plant in service associated with the post-test year Charlton Street water main project in Oxford ("Charlton Street Project") and a decrease to the allowance for cash working capital, for a total proposed rate base of $38,771,750 (Exh. 5 (Rev. 3), Sch. 1, lines 4, 20, 22). Aquarion's total proposed rate base consists of the following components: (1) $57,633,486 in pro forma net utility plant in service; (2) $262,603 in materials and supplies; and (3) $992,900 in allowance for cash working capital; less (1) $7,098,992 in accumulated deferred income taxes; (2) $12,647,332 in contributions in aid of construction ("CIAC");[70] (3) $219,874 in WBP fee balances; and (4) $151,041 in customer advances (Exh. 5 (Rev. 3), Sch. 1, lines 11-31).

B. Plant in Service

1. Introduction

Between January 1, 2011,[71] through December 31, 2016, the Company added $18,883,616 to its net utility plant in service (Exhs. JPW at 15; SCO at 4-12; DPU 4-20; DPU 24-21, Att. A at 2). Aquarion's plant in service as of December 31, 2016, totaled $74,602,394 (Exh. 5 (Rev. 3), Sch. 1).

In addition, the Company proposes to include the Charlton Street Project in rate base (Exhs. JPW, at 15-16; SCO at 13; 5, Sch. 1; DPU 11-6). The Company proposes an increase of $1,229,385 for plant additions and a decrease of $239,635 associated with the plant being retired as a result of the Charlton Street Project, for an overall increase of $989,750 to plant in service (Exh. 5 (Rev. 3), Sch. 1).

2. Capital Spending Authorization Process

Under the Company's process for authorizing capital projects, Aquarion classifies its capital projects into three categories: (1) individual projects; (2) recurring work projects; and

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70 CIAC is company-owned plant that is financed by cash contributions from customers for extension or upgrade of service to the customers. See Milford Water Company, D.P.U. 11-99, at 3 n.3 (2011); D.T.E. 02-24/25, at 63.

71 Aquarion's current rates include capital projects completed through the test year ending December 31, 2010. D.P.U. 11-43, at 1.

(3) programmatic infrastructure replacement projects (Exhs. DPU 4-1; DPU 20-31). Individual projects are projects with costs that exceed $50,000 (Exh. DPU 4-1, at 1). Recurring work projects are for relatively small projects with costs less than $50,000, including treatment, pumping, other T&D, and general plant (Exhs. JPW at 15; SCO at 5-6; DPU 20-31 & Att. A). Programmatic infrastructure replacement projects include capital programs for hydrant replacements, large meters, new meters, periodic meter replacements, new service connections, and replacements of service connections (Exhs. SCO-2, at 3; DPU 20-31).

The Company has a Project Management Committee ("PMC") that is responsible for financial oversight and implementation of the Company's one-year capital plan (Exhs. DPU 4-1, at 2; DPU 20-24, Att. A at 4). The PMC must authorize spending for projects that are estimated to cost more than $100,000 and projects of any cost that are not in the approved capital budget (Exhs. DPU 4-1, at 2; DPU 20-24, Att. A at 4-5). The PMC meets on a monthly basis and reviews individual projects to approve spending as projects reach designated project phases, such as alternatives analysis, design, execution, and project close-out (Exhs. DPU 4-1, at 2; DPU 20-24, Att. A at 6; see AG 3-19, Att. A at 1-288). The PMC must review and re-authorize individual projects when costs are expected to vary from the budget authorized by senior management by more than ten percent (Exh. DPU 20-24, Att. A at 5; see Exh. SCO-2, at 1-3). After an individual project's completion, the PMC reviews actual project costs compared with the budget reviewed and approved by the PMC, with a target variance of ten percent (Exhs. DPU 4-1; DPU 20-24, Att. A at 6; see Exh. SCO-2, at 1-3). The PMC also reviews and approves all programmatic infrastructure replacements and recurring work projects (Exh. DPU 4-1, at 2).

3. Positions of the Parties

a. Hingham and Hull

Hingham and Hull maintain that Aquarion's procurement and management operations, including the Company's oversight of contractors, are deficient (Hingham/Hull Brief at 8-9). Additionally, Hingham and Hull contend that Aquarion's level of coordination and communication with Hingham and Hull officials continues to be a concern (Hingham/Hull Brief at 8; Hingham/Hull Reply at 2-3). Hingham and Hull did not address the specific plant additions Aquarion proposes to include in rate base.

Hingham and Hull allege that Aquarion's capital spending program is deficient in three ways. First, Hingham and Hull assert that many projects had significant cost overruns (Hingham/Hull Brief at 8). Second, Hingham and Hull contend that the cost-per-foot of many mains replacement projects was higher than the respective materials and labor costs-per-foot, and that it was significantly higher than industry average costs for similar projects (Hingham/Hull Brief at 8). Third, Hingham and Hull maintain that Aquarion's use of an average cost of $275 per foot for installing six, eight, and twelve-inch mains is significantly higher than industry averages for similar mains projects (Hingham/Hull Brief at 8).

Hingham and Hull request that the Department open an investigation into Aquarion's construction management processes and procedures, procurement processes for outside contractors, and practices regarding communication and coordination with Hingham and Hull officials (Hingham/Hull Brief at 8-9; Hingham/Hull Reply at 4). Alternatively, Hingham and Hull request the Department establish specific reporting requirements (Hingham/Hull Brief at 9; Hingham/Hull Reply at 9). First, Hingham and Hull propose that prior to the commencement of a water main project Aquarion report pre-construction plans, cost estimates, and construction schedules (Hingham/Hull Brief at 9). Second, Hingham and Hull propose that during construction Aquarion report major delays in construction (e.g., delays in excess of six weeks) and significant cost overruns, as soon as the overrun hits a benchmark (e.g., 20 percent) (Hingham/Hull Brief at 9). Third, Hingham and Hull propose that, after a project is completed, Aquarion report final costs, dates that milestones were reached, and details regarding cost overruns (Hingham/Hull Brief at 9). Lastly, Hingham and Hull propose that Aquarion annually report the reduction of UAW relative to the cumulative level of mains it has renewed or replaced (Hingham/Hull Brief at 9). Finally, Hingham and Hull argue that the Company needs to improve its coordination, prioritization, and scheduling of projects with municipal officials (Hingham/Hull Brief at 8; Hingham/Hull Reply at 2-3).

b. Company

The Company contends that it assures cost containment through its capital authorization process, which includes development of one-year and five-year infrastructure investment plans by the engineering and planning department and director of operations, review and approval of budget levels for the investment plans by senior management and the board of directors, and financial oversight and management for the duration of each project by the PMC and the engineering and planning department (Company Brief at 59-60, citing Exhs. SCO at 1-5; DPU 4-1; Towns 4-1; Towns 4-2; Tr. at 167). The Company maintains that its capital authorization process results in capital additions that are reasonable and prudently incurred (Company Brief at 62). Further, the Company argues that the documentation provided in support of its proposed plant additions demonstrates that the projects were reasonably and prudently incurred and that the capital additions are in service for the benefit of customers (Company Brief at 61).

With respect to the Charlton Street Project, Aquarion asserts that the project was placed in service in August 2017 at a cost of $1,227,696, which includes a reduction from the gross project costs to account for an $81,371 contribution received from the Massachusetts Department of Transportation ("MassDOT") (Company Brief at 62, citing Exhs. DPU 11-6; DPU 15-57; DPU 20-26; AG 4-5; Tr. at 194).[72] Aquarion argues that the post-test year project costs proposed for inclusion in rate base are known and measurable and that the project meets the Department's standard for inclusion in rate base because the cost is 3.16 percent of the Company's proposed rate base (Company Brief at 63, citing Exh. 5 (Rev. 3), Sch. 1). In support of this argument, Aquarion contends that the Department previously found a post-test year addition that was 1.16 percent of a company's proposed rate base represented a significant investment (Company Brief at 63, citing

[72] As discussed below, the Company provided an estimate for the contribution from MassDOT of $81,371 and stated that the proposed increase to rate base for the Charlton Street Project would include the actual amount of the contribution in its final schedules (Exhs. DPU 15-27; DPU 20-26; Tr. at 194).

D.P.U. 17-05, at 103. Accordingly, Aquarion argues that the Department should approve the proposed inclusion of this post-test year addition to rate base (Company Brief at 63).

In response to Hingham and Hull's arguments, Aquarion claims that Hingham and Hull's allegations, statements, and recommendations are unsupported, misleading, and incorrect (Company Brief at 64). Aquarion argues that the documentation provided in this proceeding demonstrates that the plant included in rate base is in service and the associated costs were reasonably and prudently incurred, and Hingham and Hull have cited to no evidence demonstrating otherwise (Company Brief at 64, citing Exhs. SCO-2; AG 3-19). Next, Aquarion asserts that Hingham and Hull have neither provided evidence of the industry average for the cost-per-foot of water main replacement projects, nor demonstrated that the Company's cost-per-foot to replace mains is significantly higher than the industry average (Company Brief at 64). Lastly, the Company asserts that it facilitates ample communication and coordination with Hingham and Hull officials (Company Brief at 65, citing Exhs. JPW at 25-28; DPU 10-17; DPU 24-5; Tr. at 64-65, 202-207). The Company maintains that Hingham and Hull have not offered any specifics regarding coordination deficiencies, proposed improvements, or demonstrated that the coordination efforts described by the Company are inaccurate, incorrect, or untrue (Company Brief at 65; Company Reply at 18).

The Company argues that the Department should reject Hingham and Hull's recommendations (Company Brief at 64). Aquarion contends that the Department consistently has shown a reluctance to interfere with the management judgment of a company unless it is shown to be frivolous (Company Brief at 66-67). The Company argues that

Hingham and Hull have failed to make a showing or present evidence warranting interference into Aquarion's business and management decisions (Company Brief at 67).

4. Standards of Review

a. Prudent, Used and Useful Standard

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). The prudence test determines whether cost recovery is allowed at all, while the used and useful analysis determines the portion of prudently incurred costs on which the utility is entitled to a return. D.P.U. 85-270, at 25-27.

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. at 229-230. 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 utility 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, 304 (1978); Metropolitan District Commission v. Department of Public Utilities, 352 Mass. 18, 24 (1967).[73] 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.

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73 The burden of proof is the duty imposed on a proponent of a fact whose case requires proof of that fact to persuade the fact finder that the fact exists, or where a demonstration of non-existence is required, to persuade the fact finder of the non-existence of that fact. Boston Gas Company, D.T.E. 03-40, at 52 n.31 (2003), citing The Berkshire Gas Company, D.T.E. 01-56-A at 16 (2002); Fitchburg Gas and Electric Light Company, D.T.E. 99-118, at 7 (2001).

b. Post-Test Year Plant Additions

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. See also Southbridge Water Supply Company v. Department of Public Utilities, 368 Mass. 300 (1975). 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. The Department has historically judged the significance of an investment by comparing the size of the addition in relation to rate base and not based on the particular nature of the addition. Western Massachusetts Electric Company, D.P.U. 1300, at 14-15 (1983).

5. Analysis and Findings

a. Introduction

No party has challenged the prudence or used and usefulness of Aquarion's proposed plant additions. Nevertheless, the Company bears the burden of demonstrating through clear and convincing evidence that such plant investments were prudently made and are used and useful. D.P.U. 95-40, at 7, citing D.P.U. 93-60, at 26; Massachusetts Electric Company v. Department of Public Utilities, 376 Mass. at 304; Metropolitan District Commission v. Department of Public Utilities, 352 Mass. at 24.

b. General Overhead

Aquarion states that it uses a general overhead allocation factor to book the cost of indirect labor to eligible projects (Exh. DPU 23-8(a)-(b)). Aquarion explains that the eligible projects exclude projects that are less than $50,000 because they do not require significant involvement from the employees involved in the capital program (Exh. DPU 23-10). Aquarion states that the general overhead allocation factor is based on the percentage of general overhead to the cost of eligible projects for each year, as estimated during the capital planning process (Exh. DPU 23-8, Att. A). The Company states that it monitors the clearing of the general overhead account monthly and adjusts the factor periodically to ensure the account has a zero balance at the end of the calendar year (Exh. DPU 23-8(c)). The Department has reviewed the Company's method for booking general overhead costs to capital projects and finds that Aquarion has determined these charges using rational and objective criteria in accordance with our precedent. D.P.U. 11-43, at 32 (citations omitted).

c. Allowance for Funds Used During Construction

Aquarion's proposed increase to rate base includes $204,040 in allowance for funds used during construction ("AFUDC") associated with eligible plant additions placed in service between January 1, 2011, and December 31, 2016 (Exh. DPU 4-3). In addition, Aquarion proposes to include in rate base $21,141 in AFUDC associated with the Charlton Street Project (Exh. DPU 11-7 & Att. A). The Company states that AFUDC is calculated each month based upon the average balance of projects that are greater than $10,000 and open for more than one month, multiplied by the annual AFUDC rate (Exh. DPU 4-4).

AFUDC is an accounting and ratemaking convention that allows companies to recover the costs of financing a construction project by capitalizing the carrying charges associated with financing the project during construction and including those costs in rate base as a part of plant in service. Plymouth Water Company, D.T.E./D.P.U. 06-53, at 7-8 (2007); Fitchburg Gas and Electric Light Company, D.P.U. 19084, at 8 (1977); Boston Edison Company, D.P.U. 18515, at 53 (1976). The Department has long recognized the propriety of including AFUDC as a component of construction costs and will permit its inclusion in rate base provided that the associated plant satisfies the Department's prudent used and useful test. See Western Massachusetts Electric Company, D.P.U. 558, at 40 (1981); D.P.U. 19084, at 8; D.P.U. 18515, at 53.

In the Company's previous rate case, the Department directed Aquarion to develop a method of computing its AFUDC that takes into consideration the role played by long-term debt, short-term debt, and common equity in financing construction and to provide this analysis as part of its initial filing in its next rate case. D.P.U. 11-43, at 27. The Company reported it has implemented a method that incorporates all debt and equity sources, including short-term debt, in its AFUDC calculation (Exhs. DPU 4-5; DPU 8-15, Att. A; DPU 23-12). The Department has examined the Company's method of computing AFUDC and finds that it adequately takes into consideration the role played by long-term debt, short-term debt, and common equity in financing construction (Exhs. DPU 4-5; DPU 8-15, Att. A; DPU 23-12). Based on our review, the Department finds that the Company's method addresses our concerns in D.P.U. 11-43. Accordingly, the Department accepts the Company's method of computing AFUDC.

d. 2011 Through 2016 Plant Additions

Between January 1, 2011, and December 31, 2016, Aquarion added $18,883,616 to its net utility plant in service (Exhs. JPW at 15; SCO at 4-12; DPU 4-20; DPU 24-21, Att. A at 2). Aquarion's capital expenditures included 39 individual projects; annual programmatic projects for hydrant, meter, and service replacements; and annual recurring projects for treatment, pumping, other T&D, and general plant (Exhs. SCO-2; DPU 20-31).

In its initial filing, Aquarion provided project documentation to support its proposed plant additions, including detailed cost summaries and a summary list that included asset numbers, project descriptions, cost estimates, actual costs, budget-to-actual cost variances in dollars, budget-to-actual cost variances in percentages, and descriptions of the cause of variances that exceeded ten percent for all projects with a cost greater than $25,000 (Exh. SCO-2). During the proceeding, the Company provided capital authorization forms for individual projects, which included design and execution budgets, proposed work schedules, alternatives analyses, and project report cards (Exhs. DPU 20-24 and Atts. A & B; AG 3-19, Att. A).[74] In addition, the Company provided variance explanations and detailed cost breakdowns for specific projects when requested (Exhs. DPU 4-20; DPU 4-22; DPU 4-23; DPU 4-24; DPU 11-6; DPU 15-22; DPU 15-29; DPU 23-13; DPU 23-16; RR-DPU-17).

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74 Project report cards detail the review completed by the PMC after a project is completed, including actual project costs versus the amount requested and approved (Exhs. DPU 4-1; DPU 20-24, Att. A).

Under the Company's capital authorization process, PMC approval is required for projects greater than $100,000 (Exh. DPU 20-24, Att. A at 4-5). However, the authorization documentation provided by the Company demonstrates that PMC approval was sought for projects greater than $50,000 at each phase of the project, i.e., initial planning, alternatives analysis, design, execution, and project close-out (Exhs. DPU 20-24, Att. A at 4, 5; DPU 23-13, Att. A; AG 3-19, Att. A). Aquarion's project documentation also demonstrates that the PMC reviewed and reauthorized project spending when costs were expected to vary by more than ten percent (Exh. AG 3-19, Att. A at 6, 46, 74, 201). Lastly, the PMC report cards demonstrate that the PMC evaluated the Company's performance on the projects, including a comparison of the projects' estimated and actual costs (Exhs. DPU 23-13, Att. A; AG 3-19, Att. A).

Hingham and Hull did not address any specific plant additions on brief but allege that many capital projects had significant cost overruns (Hingham/Hull Brief at 8).[75] A company is required to provide a reasonable explanation for cost variances, based on the specifics of each project, sufficient for the Department to evaluate the reasonableness and prudence of any cost variance. D.P.U. 15-155, at 120; NSTAR Gas Company, D.P.U. 14-150, at 50

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[75] Hingham and Hull did not cite to specific projects in asserting that many capital projects had significant cost overruns. With respect to the plant placed in service between 2011 and 2016, Aquarion proposed to include the cost of 39 individual projects. Of those projects, 24 were under budget and 15 were over budget. Of the 15 projects that were over budget, only the following three individual projects had budget-to-actual cost variances greater than ten percent, triggering the documentation of a variance explanation as part of the PMC's final review of the project: (1) Misc. Raw Water System Improvements in Hingham; (2) Atherton Road in Hull; and (3) Phipps Street in Hull (Exh. DPU 20-29, lines 14, 61, 63).

(2015); D.P.U. 13-75, at 95, 105; D.P.U. 12-25, at 79-80, 82; D.P.U. 10-114, at 85-87; D.P.U. 10-55, at 179-180. If a company adequately justifies the reasons for any cost variance, the Department will consider the costs of the project eligible for inclusion in rate base. D.P.U. 15-155, at 120; D.P.U. 14-150, at 50. If, however, a company is unable to justify the reasons for a cost variance, the Department will exclude the excess costs to the extent that the Company has not met its burden of proof. D.P.U. 15-155, at 120; D.P.U. 14-150, at 50-51; D.P.U. 13-75, at 114; Boston Gas Company, D.T.E. 03-40, at 68 (2003); D.P.U. 95-118, at 49-55.

The Department has reviewed the documentation supporting the Company's 2011-2016 plant additions, including all project descriptions, cost estimates, actual costs, variance explanations, and closing reports (Exhs. SCO-2; DPU 20-24 and Atts. A & B; AG 3-19, Att. A). The explanations provided for the variances and reauthorizations during the life cycle of the projects include unforeseen environmental issues, changes in project scope, high estimates, booking an invoice to the wrong project, inadvertently excluding paving costs from a budget approval, increased traffic control costs, unbudgeted emergency work, and other project-specific issues (Exhs. DPU 4-22(a); DPU 4-23; DPU 4-24; DPU 20-29, Att. A, line 61; AG 3-19, Att. A at 3, 46, 74, 109, 180, 201, 205, 215, 233, 236, 257; RR-DPU-17). Based on our review of these data and supporting documentation, we find that the projects are in service, that the Company has satisfactorily explained all cost variances, that the project costs were prudently incurred, and that the resulting plant is used and useful to ratepayers (Exhs. DPU 4-22; DPU 4-23; DPU 4-24; AG 3-19, Att. A;

RR-DPU-17). Accordingly, we will include the cost of the Aquarion's projects in the Company's rate base.

Additionally, Hingham and Hull contend that the cost-per-foot of Aquarion's mains replacement projects is much higher than the materials and labor costs per foot and significantly higher than the industry average (Hingham/Hull Brief at 8). Hingham and Hull did not provide any citation or evidence to permit the Department to evaluate the basis of these assertions. We note that the costs associated with capital projects, including mains replacements, are not limited to materials and labor and also include general overhead and AFUDC (Exhs. SCO-2, at 4-121; DPU 4-3; DPU 4-4; DPU 23-8; DPU 23-10). As addressed above, the Department reviewed the Company's methods for calculating general overhead and AFUDC and the projects the Company proposes to include in rate base, and has determined that the project costs were prudently incurred.

e. Post-Test Year Plant in Service

The Company proposes to include the Charlton Street Project in rate base (Exhs. JPW at 15-16; SCO at 13). The Charlton Street Project was a water main project involving the replacement of 3,860 feet of six-inch cast iron mains with new eight-inch and twelve-inch ductile iron mains (Exhs. SCO, at 13; DPU 4-14; DPU 11-6). In its initial filing, Aquarion estimated the inclusion of the Charlton Street Project in rate base would result in an increase of $1,041,000 for plant additions and a decrease of $59,684 for pro forma retirements, resulting in a net increase of $981,316 to plant in service (Exh. 5, Sch. 1). As of

December 7, 2017, the actual project cost totaled $1,309,067 for plant additions (Exhs. 5 (Rev. 1), Sch. 1; 5 (Rev. 2), Sch. 1; DPU 11-7; DPU 15-27; AG 4-5).

On March 16, 2018, however, Aquarion indicated that the final cost for the Charlton Street Project proposed for inclusion in rate base would exclude a contribution from MassDOT (Exh. DPU 15-27). The Company projected that the contribution from MassDOT would be $81,371 and stated the actual amount of the contribution would be reflected in its schedules once it was received (Exhs. DPU 15-27; DPU 20-26; Tr. at 194). In its final adjustment, the Company proposed to include $1,229,385 for plant additions associated with the Charlton Street Project, which represents a decrease of $79,682 from the total cost of the project (i.e., $1,309,067) as of December 7, 2017 (Exh. 5 (Rev. 3), Sch. 1). The inclusion of the Charlton Street Project in rate base results in an increase of $1,229,385 for plant additions and a decrease of $239,635 for pro forma retirements, resulting in a net increase of $989,750 to test year-end plant in service (Exh. 5 (Rev. 3), Sch. 1).

The Company asserts that the Charlton Street Project is significant under Department precedent (Company Brief at 62-63, citing Exhs. SCO at 23; 5 (Rev. 3), Sch. 1). To determine whether the Charlton Street Project was a significant investment with a substantial effect on its rate base, the Department compares the net plant to the test year-end rate base. D.P.U. 17-05, at 103 & n.52, n.53. The proposed increase to net plant for the Charlton Street Project was $989,750, as of August 10, 2018 (Exh. 5 (Rev. 3), Sch. 1). The Department finds that, when compared to test year-end rate base of $37,561,662, the Charlton Street Project was a significant investment with a substantial effect on its rate base.

Next, a company must provide sufficient documentation to allow the Department to determine whether the proposed cost of a post-test year addition to plant is known and measurable and the resulting plant is in service. D.P.U. 84-32, at 17; D.P.U. 906, at 7-11. Further, 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.

The Company provided documentation including a project description, cost estimate, design and execution budgets, proposed work schedule, alternatives analysis, project invoices, and a variance explanation (Exhs. DPU 4-14; DPU 11-6 and Atts. A & B; DPU 11-7; DPU 15-27 & Att. A; AG 4-5). Based on our review of the record evidence, the Department finds that the project was put in service in August 2017, and is used and useful to ratepayers (Exh. DPU 11-6). We further find that the project costs were prudently incurred and that $1,229,385 in plant additions and $239,635 in retirements associated with the Charlton Street Project are known and measurable (Exhs. DPU 4-14; DPU 11-6 and Atts. A & B; DPU 11-7; DPU 15-27 & Att. A; AG 4-5; Tr. at 194).

f. Conclusion

The Department has reviewed the record evidence concerning Aquarion's proposed plant additions, including the cost detail, authorization documents, closing reports, variance explanations, general overhead allocation factor calculations, and method of computing AFUDC, and we find that the project costs were prudently incurred and the projects are used and useful (Exhs. SCO-2, at 1-121; DPU 4-5; DPU 4-22; DPU 4-23; DPU 4-24; DPU 15-27, Att. A; DPU 20-29; DPU 23-8; AG 3-19, Att. A; RR-DPU-17). Accordingly, the Department allows $18,883,617 for the 2011-2016 plant additions and $1,229,385 for the Charlton Street Project plant additions, less $239,635 in pro forma retirements, to be included in rate base.

6. Hingham and Hull's Request for Investigation or Establishment of Reporting Requirements

a. Introduction

Hingham and Hull raise several issues with Aquarion's management and oversight of capital projects, procurement of construction companies, and coordination and communication with Hingham and Hull officials and request that the Department either open an investigation into these matters or establish reporting requirements (Hingham/Hull Brief at 7-8). We address these issues below.

b. Capital Spending Authorization Process

Hingham and Hull raise issues regarding Aquarion's management and oversight of capital improvements (Hingham/Hull Brief at 8). The Company does not have a written capital spending policy but follows an established process for authorizing capital projects that it states has been in place for approximately 20 years (Exhs. DPU 4-1; DPU 20-24; Tr. at 193). As addressed above, in reviewing the Company's proposed plant additions, the Department examined the Company's capital authorization process.

Based on the record evidence, the Department finds that the Company authorized, oversaw, and documented the 2011-2016 plant additions in accordance with its capital spending process as described in Section VI.B.2., above (Exhs. DPU 4-1; DPU 15-27, Att. A; DPU 20-24, Att. A; AG 3-19, Att. A). The Department finds that the Company has demonstrated an adequate process for the financial oversight of its capital spending and documentation of its business and management decisions (Exhs. DPU 4-1; DPU 20-24, Att. A; Tr. at 193). Accordingly, we find no issues in the Company's management and oversight on capital projects that would warrant an investigation or the imposition of the filing requirements proposed by Hingham and Hull.[76]

Nevertheless, there are several ways that the development of a written capital authorization policy would assist the Department and any potential intervenors' review of capital projects that are before us in future proceedings. During this proceeding, Aquarion stated that it was in the course of reviewing its PMC process, but it was unsure that a written policy would be an outcome of that review (Tr. 2, at 309). The Department directs Aquarion to develop a written capital authorization policy that includes, but is not limited to, a complete and detailed explanation of the process undertaken by the Company to authorize capital spending; how the Company documents capital spending authorization and

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76 We note that much of the documentation sought by Hingham and Hull in their proposed filing requirements is relevant to the Department's prudence review conducted prior to the recovery of costs for plant additions. This sort of documentation is typically included in a company's filing seeking to recover costs for plant additions, and it would be discoverable during such a proceeding if not initially provided. See, e.g., D.P.U. 16-91-A at 16-17; D.P.U. 17-05, at 75-81; D.P.U. 14-150, at 58 ("the Department and intervenors may inquire into any project regardless of its final costs"). Accordingly, the Department finds that it would be administratively inefficient for the Department to require Aquarion to provide project documentation throughout the life of a project, as requested by Hingham and Hull, rather than at the time Aquarion seeks to recover the project's costs. Further, as addressed in Section V.C.4.m., above, the Department has established requirements for the Company's annual Mechanism filings that include reporting the reduction of UAW.

reauthorizations; and when authorizations, reauthorizations, and variance explanations are required for individual projects, recurring projects, and programmatic infrastructure replacement projects. Also, the written capital authorization policy should clarify who is required to authorize spending on projects that are not recurring projects or programmatic infrastructure replacement projects but that cost less than $100,000.

c. Procurement for Construction Projects

Hingham and Hull maintain that the Company's procurement of construction companies needs improvement (Hingham/Hull Brief at 7-8). Hingham and Hull stated that they had concerns with the Company's procurement of construction companies but did not cite to any support in the record to illustrate the basis of their concerns or provide any suggestions as to how the competitive bidding process could be improved (Hingham/Hull Brief at 7-8).

While the Department has not mandated that companies engage in competitive bidding processes for construction activities, the value and importance of thorough analyses of all major expenditures, including those deemed necessary and non-discretionary, through analytical techniques such as cost-benefit analyses cannot be underestimated. Bay State Gas Company, D.T.E. 05-27, at 90 (2005); D.P.U. 95-118, at 48-49; D.P.U. 93-60, at 27. Moreover, the Department has consistently emphasized the need to obtain competitive bids for outside services as an important part of a company's overall strategy to contain costs. D.P.U. 08-27, at 69; D.T.E. 05-27, at 158-159; D.T.E. 03-40, at 148.

The Company states that contractors are selected for most capital projects through a competitive bidding process, including all water main replacement projects (Tr. 3, at 489-490). In conducting its competitive solicitation process, the Company identifies responsible and qualified contractors for a project and sends them an invitation to bid with a detailed engineering plan and specifications (Exh. DPU 11-18). The bids are reviewed by the procurement department, and the contract is awarded based on the Company's determination of the best value taking into consideration total cost, proposed project schedule, and prior work quality and performance (Exh. DPU 11-18; Tr. 3, at 489-490). During the proceeding, in response to information requests, Aquarion provided the bid documentation for the $409,544 Atherton Road water main replacement project and the $1.3 million Charlton Street Project (Exhs. DPU 11-9 & Atts. A, B, C; RR-DPU-14 & Atts. A, B, C).

Based on substantial record evidence, the Department finds that competitive bidding is a prominent component of Aquarion's cost containment strategy. Further, we find no issues in the Company's competitive solicitation process or the solicitation documentation in the record that would warrant an investigation into Aquarion's competitive selection of contractors or the establishment of filing requirements as proposed by Hingham and Hull.

d. Coordination with Municipal Officials

Hingham and Hull state that Aquarion's coordination, prioritization, and scheduling of projects with local officials needs improvement (Hingham/Hull Brief at 8). Hingham and Hull assert that the Company's coordination with local officials is inadequate but did not provide specific details regarding how the Company's coordination with local officials could be improved (Hingham/Hull Brief at 8). Based on our review, we find that the record contains no evidence of issues in the Company's coordination and communication efforts on capital projects that would warrant an investigation.

During the proceeding, the Company described its process for coordinating paving and police detail requirements with local officials (Tr. 3, at 493-494). The Company states that in the past it spoke with the local official responsible for paving in the community before the design phase of the project was finished and the project put out to bid and coordinated with local officials to accommodate design changes during the life of the project (Tr. 3, at 493-494). Aquarion states that now it coordinates with the superintendent of the local department of public works by walking project sites during the design phase to observe asphalt conditions and verbally confirm paving requirements (Tr. 3, at 493). In addition to paving, the Company provides that police detail requirements are estimated by the project engineer based on traffic conditions and ultimately determined based on the judgment of the local police department (Tr. 3, at 501-502).

The Department recognizes the value in utility companies coordinating with local officials on capital projects as a cost containment measure and to ensure public safety. On brief, the Company asserts that it intended to continue its communication and coordination with local officials (Company Brief at 65). As addressed in Section V.C.4.l., above, the Company will be coordinating with the municipalities regarding its Mechanism projects, and the Department expects the Company to continue its communication and coordination efforts with respect to its other capital planning and projects as well.

C. Customer Advances and Deposits

1. Introduction

As of the end of the test year, Aquarion's customer advances balance was $151,041 (Exhs. 5 (Rev. 3), Sch. 1; AG 4-26; DPU 8-17). The Company proposes to reduce its rate base by the test year customer advances balance of $151,041 (Exh. 5 (Rev. 3), Sch. 1). No other party addressed this issue on brief.

2. Analysis and Findings

Customer deposits are refundable amounts held against future bills that may go unpaid when an account is closed. See D.T.E. 02-24/25, at 25; Boston Edison Company, D.P.U. 1720, at 90-91 (1984); D.P.U. 906, at 24. Similarly, customer advances, also known as refundable construction advances, are refundable amounts given to the utility by a customer or potential customer for the purpose of constructing facilities intended to serve that particular customer. D.T.E. 03-40, at 102-103; D.T.E. 02-24/25, at 29; D.P.U. 1590, at 10; Western Massachusetts Electric Company, D.P.U. 18370, at 5 (1977).

Because customer deposits and customer advances provide the utility with cost-free sources of capital, the Department requires that customer deposits and customer advances be included as offsets to rate base. The offset is calculated using the year-end balance of the customer deposit and customer advance accounts. D.P.U. 10-114, at 109; Housatonic Water Works Company, D.P.U. 86-235, at 5 (1987); D.P.U. 1590, at 10-11; D.P.U. 906, at 24. The Company recorded its customer advances in two subaccounts to Account 252 (Exh. AG 3-34, Att. A at 18). The Department finds that the Company has appropriately reduced its rate base by $151,041 for customer advances. In addition to these customer advances, the Department has identified an additional $1,000 associated with customer security deposits that were booked to Account 235 (Exh. AG 3-34, Att. A at 18). Therefore, the Department reduces the Company's proposed rate base by an additional $1,000.

The Department's regulations require utility companies to pay interest on any security deposit, represented by cash or cash-equivalent securities that are held for more than six months. 220 CMR 26.09. The interest rate is equal to the rate paid on two-year U.S. Treasury notes for the preceding twelve months ending December 31st of each year, as published in the Federal Reserve Statistical Release, H.15 Selected Interest Rates. 220 CMR 26.09. The interest rate on two-year U.S. Treasury notes for the year ending December 31, 2017, was 1.4 percent. Massachusetts Department of Public Utilities, Interest Rates for Security Deposits for Investor-Owned Utilities, https://www.mass.gov/service-details/interest-rates-for-security-deposits-for-investor-owned-utilities (last visited October 30, 2018); Federal Reserve, Data Download Program, Selected Interest Rates, available at https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15.

Consistent with this policy, the Department finds it appropriate to include in Aquarion's cost of service the interest expense associated with its customer security deposits. See Hingham Municipal Light Plant, D.P.U. 15-33, at 2 n.4 (2015); D.P.U. 10-114, at 163; D.P.U. 1720, at 90-91; Boston Edison Company, D.P.U. 1350, at 20-21 (1983); D.P.U. 906, at 24. Therefore, the Department will apply the interest rate of 1.4 percent to the aggregate test year-end balance of customer deposits of $1,000 producing a net interest expense for Aquarion of $14. Accordingly, the Company's proposed cost of service will be increased by $14.

D. Customer Contributions

1. Introduction

Aquarion proposed to reduce its rate base for three categories of customer contributions: (1) contributions in aid of construction ("CIAC"), (2) system development charges ("SDCs"), and (3) WBP fees (Exhs. MLR at 7; 5 (Rev. 3), Sch. 1; DPU 4-17; DPU 13-10; DPU 13-11). Aquarion proposed to reduce rate base by $12,144,841 for CIAC, which represents the Company's gross CIAC ($15,150,660) less the amortization of CIAC ($3,005,819) (Exhs. 5 (Rev. 3), Sch. 1; DPU 4-17; DPU 13-11; AG 3-34, Att. A at 18). The Company proposed to reduce rate base by $502,491 for plant funded by SDCs, which represents the Company's gross SDCs ($521,910) less the amortization of SDCs ($19,419) (Exhs. 5 (Rev. 3), Sch. 1; DPU 4-17; DPU 13-11; AG 3-34, Att. A at 18). Lastly, Aquarion proposed to reduce rate base by $219,874, the balance of funds received through the WBP (Exhs. 5 (Rev. 3), Sch. 1; DPU 7-8(c); DPU 8-18; DPU 24-12; AG 3-34, Att. A at 18).

Plant funded by CIAC is specific company-owned plant that is financed by cash contributions from customers for the extension or upgrade of service to the customers (Exh. DPU 4-16). Milford Water Company, D.P.U. 11-99, at 3 n.3 (2011); D.T.E. 02-24/25, at 63. The Company books CIAC to Account 271000 for internal reporting purposes (Exh. AG 3-34, Att. A at 18).

Plant funded by SDCs is also company-owned plant that is financed by customer contributions; the difference is that SDCs are charged to all new customers and used for the purpose of upsizing transmission and distribution mains (Exhs. DPU 1-30; DPU 13-10). D.P.U. 08-27, at 211-212. Aquarion books SDCs received from customers to Account 252005 for internal reporting purposes (Exhs. DPU 13-10; AG 3-34, Att. A at 18).[77] After the funds are designated for a specific project and the project is closed, Aquarion transfers the amount used on the project from Account 252005 to Account 271005 for internal reporting purposes (Exhs. DPU 13-10; AG 3-34, Att. A at 18).

Lastly, WBP fees are used for the limited purposes of water conservation, demand management, or supplemental supply development work (Exhs. DPU 7-7(a)-(b); DPU 7-8(c); DPU 15-31; Tr. 2, at 322). As of the close of the record, WBP fees have been used by the Company to pay for a water conservation study and fund Aquarion's Customer Conservation Program, a program through which Aquarion customers may apply to have their plumbing fixtures replaced with more efficient models and receive rebates for more efficient appliances (Exhs. DPU 7-7 & Atts. A, B; DPU 15-31 & Att. A; DPU 22-5; DPU 24-15 & Att. A). The Company books WBP fees received from customers to Account 252007 for internal reporting purposes (Exhs. 7-8(c); DPU 24-12; AG 3-34, Att. A at 18). No parties addressed these issues on brief.

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77 The test year-end balance of Account 252005 is included in the Company's calculation of Customer Advances, discussed in Section VI.C. above.

2. Analysis and Findings

a. CIAC and SDC Funded Plant

Under long-standing Department practice, property that has been contributed to a utility is not to be included in rate base. Milford Water Company, D.P.U. 17-107, at 45 (August 31, 2018). This is because a utility is not entitled to a return on investment which was paid for by customers. D.P.U. 17-107, at 45; Milford Water Company, D.P.U. 771, at 21 (1981); Oxford Water Company, D.P.U. 18595, at 6 (1976); Commonwealth Gas Company, D.P.U. 18545, at 2 (1976).

The Department has reviewed the record documentation supporting the CIAC and SDC account balances (Exhs. DPU 4-17; DPU 4-18; DPU 13-11; DPU 23-15). Both Account 271000 and Account 271005 represent capital contributions received from customers that are deducted from rate base. Therefore, the Department accepts the Company's proposed overall CIAC and SDC balance of $12,647,332 (Exh. 5 (Rev. 3), Sch. 1, line 15).

b. Water Balance Program Fees

Similar to customer advances, the WBP fees received by Aquarion represent a cost-free source of capital. Cf. D.T.E. 03-40, at 102-103; D.T.E. 02-24/25, at 29; D.P.U. 1590, at 10; D.P.U. 18370, at 5. Therefore, it is appropriate for Aquarion to offset its proposed rate base with the year-end balance of the WBP fees account. The Department has reviewed the record documentation supporting the WBP fees account balance and finds that the Company has appropriately reduced its rate base by $219,874 (Exhs. DPU 7-8, Att. A (Supp.); DPU 8-18; DPU 15-31, Att. A; DPU 24-12; DPU 24-15, Att. A).

During the proceeding, the Company stated that certain capital projects could be eligible for funding using WBP fees if the project resulted in water conservation, though Aquarion has not previously used WBP fees to fund such projects (Exh. DPU 22-12; Tr. 2, at 320-322; Tr. 4, at 698). In the event that the Company uses WBP fees to fund capital projects, the Company is directed to treat any such plant as contributed property. The cost of such property shall be transferred from the Company's Account 252007 to a subaccount of Account 323 (Contributions for Extensions) under the Department's Uniform System of Accounts for Water Companies for purposes of the annual return to the Department.[78] In doing so, the Company may continue to use Account 252007 for internal reporting purposes.

E. Accumulated Deferred Income Taxes

1. Introduction

As of the end of the test year, Aquarion had on its books total ADIT of $7,098,992 (Exhs. 5 (Rev. 3), Sch. 1; AG 4-27). The Company's ADIT balance consists of ADIT associated with the following: (1) depreciation; (2) loss of asset disposals; (3) proceeds from sale of equipment; (4) cost of removal; (5) reserve for bad debt; (6) deferred debits; (7) Financial Accounting Standards ("FAS") 106; (8) Voluntary Employees' Benefits Association ("VEBA") receivable portion of FAS 106; (9) pensions; (10) bonuses; (11) other accruals; (12) acquisition costs; (13) supplemental employee retirement plan costs; (14) unrealized swap losses; and (15) legacy American Water regulatory assets

78 This accounting treatment is similar to how Aquarion transfers SDCs from Account 252005 to Account 271005 once a project eligible for SDC funding is closed (Exhs. DPU 13-10; AG 3-34, Att. A at 18).

(Exh. AG 4-27; Tr. 3, at 469). These components represent both positive and negative balances, and they have a combined net balance of $7,098,992 (Exh. AG 4-27). The Company proposes to include this ADIT balance as an offset to its rate base (Exh. 5 (Rev. 3), Sch. 1).

2. Positions of the Parties

The Attorney General argues that based on the Company's description of its ADIT components, some of the ADIT balances relate to either deferred debits that are not included in rate base or to accrued liabilities that are not deducted from rate base (Attorney General Brief at 21). The Attorney General reasons that if an item giving rise to ADIT is not reflected in the determination of rate base, then the deferred tax balance related to that particular item should not be reflected in the determination of rate base (Attorney General Brief at 21). Consequently, the Attorney General asserts that certain components that make up the Company's proposed ADIT balance relate to non-rate base items and, as such, should be eliminated from the determination of ADIT deducted from plant-in-service in the calculation of rate base (Attorney General Brief at 21-22, citing Exhs. AG-DJE-1, Sch. DJE-5; AG 4-27; AG 6-13). Specifically, the Attorney General proposes to exclude the following ADIT elements from the Company's proposed balance: (1) deferred debits; (2) FAS 106; (3) VEBA receivable portion of FAS 106; (4) pensions; (5) bonuses; (6) other accruals; (7) acquisition costs; (8) supplemental employee retirement plan costs; and (9) unrealized swap losses (Attorney General Brief at 21-22, citing Exh. AG-DJE-1, Sch. DJE-5, at 1). These components of ADIT sum to negative $1,022,253 (Exh. AG 4-27).

Therefore, the Attorney General proposes to reduce the Company's proposed ADIT balance by $1,022,253 (Attorney General Brief at 21). None of the other parties presented arguments on brief regarding this proposal.

3. Analysis and Findings

ADIT represent a cost-free source of funds to utilities and, accordingly, are treated as an offset to rate base. Essex County Gas Company, D.P.U. 87-59, at 27 (1987); D.P.U. 85-137, at 31; D.P.U. 1350, at 42-43. Nonetheless, the Department has a general policy of matching recovery of tax benefits and losses to the recovery of the underlying expense with which the tax effects are associated. Commonwealth Electric Company, D.P.U. 89-114/90-331/91-80 (Phase One), at 29 (1991); Massachusetts Electric Company, D.P.U. 89-194/195, at 66 (1990). Consequently, the Department has recognized adjustments to year-end deferred income tax balances associated with a variety of items. D.P.U. 10-55, at 209-211 (contributions in aid of construction); D.P.U. 09-39, at 118-119 (FAS 109 obligations and plant recovered via separate surcharge); D.T.E. 02-24/25, at 62 (energy supply costs); D.P.U. 89-114/90-331/91-80 (Phase One) at 24-30 (Pilgrim litigation expenses); Western Massachusetts Electric Company, D.P.U. 89-255, at 18 (1990) (cancelled plant); Boston Edison Company, D.P.U. 160, at 11 (1980) (retired plant); Boston Edison Company, D.P.U. 19991, at 20 (1979) (federal versus Department AFUDC differences).

The Attorney General proposes to remove $1,022,253 from the Company's proposed ADIT balance of $7,098,992 because these components of ADIT relate to non-rate base items (Exhs. AG-DJE-1, Sch. DJE-5; AG 4-27; DPU-AG 1-1). Each of the ADIT components identified by the Attorney General are associated with temporary book/tax timing differences (Exh. AG 6-13; Tr. 3, at 468-469). Temporary tax differences arise when there is an inter-period difference between the book and tax treatment of certain accounting transactions, when those differences originate in one period and reverse in one or more subsequent periods.[79] Western Massachusetts Electric Company, D.P.U. 10-70-A at 2 n.3 (2012). The net effect of these temporary tax differences are normalized and incorporated into the Department's income tax schedules as either an addition or a deduction in the calculation of the taxable income base, with a corresponding deduction or addition to deferred income taxes. See D.P.U. 10-70-A at 3, 18.

The Department's long-standing policy has been to exclude all ADIT from rate base regardless of the nature of the timing difference which gave rise to the deferred taxes or the time period in which they will reverse. Commonwealth Electric Company, D.P.U. 88-135/151, at 15 (1989); Western Massachusetts Electric Company, D.P.U. 18731, at 34 (1977). The exceptions to this policy that are governed by the Department's policy of matching recovery of tax benefits and losses to the recovery of the underlying expense do not apply in this situation.[80] The Department finds that the ADIT components identified by

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79 For example, because the Internal Revenue Service recognizes uncollectible expense only when the associated debt is deemed worthless, the use of a reserve method to account for uncollectible expense will create a temporary timing difference between when the expense is booked and when it is recognized for tax purposes. D.P.U. 10-70-A at 3.

80 For example, while the Department will exclude ADIT associated with an item if that cost is recovered through a separate reconciling mechanism, Aquarion does not have such reconciling mechanisms. Cf. D.P.U. 09-39, at 119 (ADIT associated with

Aquarion are eligible for inclusion in the computation of the Company's ADIT offset to rate base. Therefore, the Department accepts the Company's proposal to include $7,098,992 of ADIT as an offset to rate base.

F. Conclusion

The Department allows a net utility plant in service of $57,633,486. Accordingly, Aquarion's total allowed rate base is $38,742,164, consisting of (1) $57,633,486 in net utility plant in service; (2) $262,603 in materials and supplies;[81] (3) $964,314 in cash working capital,[82] less (1) $7,098,992 in ADIT; (2) $12,647,332 in CIAC; (3) $219,874 in funds received through the WBP; and (4) $152,041 in customer deposits and advances.

VII. REVENUES

A. Introduction

Aquarion reported test year-end operating revenues of $16,054,388 (Exhs. 4 (Rev. 3), Sch. 1, at 1; AG 3-2, Att. B (2016), at 11). Aquarion's test year operating revenues are composed of $14,401,676 in metered sales, $1,593,912 in unmetered sales (i.e., fire

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Nantucket Electric Company underwater cable excluded from consideration in rate base because associated costs recovered through separate reconciling mechanism).

81 The $262,603 in materials and supplies is based on a thirteen month average of materials and supplies balance, consistent with Department precedent (Exhs. 5 (Rev. 3), Sch. 1; DPU 11-14). See D.P.U. 15-155, at 145-147; D.P.U. 86-235, at 3-4; High Wood Water Company, D.P.U. 1360, at 7-8 (1983); D.P.U. 1300, at 29.

82 Aquarion's cash working capital allowance is calculated by applying a 45/365-day cash allowance (i.e., 12.33 percent) to the Company's allowed O&M expense of $7,820,878, as shown in Schedule 6 of this Order. D.P.U. 08-27, at 39-40; D.P.U. 1300, at 19-21; D.P.U. 1350, at 25.

protection), and $58,800 in fees (Exhs. 4 (Rev. 3), Sch. 1, at 1; 4 (Rev. 3), Sch. 4, at 21).[83] The Company proposes four adjustments to its test year operating revenues: (1) removal of $9,873 in unbilled revenues; (2) a decrease of $43,432 to normalize booked test year amounts for ratemaking purposes; (3) a decrease of $40,924 to account for revenues associated with the purchased water surcharge;[84] and (4) an increase of $22,824 associated with proposed changes to fees (Exhs. TMD at 24-25; 4 (Rev. 3), Sch. 1, at 1; DPU 7-13; DPU 7-14). The proposed adjustments result in total operating revenues of $15,982,983, or a decrease of $71,405 to test year-end operating revenues. Additionally, Aquarion proposes total non-operating revenues of $74,135 (Exh. 2 (Rev. 3), Sch. 1).

B. Positions of the Parties

The Company maintains that its adjustments to test year revenues are based on known and measurable changes, consistent with Department precedent (Company Brief at 14). No other party addressed this issue on brief.

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83 The Company revised its test year revenues from fees from $59,300 to $58,800 to account for the number of times the various fees were charged during the test year (Exhs. 4 (Rev. 3), Sch. 1, at 21; DPU 1-34; DPU 6-15).

84 The Company purchases water from the City of Worcester as needed to ensure adequate service to its sole G4 customer, and those charges are recovered by a surcharge on this customer (Exhs. JAU at 5; DPU 7-21(a)). See also D.P.U. 08-27, at 188. The Company proposes a decrease in revenues associated with the purchased water surcharge from the test year amount of $167,733 to $126,809 based on reduced water usage that the Company determined would be representative of its future use (Exhs. DPU 7-14(a); DPU 7-18; DPU 7-20; AG 4-24).

C. Analysis and Findings

The Department has reviewed the Company's proposed total operating revenues and adjustments and accepts the Company's adjustment for unbilled revenues of $9,873. The Department additionally has reviewed and accepts the Company's proposed non-operating revenues of $74,135. The Department addresses the remaining revenue adjustments as discussed below.

The Company proposes an adjustment to normalize booked test year amounts for ratemaking purposes. This adjustment addresses any variations between the booked revenue, and the calculated test year revenue[85] that result from billing adjustments and proration associated with shortened or extended billing cycles (Exhs. TMD at 24-25; 4 (Rev. 3), Sch. 4, at 1-21; DPU 12-2). The calculated test year revenue for Linden Ponds used in determining this adjustment is based on one two-inch meter and one eight-inch meter (Exhs. JPW at 8; 4 (Rev. 3), Sch. 4, at 3; DPU 1-18). The Company acknowledges that this adjustment should be corrected to include the second two-inch meter at Linden Ponds (Exhs. JPW at 8; 4 (Rev. 3), Sch. 4, at 3; DPU 1-18). Accordingly, the Department increases revenues by $1,413 associated with the second two-inch meter.[86]

The test year revenues associated with the purchased water surcharge were $167,733 (Exhs. 4 (Rev. 3), Sch. 1, at 1; DPU 7-14). The Company proposes a decrease of $40,924

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85 Calculated test year revenue is based on billing determinants (i.e., the number of bills issued and consumption) (Exhs. TMD at 26; 4 (Rev. 3), Sch. 4, at 1-21).

86 During the test year, the service charge for a two-inch meter for Linden Ponds was $117.71 per month, or $1,413 per year (Exh. 4 (Rev. 3), Sch. 4, at 3).

to account for revenues associated with the purchased water surcharge that it states is more representative of decreased amounts of purchased water subsequent to the Company's well optimization efforts, resulting in proposed purchased water revenues of $126,809 (Exhs. JAU at 5; 4 (Rev. 3), Sch. 1, at 1; DPU 7-18; DPU 7-20). As discussed in Section VIII.F., the Department accepted the Company's calculation of its projected reduced need to purchase water from the City of Worcester. Based on the projected annual purchased water quantity of 45 million gallons ("MG") per year (i.e., 60,156 hundred cubic feet ("CCF")), the purchased water expense to be recovered through the surcharge is $126,809 (Exhs. 4 (Rev. 3), Sch. 1, at 1; DPU 7-18). The Department, therefore, accepts the Company's adjustment to its purchased water surcharge revenues.

In addition, the Company proposed an adjustment to its test year revenues to account for increases to the miscellaneous charges proposed in this proceeding (Exh. 4 (Rev. 3), Sch. 1, at 1). Section XIV., below, addresses the reasonableness of Aquarion's proposed fees. Consistent with the Department's findings therein, Aquarion's revenues shall be decreased by $3,168 (Exhs. 4 (Rev. 3), Sch. 4, at 21; DPU 15-16).

Based on the adjustments addressed above, the Department determines that the Company's proposed revenues of $15,982,983 should be increased by $1,413 to account for the second two-inch meter at Linden Ponds and decreased by $3,168 based on the fees approved in this Order. This results in a decrease in operating revenues by $1,755, producing total operating revenues of $15,981,228.

VIII. OPERATIONS AND MAINTENANCE EXPENSES

A. Acquisition Savings and Transaction Costs

1. Introduction

During this proceeding, Aquarion proposed to include a reduction of $14,000 to legal expenses and a reduction of $3,000 to corporate expenses to incorporate anticipated savings as a result of Eversource's acquisition of Macquarie Utilities, Inc. (Exhs. AWC-TMD-1, at 6; 2 (Rev. 1), Sch. 12, at 1; 2 (Rev. 1), Sch. 20). The Department addresses those adjustments in Section VIII.H.3. and Section VIII.K.3., below. Aquarion did not propose to recover transaction costs incurred as a result of the acquisition in this proceeding (Exhs. Towns 2-9; Towns 4-8).

2. Positions of the Parties

a. Hingham and Hull

Hingham and Hull contend that Aquarion's revenue requirement should be further reduced by $125,000, in addition to the $17,000 adjustment proposed by the Company, to account for savings that Hingham and Hull allege Aquarion will realize due to the acquisition (Hingham/Hull Brief at 20; Hingham/Hull Reply at 5-6). In support of their position, Hingham and Hull state that the Company estimated net savings of between $108,000 and $142,000 in D.P.U. 17-115 (Hingham/Hull Brief at 20, citing D.P.U. 17-115). Hingham and Hull allege that testimony sponsored by the Attorney General supports their argument for reducing the revenue requirement and that the Company failed to rebut their argument (Hingham/Hull Brief at 20-21, citing Exh. AG-TN at 12; Hingham/Hull Reply at 6).

In addition, Hingham and Hull argue that Eversource's stockholders should absorb all transaction costs incurred by Eversource or Aquarion during the acquisition (Hingham/Hull Brief at 21-22). Alternatively, Hingham and Hull propose that the Department limit the recovery of transaction costs incurred during the acquisition that may be proposed for recovery in future base rate proceedings (Exhs. TOWNS-DFR at 27; TOWNS-DFR (Supp.) at 23; Hingham/Hull Brief at 22).

b. Company

Aquarion states that it incorporated $17,000 in reductions to legal expenses and corporate expenses that the Department found would materialize as a result of the acquisition (Company Brief at 9-10). The Company acknowledges that it developed estimates of quantifiable net savings that may be realized following the change in control (Company Reply at 19, citing Exh. AG 2-1). Aquarion maintains, however, that the $142,000 in net savings cited by Hingham and Hull is only an estimate and, therefore, it is not known and measurable (Company Reply at 19). Accordingly, Aquarion argues, Hingham and Hull's proposal does not represent an appropriate adjustment to the Company's cost of service in this proceeding (Company Reply at 19). In support of its position, Aquarion states that the Department has previously rejected similar recommendations by the Attorney General concerning the savings that would accrue as a result of Eversource's acquisition of Aquarion because they were speculative (Company Reply at 19-20, citing D.P.U. 17-05, at 234 n.119). Finally, the Company argues that Hingham and Hull have provided no evidence in support of their proposal and rely solely on their beliefs regarding the savings estimate, so the Department should reject this recommended adjustment (Company Reply at 19, 20).

With respect to transaction costs, the Company stated that no transaction costs were included in the revenue requirement proposed in this proceeding (Company Brief at 10). No other party addressed these issues on brief.

3. Analysis and Findings

a. Acquisition Savings

Anticipated net savings was one of the factors considered by the Department in reviewing Eversource's proposed acquisition of MUI. D.P.U. 17-115, at 19, 27-34. Companies that achieve cost savings through mergers and other business combinations are expected to incorporate those savings in their subsequent base rate proceedings. D.P.U. 09-39, at 275, citing Bay State Gas Company/Unitil Corporation, D.P.U. 08-43-A at 45 (2008). As noted above, Aquarion proposed a reduction of $14,000 to legal expenses and a reduction of $3,000 to corporate expenses to incorporate anticipate savings as a result of Eversource's acquisition of MUI (Exhs. AWC-TMD-1, at 6; 2 (Rev. 1), Sch. 12, at 1; 2 (Rev. 1), Sch. 20). The Department addresses those adjustments in Section VIII.H.3. and Section VIII.K.3., below.

In support of their proposed reduction of $125,000 to Aquarion's cost of service, exclusive of the $17,000 proposed by the Company, Hingham and Hull point to the total estimated savings of $108,000 to $142,000 proposed by the petitioners in D.P.U. 17-115 (Hingham/Hull Brief at 20, citing D.P.U. 17-115). The $125,000 in additional estimated savings consisted of $61,000 in annual borrowing costs and $64,000 in annual labor costs. D.P.U. 17-115, at 28-33.

In D.P.U. 17-115, the Department recognized a strong potential for Aquarion to receive a higher credit rating and have access to more favorable interest rates after the acquisition, as well as a likelihood of some amount of operational savings as Eversource becomes familiar with the Company and its water operations. D.P.U. 17-115, at 33-34. However, the Department determined that the level of any such savings were unquantifiable, speculative, and, thus, inappropriate for inclusion in net savings. D.P.U. 17-115, at 31-33. Consistent with our findings in D.P.U. 17-115, we find that these savings remain unquantifiable and speculative, and they do not constitute a known and measurable change to cost of service. Accordingly, we will not reduce Aquarion's cost of service by $125,000, as proposed by Hingham and Hull.

b. Transaction Costs

Consistent with Department precedent, transaction costs may be recoverable in rates after a determination by the Department that (1) the merger is in the public interest (i.e., the benefits of the merger exceed the costs), and (2) the transaction costs are reasonable. D.P.U. 17-115, at 17; Plymouth Water Company, D.P.U. 14-120, at 101 (2015); Eastern/Colonial Acquisition, D.T.E. 98-128, at 90 (1999); Eastern/Essex Acquisition, D.T.E. 98-27, at 52 (1998). We note that no transaction costs are proposed for recovery in this proceeding (Exhs. Towns 2-9; Towns 4-8). D.P.U 17-115, at 17 n.13. As a result, the

Department finds that Hingham and Hull's proposals are speculative, premature, and beyond the scope of this proceeding.

B. Employee Compensation

1. Introduction

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. 10-55, at 234; Boston Gas Company, D.P.U. 96-50 (Phase I) at 47 (1996); Cambridge Electric Light Company, D.P.U. 92-250, at 55 (1993). This approach recognizes that different components of compensation (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. D.P.U. 92-250, at 55. In addition, the Department requires a company to demonstrate that its total unit-labor cost is minimized in a manner supported by its overall business strategies. D.P.U. 92-250, at 55.

A company is required to provide a comparative analysis of its compensation expenses to enable a determination of reasonableness by the Department. D.P.U. 96-50 (Phase I) at 47. The Department evaluates the per-employee compensation levels, both current and proposed, relative to the companies in the utility's service territory and utilities in the region 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 103 (1992); Massachusetts Electric Company, D.P.U. 92-78, at 25-26 (1992).

Aquarion's employee compensation program includes base pay, incentive compensation, vacation and holiday pay, medical and dental insurance, life insurance, disability insurance, and a pension and post-retirement benefits other than pension plan ("pension and PBOP") (Exhs. TMD at 12-15; 2 (Rev. 3), Schs. 3-5; AG 3-42; AG 3-43; AG 5-15). The Department addresses pension and PBOP expense in Section VIII.C.3., below.

2. Employee Levels

a. Introduction

In its initial filing, Aquarion reported a payroll headcount of 20 full-time employees (Exhs. 2, Sch. 3; DPU 17-2). During the course of this proceeding, the Company revised its employee level to 22 full-time employees to account for: (1) the creation of a full-time administrator position and (2) the creation of an operations supervisor position (Exhs. 2 (Rev. 3), Sch. 3; DPU 17-2; DPU 17-2, Att. A at 3; DPU 21-9; RR-DPU-1, Att. A; Tr. 2, at 292, 364-365). Additionally, the employee in the communications manager position at the time of the Company's initial filing transferred to a position outside of the operating company in June 2018 (Tr. 2, at 364-365). As of the close of the record, Aquarion reported a payroll headcount of 22 full-time employees, including open positions for operations supervisor and communications manager, and a filled administrator position.

b. Positions of the Parties

The Company contends that its pro forma wages expense is calculated based on a proposed annual payroll of 22 full-time employees (Company Brief at 44). The Company notes that its employee count includes a supply operations position, which was filled prior to the close of the record (Company Brief at 44). Aquarion also proposes to include the operations supervisor position, which has not yet been filled (Company Brief at 44). The Company asserts that a senior Aquarion-CT employee has been filling this role until Aquarion can staff this position due to the continuing critical nature of the position (Company Brief at 44). The Company claims the senior Aquarion-CT employee is on site four days a week and has secured a residence in Massachusetts in order to fill the role (Company Brief at 44). The Company notes the Aquarion-CT employee is charging her time related to the operations supervisor duties to the Company (Company Brief at 44).

Aquarion also contends that it properly included in its employee count the communications manager position, which was filled at the end of the test year but became open as of June 2018 when the former communications manager transferred to Eversource Service Company (Company Brief at 41 n.14, 44). The Company maintains that given the importance of the role, it intends to fill the position of communications manager (Company Brief at 41 n.14). Aquarion states that the former communications manager will commit one or two days per week to communications efforts for Hingham and Hull for at least the next six months and charge her time related to those efforts to Aquarion while the communications manager position is open (Company Brief at 41 n.14). No other party addressed this issue on brief.

c. Analysis and Findings

Employee levels routinely fluctuate because of retirements, resignations, hirings, terminations, and other factors. Massachusetts-American Water Company, D.P.U. 88-172, at 12 (1989); Fitchburg Gas and Electric Light Company, D.P.U. 1270/1414, at 16-17 (1983). In recognition of this variability, the Department generally determines payroll expense on the basis of test year employee levels, unless there has been a significant post-test year change in the number of employees that falls outside the normal ebb and flow of a company's workforce. The Berkshire Gas Company, D.P.U. 90-121, at 80-81 (1990); D.P.U. 88-172, at 12.

As an initial matter, the Company presented its employee levels as of the date of its filing (Exh. 2, Sch. 3). The Department generally determines payroll expense on the basis of test year employee levels. D.P.U. 90-121, at 80-81; D.P.U. 88-172, at 12. The record demonstrates an average employee headcount of 20[87] for the test year and at the test year-end (Exh. AG 3-44, Att. A).[88] Accordingly, the Department finds that the Company's test year employee level was 20 employees.

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87 Aquarion's average monthly headcount during the test year was 20.2, rounded to the nearest whole number (Exh. AG 3-44, Att. A). During the test year, Aquarion's employee headcount was 20 employees from January through May, increased to 21 in June, and 20.5 from July through August, and then returned to 20 from October through December (Exh. AG 3-44, Att. A).

88 The Department notes that Aquarion was in the process of replacing one of its 20 employees as of the initial filing and filled that position before the close of the record (Exhs. AG 4-12; DPU 17-2).

Aquarion's employee level has fluctuated during the course of this proceeding due to multiple staffing changes and management decisions (Exhs. 2 (Rev. 3), Sch. 3; DPU 15-8, Att. A; DPU 17-2; DPU 21-9; Tr. 2, at 363). Since the end of the test year, the Company experienced a number of staffing changes that had no net impact on the total employee level from the test year level (see Exh. DPU 17-2). This includes the communications manager position,[89] which was filled at the end of the test year and became vacant in June 2018, as well as the supply operations position that became open in February 2018 and was filled prior to the close of the record (Exh. DPU 17-2(i)(a)(2); RR–DPU-1; Tr. 2, at 364-365). The Company either already has filled or demonstrated that it intends to fill each of the positions that became vacant after the test year (see Exh. DPU 17-2; Tr. 2, at 365). The Department finds that these post-test year departures and replacements do not represent a structural change in the Company's workforce, but rather a fluctuation within the normal ebb and flow of employee levels. See D.P.U. 12-86, at 118-119. Accordingly, the Department will not adjust the Company's payroll expense for these fluctuations in staffing levels.

The Company proposes to add positions for an administrator and operations supervisor, both created after the test year (Exh. DPU 17-2). The Company created the administrator position to replace a temporary position that was not included in the Company's employee level at the time of the initial filing; the Company filled that position in January 2018 (Exhs. DPU 17-1; DPU 17-2 & Att. A; AG 17-2, Att. A; DPU 15-8, Att. A).

[89] As addressed in Section VIII.L.3., the Department recognizes the continued importance of a dedicated employee to handle communications for the Company.

The Company created the operations supervisor position in December 2017 (Exhs. AG 4-12; DPU 17-2(i)(b)(1)). That position remained unfilled as of the close of the record (Exh. DPU 17-2(i)(b)(1); Tr. 2, at 292).

The Department finds that the fluctuation in employee levels detailed above are not isolated to the post-test year period (Exh. AG 3-44, Att. A). Since its last rate case, the Company has operated with as few as 17 and as many as 23 employees with routine fluctuations in between (Exh. AG 3-44, Att. A). The Department, therefore. finds that the Company's proposed post-test year changes to employee level for these two positions fall within the normal ebb and flow and do not warrant an adjustment.

In asserting that the open operations supervisor position specifically should be included in its cost of service, the Company argues that due to the critical nature of the operations supervisor position, a senior Aquarion-CT employee is fulfilling those duties and is charging the associated time to the Company (Company Brief at 44, citing Tr. 2, at 363).[90] This is not, however, a basis to depart from the Department's finding above that the Company's proposed post-test year addition of this position falls within the normal ebb and flow. The Department has previously determined that, regardless of a company's claim of need, a new position unfilled as of the end of the test year and remaining unfilled as of the close of the evidentiary record is neither known nor measurable. D.P.U. 10-114, at 136. Here, where the current operations supervisor was created after the test year and remained

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90 While the Company contends that the Aquarion-CT employee is on site four days a week, the record does not indicate the amount of time charged to fulfill the operations supervisor duties.

unfilled as of the close of the evidentiary record, the Department determines that the proposed addition of this position is neither known nor measurable.[91] Accordingly, the Department will exclude the costs associated with the operations supervisor position from the Company's cost of service on this additional basis.

The Department thus rejects the Company's pro forma employee level of 22 full-time employees. The Department will base the Company's salaries and wages expense on an employee level of 20 full-time employees.

3. Payroll Expense

a. Introduction

The Company claimed $1,780,444 in gross union and non-union current annualized wages in its initial filing (Exh. 2, Sch. 3). During the pendency of this case, Aquarion updated this number, reporting $1,980,396 in annualized wages (Exh. 2 (Rev. 3), Sch. 3). The Company further increased union wages for Millbury employees by $8,405, representing a three percent wage increase effective in August 2018 (Exh. 2 (Rev. 3), Sch. 3). In

91 We note that the record demonstrates that the Company has not had a full-time employee dedicated to the operations supervisor position since at least early 2016 (Tr. 2, at 362-364). The Company previously had an operations supervisor position, which was vacant as of early 2016 (Exh. DPU 15-8, Att. A; Tr. 2, at 292, 362-363). Having been unable to fill that position, in June 2016, Aquarion redefined the role of the then manager of community relations to encompass both operations and communications roles (Exh. DPU 15-8, Att. A; Tr. 2, at 292, 362-363). The Company subsequently determined that this combined role was too much for a single employee and, on December 7, 2017, re-established separate communications manager and operations supervisor positions (Exhs. DPU 15-8, Att. A; DPU 17-2(i)(b)(1); Tr. 2, at 292, 362-363). The employee who had served as manager of community relations and manager of communications and operations remained in the communications manager role at that time (Tr. 2, at 362-363).

addition, the Company increased current gross overtime by $15,319 to account for union and non-union wage increases effective in April 2017 and April 2018 (Exh. 2 (Rev. 3), Sch. 3). The resulting pro forma gross payroll expense amounts to $2,004,120 (Exh. 2 (Rev. 3), Sch. 3). Because a portion of salaries and wages are capitalized, Aquarion multiplied its gross payroll by the Company's expense allocator of 94.69 percent, resulting in a pro forma payroll expense of $1,897,701, an increase of $289,711 over the test year payroll expense of $1,607,990 (Exh. 2 (Rev. 3), Sch. 3).

b. Positions of the Parties

The Company contends that its pro forma wages expense, including both union and non-union base wage increases, should be approved by the Department (Company Brief at 45). The Company argues that all union increases are per existing signed collective bargaining agreements that will be in effect prior to the mid-point of the rate year (Company Brief at 44, citing Exhs. TMD at 13; AG 3-42; AG 3-43; AG 4-9). The Company also argues that non-union wage increases are consistent with both union increases and past non-union increases, as well as in line with market data (Company Brief at 44, citing Exhs. TMD at 13; AG 4-9; AG 3-41). The Company claims that it has evaluated each position on an annual basis against salary ranges provided by the Company's benefits consultant (Company Brief at 45, citing Exh. TMD at 14). For these reasons, the Company asserts that both union and non-union wage increases are reasonable, consistent with Department precedent, and correctly calculated and should be approved accordingly (Company Brief at 45). No other party addressed this issue on brief.

c. Analysis and Findings

i. Standard of Review

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 measureable (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; D.P.U. 92-250, at 35; 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; D.P.U. 1270/1414, at 14. 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).

ii. Union Wage Increases

With respect to Aquarion's union payroll increase, the proposed adjustment appropriately includes 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 (i.e., through May 1, 2019) (Exhs. 2 (Rev. 3), Sch. 3; AG 3-42, Att. A; AG 3-42, Att. B). The union payroll increases are also based on a signed collective bargaining agreement and, therefore, are known and measurable (Exh. AG 3-42, Att. B). The Company provided a compensation survey to demonstrate the reasonableness of its union wages in its last rate case. D.P.U. 11-43, at 84. Here, the Company indicates that it no longer participates in the compensation survey because of the limited nature of the information included and the Company's inability to match a significant portion of its positions to those in the survey (Exh. DPU 15-13). The Company has based its union payroll increases on annual three percent increases since the Company's last rate case (Exh. TMD at 13). D.P.U. 11-43, at 80-81. The Department finds the proposed pro forma adjustments to union payroll are reasonable in amount and comply with Department precedent. Thus, the proposed adjustment is allowed. Accordingly, we accept the Company's proposed union gross payroll expense of $1,180,028 (Exh. 2 (Rev. 3), Sch. 3).

iii. Non-Union Wage Increases

During the pendency of this case, the Company updated non-union wages to reflect increases effective in April 2018 (Exhs. 2 (Rev. 3), Sch. 3; DPU 21-9; DPU 21-10). The Department finds that these wage increases were already effective as of the close of the record and, therefore, are known and measurable (Exhs. 2 (Rev. 3), Sch. 3; DPU 21-9; DPU 21-10). As addressed above, the Company no longer participates in a compensation survey. However, the Department finds the Company's three percent annual wage increases are both in line with historic trends and comparable to union wage increases (Exh. TMD at 13). Thus, the Department accepts the proposed adjustment for non-union wage increases effective April 2018. The Company did not propose any further increases to non-union wages.

As addressed above, the Department has excluded from the Company's payroll expense the administrator and operations supervisor positions created after the test year. The Department, therefore, reduces Aquarion's gross payroll by the expense associated with these two positions, resulting in a reduction to pro forma wage expense of $125,635 (Exhs. 2 (Rev. 3), Sch. 3; DPU 21-9). Additionally, the Department reduces the Company's payroll taxes by $854 based on the reduction to gross payroll for these two full-time positions (Exh. 2 (Rev. 3), Sch. 27).

iv. Conclusion

Based on the Department's findings, above, the resulting allowed pro forma wage expense is $1,772,066 (Exh. 2 (Rev. 3), Sch. 3). Accordingly, the Department allows the Company an increase of $164,076 over the test year payroll expense of $1,607,990 (Exh. 2 (Rev. 3), Sch. 3).

4. Incentive Compensation

a. Introduction

The Company offers two incentive compensation programs for non-union employees. The first plan is the Aquarion Water Company Employee Incentive Plan ("Employee Incentive Plan") and is open to all non-union employees (Exh. AG 5-15, Att. A). The second plan is the Aquarion Water Company Long-Term Incentive Plan ("Long-Term Plan") in which only key executives may participate (Exh. AG 5-15, Att. B).[92]

Under the Employee Incentive Plan, employees of Aquarion are eligible for an annual target incentive award equal to the following: (1) 1.5 percent of annual salary for non-exempt employees; (2) three percent of annual salary for exempt employees; (3) ten percent of annual salary for directors; (4) 20 to 40 percent of annual salary for vice presidents; and (5) 60 percent of annual salary for the president and chief executive officer ("CEO") (Exh. AG 5-15, Att. A at 6). The Employee Incentive Plan was implemented in 2002, and includes the following performance goals: (1) ranking based on number of customer complaints; (2) call center abandonment rate; (3) number of customer service complaints; (4) customer satisfaction results measured by a survey; (5) number of product compliance violations per year; (6) number of water quality complaints; and (7) the Federal Occupational Safety and Health Administration ("OSHA") incident rate (Exhs. AG 5-15(e) & Att. A at 3).[93] These performance objectives are evaluated based on three levels of achievement upon which different payout levels are established: (1) an earnings before taxes, depreciation, and amortization ("EBITDA") threshold level that, if not met, results in zero

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92 Under the Long-Term Plan, key executives are defined as, "Any employee of the Company invited by the Company, and approved by the Board, to join the Plan who is considered by the Company and the Board as having a significant role in the effective execution of the Business Plan" (Exh. AG 5-15, Att. B at 2).

93 OSHA directs national compliance initiatives in occupational safety and health to assure safe and healthful working conditions. See Occupational Safety and Health Act of 1970, Pub. L. No. 91-596, 84 Stat. 1590-1620 (1970); see also 29 U.S.C. § 651 et seq.

funding for the entire Employee Incentive Plan; (2) team measures for overall service and product quality, which account for 100 percent of the non-discretionary performance measures for non-exempt and exempt employees, and 50 percent of the performance measures for directors, vice presidents, and the president and CEO; (3) individual employee goals and objectives (key executives only); and (4) an individual performance modifier allowing for an employee's award to be increased or decreased by 25 percent, set at the discretion of the CEO and the compensation committee (Exh. AG-5-15, Att. A at 3-5).

Under the Long-Term Plan, key executives are eligible for a percentage of the plan's award pool based on the number of the following operational performance targets achieved: (1) customer satisfaction results measured by regulatory complaints; (2) call abandonment rate; (3) number of complaints; (4) customer satisfaction index score and first call resolution rate; (5) number of regulatory violations per year; (6) number of quality complaints; (7) OSHA incident rate; (8) variance between total and planned capital expenditures in a given fiscal year; and (9) specific capital project variance in a given fiscal year (Exh. AG 5-15, Att. B at 9). The size of the award pool available is based on the percentage of an annually established financial performance target achieved (Exh. AG 5-15, Att. B at 10-11). If the Company does not reach 90 percent of its financial performance target, the pool will not be funded (Exh. AG 5-15, Att. B at 11). Fifty percent of the pool becomes available at 90 percent of the target, scaling up to a maximum of 150 percent of the pool at 110 percent of the Company's financial performance target (Exh. AG 5-15, Att. B at 11-12). A total incentive compensation award of $29,275 was paid out in the test year, including $23,731 from the Employee Incentive Plan and $5,544 from the Long-Term Incentive Plan (Exhs. DPU 15-12; DPU 21-5).

b. Positions of the Parties

The Company contends that incentive compensation paid out in the test year under both plans should be approved by the Department (Company Brief at 46). The Company states that the Employee Incentive Plan encourages improved customer service, achieving identified business goals, and attracting and retaining employees (Company Brief at 45). The Company states that the Long-Term Incentive Plan encourages improving customer service, operational efficiencies, and financial performance (Company Brief at 46). The Company argues that incentive compensation paid out in the test year was reasonable in amount, encourages good employee performance, and should, therefore, be approved (Company Brief at 46). No other party addressed this issue on brief.

c. Analysis and Findings

The Department has traditionally allowed incentive compensation expenses to be included in a utility's cost of service if they are (1) reasonable in amount and (2) paid in accordance with incentive plans that are reasonably designed to encourage good employee performance. Fitchburg Gas and Electric Light Company, D.P.U. 07-71, at 82-83 (2008); D.P.U. 89-194/195, at 34. For an incentive plan to be reasonable in design, it must both encourage good employee performance and result in benefits to ratepayers. D.P.U. 07-71, at 83; D.P.U. 93-60, at 99.

The Department has previously reviewed the Company's Employee Incentive Plan and found it reasonably designed to both encourage good employee performance and result in benefits to ratepayers. D.P.U. 11-43, at 92. The Company's current Employee Incentive Plan is substantially the same as the plan previously reviewed and, thus, the Department finds the Employee Incentive Plan continues to be reasonable in design (Exh. AG 5-15, Att. A).

The Department has not previously reviewed the Company's Long-Term Incentive Plan and, therefore, must determine whether the Long-Term Incentive Plan is reasonably designed to both encourage good employee performance and result in benefits to ratepayers. D.P.U. 11-43, at 89 n.58. Under the Company's Long-Term Incentive Plan, awards are determined by a mixture of operational and financial performance metrics (Exh. AG 5-15, Att. B at 12). The Department has articulated its expectations on the use of financial targets in incentive plans and the burden required to justify the recovery of such costs in rates. D.P.U. 11-01/D.P.U. 11-02, at 192-193; D.P.U. 10-70, at 105-106; D.P.U. 10-55, at 253-254. Specifically, where companies seek to include financial goals as a component of incentive compensation design, the Department expects to see the attainment of such goals as a threshold component with job performance standards designed to encourage good employee performance (e.g., safety, reliability, and/or customer satisfaction goals) used as the basis for determining individual incentive compensation awards. See D.P.U. 11-01/D.P.U. 11-02, at 192-193; D.P.U. 10-70, at 105-106; D.P.U. 10-55, at 253-254. The Department, however, has previously allowed the use of financial performance metrics other than as threshold components where employee performance is adequately tied to meeting safety, reliability, and customer satisfaction goals. See D.P.U. 10-70, at 105; D.P.U. 10-55, at 253; D.P.U. 09-39, at 142. Here, the Department finds that financial performance impacts employee awards and, thus, financial metrics are not solely a threshold component of the Long-Term Incentive Plan (Exh. AG 5-15, at 3, Att. B). However, the Department finds that the use of operation metrics in the Long-Term Incentive Plan adequately ties employee performance to meeting safety, reliability, and customer satisfaction goals (Exh. AG 5-15, at 3, Att. B). The Department concludes that the Long-Term Incentive Plan, therefore, encourages good employee performance and results in benefits to ratepayers. The Department, thus, determines that the Company's Long-Term Incentive Plan is reasonable in design.

Based upon its review of the Company's incentive compensation plans and considering previously approved incentive compensation awards, the Department finds the costs of $23,731 for the Employee Incentive Plan and $5,544 for the Long-Term Incentive Plan, totaling $29,275, are reasonable in amount. See D.P.U. 11-43, at 93. Accordingly, the Department approves the Company's proposed incentive compensation expense.

5. Group Medical, Dental, Life, and Disability Insurance Expense

a. Introduction

During the test year, the Company booked $451,045 in group medical, prescription, and dental insurance costs (Exh. 2 (Rev. 3), Sch. 4). The Company then removed the employee contribution level of $49,937 from this amount and multiplied the remaining $401,108 by the expense allocator of 94.69 percent to determine the amount booked to test year expense, i.e., $379,809 (Exh. 2 (Rev. 3), Sch. 4). The Company proposes to increase group medical, prescription, and dental insurance expense by $78,293 based on actual premiums billed by the Company's health insurance provider (Exhs. 2 (Rev. 3), Sch. 4; DPU 6-32, Att. A; AG 4-7, Att. A).

During the test year, the Company also booked $3,884 and $3,425 in life and disability insurance costs, respectively (Exh. 2 (Rev. 3), Sch. 4). The Company then multiplied these amounts by the Company's expense allocator of 94.69 percent to arrive at $3,678 and $3,243, respectively, for its test year expense (Exh. 2 (Rev. 3), Sch. 4). The Company proposes to increase these expenses by $1,494 and $1,050 for life and disability insurance, respectively, based on pro forma wages and salaries and the associated insurance premium rates (Exhs. 2 (Rev. 3), Sch. 4; DPU 21-16).

b. Positions of the Parties

The Company contends that all of its proposed employee benefit expenses should be approved (Company Brief at 48). The Company argues that its benefits offerings are analyzed using benchmark comparisons to ensure they are reasonable and competitive with other utilities (Company Brief at 47, citing Exh. DPU 6-24). The Company states that it has taken steps to contain its healthcare, dental, and other benefit costs by increasing employee cost sharing requirements and closing defined benefit pension and retiree medical plans to new hires (Company Brief at 47). For these reasons, the Company asserts it has met its burden regarding the inclusion of benefits expense (Company Brief at 47). No other party addressed this issue on brief.

c. Analysis and Findings

To be included in rates, medical and dental insurance expenses must be reasonable. D.P.U. 92-78, at 29; Nantucket Electric Company, D.P.U. 91-106/91-138, at 53 (1991). Any post-test year adjustments to health care expense must be known and measurable. The Berkshire Gas Company, D.T.E. 01-56, at 60 (2002); D.P.U. 96-50 (Phase I) at 46; North Attleboro Gas Company, D.P.U. 86-86, at 8 (1986). Further, companies must demonstrate that they have acted to contain their health care costs in a reasonable, effective manner. D.T.E. 01-56, at 60; D.P.U. 96-50 (Phase I) at 46; D.P.U. 92-78, at 29; D.P.U. 91-106/91-138, at 53.

The Department finds that Aquarion has taken reasonable and effective measures to contain its health care costs. For example, the Company has: (1) introduced a medical plan option which allows employees to "shop around" for low cost providers in order to minimize out-of-pocket costs; (2) increased employee premium requirements upwards of 80 percent since 2011; (3) implemented a three-tier approach to employee premium contribution requirements, charging higher employee premium contributions to employees at higher salary levels; (4) sponsored a comprehensive wellness program to encourage employees to proactively focus on healthy habits; (5) provided an "opt-out" benefit to encourage employees to enroll in a spouse's benefit plan; and (6) actively marketed the medical plan in order to select the lowest cost provider (Exhs. DPU 6-29; AG 3-52). Based on the above, we find that Aquarion has adequately demonstrated that it is attempting to contain its health care costs.

The Department finds that the Company's adjustments to group medical, prescription, and dental insurance expenses are based on actual premiums and concludes that these expenses are known and measureable and reasonable in amount. The Department, therefore, approves the Company's proposed $78,293 adjustment to group medical, prescription, and dental insurance expense. However, the Department finds that Aquarion's calculations of life and disability insurance expenses are based on a proposed level of salaries and wages expense that the Department has disallowed. Using the expense portion of the allowed salaries and wages expense (less overtime and shift differential) of $1,519,376[94] and the Company's provided insurance premium rates, the Department has calculated appropriate pro forma life and disability insurance expenses of $4,777[95] and $3,966,[96] respectively (Exhs. 2 (Rev. 3), Schs. 3 & 4; DPU 21-16). The Department, therefore, reduces the Company's proposed life insurance expense by $395[97] and its proposed disability insurance expense by $327.[98] These adjustments result in an overall decrease to group medical, dental, life, and disability insurance expense of $722.

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94 Gross allowed payroll of $1,871,440 minus overtime and shift differentials of $266,860, multiplied by the expense ratio of 94.69 percent, equals $1,519,376 (Exh. 2 (Rev. 3), Sch. 3).

95 $1,519,376*.262/1,000*12=$4,777

96 $1,519,376*.261/100=$3,966

97 $5,172-$4,777=$395

98 $4,293-$3,966=$327

C. Pension and Post-Retirement Benefits Expense

1. Introduction

a. Pension Expense

During the test year, the Company booked $188,623 in pension expense (Exh. 2 (Rev. 3), Sch. 5). Aquarion has calculated a normalized pension expense of $275,674 based on a four-year average of cash contributions (Exh. 2 (Rev. 3), Sch. 5). Using an expense ratio of 94.69 percent, the Company proposes a pro forma pension expense of $261,036 (Exh. 2 (Rev. 3), Sch. 5). When compared to the test year, this results a proposed increase to pension expense of $72,413 (Exh. 2 (Rev. 3), Sch. 5).

b. PBOP Expense

During the test year, the Company booked $155,612 in PBOP expense (Exh. 2 (Rev. 3), Sch. 5). Aquarion has calculated a normalized PBOP expense of $50,698 based on a four-year average of cash contributions (Exh. 2 (Rev. 3), Sch. 5). Using an expense ratio of 94.69 percent, the Company proposes a pro forma pension expense of $48,006 (Exh. 2 (Rev. 3), Sch. 5). When compared to the test year, this results in a proposed decrease in PBOP expense of $107,606 (Exh. 2 (Rev. 3), Sch. 5).

c. Deferred Pension and PBOP Expense

In Aquarion's last rate case, the Department allowed the Company to continue its practice of recording the difference between its test year level of pension and PBOP expenses[99] and its actual pension and PBOP expense as a regulatory asset or a regulatory liability. D.P.U. 11-43, at 105.

As of the end of the test year, the Company had a deferred pension expense balance of $1,360,527 and a deferred PBOP balance of a negative $552,781 (Exh. 2 (Rev. 3), Sch. 6). Aquarion proposes to add an additional $276,285 in deferred pension costs and to deduct $464,259 in deferred PBOP costs to these amounts, representing its estimate of the deferrals that will have accumulated between the end of the test year and the implementation of new rates (Exh. 2 (Rev. 3), Sch. 6). On a combined basis, these four items total $619,772, which the Company proposes to amortize over four years (Exhs. TMD at 16; 2 (Rev. 3), Sch. 6). Amortizing this balance over a four-year period produces an annual expense of $154,943, which when compared to the actual test year expense of $52,171, results in a proposed increase of $102,772 (Exh. 2 (Rev. 3), Sch. 6).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the Company's pension and PBOP deferral should be adjusted to recognize the continuing recovery of previous amortizations established in

99 Aquarion refers to these expenses as other post-retirement benefits, or OPEB (Exh. TMD at 16). To minimize customer confusion, the Department finds it appropriate to continue a standard nomenclature for all Department filings. See D.P.U. 09-39, at 225-226; Massachusetts Electric Company, D.P.U. 85-146, at 106-107 (1986); D.P.U. 84-145-A at 133-134. The Department has previously directed Aquarion to refer to these expenses as "post-retirement benefits other than pension" or "PBOP" in all future Department filings. D.P.U. 11-43, at 99 n.62. We reiterate this directive here.

D.P.U. 11-43 and D.P.U. 08-27 (Attorney General Brief at 18). The Attorney General claims that the deferrals amortized in D.P.U. 11-43 and D.P.U. 08-27 were fully recovered in December 2015 and March 2016, respectively (Attorney General Brief at 16, citing Exh. AG-DJE-1, at 8). However, the Attorney General asserts the rates established in D.P.U. 11-43 have continued to include these amortizations and will continue to do so until the rates are modified in the present case (Attorney General Brief at 16-17, citing Exh. AG-DJE-1, at 8). The Attorney General claims that the Company is protected from under-recovery of an amortization when new rates are established before the end of an amortization period (Attorney General Brief at 17-18). The Attorney General requests that ratepayers be similarly protected in this instance where rates have remained the same after the end of an amortization period, resulting in an over-recovery (Attorney General Brief at 17-18). The Attorney General claims that such an over-recovery is inconsistent with the "just and reasonable" standard mandated by Section 94 ratemaking (Attorney General Brief at 18).

The Attorney General calculates the continuing recovery of pension and PBOP amortizations from the point that the Company ceased to record the amortizations through the end of August 2018, to be a deferral balance of $1,675,288 (Attorney General Brief at 18-19, citing Exh. AG-DJE-1 (Supp.) at 4-5). Amortized over four years, the Attorney General proposes this balance be credited against the Company's proposed deferred expenses amortization (Attorney General Brief at 18-19, citing Exh. AG-DJE-1 (Supp.) at 4-5). The Attorney General, therefore, argues that the Company's deferred expense amortization should be reduced by $418,822 (Attorney General Brief at 18-19, citing Exh. AG-DJE-1 (Supp.) at 4-5).

b. Hingham and Hull

Hingham and Hull contend that based on their review of the record, they agree with the Attorney General's position on this issue (Hingham/Hull Brief at 21). Hingham and Hull, therefore, argue the Company's deferred expense amortization should be reduced by $418,822 as proposed by the Attorney General (Hingham/Hull Brief at 21).

c. Company

The Company asserts that in authorizing the amortization of deferred expenses in D.P.U. 11-43, the Department did not direct or authorize the Company to make any adjustments to the period or cost being deferred during the delineated periods (Company Brief at 51). The Company states that the Department elected not to establish a reconciling mechanism that would provide dollar for dollar recovery of actual pension and PBOP costs (Company Brief at 52; Company Reply at 15). The Company also notes that, while the Department had the authority to review the Company's rates when certain amortization periods ended prior to a new base rate proceeding, the Department did not undertake such a review (Company Brief at 52). The Company argues that the Attorney General's argument effectively advocates that the Company should have adjusted its base rates between rate cases to account for the completion of the amortization associated with past pension and PBOP expense (Company Brief at 50; Company Reply at 13). The Company asserts that making such a change without Department approval would fly in the face of well-established Department precedent (Company Brief at 50).

The Company asserts that in a similar circumstance, the Department has previously determined that the ebb and flow of costs and earnings between rate cases did not necessitate any special treatment for amortization period that may have concluded prior to a new base rate proceeding, quoting "[a]lthough the amortization period may end, there are many other changes that could affect the Company's cost and earnings" (Company Brief at 52; Company Reply at 14, citing Hutchinson Water Company, D.P.U. 85-194-B at 9 (1986)).

The Company also claims that the Attorney General inaccurately bases her claim on the assumption that ratemaking treatment established by the Department in D.P.U. 11-43 and prior cases was intended to follow the principles of a pension and PBOP reconciliation mechanism, i.e., recovering the exact dollar amounts of actual costs (Company Reply at 15, citing Tr. 5, at 759-760). The Company claims that its recovery of deferred pension and PBOP costs operates in a manner distinct from the principles of reconciliation mechanisms, such as the application of carrying charges on unamortized balances (Company Reply at 15). As a result, the Company asserts the Department should reject the Attorney General's recommendations and approve the Company's pension and PBOP expense and deferrals because they were prudently incurred, reasonable in amount, and correctly calculated (Company Brief at 53; Company Reply at 15).

3. Analysis and Findings

a. 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 ("IRS") requirements, plan returns, and participant demographics (Exhs. AG 3-48, Att. A; AG 3-49, at 2). The Company's pension fund contributions since its last rate case (i.e., 2012-2017) have ranged between $0 and $789,242, with a six-year average over that period of $395,319 (Exhs. 2 (Rev. 3), Sch. 5; AG 3-49, at 2). The Department is persuaded that sufficient volatility remains in Aquarion's cash contributions to its pension plan to warrant the use of a representative level of pension expense (Exhs. AG 3-48, Att. A; AG 3-49). Accordingly the Department will determine a representative level of pension expense.

The Company proposes to base its pension expense on the four-year average of cash contributions (less the capitalized portion) for years 2014 through 2017 (Exhs. TMD at 15; 2 (Rev. 3), Sch. 5). Using the average contribution over this period and an expense ratio of 94.69 percent, the Company proposes an expense of $261,036 as a representative level of pension expense (Exhs. TMD at 15; 2 (Rev. 3), Sch. 5). When compared to the pension expense included in the test year, this results in a proposed pro forma adjustment of $72,413 (Exhs. TMD at 15; 2 (Rev. 3), Sch. 5). The Department finds the Company's method of determining pension expense to be in line with Department precedent and correctly calculated

(Exh. 2 (Rev. 3), Sch. 5). D.P.U. 11-43, at 102. Accordingly, the Department allows the Company's proposed adjustment to its cost of service.

b. PBOP Expense

The Department has previously expressed concern 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 80-81. 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.

Aquarion proposes to base its PBOP expense on the four-year average of cash contributions (less the capitalized portion) for years 2014 through 2017 (Exh. 2 (Rev. 3), Sch. 5). Using the average contribution over this period and an expense ratio of 94.69 percent, the Company proposes an expense of $48,006 as a representative level of PBOP expense (Exh. 2 (Rev. 3), Sch. 5). When compared to the PBOP expense included in the test year, this results in a proposed reduction of $107,606 (Exh. 2 (Rev. 3), Sch. 5). The Department finds the Company's method of determining PBOP expense in line with Department precedent. D.P.U. 11-43, at 104. However, the Department determines that the Company calculated its pro forma adjustment based on a currently effective amortization recovery of $155,612, while the Company's effective rates included recovery for $156,612 of PBOP expense (Exh. 2 (Rev. 3), Sch. 5). D.P.U. 11-43, at 104. Accordingly, the Department reduces Aquarion's proposed cost of service by $1,000.

c. Amortization of Deferred Expenses

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. TMD at 16). 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, Stamp-Approved (January 28, 2003); Fitchburg Gas and Electric Light Company, D.T.E. 02-83, Stamp-Approved (December 20, 2002); Boston Edison Company/Cambridge Electric Light Company/Commonwealth Electric Company/NSTAR Gas Company, D.T.E. 02-78, Stamp-Approved (December 20, 2002).

Although pension and PBOP expenses have been relatively stable in the past several years, the Company continues to experience year-to-year fluctuations in these expenses (Exhs. 2 (Rev. 3), Schs. 5 & 6; AG 3-48, Att. A; AG 3-49). Recent stability does not eliminate the inherent instability of this expense category. Future write-offs that may be required under general accounting principles, if they occur, could be of sufficient magnitude to have a material impact on the financial well-being of Aquarion and could translate directly into higher borrowing costs, higher rates, and a potential disruption in service. Fitchburg Gas and Electric Light Company, D.T.E. 04-48, at 17 (2004); Boston Edison

Company/Cambridge Electric Light Company/Commonwealth Electric Company/NSTAR Gas Company, D.T.E. 03-47-A at 25-27 (2003); 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.

The Attorney General argues that the Company's pension and PBOP deferral should be adjusted to recognize the continuing recovery of previous amortizations established in D.P.U. 11-43 and D.P.U. 08-27 that were fully recovered in rates as of December 2015 and March 2016, respectively (Attorney General Brief at 16-18). The Attorney General claims that such an over-recovery is inconsistent with the "just and reasonable" standard mandated by Section 94 ratemaking (Attorney General Brief at 18).

The Department has previously addressed the potential for rates to remain in effect after the end of an amortization period. D.P.U. 85-194-B, at 9. In D.P.U. 85-194-B, intervenors sought reconsideration of the allowed return on the basis that, because the approved rates could remain in effect for a longer period than the three and five year amortizations approved in that case, the company's rate of return would be far greater than the 13 percent approved by the Department. D.P.U. 85-194-B at 8-9. There, the Department denied reconsideration, on the basis that base rates are set to collect a representative level of costs and there is no assurance a company's return will be precisely at the level approved. D.P.U. 85-194-B at 9. The Department found that although the amortization period may end, other changes could affect the company's costs and earnings.

D.P.U. 85-194-B at 9. Thus, the ebb and flow of costs and earnings between rate cases does not make it necessary to adjust rates after an amortization expires unless the Department finds that special ratemaking treatment is warranted. See, e.g., Western Massachusetts Electric Company, D.P.U. 13-135-A at 11-12 (2016) (declining to offset difference between representative cost of storm costs included in base rates and actual level of costs where the result would essentially be the establishment of reconciling base rates contrary to well-established policy). By including this amortization in base rates, rather than establishing a reconciling mechanism in the Company's prior rate proceedings, the Department did not provide for any such special ratemaking treatment. Compare D.P.U. 11-43, at 105-107 (allowing inclusion of amortized deferred pension and PBOP expenses in base rates) with D.P.U. 09-39, at 219-223 (approving tariff implementing fully reconciling adjustment mechanism for pension and PBOP expenses outside base rates). Therefore, the Department will not apply a credit as proposed by the Attorney General.

The Department has reviewed Aquarion's costs associated with the deferral of pension and PBOP expenses (Exh. 2 (Rev. 3), Sch. 5, 6). Based on our review, we find that the Company's pension and PBOP deferrals were prudently incurred and reasonable in amount. However, the Department finds that the Company calculated its deferred PBOP costs for the test year, 2017, and ten months of 2018 using a currently effective amortization recovery of $155,612, while the Department approved recovery of $156,612 in rates set during the Company's last rate case. D.P.U. 11-43, at 104. The Department finds that using a benchmark of $156,612 reduces the test year deferral by $1,000, the 2017 deferral by

$1,000, and the 2018 deferral by $833. Summing the effect on the PBOP deferral subtotal and dividing by the amortization period of four years, the Department determines that the Company's deferred amortization expense should be reduced by $708.

D. Chemical Expense

1. Introduction

The Company uses various chemicals for the treatment of water, including sodium hypochlorite, sodium fluoride, sodium hexametaphosphate, sodium hydroxide, and potassium hydroxide (Exhs. JAU at 4; 2 (Rev. 3), Sch. 8, at 2; RR-DPU-18). During the test year, the Company booked $102,574 in chemical expense associated with its facilities, excluding the Hingham/Hull WTP (Exhs. JAU at 4; 2 (Rev. 3), Sch. 8). The Company initially proposed a reduction to test year chemical expense of $6,470 (Exhs. JAU at 4; 2, Sch. 8, at 1). The Company revised its proposed level of expense based on the most recent bid prices (Exh. DPU 24-1(a), (b) & Atts. B, C; RR-DPU-18).[100] Incorporating these revisions, the Company proposes an increase to test year chemical expenses of $14,413 for a pro forma expense of $116,987 (Exhs. JAU at 4; 2 (Rev. 3), Sch. 8, at 1; DPU 24-1(b) & Att. D). The Company's proposed chemical expense excludes the chemicals used at the Hingham/Hull WTP, which are addressed in Section XI.B.

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[100] In its revised filing, the Company also corrected the test year usage amount for the chemical Gen Floc 726 from 125 pounds/gallons to 682 pounds/gallons (Exhs. 2 (Rev. 3), Sch. 8, at 1; DPU 24-1(b) & Att. D).

2. Positions of the Parties

The Company argues that it has demonstrated that it has implemented various processes designed to ensure that the Company is able to procure the necessary chemicals at competitive prices (Company Brief at 31). Specifically, the Company asserts that it requests bids or quotes from chemical vendors on a yearly basis in an effort to procure the necessary chemicals at the lowest cost, excluding certain chemicals that it uses in limited amounts (Company Brief at 30-31, citing Exhs. SCO at 17; JAU at 4; DPU 24-1; DPU 4-35; DPU 4-36; RR-DPU-18; RR-DPU-19). The Company asserts that its proposed chemical expense is based on the most recent and lowest bid received for the provision of chemicals in 2018, with the exception of those chemicals not subject to bid (Company Brief at 31, citing Exhs. DPU 4-35; DPU 4-36; RR-DPU-18). The Company maintains that Aquarion has implemented processes designed to ensure that the Company is able to procure the necessary chemicals at competitive prices and has taken steps to control chemical expense to the extent possible given that market forces outside the Company's control have resulted in increased chemical costs (Company Brief at 31). No other party addressed this issue on brief.

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. 11-43, at 108; D.P.U. 08-27, at 61; 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.P.U. 08-27, at 61; D.T.E. 05-27, at 129; D.T.E. 02-24/25, at 76. A "known" change means that the adjustment must have actually taken place or that the change will occur based on the record evidence. D.P.U. 08-27, at 61; 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.P.U. 08-27, at 61; 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 must demonstrate that the proposed cost level is more representative than that of the test year. D.P.U. 11-43, at 108; D.P.U. 08-27, at 61.

The Company experienced a post-test year increase in the cost of chemicals (Exhs. 2 (Rev. 3), Sch. 8; DPU 24-1; RR-DPU-18). The Company submitted sufficient evidence of this increase, including invoices from suppliers, vendor bids, and the accepted bid prices (Exh. DPU 24-1, Atts. B & C). The Company also provided evidence of its efforts to contain its chemical costs, including the implementation in 2018 of its "Ebid" system, which allows vendors to submit bids electronically where previously the Company mailed invitations to bid to suppliers (Exh. DPU 24-1(a), Att. A; Tr. 4, at 684). Aquarion explained that market forces beyond the Company's control have resulted in increased chemical costs for Aquarion and water service companies in general (RR-DPU-18; RR-DPU-19; Tr. 4, at 688).

Based on the record, the Department finds that the price changes reflected in Aquarion's chemical expense calculation constitute known and measurable changes to test year expense. D.P.U. 08-27, at 62; Milford Water Company, D.P.U. 92-101, at 42 (1992); Oxford Water Company, D.P.U. 86-172, at 17 (1987). Therefore, the Department accepts

Aquarion's proposed chemical expense of $116,987, which represents an increase of $14,413 to test year expense.

E. Purchased Power Expense

1. Introduction

During the test year, the Company booked $452,065[101] in purchased power expense for its facilities in Hingham, other than the Hingham/Hull WTP, and its Millbury and Oxford facilities (Exhs. JAU at 5; 2 (Rev.), Sch. 9).[102] Hingham Municipal Light Plant ("HMLP") provides service to the Company's facilities in Hingham, and Massachusetts Electric Company ("MECo") provides distribution service to the Company's facilities in Millbury and Oxford (Exhs. SCO at 16; 2, Sch. 9).[103] In its initial filing, the Company stated that it had negotiated a lower generation rate for electricity at its Millbury and Oxford facilities with Constellation New Energy ("Constellation"), reducing the Company's cost per kilowatt-hour ("kWh") from the test year rate of $0.09460 to $0.08550 (Exhs. JAU at 5; SCO at 16; 2, Sch. 9). The Company calculated a purchased power expense of $264,317 based on the lower generation rate and test year delivery rates using the combined test year usage of 2,984 kilowatts ("kW") and 1,686,684 kWh for its Millbury and Oxford facilities (Exh. 2, Sch. 9). Additionally, the Company proposed a purchased power expense for its

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101 Minor discrepancies in any of the amounts appearing in this section are due to rounding.

102 This expense does not include service received from the Hull Municipal Light Department.

103 Because HMLP is a municipal light department, third-party energy procurement services are not available (Exhs. SCO at 16; 2, Sch. 9).

non-Hingham/Hull WTP facilities in Hingham of $180,370 based on its test year purchased power expense (Exh. 2, Sch. 9). Taken together, the Company proposed a total non-Hingham/Hull WTP purchased power expense for the Company's Hingham, Millbury, and Oxford facilities of $444,687 and initially proposed to reduce its test year purchased power expense by $7,377 (Exhs. JAU at 5; 2, Sch. 9).

During the proceedings, the Company updated its purchased power expense to reflect actual expenses incurred through October 2017, including updated MECo and Constellation rates, as well as an HMLP price increase effective July 1, 2017 (Exh. 2 (Rev.), Sch. 9). The Company reported 2017 expenses[104] at these facilities of $422,590 and revised its proposed adjustment to a reduction of $29,475 (Exh. 2 (Rev.), Sch. 9). The Company subsequently proposed a further revision to its purchased power expense to $419,702 in its final cost of service schedules filed simultaneous to the Company's reply brief based on a 2018 change to HMLP's rates (Exh. 2 (Rev. 3), Sch. 9).[105]

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[104] The Company provided updated cost information for January 2017 through October 2017 and used 2016 data for November and December (Exh. 2 (Rev.), Sch. 9).

[105] As addressed in Section IV.C., above, the Department granted the Attorney General's Motion to Strike. As a result, the invoices and analysis included in Exhibit 2 (Rev. 3), Schedule 9 are not part of the record of this proceeding. However, because the Company's final revision to its revenue requirement calculation, Exhibit 2, includes the proposed level of expense, for purposes of the Department's schedules, we will base any adjustments off of the final proposed amount of $419,702.

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the Company's adjustment to its test year purchased power expense to reflect the Constellation contract for electricity consumed in Millbury and Oxford does not capture all known and measurable changes in the Company's purchased power expense (Attorney General Brief at 14-15, citing Exh. AG-DJE-1, at 4). According to the Attorney General, HMLP revised its rates effective July 1, 2017, and, consequently, the Company's proposed cost of service should be further modified to recognize those rates (Attorney General Brief at 14-15, citing Exh. AG-DJE-1, at 4). The Attorney General notes that the Company's pro forma purchased power expense still includes six months of the HMLP rates in effect prior to July 1, 2017, and she points out that those rates are no longer in effect (Attorney General Brief at 15). Therefore, the Attorney General contends that the Company's pro forma purchased power expense should be modified to annualize HMLP's rates as of July 1, 2017, because those are the rates that Aquarion will be billed when the rates set in this proceeding will take effect[106] (Attorney General Brief at 15). The Attorney General calculated pro forma purchased power expense by annualizing the HMLP rates

106 The Attorney General further argues that Aquarion mischaracterizes her argument regarding the Company's adjustments to purchased power expense (Attorney General Reply at 7). The Attorney General asserts that the Company wrongly claims that she recommends the Company reflect the actual purchased power expense for 2017, when in fact she recommends the purchased power expense be modified to annualize HMLP's rates as of July 1, 2017 (Attorney General Reply at 7).

effective July 1, 2017, which results in a reduction of $106,899[107] to the pro forma test year expense proposed by the Company in its Supplemental Testimony (Attorney General Brief at 15). On this basis, the Attorney General concludes that the Department should reduce the Company's proposed purchased power expense by $106,899 (Attorney General Brief at 15).

b. Hingham and Hull

Hingham and Hull contend that based on their review of the record, they agree with the Attorney General's position on this issue (Hingham/Hull Brief at 21). Hingham and Hull, therefore, argue that the Company's purchased power expense should be reduced by the amount proposed by the Attorney General (Hingham/Hull Brief at 21).

c. Company

The Company states that in an effort to control costs, it has entered into a contract with Constellation to serve the Company's electricity needs in Millbury and Oxford (Company Brief at 31, citing Exh. SCO at 16). Aquarion notes that competitive energy procurement is not available in Hingham and Hull as both communities have municipal light departments (Company Brief at 31 n.13). The Company asserts that the use of competitive electric supply has provided lower kWh power costs for the Company in Millbury and Oxford over the past three years, yielding a reduction in electric costs of more than five percent (Company Brief at 31). The Company claims that based on recent negotiations with Constellation, the Company's electric supply cost per kWh changed from the test year

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107 The Attorney General's proposed reduction of $106,899 is inclusive of costs associated with the Hingham/Hull WTP, which are addressed in Section XI.B.

rate of $0.08550 to the current rate of $0.09460 (Company Brief at 31, citing Exhs. JAU at 5; AG 4-6). Moreover, Aquarion claims that it has adjusted the purchased power expense from HMLP to reflect 2017 actual amounts (Company Brief at 32, citing Exhs. 2, Sch. 9; AG 4-22).

In response to the arguments of the Attorney General and Hingham and Hull that the Company incorporate its actual purchased power expense for 2017 in the cost of service, Aquarion counters that its updated revenue requirement demonstrates that the Company has already incorporated its actual purchased power expense, including the changes associated with Constellation's and HMLP's rate changes, into its rate proposal (Company Brief at 32, citing Exhs. 2, Sch. 9; AG 4-6; AG 4-22; AG 6-6). The Company argues the Department should find that the Company has appropriately calculated its purchase power expense to include 2017 actual costs (Company Brief at 32).

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. D.P.U. 17-107, at 104, citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 120; Western Massachusetts Electric Company, D.P.U. 87-260, at 75 (1988). A utility seeking an adjustment in test year electric power expense must demonstrate that the proposed purchased power cost level is more representative than that of the test year. D.T.E./D.P.U. 06-53, at 12-13.

Aquarion initially proposed a purchased power expense of $264,317 for its Millbury and Oxford facilities (Exhs. JAU at 5; 2 (Rev. 3), Sch. 9). During the course of the proceeding, the Company revised its proposed purchased power expense to reflect the Company's combined usage for the twelve months ending October 2017 of 3,592 kW and 1,311,965 kWh (Exhs. 2 (Rev.), Sch. 9, at 2; JAU at 5; AG 4-6, Att. A, at 6).

The Company's test year usage for its Millbury and Oxford facilities was 2,984 kW and 1,686,684 kWh (Exh. 2, Sch. 9, at 2). The Department finds no basis in the record to conclude that 2017 usage levels[108] are more representative of costs going forward than the test year levels (e.g., a new plant coming online) (Exhs. 2, Sch. 9, at 2; AG 4-22, Att. A at 1). Accordingly, the Department will establish Aquarion's purchased power expense for its Millbury and Oxford facilities based on the Company's test year usage.

Aquarion proposes purchased power expense based on the 2016 and 2017 rates in effect for the twelve months ending October 2017 (Exh. 2 (Rev.), Sch. 9, at 2). Pursuant to Aquarion's contract with Constellation, its generation rate changed in December 2017 to $0.09960 per kWh (Exh. AG 4-6, Att. A, at 6). MECo's delivery rates charged to the Company have also changed since Aquarion's initial filing (Exh. AG 4-22, Att. A, at 1). We find that these rate changes represent a known and measurable change to the Company's test year level of expense and that, as a result, a level of purchased power expense based on those rates is more representative of the Company's purchased power expense going forward than a level of expense based on the rates in effect during the test year. See D.T.E. 05-27, at 194; D.P.U. 86-172, at 15-16; D.P.U. 84-33, at 66.

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108 Additionally, the record contains only ten months of 2017 usage information for the Company's Millbury and Oxford facilities (Exh. 2 (Rev. 3), Sch. 9, at 2).

Application of the rates in effect as of December 2017 to the Company's test year power usage produces a purchased power expense associated with Aquarion's Millbury and Oxford facilities of $294,878 (Exhs. 2, Sch. 9, at 2; AG 4-6, Att. A at 6).

For its non-Hingham/Hull WTP facilities in Hingham, the Company initially proposed a purchased power expense of $180,370 (Exh. 2, Sch. 9). During the course of the proceeding, the Company revised its proposed purchase power expense to incorporate a change in rates effective July 1, 2017, and the Company's combined usage for the twelve months ending October 2017 of 1,595 kW and 1,169,814 kWh (Exhs. 2 (Rev.), Sch. 9, at 3; AG 4-22, Att. A at 2; Hingham Municipal Light Plant, M.D.P.U. Nos. 88, 89, 90). Specifically, the Company calculated its revised proposed level of expense based on its usage for the twelve months ending October 2017, based on the effective rate in each month (Exhs. 2 (Rev.), Sch. 9; AG 4-22, Att. A at 2). The Company subsequently revised its purchased power expense to include a change to HMLP's rates in its final cost of service schedules filed simultaneous to the Company's reply brief (Exh. 2 (Rev. 3), Sch. 9). As addressed in Section IV.C., above, the Department granted the Attorney General's motion to strike information and analysis contained in revised Schedule 9. As a result, the record contains only monthly customer counts and usage for the test year and through October 2017, as well as HMLP's rates in effect as during the test year and as of July 1, 2017.

The Company's test year combined usage for its non-Hingham/Hull WTP facilities in Hingham was 1,227 kW and 1,295,271 kWh (Exh. 2, Sch. 9, at 3). The Department finds that there is no basis to conclude that 2017 usage levels were more representative of usage going forward than the test year (Exhs. 2, Sch. 9, at 3; AG 4-22, Att. A at 2).[109] Accordingly, the Department will establish Aquarion's purchased power expense for non-Hingham/Hull WTP facilities in Hingham based on the Company's test year combined usage of 1,227 kW and 1,295,271 kWh (Exh. 2, Sch. 9, at 3).

Aquarion proposes a purchased power expense based on the rates in effect for the twelve months ending October 2017 (eight months at the rates in effect during the test year and four months at the rate effective July 1, 2017) (Exh. 2(Rev. 2), Sch. 9). The record demonstrates a change in the rate charged to Aquarion effective July 1, 2017, from the rate in effect during the test year (Exh. AG 4-6, Att. A at 6). The Department finds that applying the rate effective July 1, 2017, is supported by the record evidence and produces a more representative level of purchased power expense going forward than the test year. See D.T.E./D.P.U. 06-53, at 12-13; Assabet Water Company, D.P.U. 95-92, at 22 (1996). Application of the rates effective July 1, 2017, including the prompt payment discount of ten percent, to the Company's test year combined with usage of 1,227 kW and 1,295,271 kWh produces a purchased power expense associated with the Company's non-Hingham/Hull WTP facilities in Hingham of $142,082 (Exhs. 2, Sch. 9, at 3; AG 4-22, Att. A at 2; Sch. DJE-2).

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109 Further, the record contains only ten months of 2017 consumption and demand information for the Company's Hingham facilities (Exh. 2 (Rev. 3), Sch. 9, at 3). Moreover, some of the 2017 data is distorted by a billing error involving Aquarion's Free Street location (Exh. AG 4-22, Att. B at 1-2).

Based on the foregoing analysis, the Department finds that Aquarion's non-Hingham/Hull WTP purchased power expense is $436,959, which is $15,106 less than the Company's test year non-Hingham/Hull WTP purchased power expense of $452,065. Aquarion proposed a reduction of $32,363 (Exh. 2 (Rev. 3), Sch. 2, at 1). Accordingly, the Department increases the Company's proposed cost of service by $17,257.[110]

F. Purchased Water

1. Introduction

During the test year the Company booked $496,922 in purchased water expense from the City of Worcester ("Worcester") (Exhs. 2 (Rev. 3), Sch. 18; AG 3-34, Att. A, at 13). Aquarion purchases water to supplement the capability of its own wells in Millbury to meet the demand of its single G4 customer, Wheelabrator Millbury, Inc. ("Wheelabrator") (Exh. DPU 13-1; RR-DPU-20, Att. A). The Company proposes a reduction of $260,508 for a pro forma expense of $236,414 based on an anticipated reduction in its need to purchase water (Exhs. JAU at 5; 2 (Rev. 3), Sch. 18; DPU 7-20). Aquarion calculated this adjustment by estimating its annual purchased water needs based on a historical average adjusted to take into consideration improvements in well efficiency, and then multiplying this amount by Worcester's current rate of $3.93 per CCF (Exhs. 2 (Rev. 3), Sch. 18; DPU 19-15, Att. A at 2; AG 4-24; DPU 7-20).

[110] ($15,106) – ($32,363) = $17,257.

2. Positions of the Parties

The Company reports that it purchases water from Worcester to help provide adequate service to Wheelabrator (Company Brief at 29). Aquarion contends that it is currently better optimizing its wells, which should lead to it needing to purchase less water in the future (Company Brief at 29). The Company asserts that its calculation of anticipated demand is an appropriate means of determining a representative level of purchased water expense for inclusion in rates (Company Brief at 30). No other party addressed this issue on brief.

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. D.P.U. 17-107, at 104, citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 120; D.P.U. 87-260, at 75. In this regard, the Department has consistently held that there are three classes of expenses that are recoverable through base rates: (1) annually recurring expenses; (2) periodically recurring expenses; and (3) nonrecurring extraordinary expenses.[111] D.P.U. 17-107, at 104-105, citing D.P.U. 11-01/D.P.U. 11-02, at 345; Fitchburg Gas and Electric Light Company, D.T.E. 98-51, at 35 (1998); D.P.U. 95-118, at 121-122; D.P.U. 1270/1414, at 32-33.

In order to determine whether the purchased water expense should be included in the Company's cost of service, the Department must first determine whether the expense is a

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111 In instances where an expense is periodically recurring or non-recurring but extraordinary in nature, the amount may be amortized over an appropriate time period. D.P.U. 1270/1414, at 33; see also D.P.U. 89-114/90-331/91-80 (Phase One) at 152; D.P.U. 88-250, at 65-67.

recurring expense. The Department has stated that test year expenses, which recur on an annual basis, are eligible for full inclusion in cost of service unless the record supports a finding that the level of the expense in the test year is abnormal. D.P.U. 10-114, at 250; D.P.U. 1270/1414, at 33. If a finding is made that the test year expense is abnormal, it is necessary to normalize the expense to reflect the amount that is likely to recur on a normal annual basis. D.P.U. 10-114, at 250; D.P.U. 1270/1414, at 33. Normalization of an expense is not intended to ensure dollar-for-dollar recovery of a particular expense, but rather is intended to recover a representative annual level of the expense through rates. D.P.U. 07-71, at 103.

The record demonstrates that the Company's water purchases from Worcester are a recurring expense and, therefore, should be included in the Company's cost of service (Exhs. DPU 7-19; DPU 14-12; DPU 17-8). During the test year, the Company purchased 116,500 CCF of water from Worcester, which was a significantly larger quantity than in previous years (Exhs. DPU 7-19; DPU 17-8; DPU 14-9; DPU 19-15, Att. A; RR-DPU-20, Att. A). Specifically, in 2008, 2009, 2010, 2015, and 2017 Aquarion purchased 29,280 CCF, 1,385 CCF, 45,422 CCF, 75,000 CCF, and 69,300 CCF of water from Worcester, respectively (Exhs. DPU 7-19; DPU 17-8; DPU 19-15, Att. A).[112] Based on this information, the Department finds that the level of the expense in the test year is abnormal. Accordingly, the Department determines it is appropriate to normalize the Company's

[112] The Department excludes from this analysis the years 2011 through 2014 because, due to a broken meter, the Company's water purchases were based on estimates during this time (Exh. DPU 19-15, Att. A at 2; Tr. 4, at 663).

purchased water expense to reflect the amount that is likely to recur on a normal annual basis. D.P.U. 10-114, at 250; D.P.U. 1270/1414, at 33.

Aquarion proposes to base its purchased water expense on its historical usage and anticipated water production efficiencies (Exhs. JAU at 5; AG 4-24; DPU 19-15, Att. A at 2; DPU 7-20; RR-DPU-20, Att. A). Specifically, the Company used historical monthly averages between 2008 and 2016 to determine the Company's annual purchased water needs (Exh. DPU 19-15, Att. A at 2; RR-DPU-20, Att. A; Tr. 4, at 666). The Company then decreased its purchased water needs by four MG per year to account for anticipated better optimization of its wells (Exhs. JAU at 5; DPU 19-15, Att. A at 2; RR-DPU-20, Att. A; Tr. 4, at 668-669).[113] The Company multiplied the resulting amount (i.e., 60,156 CCF) by the most recent rate of $3.93 per CCF to derive its purchased water expense (i.e., $236,414) (Exhs. JAU at 5; 2 (Rev. 3), Sch. 18; AG 4-24).

In determining its historical usage, the Company relied upon monthly averages between 2008 and August 2016, excluding those months from September 2011 through May 2014 when the meter measuring the amount of water purchased from Worcester was impaired (Exh. DPU 19-15 & Att. A at 2; Tr. 4, at 663). However, the Department will instead rely on the most recent five years of complete annual data on the record (i.e., 2009, 2010, 2015, 2016, and 2017) (Exhs. DPU 7-19; DPU 19-15, Att. A). Rather than include partial year data, the Department excludes from its analysis purchased water amounts in years 2011 through 2014 (Exh. DPU 19-15 & Att. A at 2; Tr. 4, at 663). See, e.g.,

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113 Four MG is approximately 5,347 CCF (4 MG*1,336.8056 CCF/MG=5,347 CCF).

D.P.U. 15-80/D.P.U. 15-81, at 141-143; D.P.U. 09-39, at 146-149. The Department calculates a normalized annual purchased water amount of 61,521 CCF, which results in an annual purchased water expense of $241,779 (61,521 CCF * $3.93/CCF = $241,779), or a reduction of $255,143 from the test year ($496,922 - $241,779 = $255,143) (Exhs. DPU 7-19; DPU 17-8; AG 3-34, Att. A at 13; AG 4-24).[114]

The Company's proposed level of purchased water expense also included an adjustment based on anticipated improvements in well efficiency (Exhs. 2 (Rev. 3), Sch. 18; DPU 19-15, Att. A at 2; AG 4-24; DPU 7-20). However, Aquarion did not provide evidence supporting the expected efficiencies and, as a result, we find that such adjustment is neither known nor measureable. Above, the Department determined that the Company's normalized annual purchased water expense is $241,779, which is a $255,143 reduction to the test year purchased water expense. Aquarion proposed $236,414 in normalized annual purchased water expense, which represented a $260,508 reduction to the test year purchased water expense (Exhs. JAU at 5; 2 (Rev. 3), Sch. 18). Accordingly, the Department increases the Company's proposed cost of service by $5,365 ($260,508 - $255,143 = $5,365).

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114 The average amount of purchased water, 61,521 CCF, was derived by adding the purchased water amounts from 2009, 2010, 2015, 2016, and 2017 (i.e., 1,385 CCF, 45,422 CCF, 75,000 CCF, 116,500 CCF, and 69,300 CCF, respectively), and dividing the result by five (Exhs. DPU 7-19; DPU 17-8).

G. Rate Case Expense

1. Introduction

In its initial filing, Aquarion estimated that it would incur approximately $393,000 in rate case expense (Exh. 2, Sch. 10). The Company's estimated rate case expense included $233,000 for legal fees, $60,000 for a cost of service study ("COSS") and related consulting services ("COSS services"), and $100,000 for preparation and presentation of revenue requirement testimony and exhibits (Exhs. MLR at 3-4; 2, Sch. 10). Aquarion proposes to recover rate case expenses totaling $571,641, including the following: (1) $316,910 in legal fees; (2) $81,119 in COSS services; (3) $114,238 in affiliate services related to the preparation and presentation of revenue requirement testimony and exhibits; (4) $25,894 in miscellaneous expenses; and (5) $33,480 for the Attorney General's consultants (Exh. 2 (Rev. 3), Sch. 10). The Company submitted invoices in support of its proposed rate case expenses in response to an information request and with its reply brief.[115]

The Company issued requests for proposals ("RFPs") to provide legal counsel and COSS services and ultimately hired firms based on those RFPs (Exhs. TMD, at 9; DPU 5-1). During the proceeding, the Company retained a different firm to provide legal representation for the remainder of the proceeding without undergoing a second competitive bidding process

[115] Aquarion submitted rate case expense invoices in response to information request DPU 5-13, and it subsequently refiled corrected redactions in accordance with the Hearing Officer's Ruling on Aquarion's Motion for Confidential Treatment (Tr. at 10-12). Citations to DPU 5-13, Att. A, herein refer to the corrected version of Attachment A filed on July 9, 2018. On August 10, 2018, the Company filed additional invoices relating to rate case expenses with its reply brief, hereafter cited as DPU 5-13, Att. A (Supp.).

(Exhs. DPU 19-5; DPU 19-9, Att. A; Tr. 2, at 307-309). Aquarion used employees of its affiliate, Aquarion-CT, to prepare and present testimony and discovery responses (Exhs. DPU 5-5; DPU 5-9; DPU 5-13). Aquarion is seeking to recover its proposed rate case expense over a five-year period based on the average interval between its last five rate cases (Exhs. MLR at 4; 2 (Rev. 3), Sch. 10). Normalizing the Company's proposed rate case expense of $571,641 over five years produces $114,328 in rate case expense (Exh. 2 (Rev. 3), Sch. 10).

2. Positions of the Parties[116]

a. Attorney General

i. Selection Process for Outside Consultants

The Attorney General did not present arguments on brief relating to the RFPs or the Company's selection of outside consultants. Regarding Aquarion's change of legal representation during the proceeding, however, the Attorney General maintains the decision to forego a competitive bidding process is problematic (Attorney General Brief at 22 n.5). The Attorney General argues that the Company should have issued a secondary RFP or solicited renewed bids under the original RFP to provide transparency in the selection of outside services and to compare the cost of the new firm against contemporaneous bids rather than rely on potentially outdated bids (Attorney General Brief at 22 n.5). The Attorney General requests that the Department provide guidance on the process companies should

116 Hingham and Hull did not present specific arguments on brief relating to rate case expense but adopted the arguments of the Attorney General (Hingham/Hull Reply at 2).

employ should they wish to replace an outside consultant during the course of a base distribution rate proceeding (Attorney General Brief at 22 n.5).

ii. Cost Containment Measures and Supporting Documentation for Proposed Expenses

The Attorney General contends that Aquarion has failed to justify full recovery of its rate case expenses (Attorney General Brief at 22). Specifically, the Attorney General raises concerns about COSS services (Attorney General Brief at 22). The Attorney General argues that the Company failed to adequately control its costs for COSS services (Attorney General Brief at 23). The Attorney General asserts that while the consultant's RFP response estimated the cost at $46,500, the Company's original estimate for COSS services was $60,000 and it provided no explanation regarding the difference (Attorney General Brief at 23, citing Exhs. DPU 5-2, Att. C; DPU 19-8, Att. A; Attorney General Reply at 11).[117] The Attorney General claims that throughout the proceeding the cost overrun continued to increase without an explanation from the Company, despite representations that the consultant's work on a COSS for the Company's 2008 rate case would reduce the total hours required for COSS services in the present case (e.g., as of June 18, 2018, the expense for the consultant was $75,699, or 60 percent more than the consultant's original bid) (Attorney General Brief at 23, citing Exhs. 2 (Rev. 2), Sch. 10; DPU 5-2, Att. C at 15; DPU 5-4, Att. A at 2; DPU 5-12, Att. A; DPU 19-8, Att. A).

117 The consultant's response to the RFP has been accorded protection from public disclosure (Tr. at 8). However, the Company subsequently made the consultant's original estimate available in the public domain (Company Brief at 28).

The Attorney General argues that the Department should limit the Company's rate case expense for COSS services to the consultant's original bid because the Company has the burden of demonstrating that its selection of service providers was prudent and appropriate and Aquarion has failed to provide any justification for the cost overrun (Attorney General Brief at 23-24; Attorney General Reply at 10-11). The Attorney General contends that the Company's vague assertions fail to satisfy the Department's standard, and without demonstrating that the Company did more to contain rate case expense, such as accepting a fee proposal with cost-control features, the Department should not allow the Company to recover expenses for COSS services in excess of the original estimate (Attorney General Reply at 10-11). Lastly, the Attorney General argues that the Company should receive only those rate case expenses for which it has provided invoices (Attorney General Reply at 10 n.4). The Attorney General notes that as of the date of her initial brief, August 3, 2018, Aquarion had not submitted invoices for rate case expenses since December 31, 2017 (Attorney General Brief at 10 n.4).

b. Company

i. Selection Process for Outside Consultants

Aquarion states that it issued RFPs for legal services and for COSS services in November 2016 (Company Brief at 25, citing Exhs. TMD at 9; DPU 5-1). The Company asserts that the bids were reviewed by management and summarized according to the following criteria: (1) water rate case experience in Massachusetts; (2) other relevant case experience; (3) key attorneys and billing rates; (4) other relevant rates and pricing; (5) full cost estimate; and (6) other miscellaneous considerations (Company Brief at 25, citing Exhs. DPU 5-3; DPU 5-4). Regarding the selection of the COSS consultant, the Company maintains that although the selected firm was the second lowest bid, the Company selected the firm because of its extensive experience in the water industry and experience with Aquarion specifically (Company Brief at 26; Company Reply at 16-17, citing Exh. DPU 5-6). For legal services, the Company provides that it retained Keegan Werlin LLP ("Keegan Werlin") in December 2017 to replace its original legal services provider (Company Brief at 26). The Company alleges that it did not need to conduct another competitive process to evaluate the reasonableness of Keegan Werlin's proposal because it had already conducted an RFP for legal services and was, therefore, able to compare the proposal to the rates provided under the original RFP (Company Brief at 26). The Company argues that Keegan Werlin offered an hourly rate that was significantly lower than the rates provided in the bids received under the original RFP (Company Brief at 26, citing Exhs. DPU 5-2; DPU 19-5, DPU 19-9). Additionally, the Company alleges that it considered the firm's familiarity and experience with the Company and the Department's rate-case precedent (Company Brief at 26, citing Tr. 2, at 308-309). The Company maintains that a second RFP process would not have yielded a rate lower than that offered by Keegan Werlin (Company Brief at 26, citing Exh. DPU 9-5).[118]

[118] Although the Company's brief cites to Exhibit DPU 9-5 in support of this point, it is likely the Company intended to cite to Exhibit DPU 19-5.

ii. Cost Containment Measures and Supporting Documentation for Proposed Expenses

Aquarion argues that it undertook measures to control rate case expense in addition to the RFP process (Company Brief at 26; Company Reply at 16). The Company provides that its use of employees from Aquarion-CT limited the use of outside consultants and controlled costs (Company Brief at 26-27). The Company asserts that Aquarion-CT employees had firsthand knowledge of the Company's operations and experience presenting rate cases, so they took a lead role in drafting responses to information requests and preparing materials filed in this case, limiting the need to rely on outside counsel and the COSS expert (Company Brief at 27; Company Reply at 17). In addition, the Company maintains that the time charged for rate case expense is less than the time these employees actually worked on the proceeding because these employees are paid a base salary without overtime (Company Brief at 27). Also, the Company argues that it consulted with other parties in an attempt to avoid unnecessary costs of accommodation and travel for the COSS expert to appear for evidentiary hearings (Company Reply at 17, citing Tr. 2, at 227-228).

The Company contends that it has provided documentation to support rate case expense in accordance with Department precedent (Company Brief at 27). Aquarion alleges that all invoices were thoroughly reviewed to ensure that the hours and expenses billed were consistent with the Company's expectations, based on each consultant's RFP response, fee arrangement, and Company interactions with the consultants throughout the proceeding (Company Brief at 27). Finally, the Company provides that the five-year normalization period is calculated consistent with Department precedent (Company Brief at 27).

Aquarion claims that the Attorney General, in seeking to limit rate case expense for the COSS expert to the original estimate, attempts to hold the Company to a standard that is not required by Department precedent (Company Reply at 17). The Company asserts that there is no Department precedent that limits recovery of rate case expenses to an original estimate unless it is a fixed fee, which was not the case here (Company Reply at 6). Contrary to the Attorney General's position, the Company argues it provided ample evidence that the proposed rate case expense is reasonable, appropriate, and prudently incurred and the costs were carefully controlled though employee assistance and coordination (Company Reply at 17).

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 actually been incurred and, thus, is considered known and measurable. D.P.U. 10-114, at 219-220; D.P.U. 07-71, at 99; D.T.E. 05-27, at 157; D.T.E. 98-51, at 61-62. Second, such expenses must be reasonable, appropriate, and prudently incurred. D.P.U. 10-114, at 220; D.P.U. 09-30, at 227; D.P.U. 95-118, at 115-119.

The overall level of rate case expense among utilities has been, and remains, a matter of concern for the Department. D.P.U. 10-114, at 220; D.P.U. 07-71, at 99; D.T.E. 03-40, at 147; D.T.E. 02-24/25, at 192; D.P.U. 93-60, at 145. Rate case expense, like any other expenditure, is an area in which companies must seek to contain costs. D.P.U. 10-114, at 220; D.P.U. 07-71, at 99; D.T.E. 03-40, at 147-148; D.T.E. 02-24/25, at 92; D.P.U. 96-50 (Phase I) at 79. Further, the Department has stated that rate case expenses may not be allowed in cost of service where such expenses are disproportionate to the relief being sought. D.P.U. 10-114, at 220; D.P.U. 10-55, at 323; see also Barnstable Water Company, D.P.U. 93-223-B at 16 (1994). Finally, all companies are on notice that the risk of non-recovery of rate case expenses looms should they fail to sustain their burden to demonstrate cost containment associated with their selection and retention of outside service providers. D.P.U. 10-114, at 220; D.P.U. 09-39, at 289-293; D.P.U. 09-30, at 238-239; D.T.E. 03-40, at 152-154.

b. Outside Consultant Services

i. Introduction

The Department has consistently emphasized the importance of competitive bidding for outside services in a petitioner's overall strategy to contain rate case expense. See, e.g., D.P.U. 10-114, at 221; D.P.U. 09-30, at 227; D.T.E. 05-27, at 158-159; D.T.E. 03-40, at 148; D.T.E. 02-24/25, at 192. If a petitioner elects to secure outside services for rate case expense, it must engage in a competitive bidding process for these services. D.P.U. 10-114, at 221; D.P.U. 09-30, at 227; D.P.U. 07-71, at 99-100, 101; D.T.E. 03-40, at 153. In all but the most unusual of circumstances, it is reasonable to expect that a company can comply with the competitive bidding requirement. D.P.U. 10-55, at 342. The Department fully expects that competitive bidding for outside rate case services, including legal services, will be the norm. D.P.U. 10-55, at 342. If a company decides to forgo the competitive bidding process, the company must provide an adequate justification for its decision to do so. D.T.E. 01-56, at 76; D.T.E. 98-51, at 59-60; D.P.U. 96-50 (Phase I) at 79.

The required submission of competitive bids in a structured and organized process serves several important purposes. First, the competitive bidding and qualification process provides an essential, objective benchmark to evaluate the reasonableness of the cost of the services sought. D.P.U. 10-114, at 221; D.P.U. 09-30, at 228-229; D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. Second, it keeps even a consultant with a stellar past performance from taking the relationship with a company for granted. D.P.U. 10-114, at 221; D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. Finally, a competitive solicitation process serves as a means of cost containment for a company. D.T.E. 03-40, at 152-153.

The competitive bidding process must be structured and objective, and based on an RFP process that is fair, open, and transparent. See D.P.U. 10-114, at 221; D.P.U. 09-30, at 227-228; D.P.U. 07-71, at 99-100; D.T.E. 03-40, at 153. The timing of the RFP process should be appropriate to allow for a suitable field of potential service providers to provide complete bids and provide the company with sufficient time to evaluate the bids. D.P.U. 10-114, at 221; D.P.U. 10-55, at 342-343. Further, the RFPs issued to solicit service providers must clearly identify the scope of work to be performed and the criteria for evaluation. D.P.U. 10-114, at 221-222; D.P.U. 10-55, at 343.

The Department does not seek to substitute its judgment for that of a petitioner in determining which service provider may be best suited to serve the petitioner's interests, and obtaining competitive bids does not mean that a company must necessarily retain the services of the lowest bidder regardless of its qualifications. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153. The need to contain rate case expense, however, should be accorded a high priority in the review of bids received for rate case work. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153. In seeking recovery of rate case expenses, companies must provide an adequate justification and showing, with contemporaneous documentation, that their choice of outside services is both reasonable and cost-effective. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153.

ii. The RFP Process

The Company issued RFPs for legal services to five law firms and received two responses (Exhs. DPU 5-1; DPU 5-2, Att. A, Att. B; DPU 5-4). Also, the Company issued RFPs for COSS services to three firms and received three responses (Exhs. DPU 5-1; DPU 5-2, Att. A, Att. C; DPU 5-4, Att. A). The RFPs set forth the scope of work to be performed by the bidders, the information sought from each bidder in response to each RFP, and the price and non-price criteria upon which each bid would be evaluated (Exh. DPU 5-2, Att. A). Although the Company did not use a formal scoring system in evaluating each bidder’s response, it created an evaluation matrix that sets forth the key criteria in the evaluation process and how they were addressed in each proposal (Exh. DPU 5-4, Att. A). The record demonstrates that, in evaluating each bid by using the evaluation matrix, the Company considered the criteria outlined in each RFP, as well as other important price and non-price factors (Exh. DPU 5-4, Att. A). Thus, we conclude that Aquarion’s bid evaluation process was adequately structured to allow the Company to determine the capabilities, approach, and pricing offered by the responding COSS consultants and legal representatives. In addition, we determine that the Company's evaluation system was sufficient to provide an objective benchmark to measure the reasonableness of the costs of the various services (Exh. DPU 5-4, Att. A). Based on these considerations, we conclude that the Company conducted fair, open, and transparent RFP processes to generate bids from potential outside consultants.

iii. Selection of Legal Services Providers

Initially, Aquarion retained Rich May, P.C. as the Company's legal representatives through the RFP process described above (Exh. DPU 5-1). Aquarion reviewed the RFP responses from legal representatives and considered each firm's water rate case experience in Massachusetts, other relevant case experience, key attorneys and billing rates, other relevant rates and pricing, the full cost estimate, and other miscellaneous considerations (Exhs. DPU 5-3; DPU 5-4, Att. A). In December 2017, the Company retained Keegan Werlin as the Company's legal representatives for the remainder of the proceeding (Exhs. DPU 19-5; DPU 19-9, Att. A; Tr. 2, at 307-309). Leading up to December, representatives from Aquarion and Eversource discussed the possibility of retaining Keegan Werlin while working together on the acquisition of Aquarion's parent company, MUI (Tr. 2, at 308). These discussions were motivated by Keegan Werlin's experience as legal representatives on base distribution rate proceedings before the Department and Aquarion's experience working with the firm on the acquisition (Tr. 2, at 308-309). Ultimately, a fee proposal was requested from Keegan Werlin, and the firm's proposed rate was compared with the rate of the existing legal service provider as well as the other rate submitted during the RFP process described above (Exhs. DPU 5-2, Att. B; DPU 19-5; Tr. 2, at 308). According to the Company, Aquarion did not conduct a competitive bidding process because the rate offered by Keegan Werlin was significantly lower than the bids received under the RFP, so a second RFP process was not expected to result in a proposal with a lower rate (Exh. DPU 19-5; Tr. 2, at 308).

As a result of the acquisition, during this proceeding Aquarion found itself in the uncommon circumstance of working with two different law firms simultaneously (Tr. 2, at 308). As stated above, the Department will not substitute its judgment for that of the petitioner in selecting an outside service provider that may best serve the petitioner's interests as Aquarion did when it determined its interests were best served by switching its legal representatives. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153. The record demonstrates that Aquarion made the decision to change its legal representation for this proceeding after the Company was sure it could retain Keegan Werlin based on hourly rates that were significantly lower than the rates offered under the competitive process conducted in November 2016 (Exhs. DPU 5-2, Att. B; DPU 19-5; Tr. 2, at 308-309). Accordingly, the Department finds that the Company retained Keegan Werlin in consideration of important non-price factors, while also placing a high priority on containing rate case expense (Exhs. DPU 19-5; DPU 19-9, Att. A; Tr. 2, at 307-309). Further, the competitive process conducted in November 2016 provided an objective benchmark for the reasonableness of the rates offered by Keegan Werlin (Exhs. DPU 5-2, Att. B; DPU 19-9, Att. A). Consequently, we find that the Company provided an adequate justification for retaining Keegan Werlin without undergoing a second competitive bid process.

The Attorney General requests that the Department provide guidance on the process companies should follow in the event that they seek to replace an outside consultant during a rate case proceeding (Attorney General Brief at 22 n.5). The recovery of expenses for outside consultants used in the preparation and presentation of a base rate proceeding is subject to our longstanding precedent, whether such a consultant is hired prior to or during the course of the proceeding. This includes the expectation that companies will undergo a competitive bidding process to retain outside consultants or provide an adequate justification for not doing so. Instances where a company substitutes an outside service provider during a proceeding are rare enough to warrant Department evaluation of the facts and circumstances on a case-by-case basis under our existing precedent.

c. Cost Containment Measures and Supporting Documentation for Proposed Expenses

i. Introduction

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.P.U 11-43, at 123-124 (citations omitted); D.P.U 08-27, at 71 (citations omitted). The Department previously has put all utility companies on notice that failure to provide all invoices for outside rate case services could result in the disallowance of all or a portion of rate case expenses. See, e.g., D.P.U 11-43, at 123-124; D.P.U 08-27, at 71-73; D.P.U. 10-55, at 331; D.P.U. 09-39, at 293; D.T.E. 02-24/25, at 193;

D.T.E. 96-50 (Phase I) at 79. In this proceeding, the Department issued discovery requesting that Aquarion submit ongoing updates to the invoices and supporting documents for rate case expenses. Specifically, on January 3, 2018, the Department issued an information request for the following: (1) invoices and supporting documentation for the testimony and exhibit preparation, legal representation, and COSS services incurred to date; and (2) updated invoices and supporting documentation throughout the proceeding, with an update filed at least one week prior to the start of the evidentiary hearings and a final update provided no later than the date of the Company's reply brief (see Exh. DPU 5-13).

On January 18, 2018, Aquarion submitted invoices and supporting documentation for rate case expenses incurred before December 31, 2017, for its initial legal service provider,[119] COSS services, Aquarion-CT employees, and miscellaneous expenses such as transcripts and postage (see Exh. DPU 5-13, Att. A). As noted by the Attorney General, the Company did not provide updated invoices prior to the evidentiary hearings in response to the Department's information request. On August 10, 2018, Aquarion submitted invoices for Keegan Werlin's legal services provided from December 11, 2017, through August 10, 2018; COSS services performed between April 2018 and June 2018; and the Attorney General's consultants for work performed in May 2018 and June 2018 (Exh. DPU 5-13, Att. A (Supp.)). As a result, the record contains no documentation supporting the costs for Aquarion-CT employees' work in this proceeding since December 31, 2017; no invoices for

119 The initial legal service provider last billed for services on November 30, 2017 (Exh. DPU 5-13, Att. A at 43).

the COSS expert between July 2017 and March 2018; and no invoices for the Attorney General's consultants prior to May 2018 (Exhs. DPU 5-13, Att. A; DPU 5-13, Att. A (Supp.)). As addressed below for each category of rate case expenses, without complete invoices and supporting documentation the Department is unable to determine whether that portion of the Company's proposed rate case expenses were actually incurred, and thus known and measurable, or reasonable, appropriate, or prudently incurred.

ii. Legal Representatives

The Company proposes to include a total of $316,910 in rate case expense related to legal fees (Exh. 2 (Rev. 3), Sch. 10, line 12).[120] The Department has reviewed the invoices submitted by the Company from its legal representatives, which total $281,786 (Exhs. DPU 5-13, Att. A at 1-43; DPU 5-13, Att. A (Supp.) at 1-62). First, we find that the invoices provided are properly itemized for allowable expenses and represent expenses that were actually incurred and, thus, are known and measurable (Exhs. DPU 5-13, Att. A at 1-43; DPU 5-13, Att. A (Supp.) at 1-62). Second, our review of the record indicates that the legal fees and associated disbursements of $281,786 were reasonable, appropriate, and prudently incurred (Exhs. DPU 5-3; DPU 5-4, Att. A; DPU 5-5; DPU 5-9; DPU 5-13; DPU 5-13, Att. A; DPU 5-13, Att. A (Supp.); DPU 19-5; DPU 19-9, Att. A; Tr. 2, at 307-309). However, the Company did not submit invoices or supporting documentation for the remaining $35,124 in proposed legal fees (Exhs. DPU 5-13, Att. A; DPU 5-13,

120 The Company's total proposed legal fees are based on incurred costs and do not include an estimated cost component for completion of the rate case beyond the briefing period.

Att. A (Supp.)).[121] Absent supporting invoices, the Department is unable to determine whether the remaining $35,124 in claimed legal fees were actually incurred and, thus, known and measurable, or reasonable, appropriate, and prudently incurred. Therefore, the Department denies recovery of $35,124 in rate case expense associated with legal fees.

iii. COSS Services

The Company proposes to include $81,119 in rate case expenses as the final cost associated with COSS services (Exh. 2 (Rev. 3), Sch. 10, line 13). The Department has reviewed the invoices submitted by the Company for COSS services totaling $65,531 (Exhs. DPU 5-13, Att. A at 44-47; DPU 5-13, Att. A (Supp.) at 63-64). We find that the invoices provided are properly itemized for allowable expenses and represent expenses that were actually incurred and, thus, are known and measurable (Exhs. DPU 5-13, Att. A at 44-47; DPU 5-13, Att. A (Supp.) at 63-64). However, the Company did not submit invoices or supporting documentation for $15,588 of the proposed COSS services. Absent supporting documentation, the Department is unable to determine whether the remaining $15,588 in claimed expenses were actually incurred and, thus, known and measurable.[122] Therefore, the Department denies recovery of $15,588 in rate case expense associated with COSS services.

Next, the Department must determine whether the $65,531 in invoiced COSS services were reasonable, appropriate, and prudently incurred. D.P.U 11-43, at 117; D.P.U 08-27,

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121 $316,910 - $281,786 = $35,124

122 $81,119 - $65,531 = $15,588

at 68; D.T.E. 05-27, at 160-161. First, the Company solicited proposals for a COSS using a competitive process and selected a firm based on its price estimate and its extensive experience in the water industry and with Aquarion specifically (Exhs. DPU 5-4, Att. A; DPU 5-6). Second, the Company made efforts to limit the use of the consultant and contain COSS services costs by using employees from its Connecticut affiliate (Exh. DPU 5-9). In addition, Aquarion reviewed the consultant's invoices to ensure the hours and expenses billed were consistent with the Company's expectations (Exh. DPU 5-14). The invoices provided by Aquarion sufficiently detail the work performed by the consultant for the Department to determine the work performed and hours billed are in line with what can reasonably be expected from a COSS expert based on the size and scope of this proceeding (Exhs. DPU 5-13, Att. A at 44-47; DPU 5-13, Att. A (Supp.) at 63-64). Accordingly, the Department finds that Aquarion took reasonable action in its effort to contain costs (Exhs. DPU 5-4, Att. A; DPU 5-6; DPU 5-9; DPU 5-13, Att. A at 44-47; DPU 5-13, Att. A (Supp.) at 63-64; DPU 5-14).

The Attorney General argues that comparing the COSS expert's bid estimate of $46,500, the Company's original estimate of $60,000 for the same services, and the subsequent increase in the invoiced amounts demonstrate that the Company failed to adequately control COSS services (Attorney General Brief at 23). The Attorney General contends that that the Company provided no explanation or justification for the cost overrun. Nevertheless, we find that the Company provided adequate explanation for the increase in costs. The invoices provided by the Company describe the specific work activity underlying the $65,531 in COSS services, including the following: (1) preparation of the COSS, testimony, computer models, and an estimate to perform a weather normalization study; (2) data input; (3) correspondence; (4) discussions; (5) multiple revisions to the COSS for allocation adjustments; (6) drafting responses to information requests; and (7) travel to Boston for an evidentiary hearing (Exhs. DPU 5-13, Att. A at 44-47; DPU 5-13, Att. A (Supp.) at 63-64).

The Department has previously recognized that the level of rate case expense is in part dependent upon the degree of scrutiny a filing receives. D.P.U. 93-223-B at 16. In evaluating the known and measurable costs of Aquarion's COSS services to determine whether the expenses were reasonable, appropriate, and prudently incurred, we consider the various issues involved in this case and the amount and nature of discovery issued to Aquarion. See D.P.U. 11-43, at 126. Based on the Company's process for selecting its consultant, steps for containing and monitoring costs, the size and scope of the proceeding, and the descriptions provided of the consultant's work activity, we find the $65,531 in COSS services to be reasonable, appropriate, and prudently incurred (Exhs. DPU 5-3; DPU 5-4, Att. A; DPU 5-5; DPU 5-6; DPU 5-9; DPU 5-13, Att. A at 44-47; DPU 5-13, Att. A (Supp.) at 63-64; DPU 5-14). As a result, we decline to limit the rate case expenses associated with COSS services to the expert's original estimate as proposed by the Attorney General.

iv. Affiliate Services

Aquarion proposes to include a total of $114,238 in rate case expense related to work performed by three Aquarion-CT employees in (1) responding to discovery requests and (2) preparing and presenting the revenue requirement testimony and exhibits (Exhs. 2 (Rev. 3), Sch. 10, line 11; DPU 5-5; DPU 5-9; DPU 5-13). Rate case expenses for affiliate services 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. 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 non-discriminatory. D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52; see also D.P.U. 08-27, at 72 & n.38.

The record demonstrates that these expenses are specific to services provided for this rate case and do not duplicate services already provided by Aquarion or any of its affiliates (Exhs. DPU 5-9; DPU 5-13). Further, the expenses represent only the hours directly billed by three employees of Aquarion-CT, limited to eight hours per day, and do not include costs for overhead, benefits, travel, meals, or lodging (Exhs. DPU 5-9; DPU 5-13). The Department has reviewed the supporting documentation, and we find that the Company demonstrated that the expenses through December 31, 2017 were (1) specifically related to this rate case, (2) not duplicative of services already provided by Aquarion, (3) provided at a competitive and reasonable price, and (4) billed to the Company based only on actual work performed, thus, satisfying the requirement that expenses for affiliates be allocated to the Company by a formula that is both cost-effective and non-discriminatory (Exhs. DPU 5-9; DPU 5-13). D.P.U. 08-27, at 72 & n.38, 74; D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52.

The Company provided documentation of the hourly rates, hours worked, and work activity performed by the Aquarion-CT employees through December 31, 2017, with a total of $37,268 (Exh. DPU 5-13). First, we find that the provided documentation represents expenses that were actually incurred and, thus, are known and measurable (Exhs. DPU 5-13). Second, our review of the record indicates that the costs of $37,268 associated with services provided by the Aquarion-CT employees were reasonable, appropriate, and prudently incurred. See, e.g., D.T.E. 98-51, at 59.

The Company did not, however, submit any documentation supporting the costs related to the Aquarion-CT employees for services provided after December 31, 2017. Accordingly, the Department is unable to determine whether the remaining $76,970 in claimed expenses were actually incurred and, thus, known and measurable, or reasonable, appropriate, and prudently incurred.[123] Therefore, the Department disallows recovery of $76,970 in rate case expense associated with the services performed by the Aquarion-CT employees. See D.P.U. 10-70, at 157.

[123] $114,238 - $37,268 = $76,970

v. Attorney General Consultants

Pursuant to G.L. c. 12, § 11E(b), the Attorney General may retain experts or other consultants to assist her in Department proceedings involving rates, charges, prices, and tariffs of an electric, gas, generator, or transmission company subject to the Department's jurisdiction. The cost of retaining such experts or consultants cannot exceed $150,000 per proceeding, unless otherwise approved by the Department based upon exigent circumstances. G.L. c. 12, § 11E(b). All reasonable and proper expenses for such experts or consultants are to be borne by the affected company and are recoverable through the company's rates without further approval by the Department. G.L. c. 12, § 11E(b). The Department approved the Attorney General's notice of retention of experts and consultants in this matter on July 27, 2017. D.P.U. 17-90, Stamp-Approved Notice of Retention of Experts and Consultants (July 27, 2017).

The Attorney General's consultants submitted prefiled testimony, responded to information requests, and testified at the evidentiary hearing (see Exhs. AG-DJE; AG-DJE-1 (Supp.); AG-JRW; AG-JRW-1 (Supp.); AWC-AGO 1-1 - AWC-AGO 1-12; DPU-AG 1-1; DPU-AG 2-1; Tr. 4, at 604-634; Tr. 5, at 742-764). The Company proposes to include $33,480 in Attorney General's consultant costs as part of its total rate case expense (Exh. 2 (Rev. 3), Sch. 10, line 14). The Department has reviewed the invoices submitted by the Company from the Attorney General and determines the invoices total $2,520. We find that the invoices provided represent expenses that were actually incurred and thus, are known and measurable (Exh. DPU 5-13, Att. A (Supp.) at 65-70). However, absent supporting invoices, the Department is unable to determine whether the remaining $30,960 in Attorney General's consultant costs were actually incurred and, thus, known and measurable.[124] Therefore, the Department denies recovery of $30,960 in rate case expense associated with the Attorney General's consultants.

vi. Miscellaneous Rate Case Expenses

The Company seeks recovery of $25,894 in miscellaneous rate case expenses that include costs for postage and transcripts (Exhs. 2 (Rev. 3), Sch. 10, line 15; DPU 19-8, Att. A, lines 4, 5). The Department has reviewed the invoices provided by Aquarion for postage and transcripts totaling $13,729 (Exhs. DPU 5-13, Att. A at 48-51). Our review of the record indicates that the miscellaneous rate case expenses of $13,729 were reasonable, appropriate, and prudently incurred (Exhs. DPU 5-13, Att. A at 48-51). However, the Company did not submit invoices or supporting documentation for the remaining $12,165 in proposed miscellaneous rate case expenses (Exhs. DPU 5-13, Att. A; DPU 5-13, Att. A (Supp.)).[125] Absent supporting invoices, the Department is unable to determine whether the remaining $12,165 in miscellaneous rate case expenses were actually incurred and, thus, known and measurable, or reasonable, appropriate, and prudently incurred. Accordingly, Aquarion's miscellaneous rate case expense will be decreased by $12,165.

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124 $33,480 - $2,520 = $30,960

125 $25,894 - $13,729 = $12,165

d. Normalization of Rate Case Expense

Aquarion proposed to normalize its proposed rate case expense over a five-year period based on the average interval between its last five rate cases (Exhs. MLR at 4; 2 (Rev. 3), Sch. 10). 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. Based on the average interval of its last four rate case filings, including the present case, the Department finds that the appropriate normalization period for the Company is five years, consistent with the Company's proposal.[126] The Department finds that the application of this method does not produce an unreasonably long normalization period and that the facts of this case do not warrant a departure from the Department's general precedent in applying this mathematical formula. Accordingly, we will apply a normalization period of five years to the Company's rate case expense.

4. Conclusion

Based on the findings above, the Department finds that Aquarion may recover rate case expense in the amount of $400,834, comprised of (1) $281,786 for legal fees;

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126 Including the present case, Aquarion's most recent rate case proceedings are D.P.U 17-90, filed April 13, 2017; D.P.U 11-43, filed May 13, 2011; D.P.U. 08-27, filed May 14, 2008; and D.T.E. 00-105, filed November 16, 2000. The sum of the intervals between these rate cases (i.e., 5.9 years plus 3 years plus 7.5 years), divided by three, and rounded to the nearest whole number of years, results in a normalization period of five years.

(2) $65,531 for COSS services; (3) $37,268 for affiliate services; (4) $2,520 for Attorney General consultants; and (5) $13,729 for miscellaneous rate case expenses. The Department concludes that the correct level of normalized rate case expense is $80,167 (i.e., $400,834 divided by five years). Accordingly, because the Company has proposed an adjusted rate case expense of $114,328, the Company's proposed cost of service will be reduced by $34,161.[127]

H. Shared Corporate Expense

1. Introduction

During the test year Aquarion was allocated a share of certain corporate expenses from its parent company, Aquarion Company, and Aquarion Company's then-parent MUI (Exhs. TMD at 18; 2 (Rev. 3), Sch. 12, at 1). Charges from MUI included various internal audit and tax fees, directors and officers insurance, corporate governance, and legal fees (Exhs. 2 (Rev. 3), Sch. 12, at 1; DPU 2-1, Att. B). Charges from Aquarion Company included such items as salaries and benefits, bank fees, external audit and consulting costs, and building overhead (Exhs. TMD at 17-18; 2 (Rev. 3), Sch. 12). These corporate expenses are allocated using the "Massachusetts Formula" (Exhs. TMD at 18; 2, (Rev. 3) Sch. 12).[128] During the test year, the Company booked $115,184 in shared corporate

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127 $114,328 - $80,167 = $34,161

128 The Massachusetts Formula is a three-part formula that uses weighted cost average ratios comparing gross revenues, plant, and payroll (Exh. TMD at 18). D.P.U. 10-114, at 171 n.127. Costs are then allocated to the regulated utilities based on each utility's customer count (Exh. TMD at 18). The regulated utilities receive

expense (Exhs. TMD at 17; 2 (Rev. 3), Sch. 12, at 1). Aquarion initially proposed a decrease to test year shared corporate expense of $543, producing a proposed pro-forma expense of $114,641 based on an overall allocation rate of 8.57 percent (Exhs. TMD at 18; 2, Sch. 12, at 1; DPU 8-1).

On November 17, 2017, the Department approved a change in control of Aquarion Company and its subsidiaries, including the Company, from MUI to Eversource. D.P.U. 17-115, at 75. The change in control took place on December 4, 2017 (Exhs. AG 9-5, Att. A; AG 8-3, Atts. A, B, C). After the close of that transaction, Eversource became the holding company and sole stockholder of MUI, which was renamed Eversource Aquarion Holdings, Inc., and it remained the holding company of the Aquarion subsidiaries, including the Company (Exhs. AG 3-98; AG 8-3, Atts. A&B). See also D.P.U. 17-115, at 6.

During the course of this proceeding, the Company proposed to further reduce its corporate services expense. Specifically, it seeks a $3,000 reduction to incorporate the estimated annual savings that would result from the change in control to Eversource, producing a pro forma corporate expense of $111,641 (Exh. 2 (Rev. 3), Sch. 12, at 1).

2. Positions of the Parties

The Company argues that its arrangement with Aquarion Company allowed it to avoid the costs of stand-alone financial audits, tax preparation, accounting, and pension

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98.7 percent of the total corporate costs, of which 8.68 percent is allocated to Aquarion, resulting in an overall allocation of 8.57 percent (Exh. TMD at 18).

management and advisory services (Company Brief at 16-17, citing Exh. TMD at 17). The Company maintains that the services received from MUI and Aquarion Company during the test year were governed by service agreements (Company Brief at 17, citing Exhs. DPU 2-1; AG 3-26). It argues that, under these agreements, costs that can be identified and exclusively related to the Company are directly charged to the Company, and the remaining costs are allocated to the Company based on the Massachusetts Formula, which was used and reviewed in D.P.U. 11-43 (Company Brief at 17-18, citing Exhs. TMD at 18; 2, Sch. 12; DPU 2-5). Aquarion maintains that following the acquisition by Eversource, the services formerly provided by MUI will be provided by Eversource (Company Brief at 19 n.10).

The Company argues that its service company charges are reasonable and properly allocated consistent with the Department's standard (Company Brief at 19). It notes that costs directly charged or allocated to the Company are for activities that specifically benefit the Company in providing service to its customers and that do not duplicate services already provided by Company personnel (Company Brief at 19). In addition, it notes that the services provided to the Company encompass professional and technical services that are provided most cost-effectively on a shared basis across the Aquarion operating companies and do not overlap with services provided by Company personnel, as the Company does not have employees who perform these functions (Company Brief at 19, citing Exh. AG 3-26). The Company argues that its allocation method is non-discriminatory, and the Department should, therefore, approve the proposed level of corporate service expenses (Company Brief at 19-20). No other party addressed shared corporate expense on brief.

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. See D.P.U. 12-86, at 213; D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 120. To qualify for inclusion in rates, payments by Aquarion for services provided by Aquarion Company 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 permits recovery of payments to affiliates where these payments are (1) for services that specifically benefit the regulated utility and that 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 method that is both cost-effective in application and nondiscriminatory, for those services specifically rendered to the utility by the affiliate and for general services that may be allocated by the affiliate to all operating affiliates. D.P.U. 15-155, at 270-271, citing D.P.U. 13-75, at 184; D.P.U. 12-25, at 231.

During the test year, the Company received from Aquarion Company and MUI certain resources and services pursuant to service agreements ("Aquarion Service Agreement" and "MUI Agreement," respectively, and together "Service Agreements") (Exhs. TMD at 17; 2 (Rev. 3), Sch. 12; AG 3-26, Atts. A, B). The corporate services costs allocated to the Company during the test year pursuant to the Service Agreements include the following: (1) fees from MUI for internal audit services, tax preparation and financial audit services, and minimal legal services; and (2) charges from Aquarion Company consisting of salaries and benefits, audit and consulting costs, bank fees, legal fees and other costs[129] (Exhs. TMD at 17-18; 2 (Rev. 3) Sch. 12; DPU 2-3; DPU 2-7; DPU 2-8; AG 3-90; AG 3-96; AG 3-97). The corporate services provided by Aquarion Company and MUI relate primarily financial and accounting services (including internal and external audit as well as tax preparation), and other professional services (Exhs. TMD at 17; 2 (Rev. 3), Sch. 12; DPU 2-7; DPU 2-8). Aquarion as an affiliate is required to participate in the preparation of consolidated tax returns and internal audits. D.P.U. 11-43, at 139. Additionally, Aquarion does not have its own dedicated, full-time corporate officers and employees who perform these tasks (Exhs. TMD at 17; DPU 2-7; DPU 2-8; AG 4-12; AG 3-98). Therefore, we find that those activities specifically benefit Aquarion and there is no overlap in the services Aquarion Company and MUI charged to the Company during the test year (Exh. TMD at 17). D.P.U. 15-155, at 271-272.

The Service Agreements provide that the Company may be charged for the costs of services provided, including direct and allocated costs (Exh. AG 3-26, Att. A at 11-12, Att. B at 3-4). In reviewing allocated costs, we note that we previously disallowed a management fee that simply constituted a pro rata portion of MUI personnel costs and other expenses that did not delineate tasks or functions as specifically benefitting Aquarion. D.P.U 11-43, at 138. In the instant matter, however, the Company seeks recovery only of costs allocated to the Company based on directly incurred costs and actual cost of the labor

[129] Certain costs, including payroll and benefit allocation, are addressed in Section VIII.J., below.

and related overheads associated with the actual time spent (Exhs. TMD at 18; 2 (Rev. 3), Sch. 12; DPU 2-8). See D.P.U. 11-43, at 139-140; D.P.U. 17-115, at 64. The Company also provided documentation of its assessment of the reasonableness of the third-party expenses provided through MUI, including the contracts for internal audit services from KPMG LLP, tax preparation and financial audit services from PricewaterhouseCoopers LLP, and policies for directors and officers insurance (Exhs. TMD at 18; 2 (Rev. 3), Sch. 12; DPU 2-8 & Atts. A, B; DPU 2-6, Att. H). Based on the record, we find that these corporate charges are at a competitive and reasonable price.

Using the Massachusetts Formula, the Company proposes an overall allocation of 8.57 percent to the Company (Exh. TMD at 18). The Department has previously relied on the Massachusetts Formula to allocate similar corporate expenses, including in Aquarion's prior rate case. D.P.U. 11-43, at 139; D.P.U. 11-01/D.P.U. 11-02, at 320; D.P.U. 10-114, at 187; D.P.U. 08-27, at 85 n.47; Eastern Edison Company, D.P.U. 1130, at 29-31 (1982). Here, where payments were (1) based on directly incurred costs and actual cost of the labor and related overheads associated with the actual time spent (Exh. AG 3-26, Att. A at 11-12) or (2) based on time spent or allocated cost of those personnel (Exh. AG 3-26, Att. B at 3), we find that the allocation formula is cost-effective and non-discriminatory. See D.P.U. 17-115, at 64; D.P.U. 11-43, at 139-140.

Based on the foregoing, we conclude that the costs allocated for shared corporate services during the test year were (1) for services that specifically benefit the regulated utility and that 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 method that is both cost-effective in application and nondiscriminatory, for those services specifically rendered to the utility by the affiliate and for general services that may be allocated by the affiliate to all operating affiliates. D.P.U. 15-155, at 270-271. We, therefore, find that the Company's pro forma expense of $114,641 based on an overall allocation rate of 8.57 percent satisfies the Department's affiliate transaction standard. D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52.

As addressed above, after the acquisition, Eversource became the holding company and sole stockholder of MUI, which was renamed Eversource Aquarion Holdings, Inc., and remained the holding company of the Aquarion subsidiaries, including the Company (Exhs. AG 3-98; AG 8-3, Atts. A & B). See also D.P.U. 17-115, at 6. As a result, the services previously provided by MUI are now provided by Eversource (Exhs. DPU 3-2; AG 9-3). The Company additionally proposes to reduce the test year expense based on the Department's determination in D.P.U. 17-115, that the Company would realize $3,000 in corporate expense savings resulting from Eversource providing these services after acquisition (Exhs. 2 (Rev. 3), Sch. 3; AG 2-1, Att. A at 3). D.P.U. 17-115, at 31-32. The Department finds that it is appropriate to incorporate that determination into the Company's corporate expense included in its cost of service (Exhs. 2 (Rev. 3), Sch. 12; AG 2-1, Att. A at 3).

The Department, therefore, calculates the pro forma amount of corporate expenses is $111,641, based on the test year expense of $115,184, adjusted to exclude the Company's initial $543 adjustment and $3,000 in identified acquisition savings (Exhs. 2 (Rev. 3), Sch. 3; AG 2-1, Att. A at 3). Accordingly, the Department accepts the Company's proposed adjustment of negative $3,543 resulting in a total of $111,641 in shared corporate expenses included in the cost of service.

I. Shared Services and Common Facilities

1. Introduction

Aquarion Water Company provides the Company and other affiliates with certain services under the terms of a service agreement (Exh. AG 3-26, Att. A).[130] Under the terms of the Aquarion Service Agreement, the Company is authorized to perform any of these services with its own personnel, or contract with an affiliated or non-affiliated company to obtain these services (Exh. AG 3-26, Att. A at 2-3). The Company relies on its Connecticut affiliate, Aquarion-CT, for some customer services and IT services (Exh. TMD at 19-21).

Aquarion-CT's customer services functions include handling customer inquiries and billing disputes, scheduling field appointments, arranging for payment plans, and assisting with collection of account receivables (Exh. TMD at 19). Aquarion-CT's shared IT services include personal computer and networking services, software and hardware maintenance and data processing services, and its System Analysis and Program Development ("SAP") software systems (Exhs. TMD at 19; 2 (Rev. 3), Sch. 13; DPU 2-9; DPU 2-10). The

130 These services include accounting, administration, communication, corporate secretarial, engineering, financial, human resources, information systems, operation, rates and revenue, risk management, customer service, collection and revenue management, purchase, real estate and water quality (Exh. AG 3-26, Att. A at 2).

allocated IT costs also include the return on investment and depreciation of the SAP software, based on the most recent rate case before the Connecticut Public Utilities Regulatory Authority ("CT-PURA") (Exh. TMD at 19). Costs related to Aquarion-CT's customer service and IT operations are allocated to affiliates based on the number of customers served as of the end of the immediately preceding calendar year (Exhs. TMD at 20; AG 3-26, Att. A at 11-12). Because Aquarion Water Company of New Hampshire ("Aquarion-NH") handles all of its incoming customer service calls at its New Hampshire office, this company's customer count is reduced by 50 percent for purposes of developing the customer services allocation formula (Exhs. TMD at 20; DPU 2-13; DPU 2-16).

During the test year, Aquarion booked $195,035 in shared customer services from Aquarion-CT (Exh. 2 (Rev. 3), Sch. 14). The Company initially proposed an increase of $25,898 to its test year cost of service (Exh. 2, Sch. 14). During the proceedings, the Company decreased its proposed adjustment from $25,898 to $13,256, ultimately proposing to include $208,291 in shared customer services in its cost of service (Exhs. 2 (Rev. 3), Sch. 14; DPU 2-14). Shared customer services costs are allocated to the Company based on the percentage of customers for each affiliate, allowing for a 50 percent reduction in customers for Aquarion-NH as explained above (Exh. 2 (Rev. 3), Sch. 14).

During the test year, Aquarion booked $518,229 in shared IT expense from Aquarion-CT (Exh. 2 (Rev. 3), Sch. 13). The Company initially proposed an increase of $4,876 to its test year cost of service (Exh. 2, Sch. 13). During the proceedings, the Company revised this adjustment to a decrease of $8,453 from the test year cost of service, ultimately proposing to include $509,776 in shared IT services in its cost of service (Exhs. 2 (Rev. 3), Sch. 13). Shared IT services expenses are allocated to the Company based on the percentage of customers for each affiliate (Exh. 2 (Rev. 3), Sch. 13).

In connection with providing these shared services, Aquarion-CT maintains three facilities that are used in common by its affiliates: an operations center; a corporate office; and a customer service call center (Exh. TMD at 20). The costs of these facilities are allocated among Aquarion's affiliates, by first deriving a building overhead rate per facility and then applying that rate to the labor charged from each facility to the Company in accordance with the provisions of the Aquarion Service Agreement (Exhs. TMD at 20; 2 (Rev. 3), Sch. 15; DPU 8-3). During the test year, Aquarion booked $98,725 in shared office costs (Exh. 2 (Rev. 3), Sch. 15). Based on the current costs associated with these facilities and the current allocation to Aquarion, the Company calculates the allocable building overhead to be $97,790, representing a decrease of $935 from the test year expense of $98,725 (Exh. 2 (Rev. 3), Sch. 15).

2. Positions of the Parties

Aquarion argues that just as with the services it receives from Aquarion Water Company, its service charges from Aquarion-CT are reasonable and properly allocated consistent with the Department's standards (Company Brief at 18-19). The Company argues that test year costs that are directly charged or allocated to the Company relate to services that are most cost-effectively performed on an aggregate basis for all operating companies under the Aquarion umbrella and that it would not be practical for each operating company to perform on an individual basis (Company Brief at 19). It claims that it cannot obtain the same quality and diversification of services on a comparable economic basis elsewhere (Company Brief at 19, citing Exh. AG 3-26, Att. A at 1). According to the Company, its Aquarion-CT charges are for activities that specifically benefit the Company in providing service to its customers, and they do not duplicate services already provided by Company personnel (Company Brief at 19). Moreover, the Company maintains that the allocation method contained in its service agreements, including the Aquarion Service Agreement, is non-discriminatory because these costs are allocated on the basis of customer counts (Company Brief at 19-20). Aquarion argues that, therefore, the Department should approve the service company charges included in the Company's revenue requirement. No other party addressed shared services and common facilities on brief.

3. Analysis and Findings

The Department permits rate recovery of payments to affiliates where these payments are (1) for services that specifically benefit the regulated utility and that 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 method that is both cost-effective in application and nondiscriminatory, for those services specifically rendered to the utility by the affiliate and for general services that may be allocated by the affiliate to all operating affiliates. D.P.U. 13-75, at 184; D.P.U. 12-25, at 231; D.P.U. 89-114/90-331/91-80 (Phase One) at 79-80; D.P.U. 88-170, at 21-22; D.P.U. 85-137, at 51-52.

In determining whether the services rendered by an affiliate specifically benefit a regulated utility and do not duplicate services already provided by the utility, it is necessary to examine whether there is any overlap between the services rendered by an affiliate and the operating company's functions. D.P.U. 13-75, at 184; D.P.U. 08-27, at 80-81; Oxford Water Company, D.P.U. 1699, at 11-12 (1984). Regarding customer service, Aquarion-CT personnel handle customer inquiries, schedule appointments for fieldwork, resolve billing disputes, edit meter reading results, establish meter change-out programs, explain utility programs and services, make payment arrangements, handle customer maintenance, prepare quotes for home sales, and assist with the collection of account receivables (Exhs. TMD at 19; AG 3-26, Att. A at 1-2). These activities are necessary to Aquarion's business and, thus, specifically benefit Aquarion. Aquarion's management staff handle customers calls on certain limited issues, not otherwise handled by Aquarion-CT's customer service representatives (Exh. DPU 10-24). The Department finds that these customer service activities provided by Aquarion-CT do not duplicate services provided by Aquarion personnel.

Aquarion-CT's IT services are a key component of the services that Aquarion-CT provides to Aquarion and its customers. D.P.U. 11-43, at 144. These IT services include personal computer and networking services, software and hardware maintenance, and data processing services, including SAP (Exhs. TMD at 19; 2, (Rev. 3), Sch. 13). These activities are also necessary to the Company's business and, thus, specifically benefit Aquarion. Moreover, the Department has previously found that the IT-related services provided by Aquarion-CT, including the SAP system, provide direct benefit to Aquarion by facilitating its overall business, including its customer service (see Exh. DPU 2-10). D.P.U. 11-43, at 144; D.P.U. 08-27, at 81-82. The Company does not maintain such functions on a local basis, and there is no overlap between the services rendered by Aquarion-CT and the Company's functions (see Exhs. TMD at 16, 19; 2 (Rev. 3), Sch. 13; DPU 2-10). See D.P.U. 11-43, at 144.

The Department next evaluates the method of allocating costs from Aquarion-CT to the Company. When allocating costs among affiliates, it is preferable that costs associated with a specific utility are directly assigned to that utility. In the absence of a clear relationship between the cost and the affiliate, or when costs cannot be directly assigned, these costs are preferably allocated using cost-causative allocation factors to the extent such allocation factors can be applied, with general allocation factors used to allocate any remaining costs. D.P.U. 13-75, at 188; D.P.U. 11-01/D.P.U. 11-02, at 318-321; D.P.U. 10-114, at 271-274. Customer service and IT costs are allocated on the basis of customer counts, with an adjustment to recognize Aquarion-NH's in-house customer call center (Exhs. 2 (Rev. 3), Sch. 14; DPU 2-13; DPU 2-16). Shared office costs cannot be directly assigned and are allocated by deriving a building overhead rate per facility then applying the rate to labor charged from each facility to the Company (Exhs. AG 3-26, Att. A; DPU 2-16; DPU 8-3).

The Company's proposed allocated IT costs also include the return on investment and depreciation of the SAP software based on a 7.5 percent weighted average cost of capital

("WACC") and a tax gross-up factor of 1.701, from the most recent rate case before the CT-PURA (Exhs. TMD at 19; 2 (Rev. 3), Sch. 13; DPU 2-9, Att. A). The Department previously found that application of a WACC and tax gross-up factor that were approved by the CT-PURA to determine the Company's allocated share of the SAP costs, of which a portion would be allocated to Massachusetts, would result in Massachusetts ratepayers inappropriately subsidizing the operations of Aquarion-CT. D.P.U. 11-43, at 145; D.P.U. 08-27, at 82. Aquarion acknowledges that the return on SAP investment should incorporate the WACC and gross-up factor approved in this proceeding (Exh. AG 5-21). Therefore, the Department will recalculate the required return on Aquarion-CT's SAP investment using Aquarion's 8.05 percent WACC and a tax gross-up factor of 1.3759 (see Schedules 5 and 8, below). Application of these factors to the net book value of Aquarion-CT's SAP investment of $4,374,453 produces an annual SAP return requirement of $484,514 and a total SAP cost of $5,799,677, of which 8.68 percent, or $503,412, is allocable to Massachusetts operations (see Exh. DPU 2-9, Att. A). This result produces a decrease to test year cost of service of $14,817. The Company had proposed a decrease of $8,453 to its test year IT expense. Accordingly, the Department reduces the Company's proposed cost of service by an additional $6,364.

Based on the foregoing, we find that Aquarion has sufficiently demonstrated that the proposed allocations from Aquarion-CT are (1) for activities that specifically benefit the Company and that do not duplicate services already provided by Aquarion; (2) made at a competitive and reasonable price; and (3) with the exception of the SAP investment, allocated to the Company by a method that is both cost-effective and nondiscriminatory. Thus, the Department allows Aquarion's proposed adjustments to the test year cost of service of $13,256 for shared customer service expenses, resulting in $208,291, included in the cost of service; and negative $935 for shared office expense, resulting in $97,790 included in the cost of service. The Department allows $503,412 in shared IT expense in the Company's cost of service, which is a decrease of $6,364 from the Company's proposed shared IT expense of $509,776, resulting in a decrease to Aquarion's proposed cost of service of $6,364.

J. Benefits Allocated from Aquarion-CT

1. Introduction

Aquarion-CT directly charges its affiliates, including the Company, for services provided, except for customer service and IT functions which are allocated, as addressed above (Exh. 2 (Rev. 3), Sch. 16). In contrast, payroll overhead expenses, such as benefits and payroll taxes, are allocated to Aquarion on the basis of Aquarion-CT's benefits overhead rate and payroll taxes (Exh. 2 (Rev. 3), Sch. 16).

During the test year, the Company was directly charged $242,973 in labor costs by Aquarion-CT (Exh. 2 (Rev. 3) Sch. 16). The Company increased this amount by $14,797 to account for wage increases that took effect on April 1, 2017, and April 1, 2018, producing a direct labor cost of $257,770 (Exhs. 2 (Rev. 3), Schs. 3 & 16). In addition, Aquarion-CT allocated $208,291 in labor associated with customer service and $76,190 in labor associated with IT services (Exhs. 2 (Rev.), Sch. 16; DPU 2-14). The sum of directly charged and allocated labor is $542,251 to which the Company applied a benefit rate of 60 percent to determine a proposed allocated benefit charge of $325,351 (Exh. 2 (Rev. 3), Sch. 16). The proposed benefits expense is a reduction of $48,178 from the test year expense of $373,529 (Exh. 2 (Rev. 3), Sch. 16). The Company also includes a payroll tax of eight percent of the direct charged and allocated labor costs, or $43,380, representing a reduction of $4,887 from the test year payroll tax expense (Exh. 2 (Rev. 3), Sch. 16).

2. Positions of the Parties

As addressed in Section VIII.I.2. above, the Company contends that its service charges from Aquarion-CT are reasonable and properly allocated consistent with the Department's standards (Company Brief at 18-19). The Company argues that Aquarion-CT's benefit overhead rate is 60 percent and the payroll tax rate is eight percent (Company Brief at 47, citing Exh. TWD at 21). The Company asserts that when these rates are applied to the labor provided by Aquarion-CT in the test year, the rest is a pro forma benefit charge of $325,351 and a pro forma payroll tax charge of $43,380 (Company Brief at 47). The Company argues that the Department should approve the corporate service company charges included in the Company's revenue requirement calculations (Company Brief at 19-20). No other party addressed benefits allocated from Aquarion-CT on brief.

3. 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. The Company took the expense related to direct labor performed by Aquarion-CT employees for the Company and added in known and measurable pay increases of three percent effective before the midpoint of the rate year, resulting in a sum of $257,770 (Exh. 2 (Rev. 3), Sch. 16). The Company then added that amount to the allocated customer service and IT labor amounts for a total labor pool amount of $542,251[131] (Exh. 2 (Rev. 3), Sch. 16). The Company then used the prior year's benefit allocator of 60 percent to derive the total benefit allocation for Aquarion in the amount of $325,351 (Exh. 2 (Rev. 3), Sch. 16). Accordingly, the Department accepts the Company's proposed benefit allocation reduction of $48,178, resulting in a total of $325,351 in benefits included in the cost of service.

For the issue of payroll taxes, the Company used the prior year's payroll tax allocator of eight percent (Exh. 2. (Rev. 3), Sch. 16). The Company multiplied the payroll tax allocator by the total labor pool figure to arrive at a total of $43,380 (Exh. 2 (Rev. 3), Sch. 16). This procedure, including the allocation factors themselves, is virtually identical to the approach that the Department approved in the Company's last two rate proceedings. D.P.U. 11-43, at 147; D.P.U. 08-27, at 84-85. As such, the Department finds that the Company's process for calculating allocated payroll taxes is appropriate. Accordingly, the

[131] Comprised of $257,770 in direct labor costs, $208,291 in allocated customer service labor costs, and $76,190 in allocated IT labor costs from Aquarion-CT (Exh. 2 (Rev. 3) Schs. 3 & 16; DPU 2-14).

Department accepts the Company's proposed payroll reduction of $4,887, resulting in a total of $43,380 in payroll tax expense included in the cost of service.

K. Legal Expense

1. Introduction

During the test year, Aquarion booked $205,395 in legal expenses, of which $170,949 was associated with the Company's litigation costs in connection with the Hingham takeover proceeding (Exhs. 2 (Rev. 3), Sch. 20; AG 3-95, Att. A).[132] The Company represents that it is not seeking to recover any of its litigation costs relating to the Hingham takeover proceeding (Exhs. MLR at 3-4; JPW at 17-18; 2 (Rev. 3), Sch. 20; AG 3-95, Att. A; Towns 2-12). Aquarion proposed to include in cost of service $21,072 in pro forma legal expense, which it based on a three-year average for legal expenses of $35,072[133] that excludes expenses associated with both Oxford and Hingham takeover proceedings and then reduced that amount by $14,000, associated with estimated annual legal regulatory savings resulting from the acquisition of the Company by Eversource (Exhs. 2 (Rev. 3), Sch. 20; AG 4-25, Att. A).

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132 The Company's initial filing labeled the $35,072 as "Pro forma Costs for Leak Detection Survey" (Exh. 2, Sch. 20). The Company confirmed that this reference to a leak detection survey was a typographical error, and corrected the reference in its revised filings (Exhs. 2 (Rev. 3), Sch. 20; DPU 15-10;).

133 Excluding expenses associated with both the Hingham and Oxford takeover proceedings, the Company's legal expense was $43,669 in 2014, $27,101 in 2015, and $34,446 in 2016, averaging $35,072 (Exh. AG 4-25, Att. A). When compared to the test year legal expense of $205,395, $35,072 in legal expense results in a pro forma reduction of $170,323.

2. Positions of the Parties

a. Hingham and Hull

Hingham and Hull argue that, as represented by the Company, none of the costs associated with the Company's efforts to prevent Hingham from acquiring Service Area A's assets should be included or allowed in the Company's cost of service (Hingham/Hull Brief at 16).

b. Company

The Company asserts that it is not seeking recovery of legal costs associated with the Hingham takeover proceeding (Company Brief at 34-35, citing Exhs. TMD at 6; DPU 15-11; AG 4-25; Towns 1-26; Tr. 2, at 255). The Company argues that once these legal expenses have been removed from the test year legal expense, the remaining legal costs are not necessarily representative of its legal costs going forward (Company Brief at 35, citing Exh. AG 4-25). The Company asserts that because its legal costs fluctuate from year to year, Aquarion used a three-year average of legal costs (excluding takeover costs) to develop its pro forma legal expense (Company Brief at 35, citing Exhs. MLR at 4-5; 2 (Rev. 3), Sch. 20; DPU 15-11; AG 4-25). The Company additionally contends that its proposed legal expense also properly incorporates the $14,000 estimated annual regulatory legal savings resulting from the acquisition of the Company by Eversource (Company Brief at 35, citing Exhs. 2 (Rev. 3), Sch. 20; DPU 7-2).

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. See D.P.U. 12-86, at 213; D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 119. The Company's test year level of legal expense was $205,395 (Exhs. 2 (Rev. 3), Sch. 20; AG 3-95, Att. A). Excluding $170,949 in costs related to the Hingham takeover from the test year level of expense results in an adjusted test year expense of $34,446 (Exhs. MLR at 3-4; JPW at 17-18; 2 (Rev. 3), Sch. 20; AG 3-95, Att. A; Towns 2-12). The Company proposes to determine legal expense based on a three-year average (excluding expenses associated with both Oxford and Hingham takeover) of $35,072 (Exhs. 2 (Rev. 3), Sch. 20; AG 4-25, Att. A). However, the Company did not provide evidence that its non-takeover related test year costs of $34,446 are abnormal or would be unrepresentative. D.P.U. 10-114, at 250; D.P.U. 1270/1414, at 33. Accordingly, the Department will not rely on an historic three-year average to determine the Company's legal expense, and will instead determine the Company's legal expense based on its non-takeover related test year expense of $34,446.

Additionally, the Company proposes to reduce its annual legal expense based on the Department's determination in D.P.U. 17-115, that the Company would realize $14,000 in net legal regulatory expense savings resulting from the Eversource acquisition D.P.U. 17-115, at 32. The Department finds that it is appropriate to incorporate that determination into the Company's legal expense included in its cost of service (Exhs. TMD-1, at 7; DPU 7-4).

The Department, therefore, calculates the pro forma amount of legal expenses to be $20,446, based on the test year legal expense of $205,395, adjusted to exclude takeover costs of $170,949 and $14,000 in identified acquisition savings (Exh. AG 4-25). Compared to the Company's proposed $21,072 in legal expense ($35,072-$14,000 = $21,072), this results in a reduction to the Company's proposed cost of service by $626.

L. Outside Services Communication Expense

1. Introduction

During the test year, the Company booked $418,521[134] in community relations expenses (Exh. 2 (Rev. 3), Sch. 7).[135] The Company states that the majority of test year expense was related to increased communications activities involved with the municipal takeover attempts in Oxford and Hingham (Exhs. TMD at 16-17; AG 4-21). The Company proposes pro forma annual communications expense of $84,000 based on an assumption that Aquarion would be spending $4,000 per month in Service Area A (Hingham/Hull/Cohasset) and $3,000 per month in Service Area B (Oxford/Millbury) for communications expense related to normal utility operations (Exhs. TMD at 16; 2 (Rev. 3), Sch. 7). The Company

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134 The Company's test year level of expense was understated by $2,805 associated with a credit unrelated to test year communications expense, resulting in actual test year expense of $421,326 (Exhs. DPU 14-21; Towns 1-23). As noted below, because the Company did not revise its test year expense or proposed adjustment to account for the corrected test year expense in its revised revenue requirement calculations, the Department will base its adjustments off of the test year expense of $418,521 presented in the Company's filing.

135 The Company reports spending between $280,906 and $587,842 per year between January 1, 2013 and January 20, 2018 for public affairs and media relations (Exh. Towns 1-23).

states that these assumptions are consistent with the amount that Aquarion expended on outside services-communications for Oxford during the test year (i.e., $48,000) at which time there was no pending municipal takeover (Exh. AG 4-21). Accordingly, the Company proposes to decrease the test year amount by $334,521 (Exhs. 2 (Rev. 3), Sch. 7; DPU 14-21; AG 4-21).

2. Positions of the Parties

a. Hingham and Hull

Hingham and Hull assert that all costs associated with the Company's efforts to prevent Hingham from acquiring Service Area A's assets should be disallowed (Hingham/Hull Brief at 16).

b. Company

Aquarion contends that outside consultants assist with two categories of communications activities: (1) public affairs and (2) public media relations (Company Brief at 41). The Company asserts that, while it uses these consultants to assist the Company in providing support for both normal utility operations and Hingham takeover proceedings, none of the costs associated with the Hingham takeover issue are included in the cost of service (Company Brief at 41). The Company maintains that it has undertaken measures to contain consulting costs, including monthly budget reviews (Company Brief at 41).

The Company argues that it has demonstrated its commitment to maintaining superior communications with its customers (Company Brief at 41). It alleges that, notwithstanding the Eversource acquisition, it will continue to require the services of outside communications consultants (Company Brief at 41). The Company asserts that it has made a reasonable and discrete adjustment to the test year costs for these consultants and that the Department should approve the Company's proposed communications expense (Company Brief at 42).

3. Analysis and Findings

The Department allows a company to recover professional service or consulting fees that were booked during the test year if the fees are reasonable and if the services provided were of value to the company. D.T.E. 03-40, at 148, 153; D.T.E. 01-56, at 67. In determining whether the actual level of expense incurred was reasonable, the Department first reviews whether the specific charges incurred were reasonable, which entails an examination of matters such as the nature of the services performed, the hourly charges, and the cost of auxiliary services. D.P.U. 08-35, at 114; D.P.U. 89-114/90-331/91-80 (Phase One) at 44. Second, the Department determines whether a utility has a reasonable process in place for an on-going evaluation of the cost-effectiveness of the services provided. D.P.U. 11-43, at 177; D.P.U. 08-35, at 114; D.P.U. 89-114/90-331/91-80 (Phase One) at 44-45. Finally, the Department reviews whether the service provided was obtained through a competitive bid. D.P.U. 08-35, at 114. For those outside services that were not competitively bid, the company should be prepared to justify why competitive bidding was not used and why its choice of service provider was reasonably and effective. D.P.U. 08-35, at 114, citing D.P.U. 93-60, at 233; D.P.U. 92-250, at 128-129.

The Company does not seek to recover the test year level of outside communications expense, but proposes to recover an adjusted level of expense based on its test year level of expense for Oxford (Exhs. 2 (Rev. 3), Sch. 7; AG 4-21). Before reaching the basis for the Company's adjustment, we first determine whether the Company has demonstrated that the incurred fees were reasonable. See D.T.E. 03-40, at 153. The Company states that it discussed the scope of work with the consultant, including periodic discussions about budget (Exh. DPU 23-5). The Company identifies cost control efforts beginning in 2017 under new ownership, including more frequent and regular discussions with consultants and monthly budget reviews (Exh. DPU 23-5). Further, while the Company provided test year bills and invoices from its outside communications consultants, those invoices do not include hourly or detailed per-task rates (Exhs. DPU 14-19; Towns 4-18, Atts. G & H). Specifically, the test year invoices for Oxford provide only broad descriptions such as "government relations, community relations, communications, and political management" associated with a flat charge of $4,000 per month (see Exh. Towns 4-18, Att. H). The test year invoices for Hingham and Hull include more detailed task descriptions but do not include hourly or per-task rates and, further, do not identify tasks related to takeover activities (see Exh. Towns 4-18, Att. G).[136] There is no basis to determine whether the level of communication-related activities was commensurate with the billed charges. The Department also notes that the Company did not utilize competitive bidding, and it did not address why it did not do so or why its choice of service provider was reasonable and effective (Exh. DPU 14-19). See D.P.U. 08-35, at 114. Accordingly, the Department finds that the

[136] In response to a record request, the Company submitted more recent invoices from March 2017 through July 2018 that include detailed task descriptions and billed time as well as hourly rates (RR-DPU-2 (Supp.) & Att.; RR-DPU-3).

Company has failed to satisfy its burden to demonstrate that the specific charges incurred were reasonable (Exhs. DPU 14-19; Towns 4-18, Atts. G, H). See D.P.U. 93-60, at 233; Cambridge Electric Light Company, D.P.U. 92-50, at 128-129 (1993); D.P.U. 08-35, at 114; D.P.U. 89-114/90-331/91-80 (Phase One) at 44.

Even had the Company demonstrated that its choice of provider was reasonable and effective and that the resulting fees were reasonable, Aquarion's proposed adjusted level of expense is neither known nor measurable. The Company proposes pro forma annual expense of $84,000 based on estimated expenditures of $4,000 per month in Service Area A and $3,000 per month in Service Area B (Exhs. TMD at 16; 2 (Rev. 3), Sch. 7). The Company states that it based these estimates on the $4,000 per month spent on outside communications in Oxford during the test year when there was no active municipal takeover activities in that town (Exhs. TMD at 16-17; 2 (Rev. 3), Sch. 7; AG 4-21).[137] The Company did not provide additional support or explanation of how the $4,000 in monthly communications expense for normal utility operations in Oxford results in a proposed monthly expense of $3,000 for Service Area B or $4,000 for Service Area A (Exhs. 2 (Rev. 3), Sch. 7; DPU 6-1; DPU 14-18; AG 4-21). Accordingly, the Department disallows the Company's proposed communications expense of $84,000. During the proceeding, the Company determined that its test year level of expense was understated by $2,805 associated with a credit unrelated to

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137 Aquarion states that it began identifying expenses related to the takeover beginning in March 2017, subsequent to the test year, and thus relied on assumptions to estimate the amount spent on routine communications in the test year (Exhs. AG 4-21; DPU 14-20).

test year communications expense, resulting in actual test year expense of $421,326, rather than the $418,521 identified in Aquarion's initial filing. However, the Company did not revise its test year expense or proposed adjustment to account for the corrected test year expense in its revised revenue requirement calculations. Accordingly, based off of actual test year expense of $421,326, the Department will reduce the Company's proposed cost of service by $86,805.

The Department acknowledges that the Company has undertaken significant efforts to develop its public and community regulations programs and increase communications within each of the communities that it serves since its last rate case, as addressed in Section XVI.A.3. (Exhs. JPW at 24-30; TMD at 16; DPU 17-10). The Department recognizes that the Company relied on outside communications consultants in developing a comprehensive communications program beginning in 2012 (Exhs. DPU 14-18; DPU 17-10).[138] However, as addressed in Section VIII.B.2.c., above, the Company now has a dedicated communications manager position, vacant as of June 2018, that it intends to fill.[139] Additionally, the Company acknowledges that its need for outside communications

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138 Although the Company created a communications position in 2012, during a period of time beginning in mid-2016 the employee in that position was not dedicated to communications and also served an operations role (Exhs. JPW at 24-25; DPU 15-8, Att. A; DPU 17-10; Tr. 2, at 292, 362-363). As a result, the Company had to use communications consultants to perform some of the activities that the employee in the communications position otherwise would have performed (Exh. DPU 17-10; Tr. 5, at 363). The Company subsequently established a dedicated communications manager position (Exhs. DPU 15-8, Att. A; DPU 17-2(i)(b)(1); Tr. 2, at 292, 362-363).

139 The individual in the communications manager position transferred to Eversource Service Company in June 2018, and continues to commit one or two days per week to

will decrease going forward due to (1) no additional municipal takeover attempts and (2) improvements in the reliability and consistency of water quality requiring fewer reactive communications (Exh. DPU 17-10). Based on these factors, and particularly the well-developed communications program in place, and the dedicated communications manager position, the Department expects that the Company's need for communications services will continue to decrease.

M. Rent/Lease Expense

1. Introduction

During the test year, Aquarion booked $51,496 in commercial leases and associated operating expenses for rented office space in Millbury and Oxford (Exhs. 2 (Rev. 3), Sch. 21; DPU 16-2, Att. A).[140] The Company proposes a total rent expense amount of $53,159, which is a $1,663 increase over the test year level, to reflect the terms of an updated commercial lease for the Millbury office space (Exhs. 2 (Rev. 3), Sch. 21; DPU 16-2, Att. A). Aquarion's proposed lease expense includes the following: (1) rent for the Company's commercial office space in Millbury in the amount of $40,463; (2) annual property taxes, insurance, water, and sewer charges of $3,996 associated with the Millbury office; and (3) rent for the Oxford office space in the amount of $8,700 (Exhs. 2 (Rev. 3), Sch. 21; DPU 16-2, Att. A).

communications efforts for Hingham and Hull while the communications manager position remains open (Tr. 2, at 364-366).

140 The lease associated with the Hingham/Hull WTP is addressed in Section XI.

2. Positions of the Parties

Aquarion asserts that the calculation of rent expense is consistent with Department precedent and, therefore, should be included to determine the Company's revenue requirement (Company Brief at 37). No other party addressed rent expense on brief.

3. Analysis and Findings

A company's lease expense represents an allowable cost qualified for inclusion in its overall cost of service. D.P.U. 11-43, at 185, citing D.T.E. 03-40, at 171; Nantucket Electric Company, D.P.U. 88-161/168, at 123-125 (1989). The standard for inclusion of lease expense is one of reasonableness. D.P.U. 11-43, at 185, citing D.P.U. 89-114/90-331/91-80 (Phase One) at 96. Known and measurable increases in rental expense based on executed lease agreements with unaffiliated landlords are recognized in cost of service as are associated operating costs (e.g., maintenance, property taxes) that the lessee agrees to cover as part of the agreement. D.P.U. 11-43, at 185, citing D.P.U. 95-118, at 42 n.24; Boston Gas Company, D.P.U. 88-67 (Phase I) at 95-97 (1988).

Regarding the rental expenses for the Oxford and Millbury offices, Aquarion entered into written lease agreements for these units, and the Company is presently occupying space at both offices pursuant to the terms and conditions of the executed lease agreements (Exhs. 2 (Rev. 3), Sch. 21; DPU 5-15, Att. A; DPU 8-7, Att. A; DPU 8-8, Att. A; DPU 8-9, Att. A). In addition, Aquarion executed these lease agreements with unaffiliated landlords. Integral to the executed Millbury lease agreement are the associated annual property taxes, insurance, and water and sewer charges (Exh. DPU 5-15, Att. A at 3). The Department has reviewed the terms and conditions of these executed lease agreements and related documents, and we find that the Company's proposed lease expense and operating costs are appropriately documented and, as such, represent a known and measurable change to the Company's test year cost of service (see Exhs. 2 (Rev. 3), Sch. 21; DPU 5-15, Att. A; DPU 8-7, Att. A; DPU 8-8, Att. A; DPU 8-9, Att. A). Therefore, we accept the Company's proposed lease expense of $53,159 (Exh. 2 (Rev. 3), Sch. 21). Accordingly, we allow the proposed adjustment to the Company's cost of service of $1,663 (Exh. 2 (Rev. 3), Sch. 21).

N. Uncollectibles (or Bad Debt) Expense

1. Introduction

During the test year, Aquarion booked $12,169 in bad debt expense (Exh. 2 (Rev. 3), Sch. 22). The Company proposes to increase this expense by $13,258 (Exh. 2 (Rev. 3), Sch. 22). To derive this adjustment, the Company calculated a three-year average bad debt ratio of 0.16 percent and multiplied this ratio by pro forma operating revenues of $15,811,344 (Exh. 2 (Rev. 3), Sch. 22). The Company then applied the resulting value, i.e., the Company's proposed bad debt and reduced it by Aquarion's test year bad debt expense of $12,169, which yields a proposed bad debt expense that is $13,258 higher than test year bad debt expense (Exh. 2 (Rev. 3), Sch. 22).

The Company also calculated the level of bad debt expense attributable to its overall requested rate increase. In doing so, the Company multiplied its requested revenue requirement increase of $2,229,727 by a bad debt ratio of 0.16 percent to arrive at $3,586

(Exh. 2 (Rev. 3), Sch. 22). Thus, in aggregate the proposed adjustments represent an increase of $16,844 to the Company's test year cost of service (Exh. 2 (Rev. 3), Sch. 22).

2. Positions of the Parties

Aquarion asserts that the calculation of bad debt expense is consistent with Department precedent and, therefore, should be included to determine the Company's revenue requirement (Company Brief at 21). No other party addressed bad debt expense on brief.

3. Analysis and Findings

The Department permits companies to include for ratemaking purposes a representative level of bad debt revenues as an expense in cost of service. D.P.U. 11-43, at 188, citing 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 expense. D.P.U. 11-43, at 188, citing D.P.U. 96-50 (Phase I) at 71. The calculation of a company's bad debt ratio is derived by dividing the three-year average net write-offs[141] by the average billed revenues over the same period. D.P.U. 11-43, at 188, citing D.P.U. 95-118, at 135. This bad debt ratio is then multiplied by test year billed revenues, adjusted for any revenue increase or decrease that was approved for recovery in the current rate case. See D.P.U. 11-43, at 188, citing D.P.U. 96-50 (Phase I) at 71.

141 This write-off occurs when the company has categorized a delinquent customer account as uncollectible. The uncollectible amount is deducted from the accounts receivable asset and added to the bad debt expense account.

The method used by Aquarion to calculate its bad debt expense is consistent with Department precedent. See D.P.U. 11-43, at 188, citing D.P.U. 96-50 (Phase I) at 70-71. The record reveals that the Company's percentage of net write-offs to operating revenues for the years 2015, 2016, and 2017 were 0.30 percent, 0.06 percent, and 0.12 percent, respectively (Exh. 2 (Rev. 3), Sch. 22). Thus, the Company correctly calculated the three-year average of net write-offs to operating revenues as 0.16 percent. Further, upon review of the most recent three years of uncollectibles data (see Exh. 2 (Rev. 3), Sch. 22), we find that the resulting bad debt ratio is reasonable and that no modification of the Company's calculation of bad debt expense is necessary. D.P.U. 11-43, at 188-189, citing D.P.U. 09-30, at 249; D.T.E. 03-40, at 265-266.

When applied to test year operating revenues of $15,811,344, the bad debt ratio produces an allowed bad debt expense of $25,427 (Exh. 2 (Rev. 3), Sch. 22). As noted above, during the test year Aquarion booked $12,169 in bad debt expense (Exh. 2 (Rev. 3), Sch. 22). Thus, the Company may increase its test year level of bad debt expense by the amount of $13,258.

In addition, the Company seeks an adjustment for bad debt expense associated with its requested revenue increase (Exh. 2 (Rev. 3), Sch. 22). Applying the calculated bad debt ratio set forth above to the revenue increase approved in this case, $1,998,279, results in an allowed bad debt expense adjustment in the amount of $3,214. Therefore, the Department allows a total increase to the Company's test year cost of service of $16,472 ($13,258 +

$3,214). Accordingly, the Department reduces the Company's proposed cost of service by $372.

O. Inflation Adjustment

1. Introduction

In its initial filing, the Company proposed an inflation adjustment of $100,252 (Exh. 2, Sch. 23). Aquarion later amended this figure to $129,232 to incorporate updated data from the January 2018 Blue Chip Economic Indicator[142] for the gross domestic product chained price index ("GDP-CPI") (Exh. 2 (Rev. 3), Sch. 23). The Company calculated its proposed inflation adjustment by using GDP-CPI data from the midpoint of the test year to the midpoint of the rate year, which resulted in an inflation factor of 6.02 percent (Exh. 2 (Rev. 3), Sch. 23). Next, the Company calculated its residual O&M by subtracting all separately adjusted O&M expenses from the normalized test year O&M expense (Exh. 2 (Rev. 3), Sch. 23). The Company then multiplied the inflation factor by its proposed adjusted residual test year O&M expense of $2,146,714 to yield the requested inflation allowance of $129,232 (Exh. 2 (Rev 3.), Sch. 23). The Company states that its proposed inflation adjustment is intended to provide for cost categories where the individual item is not large enough to warrant a separate adjustment (Exh. MLR at 5).

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142 The Blue Chip Economic Indicator is a monthly newsletter that includes forecasts of U.S. economic growth, inflation, interest rates, and a host of other critical indicators of future business activity from more than 50 economists employed by some of America's largest and most respected manufacturers, banks, insurance companies, and brokerage firms (www.aspenpublishers.com) (see Exh. MLR-1).

2. Positions of the Parties

a. Hingham and Hull

Hingham and Hull argue that the Company's inflation factor should be reduced from 6.02 percent to 2.212 percent (Hingham/Hull Brief at 17). Hingham and Hull contend that the GDP-CPI used by the Company to calculate its proposed inflation factor does not capture the specific rate of inflation associated with the region in which the Company's service territory is located (Hingham/Hull Brief at 17). According to Hingham and Hull, the Consumer Price Index ("CPI") for the Northeast section of the United States is a better measure of general inflation for any location in Massachusetts (Hingham/Hull Brief at 17; Hingham/Hull Reply at 5). To develop their proposed inflation factor, Hingham and Hull first calculate an average CPI inflation rate for the Northeast section over the years 2013 through 2017 of 1.1 percent (Hingham/Hull Brief at 17). Hingham and Hull claim that this average inflation should be doubled to account for the length between the test year and the rate year, resulting in an inflation factor of 2.212 percent (Hingham/Hull Brief at 17). Hingham and Hull contend that multiplying this factor by the Company's residual O&M of $2,220,341[143] produces what they consider to be an appropriate inflation allowance of $49,114, a reduction of $80,118 to the Company's proposed revenue increase (Hingham/Hull Brief at 17).

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[143] Hingham and Hull used the Company's unadjusted residual O&M expense in their inflation adjustment calculation (see Exh. 2 (Rev. 3), Sch. 23).

In testimony, Hingham and Hull proposed an alternative method of offsetting in whole or in part the inflation adjustment proposed by the Company by an amount reflective of the growth in sales and associated revenues that can be reasonably expected in 2019 above the levels realized in the test year (Exh. TOWNS-DFR (Supp.) at 22).

b. Company

The Company argues that the Department should reject Hingham and Hull's proposal (Company Brief at 39). The Company contends that it used the same method of calculating the inflation expense as it did in its last rate case (Company Brief at 39, citing D.P.U. 11-43, at 194-195). Specifically, the Company claims that in D.P.U. 11-43, the Department found the GDP-CPI to be appropriate for calculating the Company's inflation factor (Company Brief at 39, citing D.P.U. 11-43, at 194-195). The Company maintains that Hingham and Hull have not identified any flaws with the GDP-CPI, nor have they demonstrated the CPI for the Northeast is a more appropriate measure of inflation (Company Brief at 39). The Company argues that its inflation adjustment has been calculated consistent with the Department's standards and should be approved (Company Brief at 39).

3. Analysis and Findings

The inflation allowance recognizes that known inflationary pressures tend to affect a company's expenses in a manner that can be measured reasonably. D.T.E. 02-24/25, at 184; D.T.E. 01-56, at 71; D.T.E. 98-51, at 100-101; D.T.E. 96-50 (Phase I), at 112-113. The inflation allowance is intended to adjust certain O&M expenses for inflation where the expenses are heterogeneous in nature and include no single expense large enough to warrant specific focus and effort in adjusting. D.P.U. 1720, at 19-21. The Department permits utilities to increase their test year residual O&M expense by an independently published price index from the midpoint of the test year to the midpoint of the rate year. D.P.U. 08-35, at 154-155; D.T.E. 02-24/25, at 184; D.P.U. 95-40, at 64; D.P.U. 92-250, at 97-98. In order for the Department to allow a utility to recover an inflation adjustment, the utility must demonstrate that it has implemented cost containment measures. D.P.U. 09-30, at 285; D.P.U. 08-35, at 154; D.T.E. 02-24/25, at 184.

The Department finds that the Company has implemented cost reduction and operations efficiency measures that have reduced Aquarion's revenue requirement (and thus the cost to be recovered from its customer base) (Exhs. TMD at 15, 17-22; DPU 6-29; AG 3-52; AG 4-25). In particular, the Company has done the following: (1) taken steps to contain health care costs, including increasing employee premium requirements and introducing an "HAS" medical plan option; (2) limited pension and PBOP obligations for new employees; (3) voluntarily excluded legal costs related to the Hingham acquisition proceeding; and (4) leveraged resources from its Connecticut affiliate at costs below outside alternatives (Exhs. TMD at 15, 17-22; DPU 6-29; AG 3-52; AG 4-25). Accordingly, the Department finds that Aquarion has made reasonable efforts to implement cost containment measures and, thereby, demonstrated that it is eligible to recover an inflation allowance.

As noted above, the Department permits utilities to increase their test year residual O&M expense by the projected price index from the midpoint of the test year to the midpoint of the rate year. D.P.U. 08-35, at 154-155; D.T.E. 02-24/25, at 184; D.P.U. 95-40, at 64;

D.P.U. 92-250, at 97-98. Aquarion proposed a 6.02 percent inflation factor derived from the GDP-CPI as reported by the Blue Chip Economic Indicator as of June 2018 (Exh. 2 (Rev. 3), Sch. 23). The GDP-CPI is a measure of price levels based on the chain weighted calculation of real GDP and is reported quarterly by the U.S. Bureau of Economic Analysis ("BEA"). Concepts and Methods of the U.S. National Income and Product Accounts, Bureau of Economic Analysis, November 2011.[144] The Department continues to be satisfied that the GDP-CPI is an appropriate inflation index for use in this case and the Blue Chip Economic Indicator is an appropriate forecast to use in calculating the Company's inflation factor. D.P.U. 11-43, at 194. Aquarion's proposed GDP-CPI factor is applied over the period of 2.75 years from the midpoint of the test year to the midpoint of the rate year (i.e., 2nd quarter 2016 through 1st quarter 2019) (see Exhs. 2 (Rev. 3), Sch. 23; MLR at 6).

Hingham and Hull argue that the Company's use of the GDP-CPI for its inflation factor does not accurately reflect the inflation conditions recognized by the Company within its service territory (Hingham/Hull Brief at 17).[145] Hingham and Hull submitted testimony that a regional price deflator would be a better indicator of inflation in southeastern Massachusetts than a national index, but acknowledging that such an index is not available,

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144 The BEA is an agency of the U.S. Department of Commerce. The BEA collects source economic data, conducts research, and analyses, develops and implements estimation methodologies, and disseminates statistics to the public (http://www.bea.gov). The Department finds that the economic and statistical data published by the BEA is the type of relevant and competent material that can be reasonably relied on for the purpose of establishing an inflation adjustment factor.

145 The Department notes that Hingham and Hull failed to provide any supporting citation in addressing this issue on brief.

proposed an inflation factor based on CPI for the Northeast section (Exh. TOWNS-DFR at 24).[146] The Department finds that Hingham and Hull have not demonstrated that the CPI for the Northeast section is a more appropriate inflation index than the GDP-CPI. Additionally, Hingham and Hull's proposal relies exclusively on average historic data for a five-year period, including three years pre-dating the test year, and is based on only two years of inflation instead of the 2.75 years warranted in this case. Accordingly, the Department will not adopt Hingham and Hull's proposed inflation adjustment and accepts the Company's use of the GDP-CPI for its inflation index calculation.

Hingham and Hull offered testimony recommending an alternative proposal if the Department declined to adopt their regional inflation index approach (Exh. TOWNS-DFR (Supp.) at 22). Hingham and Hull suggest that the Department should offset, in whole or in part, the inflation adjustment proposed by the Company by an amount representing growth in sales and associated revenues that can be reasonably expected in 2019 above the levels realized in the test year (Exh. TOWNS-DFR (Supp.) at 22). The Department is not persuaded that there is a basis for departing from its established precedent to create an offset based on projected growth in sales. D.P.U. 90-121, at 103; D.P.U. 85-270, at 191.[147] Moreover, the inflation adjustment requires a showing of cost containment and is not related to future sales and earnings. See D.P.U. 09-30, at 285; D.P.U. 08-35, at 154;

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146 The Northeast section includes New England, New York, and Pennsylvania.

147 In Section V.C.3., above, the Department found that the Company's potential for sales growth is limited as a result of its conservation measures and the water withdrawal limits established by MassDEP.

D.T.E. 02-24/25, at 184. Accordingly, the Department will not adopt Hingham and Hull's proposed offset to the inflation adjustment.

The Department finds that Aquarion appropriately derived its proposed 6.02 percent inflation factor by correctly calculating the percentage change between the two periods.[148] The Department therefore finds that the Company's method of calculating its proposed inflation factor is consistent with Department precedent. D.P.U. 09-39, at 321-322; D.P.U. 95-40, at 54; D.P.U. 92-250, at 97; D.P.U. 92-78, at 60-62. Based on the above considerations, the Department finds that an inflation allowance adjustment equal to 6.02 percent applied to the Company's approved level of residual O&M expense is proper in this case.

If an O&M expense has been adjusted or disallowed by the Department for ratemaking purposes, that expense is also removed in its entirety from the inflation allowance. D.P.U. 09-39, at 322; D.T.E. 05-27, at 204; D.T.E. 02-24/25, at 184. The Company made adjustments to 20 O&M expense categories and removed the test year amounts of those expenses from its residual O&M, leaving a residual O&M expense of $2,220,341 (Exh. 2 (Rev. 3), Schs. 2, 23). The Company further reduced this amount by $73,627 to remove expenses that it considers not subject to inflation, including postage expense, auto mileage reimbursement, general and administrative business meals, and office supplies and materials (Exh. 2 (Rev. 3), Sch. 23). This adjustment produces a residual

148 (Midpoint of the Rate Year – Midpoint of the Test Year)/Midpoint of the Test Year. In practice, (118 – 111.3)/111.3 (see Exh. 2 (Rev. 3), Sch. 23).

O&M expense subject to inflation of $2,146,714 (Exh. 2 (Rev. 3), Sch. 23). Multiplying the residual O&M expense subject to inflation by the inflation factor of 6.02 percent, the Company calculates an inflation allowance of $129,232 (Exh. 2 (Rev. 3), Sch. 23).

While the Department finds the Company has employed the correct calculation method, it excluded $28,426 in expenses for auto mileage reimbursement, general and administrative business meals, and office supplies and materials from its residual O&M balance (Exh. 2 (Rev. 3), Sch. 23). The Department is not persuaded that these expenses are somehow immune from inflationary pressures. Restoring these items to the unadjusted test year expense and multiplying by the inflation factor, the Department calculates an inflation allowance of $130,775.[149] Therefore, the Department increases the Company's proposed cost of service by $1,543.

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[149] The Company's adjustment to residual O&M expense for communications services is based on an understated test year amount of $418,521 (Exhs. DPU 14-21; Towns 1-23). Calculating residual O&M expense based on the actual test year amount of $421,326 associated with communications expense, results in an additional reduction of $2,805 to residual O&M, resulting in a reduction in the inflation allowance of $169.

Table 1:

Normalized Test Year O&M Expense:	$8,209,229
Less Company Adjustments:	
Salaries and Wages	$1,607,990
Group Medical, Life, and Disability	$386,730
Post-Retirement Healthcare & Pension	$344,235
Amortization of Deferred Expenses	$52,171
Outside Services-Communications	$421,326
Chemicals	$102,574
Purchased Electric	$452,065
Rate Case Expense & Cost of Service Study	$19,877
Corporate Insurance	$271,515
Corporate Expenses	$115,184
Shared IT Services	$518,229
Shared Customer Services	$194,035
Shared Office Costs	$98,725
Payroll & Benefit Allocations	$616,502
Goodwill Fire Charge Credits	$23,553
Purchased Water	$496,922
Legal Expense	$205,395
Rent Expense	$52,496
Uncollectibles	$12,169
Total Company O&M Adjustments:	$5,991,693
Subtotal (Adjusted per Books Less Company Adjustments)	$2,217,536
Less Excluded Test Year Expenses	
Postage Expense	$45,201
Total Excluded Test Year Expenses	$45,201
Residual O&M Expense	$2,172,335
Inflation Factor from Midpoint of Test Year to Midpoint of Rate Year:	6.02%
Inflation Allowance:	$130,775

P. Depreciation Expense

1. Introduction

During the test year, Aquarion booked $1,821,208 in depreciation expense (Exh. 2, Sch. 24, at 2).[150] The Company proposes to increase this expense by $182,571, resulting in a proposed depreciation expense of $2,003,779 (Exh. 2 (Rev. 3), Sch. 24, at 2). To determine its proposed depreciation expense, the Company applied account-specific depreciation rates and amortization rates, as approved in D.P.U. 08-27, at 104-15, 122-124, to test year-end depreciable plant balances, adjusted for plant additions and retirements associated with the Charlton Street Project (Exh. 2 (Rev. 3), Sch. 24, at 2).[151] Next, the Company reduced this amount by $222,974, which represents the imputed depreciation expense associated with mains financed through CIAC (Exhs. MLR at 6; 2 (Rev. 3), Sch. 24, at 2; DPU 8-14).[152] This reduction results in an adjusted depreciation expense of $2,003,779 (Exh. 2 (Rev. 3), Sch. 24, at 2). The difference between this amount and the

150 The test year depreciation expense consisted of $2,043,758 in depreciation expense (Account 403000), less $215,139 for amortization of other utility plant (Account 405000), and less $7,411 for amortization of CIAC associated with SDCs (Exhs. DPU 4-9; DPU 15-34).

151 Plant accounts in the Company's proforma depreciation expense calculation include sources of supply, pumping, water treatment, transmission and distribution, and general plant (Exh. 2 (Rev. 3), Sch. 24, at 1-2).

152 Aquarion does not book depreciation on CIAC. This adjustment is required to remove the effects of CIAC on the Company's depreciation schedules to determine the correct level of depreciation expense for ratemaking purposes. D.P.U. 11-43, at 197 n.116. In calculating this adjustment, the Company applied a 1.42 percent depreciation rate based on the depreciation rate for water mains (Exh. DPU 8-14).

test year booked depreciation expense of $1,821,208 yields the Company's proposed increase of $182,571 (Exh. 2 (Rev. 3), Sch. 24, at 2).

2. Positions of the Parties

a. Hingham and Hull

In testimony, Hingham and Hull propose that the Company be restricted to use its depreciation expense funds only for capital improvements (Exh. TOWNS-DFR (Supp.) at 26-27).

b. Company

The Company asserts that it calculated its depreciation expense using depreciation rates developed in its most recent depreciation study (Company Brief at 56). The Company maintains that depreciation study was approved by the Department in D.P.U. 08-27 and served as the basis for the depreciation expense approved by the Department in Aquarion's most recent base rate proceedings, D.P.U. 08-27 and D.P.U. 11-43 (Company Brief at 56). Further, Aquarion maintains that it properly adjusted its proposed depreciation expense during the proceeding to reflect the updated costs associated with the post-test year Charlton Street Project (Company Brief at 56, citing Exhs. 2, Sch. 24; DPU 11-10; DPU 15-32; AG 4-5). Accordingly, the Company argues that its proposed depreciation expense is consistent with its most recent depreciation study and Department practice, and it should, therefore, be approved (Company Brief at 56).

3. 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 that is at variance with that witness' 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; 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; D.P.U. 92-250, at 64. Because depreciation studies rely by their nature on examining historic performance to assess future events, a degree of subjectivity is inevitable.[153] Nevertheless, the product of a depreciation study consists of specific accrual rates to be applied to specific account balances associated with depreciable property. A mere assertion that judgment and experience warrant a particular conclusion does not constitute evidence. See D.P.U. 11-01/D.P.U. 11-02, at 288; Eastern Edison Company, D.P.U. 243,

153 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; D.P.U. 1720, at 44; D.P.U. 1350, at 109-110.

at 16-17 (1980); D.P.U. 200, at 20-21; Lowell Gas Company, D.P.U. 19037/19037-A, at 23 (1977).

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 statistical analyses but will consider other expert testimony and evidence that challenges the preparer's interpretation and expects 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. To the extent a depreciation study provides a clear and comprehensive explanation of the factors that went into the selection of accrual rates, such an approach will facilitate Department and intervenor review.

4. Analysis and Findings

In D.P.U. 08-27, at 103-104, the Department approved Aquarion's depreciation study and the use of 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. See, e.g., Boston Gas Company, D.P.U. 19470, at 46, 51 (1978). The Department determined that it was reasonable to also apply that depreciation study in the Company's subsequent rate case, D.P.U. 11-43, because the Company had not made any significant changes to its plant accounting operations since the depreciation study. D.P.U. 11-43, at 199-200. Here, the Company proposes to use its depreciation study again, as approved in D.P.U. 08-27 (Exh. DPU 4-7, Att. A). There have been no significant changes in the Company's plant accounting operations that would warrant a change in the depreciation methodology from that approved in D.P.U. 08-27 (Exh. DPU 15-35). Therefore, we find that it is reasonable to apply in this proceeding the depreciation study filed and approved in D.P.U. 08-27.

The Department has reviewed the Company's depreciation calculations, including the accrual rates applied to the depreciable plant balances and finds that the Company has calculated its depreciation expense consistent with the method approved in D.P.U. 08-27. Accordingly, the Department allows the Company's depreciation expense of $2,003,779, which results in an increase of $182,571 to Aquarion's test year depreciation expense.

In testimony, Hingham and Hull recommend that the Company be restricted in its use of its depreciation expense to fund only capital improvements (Exh. TOWNS-DFR (Supp.) at 26-27). The Department considers depreciation expense to represent a return of a company's investment. D.P.U. 1590, at 22-23. Funds generated through depreciation expense are available to fund capital investments. Andrews Farm Water Company, D.P.U. 17-35-C at 162 (February 28, 2018); Dover Water Company, D.P.U. 18365, at 7-8 (1976), affirmed, Fryer vs. Department of Public Utilities, 374 Mass. 685, 692 (1978). However, the Department has not restricted a company's use of depreciation expense funds except when a company's prior actions warranted corrective action. Cf. D.P.U. 17-35-C at 162-163 (company's failure to maintain appropriate depreciation records and need to access funds for capital additions and improvements warranted creation of funded deprecation account); D.P.U. 18365, at 10 (company with inadequate bookkeeping practices directed to create funded depreciation account). The facts presented here do not justify such action. Further, the Department allows company management considerable discretion in its operational choices. Harbor Electric Energy Company, D.P.U. 17-136, at 59 (July 31, 2018); D.P.U. 10-114, at 119, citing D.P.U. 10-70, at 190; see Attorney General v. Department of Public Utilities, 390 Mass. at 229. Accordingly, the Department declines to restrict the Company's use of depreciation expense funds.

Q. Income and Excise Taxes

1. Introduction

In its initial filing, Aquarion proposed to calculate income taxes using a 34 percent federal income tax rate and an eight percent state franchise tax rate (Exh. 2, Schs. 28, 29). The Company proposed to include in its cost of service $43,052 in state income taxes and negative $158,514 in federal income taxes, based on the above tax rates and provisions for items such as accelerated depreciation, bonus depreciation, capitalized repair deductions, and other normalized items (Exhs. TMD at 23; 2, Schs. 1, 28, 29; DPU 20-35, Att. A).[154] In addition, the Company calculated $22,268 in deferred state income taxes and $420,608 in deferred federal income taxes and included these amounts in its proposed cost of service (Exh. 2, Sch. 1). During this proceeding, the Company revised its income tax calculations to

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[154] The Company uses the normalization method of accounting for all book/tax timing differences, with the exception of the capitalized repairs deduction in accordance with the Tangible Property Regulations issued by the IRS in September 2013 (Exh. DPU 10-4).

account for the lower federal income tax rate of 21 percent resulting from the 2017 Tax Act (Exhs. AWC-TMD-1, at 3, 10-11; 2 (Rev. 3), Schs. 28, 29). The Company included in its revised cost of service $41,239 in state income taxes and negative $102,245 in federal income taxes (Exh. 2 (Rev. 3), Sch. 1). In addition, the Company also included in its revised cost of service $22,268 in deferred state income taxes and $250,197 in deferred federal income taxes (Exh. 2 (Rev. 3), Sch. 1).

2. Positions of the Parties

The Company maintains that it has correctly calculated its state and federal income tax expense (Company Brief at 55). It argues that the Department should approve the tax expenses as calculated by the Company (Company Brief at 55). No other party addressed this issue on brief.

3. Analysis and Findings

a. Federal and State Income Taxes

The Department has long relied on the "return on rate base" method to determine income taxes for ratemaking purposes. D.P.U. 17-35-C at 132; Kings Grant Water Company, D.P.U. 87-228, at 20 (1988); D.P.U. 1270/1414, at 45-46. Under this approach, the return on rate base is first determined and then reduced by interest expense. Boston Gas Company, D.P.U. 1100, at 78 (1982); Western Massachusetts Electric Company, D.P.U. 957, at 70 71 (1982); D.P.U. 906, at 64-65; New Bedford Gas and Edison Light Company, D.P.U. 20132, at 20 (1980). Various additions and deductions are then made, as appropriate, to derive a "taxable income base." D.P.U. 10-70-A at 4; D.P.U. 88-135/151-A at 15; D.P.U. 87-59, at 53-54; Dedham Water Company, D.P.U. 205, at 33 (1981). The taxable income base is then grossed up for federal and state taxes to produce the pre-tax income level ("taxable income level"), to which state and federal taxes are then applied. Agawam Springs Water Company, D.P.U. 13-163, at 58 (2014); D.P.U. 88-172, at 62. Because the return on rate base method allows various adjustments to be readily identified and made, the Department has directed that all companies use this method for the purpose of computing income tax expense. D.P.U. 1270/1414, at 46.

Aquarion did not use the return on rate base method to calculate its federal and state income taxes in its initial or amended filings; however, the Company provided the calculation of federal and state income taxes using the return on rate base method at the Department's request (Exhs. 2, Schs. 28, 29; 2 (Rev.) Schs. 28, 29; DPU 20-35). The Department will use the calculation the Company provided in Exhibit DPU 20-35, adjusted as necessary for consistency with our findings on rate base, rate of return, and other income tax components, to derive Aquarion's income tax expense.

The 1.3785 gross-up factor provided in Exhibit DPU 20-35 appears to be derived from different federal and state income tax rates than those currently in effect (Exh. DPU 20-35, Att. A). The appropriate gross-up rate based on the current federal and state income tax rates is 1.3759.[155] D.P.U. 17-107, at 145; NSTAR Electric

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155 This gross-up component recognizes the deductibility of state income taxes from federal taxable income, and it is calculated as follows: 1 ÷ (1 - (21 percent * (1- 8.0 percent) + 8.0 percent)). D.P.U. 17-107, at 145 n.101.

Company/Western Massachusetts Electric Company, D.P.U. 17-05-C at 48, 57 (February 2, 2018). Accordingly, the Department shall use a gross-up factor of 1.3759 to determine Aquarion's federal and state income taxes. The Department accepts the Company's remaining income tax computations, including the treatment of bonus depreciation for federal and state income tax purposes, and finds them to be accurate and consistent with the return on rate base method.[156] The appropriate levels of state and federal income tax, as well as their calculations, are provided in Schedule 8, below.

Additionally, as discussed in Section II. above, the Department opened an investigation into the effect of the decrease in the federal corporate income tax rate, including the excess recovery in rates of ADIT as of January 1, 2018. D.P.U. 18-15, Order Opening Investigation at 5. On September 24, 2018, the Department found that it was more timely and transparent for Aquarion to flow back excess ADIT through a revenue requirement reduction effective November 1, 2018, rather than through the Mechanism, as Aquarion had proposed. D.P.U. 18-15-D at 14. In that same order, the Department approved Aquarion's calculation of an annual amortization amount of $156,297 and stated that this amortization would be incorporated into our final Order in D.P.U. 17-90, along with any additional directives. D.P.U. 18-15-D at 16-17. The amortization of $156,297 is incorporated into Schedule 8, below.

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156 The Company reports that the 2017 Tax Act did not affect its ability to take advantage of the capitalized repairs deduction or bonus depreciation for federal income tax purposes (Exhs. DPU 15-2; DPU 15-4; AG 7-2, Att. A at 1-5).

b. Excise Tax

In addition to state income tax, utilities are also subject to the Massachusetts excise tax of 0.26 percent, applicable to a corporation's tangible personal property in Massachusetts. G.L. c. 63, §§ 30 (10), 39; see, e.g., D.P.U. 13-163, at 59-60; D.P.U. 13-75, at 265 n.180; Massachusetts Department of Revenue Technical Information Release 13-15, Section V (October 18, 2013) ("TIR 13-15"), available at https://www.mass.gov/technical-information-release/tir-13-15-tax-changes-in-the-fiscal-year-2014-budget-the.[157] According to TIR 13-15, the excise component provided in G.L. c. 63, § 39 is a non-income measure. Thus, the excise component is not used in either the income tax calculation or the computation of deferred income taxes. D.P.U. 13-75, at 265 n.180. Nonetheless, the excise tax component is included in a company's cost of service. D.P.U. 13-163, at 59-60.

The Company's net plant of $57,633,486, multiplied by the excise tax rate of 0.26 percent, produces an excise tax of $149,847. Therefore, the Department will include excise tax expense of $149,847 in Aquarion's cost of service, as provided in Schedule 7, below.

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157 A TIR states the official position of the Massachusetts Department of Revenue ("DOR"), has the status of precedent in the disposition of cases unless revoked or modified, and may be relied upon by taxpayers in situations where the facts, circumstances, and issues presented are substantially similar to those in the TIR. DOR, DOR Technical Information Releases, https://www.mass.gov/lists/dor-technical-information-releases (last visited October 29, 2018).

R. Property Taxes

1. Introduction

During the test year, Aquarion booked $458,047 in property tax and auto excise tax expense on its property other than the Hingham/Hull WTP[158] (Exh. 2 (Rev. 3), Sch. 25, at 1). The Company initially proposed an increase of $37,835, for a proposed property tax expense of $495,881 (Exhs. JAU at 6; 2, Sch. 25, at 1). During the proceedings, the Company revised this increase based on updated property tax billings and ultimately proposed an increase of $73,839, for a proposed property tax expense of $531,886 (Exhs. 2 (Rev. 3), Sch. 25, at 1; DPU 11-1, Att. A; DPU 11-1, Att. A (Supp.); RR-DPU-16).[159] Aquarion's proposed property tax adjustment incorporates the Company's current personal and real property assessments by community multiplied by the current property tax rates in the respective community, plus Community Preservation Act ("CPA") charges and auto excise taxes (Exh. 2 (Rev. 3), Sch. 25, at 1-3).

2. Positions of the Parties

Aquarion argues that its proposed property tax expense incorporates the actual assessments and tax rates associated with the Company's taxable property based on its current

158 Property taxes associated with the Hingham/Hull WTP are separately recovered through the Hingham/Hull WTP surcharge (Exh. 3 (Rev. 3), Sch. 2 at 2-3).

159 On August 10, 2018, the Company filed its most recent property tax bills with its reply brief, hereafter cited as Exhibit DPU 11-1, Att. A (Supp.).

tax bills (Company Brief at 32, citing Exhs. DPU 11-1; Towns 2-18).[160] The Company maintains that it has appropriately calculated its property tax expense and, thus, the Department should approve it (Company Brief at 32-33). No other party addressed this issue on brief.

3. Analysis and Findings

The Department's general policy is to base property taxes on the most recent property tax bills a utility receives from the communities in which it has property. D.P.U. 08-35, at 150; D.P.U. 96-50 (Phase I) at 109; D.P.U. 86-280-A at 17. The Department holds the record in a proceeding open to receive the most current tax bills from cities and towns to the utility. D.P.U. 88-67 (Phase I) at 156-166; Colonial Gas Company, D.P.U. 84-94, at 19 (1984). The Department considers it appropriate to permit such updates because they are based on information external to a company and almost entirely outside the control of the company. D.P.U. 86-280-A at 17.

Aquarion has provided its most recent property tax bills (Exh. DPU 11-1, Att. A (Supp.)).[161] The Department has reviewed the Company's calculations and recent tax bills, including those provided during the course of this proceeding (Exhs. DPU 11-1, Att. A;

160 The Company's initial brief makes reference to a property tax increase of $41,798 (Company Brief at 33). The updated increase of $73,839 was submitted on August 10, 2018, after the Company's initial brief was filed.

161 Aquarion is billed quarterly for most real property; real property located in Oxford, as well as several small parcels in Hingham, are billed semi-annually (Exh. DPU 11-1, Att. A (Supp.)).

DPU 11-1, Att. A (Supp.); AG 3-84, Att. A; RR-DPU-16, Att. A).[162] Based on our review, the Department finds that Aquarion's calculations are consistent with the information contained in the most recent tax bills (i.e., personal and property assessments, mill rate, and CPA charge), and they result in a non-speculative, reliable measure of the Company's rate year tax expense that satisfies the Department's known and measurable standard. See, e.g., D.P.U. 17-05, at 251; D.P.U. 12-86, at 243-245; D.P.U. 95-118, at 148. Therefore, the Department finds that the Company's property taxes consist of $334,067 in personal property taxes, $195,895 in real estate taxes, and $1,924 in auto excise taxes, for a total property tax of $531,886. Accordingly, the Department approves the Company's proposed increase of $73,839 to test year cost of service.

S. Sewer Use Charges

1. Introduction

During the test year, the Company booked $7,767 in expenses related to sewer charges from Millbury (Exh. 2 (Rev. 3), Sch. 26, at 1). In its initial filing, Aquarion proposed to increase the expense for sewer charges by $356, for a total expense of $8,123 (Exhs. JAU at 7; 2, Sch. 26, at 1).[163] During the proceeding, based on the most recent

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162 The personal property tax bills issued by Hingham are associated with the Hingham/Hull WTP (Exh. DPU 14-8, Att. B).

163 Millbury bills Aquarion semi-annually for sewer service, with the first bill covering service during the first half of the calendar year and the second bill covering service during the second half of the calendar year (Exh. DPU 11-3, Att. B).

sewer bills received from Millbury, Aquarion proposed to increase the adjustment to $1,691, for a total expense of $9,457 (Exh. 2 (Rev. 2), Sch. 26, at 1).

2. Positions of the Parties

The Company asserts that it correctly calculated this expense and that the Department should approve the Company's proposed sewer use expense (Company Brief at 33). No other party addressed this issue on brief.

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. D.P.U. 17-107, at 104, citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 120; D.P.U. 87-260, at 75. The Department has examined the supporting data and underlying assumptions behind the Company's proposed sewer use adjustment (Exhs. 2 (Rev. 3), Sch. 26, at 2; DPU 11-3, Atts. A, B).

The Company proposes a pro forma sewer use of 816 thousand gallons ("TG"), based on usage between July 1, 2016, and June 30, 2017 (Exhs. 2 (Rev. 3), Sch. 26, at 2; DPU 11-3, Att. B). However, Aquarion's test year sewer usage was 670 TG[164] (Exh. DPU 11-3, Atts. A, B). The Company did not provide evidence that its test year sewer use of 670 TG is abnormal or not representative. Accordingly, the Department will establish Aquarion's sewer use expense based on the Company's test year usage.

164 The difference between the December 31, 2015, meter reading of 7,505 TG and December 30, 2016, meter reading of 8,175 TG is 670 TG (Exh. DPU 11-3, Atts. A, B).

Effective July 1, 2017, Millbury increased its metered sewer rate from $8.72 per TG to $11.59 per TG (Exh. DPU 11-3, Atts. A, B). The Department finds that this rate increase represents a known and measurable change to the Company's test year sewer use expense. See D.T.E. 05-27, at 194; D.P.U. 86-172, at 15-16; D.P.U. 84-33, at 66. Application of the current $11.59 per TG rate to the Company's test year sewer use of 670 TG produces a proforma sewer expense of $7,765. Accordingly, the Department reduces Aquarion's proposed cost of service by $1,692.

T. Goodwill Fire Charge Credits

1. Introduction

During the test year, the Company provided $23,553 in goodwill credits to certain private fire connection customers (Exh. TMD at 21). Because the credits were considered to be non-recurring in nature, the Company removed them from the test year cost of service and, thus, proposed to reduce its cost of service by $23,553 (Exhs. TMD at 21; 2 (Rev. 3), Sch. 17).

2. Positions of the Parties

The Company argues that the goodwill credits were non-recurring, and it was, therefore, appropriate to remove the associated expense from the test year cost of service (Company Brief at 55). It claims that the adjustment was made consistent with the Department's treatment of non-recurring expenses and should thus be approved (Company Brief at 55). No other party addressed this issue on brief.

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. D.P.U. 17-107, at 104, citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 120; D.P.U. 87-260, at 75. In this regard, the Department has consistently held that there are three classes of expenses that are recoverable through base rates: (1) annually recurring expenses; (2) periodically recurring expenses; and (3) nonrecurring extraordinary expenses. D.P.U. 17-107, at 104-105, citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.T.E. 98-51, at 35; D.P.U. 95-118, at 121-122; D.P.U. 1270/1414, at 32-33.

Until September 1, 2016, the Company's smallest private fire service rate category was for a connection "4-inch or under." Aquarion Water Company of Massachusetts, D.P.U. 16-140, at 1 & n.1 (2016). At the time, Aquarion's private fire protection rates were established, those rates were used primarily by commercial customers with connections of four inches in diameter or larger. Aquarion Water Company of Massachusetts, D.P.U. 16-140-A at 2 (2017). As a result of new construction and changes in the building code, the number of private fire connections smaller than four inches in diameter significantly increased and these non-commercial customers were paying higher rates than the costs the Company incurred to provide service through these smaller connections. D.P.U. 16-140-A at 2-3. During the test year, the Company provided goodwill credits to these customers (Exh. TMD at 21). On August 8, 2016, the Company proposed six lower private fire protection rates for connections that were less than four inches in diameter. D.P.U. 16-140, at 1. The Department allowed the new private fire protection rates effective September 1, 2016, subject to further investigation and subsequently granted final approval in May 2017. D.P.U. 16-140-A.[165] As a result, private fire protection customers with connections smaller than four inches are now billed at the lower rates reflective of the Company's costs, and the Company has terminated its practice of issuing goodwill credits to these customers (Exhs. TMD at 21; 2 (Rev. 3), Sch. 17).

Accordingly, the Department finds that the goodwill fire charge credits represent a non-recurring expense. Therefore, the Department accepts Aquarion's proposed reduction of $23,553 to its cost of service.

U. Tangible Property Credit

1. Introduction

In 2013, the IRS promulgated new tangible property regulations ("TPR") that allow companies to adopt an alternative method for determining how capital expenditure-related tangible property can be treated for federal tax purposes. Aquarion Water Company of Massachusetts, D.P.U. 14-58, at 2 (2014). More specifically, the TPR provide that certain expenditures that were historically treated as capital additions for tax purposes instead could be treated as expenses for tax purposes. D.P.U. 14-58, at 2 (2014). As a result of the change in TPR, the Company calculated a tax credit of $410,000, which it applied to its 2013 federal income tax return (Exh. DPU 9-3).

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165 The new fire protection rates are for one-inch, one-and-one-quarter-inch, one-and-one-half-inch, two-inch, two-and-one-half-inch, and three-inch private fire protection connections. D.P.U. 16-140-A at 3.

Subsequently, the Department approved a settlement agreement between Aquarion and Attorney General whereby the Company would pass back the $410,000 tax credit in the form of a credit on customer bills (Exh. JAU at 6). See also D.P.U. 14-58, at 5. The Company provided the credit to customers for the period of January 1, 2015, to December 31, 2015, after which there remained a balance of $20,165 (Exh. JAU at 6). The Company proposes to amortize the remaining balance over three years and, thus, included a corresponding reduction to its test year cost of service of $6,722 (Exhs. JAU at 6; 2 (Rev. 3), Sch. 19).

2. Positions of the Parties

a. Hingham and Hull

In testimony, Hingham and Hull assert that because the $20,165 remaining balance of the tangible property credit is a small percentage (i.e., five percent) relative to the original amount, it should fully be refunded to ratepayers during the rate year rather than amortized over three years (Exhs. TOWNS-DFR at 26; TOWNS-DFR (Supp.) at 23).

b. Company

The Company states that at the end of 2015, the end of the credit period approved in D.P.U. 14-58, a balance of $20,165 for the credit had yet to be returned to ratepayers (Company Brief at 33, citing Exh. JAU at 6). The Company argues that the Department should approve its proposal to amortize the remaining balance over three years to ensure that customers receive the full value of the TPR credit approved in the D.P.U. 14-58 settlement (Company Brief at 33-34). No other party addressed this issue on brief.

3. Analysis and Findings

In 2014, the Department approved the settlement between the Company and Attorney General to pass back the TPR tax credit to customers through a one-year rate reduction. D.P.U. 14-58, at 3, 5. During 2015, the Company passed $389,835 of the $410,000 along to ratepayers, leaving a balance of $20,165 (Exhs. JAU, at 6; DPU 9-3). The Company confirmed that there were no subsequent adjustments to the $410,000 tax credit (Exh. DPU 9-3).[166] Accordingly, the Department finds that it is appropriate to return the balance of $20,165 associated with the TPR tax credit to ratepayers, as contemplated by the settlement in D.P.U. 14-58.

The Company proposes a three-year amortization of the balance (Exhs. JAU at 6; 2 (Rev. 3), Sch. 19). Hingham and Hull propose to return the balance of the tangible property credit in the rate year (Exhs. TOWNS-DFR at 26; TOWNS-DFR (Supp.) at 23). Amortization periods in general are determined based on a case-by-case review of the evidence and underlying facts. D.P.U. 08-27, at 9; D.P.U. 93-223-B at 14; D.P.U. 84-145-A at 54. The Department determines that amortization is appropriate to effect a dollar-for-dollar recovery. See D.P.U. 07-71, at 54. In contrast, returning the entire balance in the rate year would result in a credit of $20,165 per year on an annual basis

[166] The settlement provided that the Company shall defer on its accounting and financial records, and include for recovery or refund in its next general rate application, the amount that has been passed back to customers that is different from that amount allowed by the IRS. D.P.U. 14-58, at 4. The Department directed than any remaining balance at the end of the passback period, whether positive or negative, be booked to Account 317. D.P.U. 14-58, at 5.

until Aquarion's next rate case. Given the relatively small dollar amount remaining of the deferred TPR credit, the Department finds that three years is an appropriate amortization period. Consequently, the Department approves the Company's proposal to reduce the cost of service by $6,722.

IX. CAPITAL STRUCTURE AND RATE OF RETURN

A. Capital Structure

1. Introduction

As of the end of the test year, Aquarion's capital structure consisted of $18,810,000 in long-term debt, $1,462,901 in short-term debt, and $16,378,826 in common equity (Exh. 6, Sch. 1). These balances represented a capital structure consisting of 51.32 percent long-term debt, 3.99 percent short-term debt, and 44.69 percent common equity (Exh. 6, Sch. 1). Aquarion proposed a capital structure consisting of 51.08 percent long-term debt, 4.01 percent short-term debt, and 44.91 percent common equity, based on the repayment on August 1, 2017, of $180,000 for a Massachusetts Pollution Abatement Trust ("MPAT") loan (Exhs. TMD at 27; 6, Sch. 1).

During the proceedings, the Company revised its proposed capital structure to exclude short-term debt and reduce long-term debt by an additional $190,000 to recognize an additional principal payment on the MPAT loan scheduled to take place on August 1, 2018 (Exhs. 6 (Rev. 3), Sch. 1; AWC-TMD-1, at 6, 8-10; DPU 16-6, Att. A). These revisions resulted in a capital structure consisting of $18,440,000 in long-term debt and $16,378,826 in common equity (Exhs. 6 (Rev. 3), Sch. 1; DPU 16-6, Att. A). These balances produced a capital structure consisting of 52.96 percent long-term debt and 47.04 percent common equity (Exh. 6 (Rev. 3), Sch. 1).

2. Positions of the Parties

a. Hingham and Hull

Hingham and Hull argue that in its initial filing, the Company included the cost of short-term debt (i.e., $25,747) in its revenue requirement based on a cost rate of 1.76 percent (Hingham/Hull Brief at 18). Hingham and Hull contend that regardless of whether short-term debt is excluded from the Company's capital structure, the Department should reduce the Company's proposed revenue requirement by $15,655 based on the average cost of Eversource's commercial paper for calendar year 2017 (Hingham/Hull Brief at 18-19).

b. Company

The Company argues that its proposal to set rates based on its actual capital structure as of December 31, 2016, adjusted for known redemptions of $370,000 associated with the MPAT loan, results in 52.96 percent long-term debt, and 47.04 percent common equity (Company Brief at 67, 68, citing Exhs. TMD at 27-32; 6 (Rev. 2), Sch. 1). The Company asserts that this capital structure is consistent with Department precedent (Company Brief at 67-68, citing Exhs. TMD at 27-32; 6 (Rev. 2), Sch. 1; D.P.U. 11-43, at 204; High Wood Water Company, D.P.U. 1360, at 26-27; Blackstone Gas Company, D.P.U. 1135, at 4 (1982)). Further, Aquarion maintains that its proposed capital structure of 47.04 percent common equity is consistent with capital structures approved by the Department for other water utilities (Company Brief at 68, citing D.P.U. 14-120, at 121; D.P.U. 13-163, at 67; D.P.U. 11-43). The Company states that it corrected its capital structure to eliminate the use of short-term debt to (1) incorporate the Department's finding that the cost of short-term debt will decrease as a result of the change in control; and (2) align the proposed capital structure with the Department's ratemaking practices, which do not include short-term debt in the capital structure (Company Brief at 10, citing Exh. AWC-TMD-1, at 8-10). No other party addressed this issue on brief.

3. Analysis and Findings

A company's capital structure typically consists of long-term debt, preferred stock, and common equity. D.P.U. 17-107, at 159; D.P.U. 08-35, at 184; D.T.E. 05-27, at 269; D.T.E. 03-40, at 319; D.T.E. 01-56, at 97; Pinehills Water Company, D.T.E. 01-42, at 17-18 (2001); Fitchburg Gas and Electric Light Company, D.T.E. 99-118, at 62 (2001); D.P.U. 87-228, at 22. The ratio of each component in the total capital structure is used to weight the cost (or return) of each capital structure component to derive a weighted average cost of capital ("WACC"). D.P.U. 17-107, at 159; D.T.E. 03-40, at 319. The WACC is used to determine the return on rate base used for calculating the appropriate debt service and profits for the company to be included in its revenue requirement. D.P.U. 17-107, at 159; D.T.E. 01-42, at 18; South Egremont Water Company, D.P.U. 86-149, at 5 (1986).

The Department will normally accept a utility's test year-end capital structure, allowing for known and measurable changes, unless the capital structure deviates substantially from sound utility practice. D.P.U. 17-107, at 160; D.T.E. 03-40, at 319; D.P.U. 1360, at 26-27; D.P.U. 1135, at 4. Adjustments to test year-end capitalization to recognize redemptions, retirements, or issuances of new debt or equity are allowed, provided that they are known and measurable and the proposed issuance or retirement of securities has actually taken place by the date of the Order. D.P.U. 17-107, at 160; D.T.E. 03-40, at 323. In reviewing and applying utility company capital structures, the Department seeks to protect ratepayers from the effect of excessive rates of return. Blackstone Gas Company, D.T.E. 01-50, at 25 (2001); D.P.U. 95-92, at 33; Wylde Wood Water Works, D.P.U. 86-93, at 25 (1986).

The Department generally does not include short-term debt in capitalization because short-term debt is traditionally not used to finance costs included in rate base. D.P.U. 17-107, at 160-161; D.T.E. 02-24/25, at 209. Instead, short-term debt is primarily used to finance construction and the day to day operations of the utility. D.P.U. 17-107, at 161; D.T.E. 02-24/25, at 209; see also Massachusetts Electric Company, D.P.U. 19497, at 32 (1978). Interest costs associated with short-term debt used for these purposes are provided for through the utility's AFUDC and working capital allowance, respectively. D.T.E. 02-24/25, at 209; New England Telephone and Telegraph Company, D.P.U. 86-33-G at 380-381 (1989). Another factor in excluding short-term debt from capitalization is that short-term balances and interest rates are often considered too volatile to be representative of a company's long-term capital costs. D.T.E. 02-24/25, at 209; D.P.U. 95-40, at 85; D.P.U. 86-33-G at 380-381; D.P.U. 19497, at 32.

On occasion, the Department has included short-term debt in capitalization when it is demonstrated that the utility's short-term debt plays the role of long-term debt. D.P.U. 08-27, at 128; D.P.U. 86-86, at 22-23; Westhampton Water Company, D.P.U. 1034, at 6 (1982); Pequot Water Company, D.P.U. 938, at 8 (1982); Chatham Water Company, D.P.U. 323, at 8 (1981). The Department does not find the factual situation in this case warrants the inclusion of short-term debt in Aquarion's capital structure. Cf. D.P.U. 08-27, at 126-127 (short-term debt represented over 22 percent of total capitalization, was being used to support plant assets, and its inclusion produced capitalization ratio consistent with Company's capitalization policy). In this case, the evidence demonstrates that the Company's short-term debt balance during the test year was not unusually high and was not targeted toward the permanent financing of assets (Exhs. 6, Sch. 1; DPU 5-19; DPU 16-3). Therefore, the Department finds that it is appropriate to exclude the Company's short-term debt from its capitalization.

As a result of excluding the Company's short-term debt balance from its capital structure, short-term debt is no longer included in the calculation of Aquarion's revenue requirement. Hingham and Hull's proposed adjustment is based on the erroneous assumption that interest expense is included in the revenue requirement aside from being a component of the overall weighted cost of capital that is then applied to rate base to derive an interest expense for income tax computation purposes. D.P.U. 17-107, at 143-144; D.P.U. 1270/1414, at 45-46; D.P.U. 957, at 70-71; D.P.U. 906, at 64. As a result, no further adjustment is required.

The adjustments discussed above to long-term debt produce a capital structure consisting $18,440,000 in long-term debt and $16,378,826 in common equity. These balances produce a capital structure consisting of 52.96 percent long-term debt and 47.04 percent common equity. The Department will use this capital structure for purposes of calculating Aquarion's overall cost of capital.

B. Cost of Debt

1. Introduction

Aquarion's test year-end long-term debt consisted of $7,000,000 in 7.71 percent series general mortgage bonds, $1,400,000 in 9.64 percent series general mortgage bonds, $1,410,000 in a zero percent loan from the MPAT, and $9,000,000 in 4.11 percent series general mortgage bonds (Exhs. 6, Sch. 1; 6 (Rev. 3), Sch. 1). The Company's short-term debt consisted of $1,462,901 in notes payable to Aquarion Company at the short-term borrowing rate of 1.76 percent (Exh. 6, Sch. 1).

Aquarion initially proposed a weighted long-term debt cost of 5.81 percent, based on the respective ratios and effective interest rate applicable to each long-term debt series and the redemption of $180,000 on its MPAT loan (Exhs. 6, Sch. 1; AWC-TMD-1, at 8). Further, the Company proposed a short-term debt cost of 1.76 percent (Exhs. 6, Sch. 1; AWC-TMD-1, at 8).

In its supplemental filing, Aquarion removed the short-term debt component from its test year-end capital structure and incorporated an additional redemption of $190,000 on its MPAT loan scheduled for August 1, 2018 (Exhs. 6 (Rev. 3), Sch. 1; AWC-TMD-1, at 9-10;

DPU 16-6, Att. A). Consequently, the Company proposes a revised weighted cost of long-term debt of 5.87 percent (Exhs. 6 (Rev. 3), Sch. 1; AWC-TMD-1, at 10; DPU 16-6, Att. A).

2. Positions of the Parties

The Company argues that its cost of long-term debt of 5.87 percent reflects the Company's actual cost of debt as of the end of the test year (Company Brief at 68, citing Exh. 6 (Rev. 2), Sch. 1). Aquarion argues that its debt rate is consistent with Department precedent because it reflects the Company's actual cost of debt issuances (Company Brief at 68, citing D.P.U. 90-121, at 157). No other party addressed this issue on brief.

3. Analysis and Findings

The Department has reviewed the evidence and finds that the Company's method of calculating the effective interest rates associated with its long-term debt is consistent with Department precedent (Exhs. 6 (Rev. 2), Sch. 1; DPU 16-6, Att. A). D.P.U. 11-43, at 206-207; D.P.U. 08-27, at 128; D.P.U. 92-101, at 63. Accordingly, the Department shall apply a weighted cost of long-term debt of 5.87 percent.

C. Return on Common Equity

1. Company Proposal

Aquarion based its requested rate of return on common equity ("ROE") on the Department's optional cost of equity regulation at 220 CMR 31.00 et seq. (Exh. TMD at 28). Pursuant to this regulation, a water company may request that the Department establish its allowed ROE based on the formula contained in 220 CMR 31.03, referred to as the "optional formula." This formula takes the most recent twelve-month average of 30-year U.S. Treasury bond interest rates based on a date proximate to four months after a 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 CMR 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 CMR 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 CMR 31.02.

The Company states that application of the optional cost of equity calculation regulation, 220 CMR 31.03, yields an ROE of 11.5 percent (Exh. TMD at 28). Nonetheless, the Company's proposes to reduce the results of the optional formula results and instead proposes a 10.5 percent ROE to reduce its rate increase request (Exhs. TMD at 28; 6, Sch. 1 (Rev. 3)).

2. Attorney General Proposal

a. Introduction

The Attorney General proposes an 8.7 percent ROE, based on a discounted cash flow ("DCF") and capital asset pricing model ("CAPM") applied to proxy groups of water and gas companies (Exhs. AG-JRW at 1-2, 5; AG-JRW-1 (Supp.) at 2).[167] As discussed below,

[167] The Attorney General originally proposed an 8.4 percent ROE but revised her proposal during the course of the proceeding due to changes in capital market conditions (Exhs. AG-JRW at 5; AG-JRW (Supp.) at 1, 2).

the Attorney General used a quantitative analysis and, because it gives greater weight to the DCF model, chose the upper bound of 8.7 percent as the appropriate return on equity for Aquarion (Exhs. AG-JRW at 5, 36-37; AG-JRW-1 (Supp.) at 2).

To perform its DCF and CAPM analyses, the Attorney General relied on financial data from two proxy groups (Exh. AG-JRW at 5). The first proxy group consists of nine publicly held water companies ("Water Proxy Group"), and the second proxy group consists of seven publicly held natural gas distribution companies ("Gas Proxy Group") (Exh. AG-JRW at 9).[168,169] The Attorney General states that she analyzed the Gas Proxy Group in addition to the Water Proxy Group because there is limited data available regarding water companies (Exh. AG-JRW at 5).

The companies included in the Water Proxy Group and the Gas Proxy Group are reported on by the Value Line Investment Survey ("Value Line") (Exh. AG-JRW at 9). Using data from the Water Proxy Group, the Attorney General estimated an ROE range of 7.9 to 8.65 percent, based on the CAPM and the DCF analyses, respectively (Exhs. AG-JRW at 36; AG-JRW-1 (Supp.) at 4-6). Using data from the Gas Proxy Group, the Attorney General estimated an ROE range of 7.9 to 8.7 percent based on the CAPM and

168 The proxy group includes the following water companies: (1) American States Water Company; (2) American Water Works; (3) Aqua America; (4) Artesian Resources; (5) California Water Company; (6) Connecticut Water Company; (7) Middlesex Water Company; (8) SJW Corporation; and (9) York Water Company (Exh. AG-JRW at 9).

169 The proxy group includes the following gas companies: (1) Atmos Energy Corporation; (2) New Jersey Resources; (3) Northwest Natural Gas Company; (4) One Gas, Inc.; (5) South Jersey Industries; (6) Southwest Gas; and (7) Spire, Inc. (Exh. AG-JRW at 9).

the DCF analyses, respectively (Exhs. AG-JRW at 36; AG-JRW-1 (Supp.) at 4-6). The Attorney General relies primarily on the DCF model and, therefore, recommends that the appropriate equity cost rate for the companies in the two proxy groups is in the 7.9 to 8.7 percent range (Exhs. AG-JRW at 36-37; AG-JRW-1 (Supp.) at 6).

b. Financial Models

i. Discounted Cash Flow Model

The DCF model is predicated on the concept that a stock's current price equals the present discounted value of the future dividends that investors expect to receive (Exh. AG-JRW at 11). The Attorney General relied on a constant growth DCF model, reasoning that the public utility business is in the steady-state (or constant growth) stage of a three-stage DCF (Exh. AG-JRW at 14).[170] The Attorney General based her DCF analysis upon the following formula:

$$P = D_1 / (1+k)^1 + D_2 / (1+k)^2 + \ldots + D_n / (1+k)^n$$

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170 The three-stage DCF model assesses the connection between a firm's dividend payouts and the profitability of its internal investments, which in turn, is largely a function of the life cycle of the product or service (Exh. AG-JRW at 12). The first, or growth, stage is characterized by rapidly expanding sales, high profit margins, and abnormally high growth in earnings per share, resulting in a low payout and competitors who are attracted by the unusually high earnings (Exh. AG-JRW at 13). The second, or transition stage, occurs in later years, when increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings (Exh. AG-JRW at 13). The third, or steady-state, stage is achieved when the company's new investment opportunities offer, on average, only slightly attractive returns on equity (Exh. AG-JRW at 13). At that time its earnings growth rate, payout ratio, and return on equity stabilize for the remainder of its life (Exh. AG-JRW at 13). The constant-growth DCF model is considered to be appropriate when a firm is in the maturity stage of the life cycle (Exh. AG-JRW at 13).

where (1) P is the current stock price; (2) D_n is the dividend in year n; and (3) k is the discount rate (i.e., the investor's required ROE) (Exh. AG-JRW at 12).

The Attorney General's DCF analysis indicated a cost of equity of 8.65 percent for the Water Proxy Group and 8.7 percent for the Gas Proxy Group (Exhs. AG-JRW at 25-26; AG-JRW-1 (Supp.) at 4; AG-JRW-2 (Supp.) at 1). To determine the cost of equity using the constant growth DCF model, the Attorney General multiplied the estimated dividend yield by a one-and-one-half growth adjustment, plus the growth rates of the proxy groups (Exhs. AG-JRW at 25-26; AG-JRW-10, at 1). The Attorney General used a dividend yield of 2.1 percent in her DCF analysis of the Water Proxy Group, adjusted by 1.0325, which resulted in a dividend yield of 2.17 percent (Exhs. AG-JRW-1 (Supp.) at 4; AG-JRW-2 (Supp.) at 1). The Attorney General used a dividend yield of 2.8 percent in her DCF analysis of the Gas Proxy Group, adjusted by 1.0290, resulting in a dividend yield of 2.88 percent (Exhs. AG-JRW-1 (Supp.) at 4-5; AG-JRW-2 (Supp.) at 1).

In developing the expected growth rate, the Attorney General relied on the historic and projected growth rates of earnings per share, dividends per share, and book value per share provided by Value Line and the earnings growth forecasts of Wall Street analysts provided by Yahoo, Reuters, and Zacks (Exh. AG-JRW at 17). Although the Attorney General assumed that earnings and dividends would exhibit similar growth rates over the very long term, she also relied on other growth indicators, such as prospective dividend growth, internal growth, and projected earnings growth, to compensate for what she considers to be an upward bias among Wall Street securities analysts (Exh. AG-JRW at 21-22). The

Attorney General used DCF growth rates of 6.5 percent for the Water Proxy Group and 5.8 percent for the Gas Proxy Group (Exhs. AG-JRW at 24-25; AG-JRW-1 (Supp.) at 4).

Next, the Attorney General added the estimated growth rates to the adjusted dividend yields to determine her cost of equity for the Water Proxy Group and Gas Proxy Group (Exh. AG-JRW at 25-26). Adding a growth rate of 6.5 percent to an adjusted dividend yield of 2.17 percent produced an ROE of 8.65 percent for the Water Proxy Group (Exhs. AG-JRW at 25-26; AG-JRW-1 (Supp.) at 4; AG-JRW-2 (Supp.) at 1). Similarly, adding a growth rate of 5.8 percent to an adjusted dividend yield of 2.88 percent produced an ROE of 8.7 percent for the Gas Proxy Group (Exhs. AG-JRW at 25-26; AG-JRW-1 (Supp.) at 4; AG-JRW-2 (Supp.) at 1).

ii. Capital Asset Pricing Model

Under the CAPM, the expected return of an equity security is equal to (1) the rate on a risk-free bond, normally reflected as the yield on long-term U.S. Treasury securities plus (2) an additional risk premium to compensate equity investors for taking on the two forms of risk associated with common stock (Exh. AG-JRW at 26-27). These investment risks are market-specific risk (i.e., systematic risk) and firm-specific risk (i.e., unsystematic risk); under CAPM theory, investors only receive a return on systematic risk (Exh. AG-JRW at 26). The Attorney General's CAPM analyses are based on the following formula:

$$K = R_f + \beta * [E(R_m) - (R_f)]$$

where (1) K is the expected return on a company's stock or equity cost rate; (2) R_f is the risk free rate; (3) β (or beta) is the measure of individual stock risk relative to the market risk;

and (4) $E(R_m)$ - (R_f) is the equity risk premium, or the difference in the expected returns between investing in equity securities and investing in safer, fixed income securities (Exh. AG-JRW at 26-27).

The Attorney General used the 30-year U.S. Treasury bond rate as a proxy for the risk-free rate (Exh. AG-JRW at 28). The Attorney General stated that the yield on 30-year U.S. Treasury bonds has been in the 2.5 to 4.0 percent range during 2013 through 2017 (Exhs. AG-JRW at 28; AG-JRW-11, at 2). The Attorney General employed Value Line betas, calculating a median beta of 0.70 for the Water Proxy Group and 0.78 for the Gas Proxy Group (Exhs. AG-JRW at 29; AG-JRW-11, at 3).

To develop her equity risk premium, the Attorney General compiled a comprehensive list of studies of historical risk premiums, "ex-ante" models, assorted academic and business surveys, and a building block method from which she extracted a subset of studies published after January 2, 2010 (Exhs. AG-JRW at 33-34; AG-JRW-11, at 5-6). The Attorney General used an equity risk premium of 5.5 percent from the results of this subset of studies (Exh. AG-JRW at 34).

Using a risk-free rate of 4.0 percent, a beta of 0.70, and a median equity risk premium of 5.5 percent, the Attorney General calculated an ROE of 7.9 percent for the Water Proxy Group using the CAPM (Exhs. AG-JRW at 36). Likewise, using a risk-free rate of 4.0 percent, a beta of 0.78, and a median equity risk premium of 5.5 percent, the Attorney General calculated an ROE of 8.3 percent for the Gas Proxy Group (Exh. AG-JRW at 36).

3. Hingham and Hull Proposal

Hingham and Hull initially proposed an 8.5 percent ROE based on the optional formula provided in 220 CMR 31.03 and consideration of a number of quantitative and qualitative factors (Exh. TOWNS-DFR at 13-16). In their analysis, Hingham and Hull calculated an allowed ROE of about 5.9 percent, based on the twelve-month average for 2017 of the monthly yields on 30-year U.S. Treasury bonds, plus three percent, which they identified as the low end of a reasonable range of ROEs appropriate for Aquarion (Exh. TOWNS-DFR at 13-14). Hingham and Hull also considered the returns recently granted and those expected to be granted in future proceedings involving the Company's affiliates in Connecticut and New Hampshire, with allowed ROEs of 9.63 percent and 9.6 percent as of 2013, and determined that the Company's allowed ROE should not be significantly greater than its affiliates' allowed ROEs (Exh. TOWNS-DFR at 15-16). Additionally, Hingham and Hull reviewed the Company's relative risk versus that of other Massachusetts water companies, noting that two of the three water companies relied upon by Aquarion for authorized ROE comparisons have much different risk profiles, are riskier investments, and do not have the financial backing of a large, financially strong holding company (Exh. TOWNS-DFR at 16). Further, Hingham and Hull included in their analysis a reduction in Aquarion's financial risk from an investor's point of view, based on the Company's affiliation with Eversource (Exh. TOWNS-DFR at 15, 17). Finally, Hingham and Hull pointed to prevailing interest rates and the ability of the Company to meet its capital needs without significant borrowing (Exh. TOWNS-DFR at 17-18). In their initial analysis, Hingham and Hull concluded that the Company's ROE should be two percent to three percent lower than the 10.5 percent requested by Aquarion due to the Company's lower financial risk in comparison to the companies relied upon for comparison, and they recommended an ROE of 8.5 percent (Exh. TOWNS-DFR at 16).

Based upon their review of the Attorney General's initial analysis, more current economic conditions and financial markets, and an assumed increase in water sales, Hingham and Hull subsequently revised their proposed ROE to 8.4 percent (Exh. TOWNS-DFR (Supp.) at 17-18). Hingham and Hull state that their original analysis equally supports this proposal (Exh. TOWNS-DFR (Supp.) at 18). Additionally, Hingham and Hull propose a further reduction of 0.4 percent to provide the Company with an added incentive to reduce its UAW to 15 percent, thus producing a recommended ROE of 8.0 percent (Exhs. TOWNS-DFR at 18-19; TOWNS-DFR (Supp.) at 18). Finally, Hingham and Hull propose that if the Department approves Aquarion's proposed Mechanism that the Company's ROE be further reduced to 7.75 percent in recognition of the lower financial risk associated with accelerated capital cost recovery (Exh. TOWNS-DFR (Supp.) at 18).

4. Positions of the Parties

a. Attorney General

The Attorney General states that, based on her DCF analysis resulting in an ROE in the range of 8.3 to 8.5 percent and her CAPM analysis resulting in an ROE in the range of 7.9 percent to 8.3 percent, she recommends an ROE of 8.7 percent (Attorney General Brief at 24-25, 28-30, citing Exhs. AG-JRW, at 5; AG-JRW (Supp.) at 2, 4). The Attorney

General asserts that her overall cost of equity estimates are reasonable and appropriate (Attorney General Brief at 30). Further, the Attorney General maintains that an ROE of 8.7 percent is more than adequate for Aquarion to attract capital on reasonable terms, to maintain financial integrity, and is comparable to returns on investment of similar risk, thus meeting the Hope and Bluefield standards (Attorney General Brief at 24; Attorney General Reply at 12, 14, 15). See Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944) ("Hope"), and Bluefield Water Works Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679 (1923) ("Bluefield"). According to the Attorney General, with an ROE of 8.7 percent, the Company's overall rate of return equals 7.2 percent (Attorney General Brief at 25).

Noting that the Department has accepted the use of a comparison group of companies for evaluation of a cost of equity analysis when a distribution company, such as Aquarion, does not have common stock that is publicly traded, the Attorney General states that she evaluated the return requirements of investors in the common stock of a Water Proxy Group and a Gas Proxy Group (Attorney General Brief at 27, citing Exh. AG-JRW at 8-10 (additional citations omitted)). The Attorney General contends that, because the cost of capital is estimated using capital market data, it is appropriate to evaluate the cost of capital based on a group of utilities of similar investment risk profile (Attorney General Reply at 27, citing 262 U.S. 679; 320 U.S. 591).

According to the Attorney General, the S&P issuer credit ratings for Aquarion and the Water Proxy Group are both A-, and the average S&P rating for the Gas Proxy Group is

A/A- (Attorney General Brief at 27, citing Exh. AG-JRW at 10; Attorney General Reply at 13).[171] Based on these ratings, the Attorney General claims that the investment risk for Aquarion is generally in line with the proxy groups (Attorney General Brief at 28, citing Exh. AG-JRW at 10; Attorney General Reply at 13, 14). Moreover, the Attorney General argues that the Company's high credit rating is significant given that the Company's earned ROE in the last few years has been about 200 basis points below her 8.7 percent recommendation (Attorney General Reply at 14, citing Exh. TMD at 3).

Further, the Attorney General estimated the DCF equity cost rate of 8.65 percent for the Water Proxy Group and 8.7 percent for the Gas Proxy Group (Attorney General Brief at 34, citing Exh. AG-JRW (Supp.) at 4). Using the CAPM, the Attorney General estimated equity cost rates of 7.90 percent for both the Water and Gas Proxy Groups (Attorney General Brief at 34, citing Exh. AG-JRW (Supp.) at 4). The Attorney General asserts that each of the components of the inputs to the CAPM are reasonable and appropriate (Attorney General Brief at 30).

The Attorney General claims that the allowed ROEs for water, electric, and gas utilities have declined with interest rates and capital costs over the past ten years (Attorney General Brief at 35, citing Exh. AG-JRW at 5-6; Attorney General Reply at 13, citing Exh. AG-JRW at 37-38). According to the Attorney General, the average allowed ROE for these groups was approximately 9.6 percent as of 2017 (Attorney General Brief at 35, citing

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171 On reply, the Attorney General argues that the Company has an S&P issuer credit rating of A+ (Attorney General Reply at 14, 15, citing Tr. 4, at 629).

Exh. AG-JRW at 5-6). The Attorney General maintains that as of the first quarter of 2018, the average allowed ROEs for electric and gas companies were 9.59 percent and 9.68 percent, respectively (Attorney General Brief at 35, citing Exh. AG-JRW (Supp.) at 6-7). She contends that the updated authorized ROE for water utilities declined to 9.23 percent (Attorney General Brief at 35, citing Exh. AG-JRW (Supp.) at 6-7).

The Attorney General recommends that the Department reject Aquarion's proposed cost of capital because the Company has not supported its request (Attorney General Brief at 36). For instance, the Attorney General contends that Aquarion does not provide facts or arguments, such as traditional ROE studies on the market cost of equity capital in current markets, to support the Company's proposed ROE (Attorney General Reply at 12, 15). The Attorney General claims that the Company's requested ROE is based on an outdated formula in the Department's regulations, which relies on the current equity risk premium (Attorney General Reply at 12, citing Exh. JRW at 39-40; 220 CMR 31.00 et seq.). Further, the Attorney General maintains that Aquarion did not conduct any studies to demonstrate that the comparison ROEs from seven water and gas distribution ROE decisions by the Department would be appropriate in this proceeding (Attorney General Reply at 12-13). The Attorney General also contends that the Company provided no empirical studies or evidence to show whether Aquarion's proposed ROE meets the standards set out in Hope and Bluefield (Attorney General Reply at 13). In contrast, the Attorney General asserts that she provided substantial evidence and analyses supporting her proposal by conducting traditional DCF and CAPM studies to measure the market cost of capital in current markets (Attorney General

Brief at 36; Attorney General Reply at 13). According to the Attorney General, the Company has not proven that her recommended ROE of 8.7 percent would impair Aquarion's financial integrity, restrict its access to capital at a reasonable cost, and is not comparable to returns on investment of similar risk (Attorney General Reply at 12, 14, 15). Finally, the Attorney General argues that her recommended ROE of 8.7 percent is higher than Aquarion's earned ROE in recent years and, given its earned ROE, the Company did not claim that it was unable to attract capital (Attorney General Reply at 14, 15, citing Exh. TMD at 3). Based on the foregoing, the Attorney General contends that the Department should set the allowed ROE no higher than 8.7 percent (Attorney General Brief at 36; Attorney General Reply at 15).

b. Hingham and Hull

Hingham and Hull contend that the Company's proposed ROE is too high and recommend "a significantly lower level" based on several considerations (Hingham/Hull Brief at 22). According to Hingham and Hull, their recommendation is supported by the optional formula provided in 220 CMR 31.03; a reduction of risk arising from Aquarion's acquisition by Eversource; Aquarion's size compared to other water companies; the ROEs of similar water companies; and interest rates on U.S. treasuries (Hingham/Hull Brief at 22-26). Hingham and Hull argue that interest rates for U.S. treasuries, the prime rate, the London Interbank Offered Rate index, the Federal Funds Rate, and indices that track home mortgage rates are at or near all-time lows (Hingham/Hull Brief at 26).

Hingham and Hull argue that applying the formula provided in 220 CMR 31.03, given today's financial conditions and the circumstances of this case, would produce an ROE of approximately 5.9 percent (Hingham/Hull Brief at 23). According to Hingham and Hull, applying the same formula in the Company's prior rate case, based on the 4.2 percent 30-year U.S. Treasury yield at that time, resulted in a calculated ROE of 7.2 percent (Hingham/Hull Brief at 23). Hingham and Hull contend that this is an indication that the Company's ROE going forward should not be allowed to exceed the current level (Hingham/Hull Brief at 23). Hingham and Hull state that their recommendation is based on the formula: Allowed ROE = Index + 3.0 percent, where the index is the average of the monthly rates on 30-year U.S. Treasury bonds for the most recent twelve months (i.e., calendar year 2017) (Hingham/Hull Brief at 23). Hingham and Hull maintain that the index average is 2.87 percent (Hingham/Hull Brief at 23). Hingham and Hull conclude that 5.9 percent is at the low end of a range for ROEs (Hingham/Hull Brief at 23). For these reasons, Hingham and Hull claim that the Company's ROE, at a minimum, should not exceed the current level (Hingham/Hull Brief at 23).

Further, Hingham and Hull argue that because Aquarion is a large private water company and is owned by a larger company (i.e., Eversource), its financial risk is less than most companies selected for a comparison group (Hingham/Hull Brief at 24). For example, Hingham and Hull maintain that Aquarion-CT's allowed ROE is 9.63 percent and Aquarion-NH's allowed ROE is 9.6 percent (Hingham/Hull Brief at 24). According to Hingham and Hull, Aquarion-CT and Aquarion-NH have earned ROEs at or above their allowed ROE since 2014 (Hingham/Hull Brief at 24-25). Hingham and Hull claim that Eversource's acquisition of Aquarion Water Company, as well as continued low interest rates, will result in lower ROEs for Aquarion-CT and Aquarion-NH in their next rate cases (Hingham/Hull Brief at 24-25). Therefore, Hingham and Hull assert that given the sizes of Aquarion-CT and Aquarion-NH, their comparable financial risks, and having the same holding company (i.e., Eversource), Aquarion's allowed ROE should be lower than its affiliates' ROEs and at the low end of those authorized in the comparison group (Hingham/Hull Brief at 24-25).

Hingham and Hull also contend that the Company's ROE comparison to other water companies in Massachusetts is irrelevant, because these ROEs are out of date and two of the comparison companies have different risk profiles than Aquarion (Hingham/Hull Brief at 25). Hingham and Hull claim that these two water companies are much riskier investments because they are much smaller than the Company and neither is owned by a large, financially strong holding company like Eversource (Hingham/Hull Brief at 25). Hingham and Hull argue that water companies owned by a large, monopolistic utility makes that water company considerably less risky investments from an investor's point of view (Hingham/Hull Brief at 26). Therefore, Hingham and Hull maintain that these comparison water utilities in Massachusetts provide evidence that the Company's ROE should be set significantly lower (i.e., 2-3 percent) than the 10.5 percent that these companies were granted (Hingham/Hull Brief at 25).

According to Hingham and Hull, the average ROEs for water, gas, and electric utilities have been trending down since 2009 (Hingham/Hull Brief at 25). Hingham and Hull contend that this trend will not reverse soon (Hingham/Hull Brief at 25). Further, Hingham and Hull disagree with the Company's position that water utilities are riskier than gas utilities to investors because water is essential to human life (Hingham/Hull Brief at 26). Hingham and Hull argue that the Company faces little risk of losing market share because it is a monopoly provider of an essential service to all customers in its service territory (Hingham/Hull Brief at 26).

For these reasons, Hingham and Hull recommend that the Company's ROE should be in the range of 8.2 percent to 9.2 percent (Hingham/Hull Brief at 26-27). The Company argues that an ROE set between 8.2 percent and 9.2 percent preserves the Company's financial integrity and meets the Department's two criteria: (1) allowing the Company to attract capital on reasonable terms; and (2) be comparable to return on investments of similar risk (Hingham/Hull Brief at 26-27).

Hingham and Hull additionally propose a downward incentive adjustment to incentivize the Company to reduce its UAW to at least 15 percent (Hingham/Hull Brief at 27). Finally, Hingham and Hull recommend a further downward adjustment if the Department approves the Company's proposed Mechanism asserting that the Mechanism would reduce regulatory lag for capital improvements as well as reduce the Company's financial risk associated with recovery of a large portion of the Company's capital improvements (Hingham/Hull Brief at 24, 27). On brief, Hingham and Hull revise their recommended ROEs from those proposed in testimony and argue that an ROE of 8.6 percent would be appropriate, recommending an adjustment to 8.4 percent related to the UAW incentive and a further adjustment to 8.2 percent if the Department approves the proposed Mechanism (Hingham/Hull Brief at 26-27).[172]

c. Company

The Company argues that the Department should adopt Aquarion's recommended ROE of 10.5 percent (Company Brief at 71). The Company contends that because it elected to use the optional formula set forth in 220 CMR 31.03, it is deemed to have presented a prima facie case for its ROE and established a rebuttal presumption that the application of the formula results in a fair and reasonable ROE (Company Brief at 73, citing 220 CMR 31.02; Company Reply at 12, citing 220 CMR 31.02). Aquarion claims that the Attorney General, Hingham, and Hull dismiss the notion that the optional formula is intended to reduce the cost of litigating water rate cases by simplifying the process of setting the allowed ROE (Company Reply at 11, citing Generic Cost of Capital for Water Companies, D.P.U. 85-115, at 2-3 (1985)). According to the Company, the optional formula is designed to balance the loss of precision in setting ROE with administrative advantages (Company Reply at 11, citing D.P.U. 85-115, at 2-3). Moreover, the Company notes that it is contradictory for the Attorney General to dispute $15,000 in rate case expense for an external consultant while

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172 In their supplemental testimony, Hingham and Hull proposed an ROE of 8.4 percent, recommending a further adjustment to 8.0 percent as an incentive to reduce UAW, and to 7.75 percent in the event that the proposed Mechanism is approved (see Exh. TOWNS-DFR (Supp.) at 18).

simultaneously claiming that the Department should reject the Company's proposed ROE because Aquarion did not rely on an external expert (Company Reply at 11-12). The Company argues that by forgoing the services of an ROE expert witness, it reduced costs and acted in the best interest of its customers and itself (Company Reply at 12).

Aquarion maintains that its authorized ROE must allow it to maintain its credit and ability to attract capital in the future (Company Brief at 70, 74, citing Boston Edison v. Department of Public Utilities, 375 Mass. 305, 315 (1978), citing Hope 320 U.S.at 603; New England Telephone and Telegraph Company v. Department of Public Utilities, 327 Mass. 81, 88 (1951); Massachusetts Electric Company v. Department of Public Utilities, 376 Mass. at 299; Attorney General v. Department of Public Utilities, 392 Mass. at 265). Further, Aquarion maintains that its ROE should be determined so that it is commensurate with the returns for companies with similar risks, namely companies without a revenue decoupling mechanism and an infrastructure recovery mechanism (Company Brief at 69-70, 75, citing Attorney General v. Department of Public Utilities, 392 Mass. at 266; Hope, 320 U.S. at 603).

Aquarion contends that the Department should reject the Attorney General's recommended allowed ROE of 8.7 percent and Hingham and Hull's recommended allowed ROE of 8.4 percent because they deny the Company a fair rate of return and the ability to attract capital (Company Brief at 73, 75). The Company argues that without a fair return, it will not be able to attract investors to maintain safe and reliable service (Company Brief at 70). Aquarion contends that the Attorney General's recommended ROE of 8.7 percent would undermine its ability to sustain utility operations and attract capital at a reasonable cost (Company Brief at 74, 75; Company Reply at 13). Because other water utilities earn an ROE higher than the Attorney General's recommended 8.7 percent, Aquarion asserts that it would be more difficult to retain and attract investors because it would be at a comparative disadvantage (Company Brief at 75; Company Reply at 13). Further, Aquarion maintains that the Attorney General's recommended ROE of 8.7 percent is significantly lower than allowed ROEs by the Department over the last two decades (Company Brief at 75). The Company argues that if its ROE is below the ROEs of similar water utilities, its customers will be harmed (Company Reply at 13).

According to the Company, its proposed ROE of 10.5 percent is below the ROE of 11.5 percent permitted by 220 CMR 31.00 (Company Brief at 71, citing Exh. TMD at 28). Thus, Aquarion maintains that the Attorney General's recommended ROE of 8.7 percent is also below the ROE permitted under the optional formula in 220 CMR 31.03 (Company Brief at 73, citing Exh. TMD at 28-29). Moreover, the Company argues that Hingham and Hull calculate an ROE of 5.9 percent based on their erroneous interpretation of 220 CMR 31.03 (Company Brief at 76, citing Attorney General v. Department of Public Utilities, 392 Mass. at 262, 266). Therefore, the Company maintains an ROE of 10.5 percent is consistent with recently allowed ROEs for water utilities and that the recommended ROEs from the Attorney General and Hingham and Hull are well below ROEs recently awarded to other water utilities in Massachusetts with similar risks (Company Brief at 72-73, 75-76, citing Exh. TMD at 28; Company Reply at 12). Further, the Company maintains that the Department has previously recognized the difficulties facing small water companies in obtaining access to capital markets (Company Brief at 70-71, citing Aquarion Water Company of Massachusetts, D.P.U. 11-55, at 24 (2011); Sheffield Water Company, D.P.U. 09-143, at 10 (2010); Assabet Water Company, D.P.U. 08-49, at 8 (2008); Assabet Water Company, D.P.U. 08-9, at 10 (2008); Assabet Water Company, D.P.U. 08-7, at 8 (2008); Assabet Water Company, D.P.U. 07-34, at 9 (2007); Dover Water Company, D.T.E. 04-50, at 9 (2004); Sheffield Water Company, D.T.E. 00-75, at 5 (2000); Blackstone Gas Company, D.T.E. 98-91, at 6 (1999); Generic Cost of Capital for Water Companies, D.P.U. 96-90-A at 8-9 (1997)). Therefore, Aquarion argues that the Department should adopt the Company's recommended ROE of 10.5 percent (Company Brief at 71).

Moreover, Aquarion contends that its proposal to reduce the ROE from 11.5 percent to 10.5 considers the current interest rate environment (Company Brief at 71-72, citing Exh. TMD at 30). According to the Company, U.S. Treasury yields have been increasing as the Federal Reserve changes its monetary policies (Company Brief at 76, citing Exh. TMD at 30-31; Tr. 4, at 610; Company Reply at 12). Further, Aquarion argues that the Department granted ROEs of 10.5 percent to other water utilities while the 30-year U.S. Treasury bond rate was lower than the current rate (Company Reply at 12-13, citing Exh. TMD at 30-31). Additionally, the Company maintains that the Attorney General's witness acknowledged rising U.S. Treasury yields (Company Reply at 13). Therefore, Aquarion maintains that the current interest rate environment does not dictate a lower ROE (Company Brief at 76; Company Reply at 11).

In addition, Aquarion argues that the Department does not rely on the DCF model and the CAPM approaches that the Attorney General used to rebut the Company's proposed ROE (Company Brief at 73, citing D.P.U. 14-150, at 342-344, 349-350). Further, the Company asserts that the utilities in the proxy groups relied upon by the Attorney General are larger than Aquarion (Company Brief at 74). According to the Company, the Department "recognizes that a company's size is an appropriate factor to be considered in evaluating the relative risk of a company versus that of a proxy group" (Company Brief at 74, citing D.P.U. 12-86, at 268).

According to Aquarion, the Attorney General's proxy group of gas utilities differs from the Company because they typically have cost recovery mechanisms that water companies do not have (Company Brief at 74, citing Exh. TMD at 28-29). Moreover, Aquarion maintains that the Department has previously allowed ROEs for gas companies above the 8.7 percent ROE recommended by the Attorney General in this case (Company Brief at 74, citing D.P.U. 14-150, at 330, 367; D.P.U. 15-80/D.P.U. 15-81, at 262, 294). Thus, compared to gas utilities, Aquarion argues that its proposed ROE of 10.5 percent is reasonable because gas utilities are larger and have infrastructure tracking and revenue decoupling mechanisms (Company Brief at 72, citing Exh. TMD at 28-29). In comparing itself to the Attorney General's Water Proxy Group's ROE of 9.23 percent, the Company argues that the Department should consider that the water companies in the comparison group have much higher common equity ratios than the Company (Company Brief at 74, citing Tr. 4, at 624-625, 629).

In response to Hingham and Hull's ownership argument, Aquarion contends that the Department recognizes that a local distribution company is a separate legal entity from the holding company and, therefore, has different capital requirements (Company Brief at 76, citing D.P.U. 13-75, at 276). Accordingly, the Company argues that the Department should not reduce its proposed ROE because it is owned by Eversource (Company Brief at 76).

In addition, the Company disputes Hingham and Hull's argument that it will experience reduced financial risk arising from the Mechanism (Company Brief at 105). Aquarion contends that the Company's peer companies, including its direct affiliates, have ratemaking mechanisms in place that allow for recovery of capital cost recovery mechanisms (Company Brief at 105). Therefore, according to Aquarion, the Company will not experience reduced risk as compared to peer companies if the Department approves the proposed Mechanism, but rather, is riskier without it (Company Brief at 105). Further, the Company argues that the Attorney General did not make any downward adjustment for the proposed Mechanism and that Hingham and Hull did not proffer any evidence establishing that the Company will experience less risk (Company Brief at 105). Finally, the Company contends that it is losing money and cannot meet its debt coverage ratios (Company Brief at 105). According to Aquarion, "circumstances are dire" and application of the Mechanism is not going to fundamentally alter the situation to make the Company less risky than its peers (Company Brief at 105).

In consideration of qualitative factors in determining the ROE, the Company argues that it was ranked first in customer satisfaction in 2016 by JD Power for investor-owned water utilities (Company Brief at 72, citing Exh. TMD at 31). Further, Aquarion maintains that it has improved communications with municipalities, constituents, and stakeholders in its service territory (Company Brief at 72, citing Exh. TMD at 31). Finally, the Company asserts that it has significantly invested in its system through the replacement of aging infrastructure, thereby growing rate base by 18 percent since its last rate case (Company Brief at 72, citing Exh. TMD at 31). For these qualitative reasons, Aquarion argues that the Department should allow an ROE that is equivalent or better than its peers in the water utility industry (Company Brief at 72, citing Exh. TMD at 31). For all these reasons, the Company asserts that the Department should reject the Attorney General's and Hingham and Hull's recommended ROEs and adopt its proposed ROE of 10.5 percent (Company Brief at 72, 75-76).

5. Analysis and Findings

a. Introduction

As noted above, Aquarion has requested a 10.5 percent ROE based on the Department's optional cost of capital method established in 220 CMR 31.00. The Attorney General has proposed an ROE of 8.7 percent, based on the results of DCF and CAPM analyses. Hingham and Hull have proposed an ROE of 8.40 percent, based in part on an incentive to lower UAW, and recommend further reducing the ROE to 8.2 percent, depending upon the Department's disposition of the Company's proposed Mechanism (Hingham/Hull Brief at 26-27).[173]

First, the Department will consider the application of the Department's optional cost of capital method in this proceeding. Next, we will examine the Attorney General's selection of proxy groups, followed by the quantitative aspects of her financial models. Finally, the Department will examine the qualitative factors that warrant consideration in determining an appropriate ROE for Aquarion.

b. Generic Cost of Capital

In D.P.U. 85-115, the Department adopted 220 CMR 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 common equity ratio in excess of 25 percent but below 75 percent equity, 220 CMR 31.00 et seq., allows an ROE that is equal to the twelve-month average of 30-year U.S. 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 CMR 31.01, 31.03. Once a water company elects to use the optional formula set forth in 220 CMR 31.03, it is deemed to have presented a prima facie case

173 As noted above, on brief, Hingham and Hull revised their proposed ROE from that proposed in testimony.

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 CMR 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 CMR 31.03 ("Except where the Department may otherwise determine in specific cases, the allowed return on equity may not exceed 14.5 percent or be below 11.5 percent"). In other words, notwithstanding the bandwidth contained in 220 CMR 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. D.P.U. 08-27, at 137; D.P.U. 96-90-A at 11-12. For example, continued deficiencies in service quality could rebut the presumption created by 220 CMR 31.02 that a proposed ROE within the regulation's bandwidth is fair and reasonable. D.P.U. 08-27, at 135-136; 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 a utility's ROE at the low end of a range of reasonableness upon a showing that a utility's performance was deficient. D.P.U. 11-01/D.P.U. 11-02, at 424-426 (company shortcomings in storm response warranted reduced ROE); D.P.U. 10-114, at 339-340 (company activities related to Department-ordered audit warranted reduced ROE); D.P.U. 08-35, at 220 (customer service deficiencies warranted reduced ROE); D.P.U. 96-90-A at 11 (Department statement that subpar performance would warrant reduced ROE); see also D.P.U. 85-266-A/271-A at 172 (failure to fulfill public service obligations warranted reduced ROE). We find no reason to depart from our long-standing precedent and the accepted regulatory practice of considering qualitative factors such as management performance and customer service in setting a fair and reasonable ROE.[174]

In the present case, the Department finds sufficient evidence to rebut the presumption that the optional cost of equity formula contained in 220 CMR 31.00 et seq. produces a fair and reasonable allowed ROE and to warrant an allowed ROE outside the bandwidth provided by 220 CMR 31.03. First, Aquarion itself has proposed an ROE of 10.5 percent, which falls below the calculation provided for in 220 CMR 31.03. Second, the intervenors have presented several cogent arguments that warrant a finding that historical economic and financial data support a lower ROE and sufficiently rebuts the presumption that an ROE based on the floor contained in the optional formula is fair and reasonable. Specifically, the Attorney General has offered financial analyses using both the DCF and CAPM approaches, interest rate data, and recent allowed ROEs granted by other utility commissions (Exhs. AG-JRW at 11-36; AG-JRW (Supp.) at 6–7; AG-JRW-2; AG-JRW-3). In addition, Hingham and Hull highlight the results of the optional formula using current interest rates

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174 See, e.g., In re Citizens Utilities Company, 171 Vt. 447, 453 (2000) (general principle that rates may be adjusted depending on the adequacy of the utility's service and the efficiency of its management); US West Communications, Inc. v. Washington Utilities and Transportation Commission, 134 Wash.2d 74, 121 (1998) (a utility commission may consider the quality of service and the inefficiency of management in setting a fair and reasonable rate of return); State of North Carolina ex rel. Utilities Commission v. General Telephone Company of the Southeast, 285 N.C. 671, 681 (1974) (the quality of the service rendered is, necessarily, a factor to be considered in fixing the just and reasonable rate therefor); Gulf Power Company v. Wilson, 597 So.2d 270, 273 (1992) (regulator was authorized to adjust rate of return within reasonable range to adjust for mismanagement); Wisconsin Public Service Corporation v. Citizen's Utility Board, Inc., 156 Wis.2d 611, 616 (1990) (prudence is a factor regulator considers in setting utility rates and can affect the allowed ROE).

without consideration of the floor rate, recent allowed ROEs granted by other utility commissions, and a comparative assessment of returns recently granted by the Department to water utilities (Exhs. TOWNS-DFR at 13-17; Towns 3-9). The Department has also considered recent trends in U.S. Treasury interest rates and recent information about ROEs granted by other states for all utilities, including water companies (Exhs. AG-JRW (Supp.) at 6–7; Towns 3-9). Federal Reserve, Data Download Program, Selected Interest Rates, available at https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15.[175] The Department finds that the evidence on interest rates and allowed ROEs is satisfactory and persuasive in rebutting the presumption that the use of 220 CMR 31.00 to determine that the Company's ROE is fair and reasonable.

c. Proxy Groups

The Department has accepted the use of a proxy group of companies for evaluation of a cost of equity analysis when a distribution company does not have a common stock that is publicly traded. See D.P.U. 08-35, at 176-177; D.T.E. 99-118, at 80-82; D.P.U. 92-78, at 95-96. Companies in the proxy group must have common stock that is publicly traded and must be generally comparable in investment risk. D.P.U. 1300, at 97.

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175 The Federal Reserve now maintains historic interest data through its interactive Data Download Program. Federal Reserve, Data Download Program, https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15 (last visited October 29, 2018). This information is relied upon by the Department in the normal course of business because the data is used as an input into the optional cost of equity method in 220 CMR 31.00.

In our evaluation of the proxy groups used by the Attorney General, we recognize that it is neither necessary nor possible to find a group in which the companies match Aquarion in every detail. D.P.U. 09-39, at 386; D.T.E. 99-118, at 80; D.P.U. 87-59, at 68; D.P.U. 1100, at 135-136. Rather, we may rely on an analysis that employs valid criteria to determine which companies will be in the proxy group and also provides sufficient financial and operating data to discern the investment risk of the company versus the proxy group. D.T.E. 99-118, at 80; D.P.U. 87-59, at 68; D.P.U. 1100, at 135-136.

The Department expects diligence by parties in assembling proxy groups that will produce statistically reliable analyses required to determine a fair rate of return for the company. D.P.U. 10-55, at 480-482. Overly exclusive selection criteria may affect the statistical reliability of a proxy group, especially if such screening criteria result in a limited number of companies in the proxy group. D.P.U. 10-55, at 480-482. The Department expects parties to limit criteria to the extent necessary to develop a broader as opposed to a narrower proxy group. D.P.U. 10-114, at 299; D.P.U. 10-55, at 481-482. To the extent that a particular company's characteristics differ from those of the others in a proxy group, those differences should be identified in sufficient detail to enable a reviewer to discern any effects on investment risk. D.P.U. 10-114, at 299; D.P.U. 10-55, at 480-482.

We find that the Attorney General employed a set of valid criteria to select its Water Proxy Group, especially due to the fact that the universe of publicly traded water companies is limited both in number and size. We also find the Attorney General's reliance on a proxy group of publicly traded gas companies to be appropriate for purpose of demonstrating the comparability of the investment risk these companies face and to the risk faced by Aquarion. However, because the Attorney General's proposed Water and Gas Proxy Groups are restricted to nine and seven companies, respectively, we must take into consideration any statistical limitations associated with the size of these proxy groups when comparing these companies to the Company's operations. See D.P.U. 12-86, at 267; D.P.U. 10-55, at 480-482. Further, we find that the Attorney General provided sufficient information about its proxy groups to allow the Department to draw conclusions about the relative risk characteristics of the Company in relation to the members of the proxy groups. See D.P.U. 09-30, at 307. Therefore, the Department will rely on the Attorney General's proposed proxy groups as a basis for analyzing the Company's cost of capital.

As noted above, we will consider Aquarion's particular characteristics, as compared to the proposed proxy groups, when determining an appropriate ROE. For example, Gas Proxy Group members have a number of reconciling mechanisms. The extent to which these particular reconciling mechanisms affect a company's cash flow and financial performance will affect the evaluation of the Company's comparability to the proxy groups. Second, the Department has previously noted that some of the holding companies in the Attorney General's Gas Proxy Group are also involved in non-regulated businesses beyond gas distribution activities, potentially making these companies more risky, all else being equal, and in turn, more profitable than the Company. D.P.U. 09-39, at 350; D.P.U. 09-30, at 308; D.P.U. 08-35, at 175. Also, Aquarion has substantially less utility plant and a smaller customer base than the companies included in the Attorney General's Water and Gas

Proxy Groups (Exh. AG-JRW-4). A smaller company, as opposed to a larger one, may face greater earnings volatility if, for example, a large unanticipated expenditure is incurred. D.P.U. 12-86, at 268. Consequently, the Department recognizes that a company's size is an appropriate factor to be considered in evaluating the relative risk of a company versus that of a proxy group. D.P.U. 12-86, at 268.

In addition, the Company's current common equity ratio and revenues is somewhat lower than the averages of those companies in the Attorney General's Water and Gas Proxy Groups (Exh. AG-JRW-4). While companies that are not publicly traded, such as Aquarion, may have a greater tolerance for debt in their capital structures than publicly traded systems, the Department recognizes a company's capital structure and common equity ratio as factors to be considered in determining an appropriate ROE. D.P.U. 07-71, at 135; Commonwealth Electric Company, D.P.U. 956, at 50 (1982). The Company's financial profile notwithstanding, when determining the Company's financial risk profile, we will also take into account that Aquarion's affiliation with Eversource enables it to secure more favorable borrowing terms than those available prior to the Company's acquisition. D.P.U. 17-115, at 49.

Therefore, while we accept Attorney General's proxy groups as a basis for evaluating her ROE proposals, we find that Aquarion has an overall risk profile that is somewhat higher than that of the companies in her proxy groups due to the Company's size, common equity ratio, and relative lack of reconciling mechanisms. We will consider the particular characteristics of the Company as compared to members of the proxy groups when determining the appropriate ROE.

d. Financial Models

i. Discounted Cash Flow Model

The Attorney General used a form of the DCF model, referred to as the constant growth or Gordon DCF model, which assumes an infinite investment horizon and a constant growth rate (Exh. AG-JRW at 11-12). The DCF model used by the Attorney General has a number of very strict assumptions (e.g., it assumes that earnings growth and dividend payouts will grow at the same rate in the future for an indefinite period) (Exh. AG-JRW at 13). These assumptions affect the estimation of ROE. Because regulatory commissions establish a level of authorized earnings for a utility that, in turn, implicitly influences dividends per share, the estimation of the growth rate from such data is an inherently circular process. D.P.U. 17-05, at 682; D.P.U. 10-114, at 312; D.P.U. 10-55, at 512; D.P.U. 09-30, at 357-358. Specifically, the DCF model includes an element of circularity when applied in a rate case because investors' expectations depend upon regulatory decisions. D.P.U. 12-86, at 269; D.P.U. 10-70, at 253; D.P.U. 09-30, at 357-358. Consequently, this circularity affects the results of DCF models. The Attorney General's DCF model's partial use of historic earnings per share growth rates compensates to some extent for this circularity (Exhs. AG-JRW-1, at 17-18). The Department will consider these limitations when evaluating the DCF-determined ROE presented by the Attorney General.

ii. Capital Asset Pricing Model

The Department has previously found that the traditional CAPM, as a basis for determining a utility's cost of equity, has limited value and, in some cases, no value because of a number of limitations including questionable assumptions that underlie the model. D.P.U. 10-114, at 318; D.P.U. 10-70, at 267; D.P.U. 08-35, at 207; D.T.E. 03-40, at 359-360; D.P.U. 956, at 54.[176] We note some of these limitations below.

CAPM is based on investor expectations and, therefore, it is appropriate to use a prospective measure for the risk-free rate component. The Attorney General's CAPM analysis uses a 30-year U.S. Treasury bond yield of 4.0 percent as a proxy for the risk-free rate (Exhs. AG-JRW at 28; AG-JRW-11, at 1). The Treasury bond yield has been between 2.5 and 4.0 percent during 2013 and 2017 (Exh. AG-JRW at 28). The Department has not been persuaded that long-term government bonds are the appropriate proxy for the risk-free rate. D.T.E. 01-56, at 113; D.P.U. 93-60, at 256-257; D.P.U. 92-78, at 113; D.P.U. 88-67 (Phase I) at 182-184. Moreover, federal monetary policy intended to stimulate the economy had pushed treasury yields to near historic lows, which may tend to underestimate the

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[176] In D.P.U. 08-35, at 207 n.131, the Department identified the following questionable assumptions used in the CAPM: (1) capital markets are perfect with no transaction costs, taxes, or impediments to trading, all assets are perfectly marketable, and no one trader is significant enough to influence price; (2) there are no restrictions to short-selling securities; (3) investors can lend or borrow funds at the risk-free rate; (4) investors have homogeneous expectations (i.e., investors possess similar beliefs on the expected returns and risks of securities); (5) investors construct portfolios on the basis of the expected return and variance of return only, implying that security returns are normally distributed; and (6) investors maximize the expected utility of the terminal value of their investment at the end of one period.

risk-free rate over the long term and, thereby, understate the required ROE. D.P.U. 14-150, at 350; D.P.U. 12-25, at 427; D.P.U. 11-01/D.P.U. 11-02, at 416. The Attorney General's use of the high end of the 2013 through 2017 range of 30-year U.S. Treasury bond yields partially corrects for this underestimation.

The Attorney General's CAPM analysis employs betas of 0.70 for the Water Proxy Group and 0.78 for the Gas Proxy Group, as well as a market risk premium of 5.5 percent based on analysis of numerous surveys of financial professionals (Exhs. AG-JRW at 29-33; AG-JRW-11, at 1). While it is appropriate to base the market risk premium on investors' perception of the additional risk, the Department has found that the coefficient of determination for beta is generally so low that the statistical reliability of the results is questionable. D.P.U. 17-05, at 693; D.T.E. 01-56, at 113; D.P.U. 93-60, at 256-257; D.P.U. 92-78, at 113; D.P.U. 88-67 (Phase I) at 182-184. Moreover, as pointed out by the Attorney General's witness, there is always a debate as to how to compute the appropriate market risk premium as well as disagreements regarding the appropriate beta to be used when applying this model (Exh. AG-JRW at 30). Based on the above, the Department will give limited consideration to the results of the Attorney General's CAPM estimates in determining the appropriate ROE for Aquarion.

e. Conclusion

The standard for determining the allowed rate of ROE is set forth in Bluefield and Hope. The allowed ROE should preserve a company's financial integrity, allow it to attract capital on reasonable terms, and be comparable to returns on investments of similar risk. See Bluefield, 262 U.S. at 692-693; Hope, 320 U.S. at 603, 605.

While the results of analytical models are useful, 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. We must apply to the record evidence and argument considerable judgment and agency expertise to determine the appropriate use of the empirical results. Our task is not a mechanical or model-driven exercise. D.P.U. 08-35, at 219-220; D.T.E. 07-71, at 139; D.T.E. 01-56, at 118; D.P.U. 18731, at 59; see also Boston Edison v. Department of Public Utilities, 375 Mass. at 316).[177]

In the present case, the Department has considered the relative risk characteristics of Aquarion in relation to two separate proxy groups, assessed the relative strengths and limitations of the Attorney General's DCF and CAPM analyses, reviewed current and historic rate trends, and considered ROEs granted to other water systems in Massachusetts and elsewhere. The Department has also considered the Company's improved efforts in communicating with its customers and municipal officials and its ongoing efforts to reduce

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177 We reaffirm the Department's prior comment on setting a company's ROE:

> Advances in data gathering and statistical theory have yet to achieve precise prediction of future events or elimination of the bias of the witnesses in their selection of data. Thus, there is no irrefutable testimony, no witness who has not made significant subjective judgments along the way to his conclusion, and no number that emerges from the welter of evidence as an indisputable "cost" of equity.

New England Telephone and Telegraph Company, D.P.U. 17441, at 9 (1973).

UAW,[178] addressed in Sections XVI.A. and XVI.B. below. Finally, the Department has approved a targeted mains replacement cost recovery mechanism, limited in both scope and scale, intended to provide the Company with the financial tools it needs to undertake the significant capital replacements that will be necessary to ensure that Aquarion's customers obtain the quality of service that is expected, addressed in Section V. above.

Based on a review of the evidence, arguments of the parties, and the Department's judgment and considerable agency expertise, the Department finds that an allowed ROE of 10.5 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 various methods for determining an appropriate rate of ROE.

X. 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 as well as to ensure continuity of rates, fairness between

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178 As noted in Section XVI.B.3., the Company has made satisfactory efforts to control UAW, and the Department anticipates that the Company's UAW will continue to improve as a result of the Mechanism.

rate classes, and corporate earnings stability. D.P.U. 17-107, at 173; Bay State Gas Company, D.P.U. 12-25, at 444 (2012); D.P.U. 10-114, at 341.

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 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.P.U. 17-107, at 173-174; D.P.U. 12-25, at 445; D.P.U. 10-114, at 342.

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.P.U. 17-107, at 174; D.P.U. 12-25, at 444-445; D.P.U. 10-114, at 342.

There are two steps in determining rate structure: cost allocation and rate design. Cost allocation assigns a portion of a company's total costs to each rate class through an embedded allocated cost of service study ("ACOSS"). The allocated cost of service represents the cost of serving each rate class at equalized rates of return given the company's level of total costs. D.P.U. 17-107, at 174; D.P.U. 12-25, at 446; D.P.U. 10-114, at 342.

The results of the ACOSS are compared to the revenues collected from each rate class in the test year. If these amounts are reasonably comparable, 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 significant, 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.P.U. 17-107, at 174-175; D.P.U. 12-25, at 446.

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 overarching requirement for rate design is that a given rate class 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.P.U. 17-107, at 175-176; D.P.U. 12-25, at 447.

B. Cost of Service Study

1. Introduction

In support of its proposed rates, Aquarion conducted an ACOSS using the base-extra capacity method (Exhs. JFG at 5; JFG-1 (Rev.)). The base-extra capacity method, as set forth in the American Water Works Association's Water Rates Manual M-1

("M-1 Manual"),[179] provides for the functional allocation of the cost of service between base or average day demands and the extra capacity required to meet maximum and peak hour demands (Exhs. JFG at 5-6; JFG-1 (Rev.) at Schs. 9 & 10). Under this method, costs assignable to average day demands are considered to be base costs. The M-1 Manual defines extra-capacity costs as the additional costs incurred as the result of varying system load conditions and the need to meet water demands in excess of average day requirements. The M-1 Manual additionally divides extra-capacity costs by maximum day and peak hour. Once the Company functionalized its costs according to base and extra capacity costs, the Company allocated these costs according to rate class based on their contribution to the system's average day demand and maximum day or peak hour demands (Exh. JFG-1 (Rev.), Sch. 10).[180]

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[179] The Department takes official notice of the M-1 Manual pursuant to 220 CMR 1.10(2).

[180] To allocate costs to Aquarion's large industrial G4 class, the Company separated its base costs into two components, Base 1 and Base 2 (Exh. JFG at 5). The Base 2 function represents costs for smaller size mains that do not significantly contribute to serving the large industrial G4 class (Exh. JFG at 5). The Company also separated its extra-capacity peak-hour costs into two components, Peak Hour 1 and Peak Hour 2 (Exh. JFG at 5). Peak Hour 2 accounts for smaller mains that do not significantly contribute to service Aquarion's large industrial G4 class (Exh. JFG at 5).

Based on the results of the ACOSS, the table below shows the revenue requirement attributed to each rate class:

Rate Class	Revenue Requirement	Functional Allocation
Residential	$9,623,177	69.07%
Commercial	$1,412,002	10.14%
Industrial	$67,360	0.48%
Large Industrial	$826,703	5.93%
Public Authority	$334,490	2.40%
Fire Service (Public/Private)	$1,668,082	11.97%
TOTAL	$13,931,814[181]	100.00%

(Exh. JFG-1 (Rev.), Sch. 1). No party addressed the Company's ACOSS on brief.

2. Analysis and Findings

a. Method of Implementation

The M-1 Manual is a generally accepted reference work within the water industry. D.P.U. 08-27, at 146; 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

181 This figure is the revenue requirement as of the date of the Company's revised ACOSS, June 18, 2018, and not the revised revenue requirement contained in the Company's final revenue requirement schedules, submitted August 10, 2018. However, any resulting changes to the functional allocation would be minimal. The Company's calculation of the cost allocated to each rate class in the Company's compliance filing will be based on the revenue requirement approved by the Department in this Order.

demand 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. D.P.U. 08-27, at 146; D.P.U. 95-118, at 153.

b. Allocation Factors

The base-extra capacity method requires the use of functional allocation factors that relate average daily consumption levels for each rate class's contribution to maximum-day and peak-hour demands. The base-extra capacity method relies on the test year level of water consumption for each rate class (Exh. JFG-1 (Rev.), Sch. 10). The Company based the system-wide average day and maximum day factors used in its analysis on total system historic demands between 2013 and 2016 in its three districts: (1) Service Area A; (2) Millbury; and (3) Oxford (Exhs. JFG at 7-8; JFG-1 (Rev.), at Sch. 9; Towns 3-10). The Company based the system-wide peak-hour factors, as well as the class-specific average day, maximum day, and peak-hour factors, on a combination of the experience of other water companies and the professional judgment of the Company's witness (Exhs. JFG at 7; DPU 1-26; DPU 1-26, Att. A; DPU 1-27; DPU 6-12; DPU 13-4; DPU 13-5; DPU 13-8). When a company relies on borrowed load data, whether in 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. D.P.U. 08-27, at 146; Cambridge Electric Light Company, D.P.U. 1015, at 59 (1982); D.P.U. 956, at 69. The system-wide peak hour factor, as well as the class-specific average day, maximum day, and peak hour factors need be estimated because water meters are not designed to record consumption on a real-time basis. See D.P.U. 08-27, at 142 n.78. Accordingly, the Company determined these factors using overall industry experience and some limited studies (Exhs. DPU 1-4; DPU 1-26; DPU 1-26, Att. A). The Department has examined the data and underlying assumptions in the Company's ACOSS and notes that the ratios used to establish class-specific maximum day, Peak Hour 1, and Peak Hour 2 demand are identical to those used and accepted in D.P.U. 08-27 (Exhs. JFG-1 (Rev.), Sch. 10; DPU 13-8). D.P.U. 08-27, at 147, & Exh. JGF-1, Sch. 10. Accordingly, the Department accepts the use of Aquarion's proposed demand factors.

c. Allocation to Wheelabrator Millbury, Inc.

Wheelabrator is the Company's only customer in the large industrial G4 class (Exh. DPU 13-1). In 2002, the Company invested in upgrades at two Millbury well sites (i.e., Jacques 1 and 2) primarily to enhance the system's ability to serve the water needs of Wheelabrator by increasing pumping capacity, and the relocation of Wheelabrator's metering facilities ("meter pit") from a public roadway to eliminate a potential public safety hazard. D.P.U. 08-27, at 148-149 & n.81. The increased pumping capacity was intended to avoid a significant loss of revenues from Wheelabrator during drought conditions. D.P.U. 08-27, at 148. The Department previously recognized a benefit to Aquarion's other customers from these investments in the avoidance of the significant increase to the average cost of service that would likely result from lost Wheelabrator revenues. D.P.U. 08-27, at 148-149.

In D.P.U. 08-27, the Department determined that the ACOSS submitted in that proceeding did not contain sufficient information to calculate the precise net costs attributable solely to Wheelabrator or measure the benefit to other customers. D.P.U. 08-27, at 148-149.[182] However, the Department directed the Company to develop an allocation study in its next rate case to determine precisely the direct costs attributable to serving Wheelabrator and assign those costs to the large industrial G4 rate class. D.P.U. 08-27, at 151.

In the Company's subsequent rate case, D.P.U. 11-43, the Company did not submit an ACOSS, but provided an analysis demonstrating the impact of assigning the direct costs of serving Wheelabrator to the G4 rate class. D.P.U. 11-43, at 235. Based on that analysis, the Department recognized that Wheelabrator was being subsidized by other customers, but determined that (1) the impact on the typical residential customer was negligible, (2) the impact of fully allocating those costs to Wheelabrator would be significant, and (3) residential customers would be harmed if Wheelabrator left the system.[183] D.P.U. 11-43, at 235-236. As a result, the Department maintained the Company's existing rate design, but directed the Company to break out the costs to serve Wheelabrator and propose a solution to the

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182 In D.P.U. 08-27, the Department declined to directly assign any additional costs to Wheelabrator, at that time, because the associated rate increase would have resulted in an increase of greater than 125 percent of the overall distribution rate increase, contrary to the Department's policy, and thus any additional costs would have been later reassigned to other rate classes below the cap. D.P.U. 08-27, at 150, citing D.P.U. 95-40, at 127.

183 Wheelabrator provided nearly $500,000 in annual revenues to Aquarion at the time, and the shortfall resulting from the loss of those revenues would need to be allocated to the remaining customers. D.P.U. 11-43, at 236.

cross-subsidization of Wheelabrator by other customers in the Company's next rate case. D.P.U. 11-43, at 236.

In the instant proceeding, the Company allocated the costs to serve the large industrial G4 rate class (i.e., Wheelabrator) using a combination of the base-extra capacity method of allocating costs and direct assignment (Exh. JFG-1 (Rev.), Schs. 1 & 2). Aquarion allocated the costs associated with the plant and maintenance to serve Wheelabrator using the base-extra capacity method (Exhs. JFG at 5; JFG-1 (Rev.), Schs. 2, 3, & 4; DPU 13-3). D.P.U. 08-27, at 146; D.P.U. 95-118, at 153. Additionally, Aquarion directly assigned purchased water expense to Wheelabrator (Exhs. JAU at 5; JFG-1 (Rev.), Schs. 1, 2, & 16; DPU 1-2; DPU 1-19; DPU 7-21; DPU 13-1). D.P.U. 08-27, at 189-190.[184]

As discussed above, the base-extra capacity method of allocating costs assesses each element of the revenue requirement according to their role in meeting average day, maximum day, and peak hour demand and as it relates to customer costs (Exhs. JFG at 5; JFG-1 (Rev.), Schs. 2, 4, 5, 6, & 7). The revenue requirement, once functionalized according to these characteristics, is then allocated to the different rate classes according to each rate class's contribution to average day, maximum day, and peak hour demand as well as each rate classes' billing determinants (Exhs. JFG at 5, 7; JFG-1 (Rev.), Schs. 1, 10, & 11).[185]

[184] The Department addresses the Company's purchased water expense in Section VIII.F.3., above.

[185] As discussed in Section X.B.2.b., the allocation factors used to determine class-specific maximum day and peak hour demands have to be estimated.

In this way, the base-extra capacity method effectively allocates these costs according to the demands each rate class puts on the system.

The Department has reviewed the Company's proposed method of allocating costs to serve Wheelabrator and finds the Company's proposal to be reasonable. Contrary to our previous finding in D.P.U. 08-27, we determine that direct assignment is not necessary to appropriately allocate the costs associated with serving Wheelabrator, including the well improvements and meter pit. Specifically allocating the revenue requirement associated with the Jacques 1 and 2 well improvement project so that they are shared amongst all rate classes is appropriate because, although the initiation of the project was the direct result of Wheelabrator's needs, all of the Company's customers in Millbury continue to benefit from these improvements. D.P.U. 08-27, at 148-149. Likewise, although the cost of the meter pit is significant in relation to other meter pits, meter costs are factored into the service charge, and a customer's service charge is a function of its meter size (Exh. JFG-1 (Rev.), Schs. 1, 4, 5, & 12). Therefore, we determine that the Company's approach appropriately balances the Department's rate design goals of fairness and continuity, and we accept the proposed cost allocation to the large industrial G4 class.

C. Allocation of Hingham/Hull Water Treatment Costs

1. Introduction

Hingham and Hull contend that ratepayers in Service Area A pay for treatment costs associated with the Hingham/Hull WTP through a separate surcharge that Service Area B ratepayers are not charged, but that Service Area A customers also pay a substantial amount of the treatment costs incurred in Service Area B that are recovered through base rates (Exhs. TOWNS-DFR at 21-22; TOWNS-DFR (Supp.) at 20). Hingham and Hull state that Service Area A ratepayers are thus subsidizing Service Area B ratepayers for treatment costs and propose to reallocate a portion of the Hingham/Hull WTP surcharge to Service Area B (Exhs. TOWNS-DFR at 22; TOWNS-DFR (Supp.) at 20). Hingham and Hull maintain that this approach will minimize any subsidy, while retaining the single tariff pricing approach (Exh. TOWNS-DFR (Supp.) at 20).

2. Hingham and Hull's Proposal

Hingham and Hull propose to reallocate a portion of the Hingham/Hull WTP surcharge to customers in Service Area B (Exhs. TOWNS-DFR at 22; TOWNS-DFR (Supp.) at 20). Specifically, Hingham and Hull propose to determine average treatment costs for Service Area B based on the sum of all treatment costs incurred in Service Area B, divided by total consumption in Service Area B (Exh. TOWNS-DFR (Supp.) at 20). This average cost would then be multiplied by consumption in Service Area A to produce what Hingham and Hull consider to be an equitable portion of treatment costs for Service Area A that would be recovered through base rates on a system-wide basis (Exh. TOWNS-DFR (Supp.) at 20-21). Hingham and Hull propose to reduce the revenue requirement associated with the Hingham/Hull WTP surcharge by this amount (Exh. TOWNS-DFR (Supp.) at 21). According to Hingham and Hull, this is a revenue neutral approach to ensuring that treatment costs in each service area are paid only by those customers in that service area (Exhs. TOWNS-DFR at 23; TOWNS-DFR (Supp.) at 21). Hingham and Hull anticipate that treatment costs in each service area will eventually reach parity, at which point treatment costs can be averaged and allocated to customers across both service areas (Exh. TOWNS-DFR (Supp.) at 21). No party addressed this issue on brief.

3. Analysis and Findings

At present, all of the water sources in Service Area A are treated on a centralized basis at the Hingham/Hull WTP, with the exception of the Downing Street well which has on-site treatment but is currently inactive (Exhs. DPU 6-27, Att. A at 3; Towns 1-3, Att. A at 2, 22). D.P.U. 08-27, at 196 n.98. The Company's various sources of supply in Service Area B are treated on-site at each source (Exh. DPU 6-27, Atts. B at 4, C at 3-4). A single set of base rates applies to all customers, regardless of their service location. D.P.U. 08-27, at 155. Within base rates, treatment and purification costs for the sources of supply in Oxford, Millbury, and the Downing Street well are allocated to customers in Service Areas A and B, based on the combined demands and billing units of customers in both service areas (Exh. Towns 3-11). As discussed in Section XI.B., below, the costs associated with the Hingham/Hull WTP (i.e., operating lease, property taxes, chemicals, purchased power, waste disposal, and heating, as well as a cash working capital component and associated income taxes) are recovered through the Hingham/Hull WTP surcharge applicable to customers in Service Area A (Exhs. 3 (Rev. 3), Sch. 1, at 1; 3 (Rev. 3), Sch. 2, at 1; DPU 14-3 & Att. A).

Other than the Hingham/Hull WTP surcharge, a single set of base rates applies to all Aquarion customers, regardless of their service location, and within these base rates, treatment and purification costs for the sources of supply in Oxford, Millbury, and the Downing Street well are allocated to customers in Service Areas A and B, based on the combined demands and billing units of customers in both service areas (Exh. Towns 3-11). D.P.U. 08-27, at 155. The Department recognizes that customers in Service Area A bear a portion of the treatment and purification costs for Service Area B. However, 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. Recovering such costs from customers in all service areas 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. D.P.U. 08-27, at 167, citing 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). However, the lease and operating costs associated with the Hingham/Hull WTP are not similarly spread across customers in all service areas, as they are recovered only from customers in Service Area A through the Hingham/Hull WTP surcharge (Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet No. 29). D.P.U. 11-43, at 239.

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. 08-27, at 167, citing D.P.U. 95-118, at 76-79, 147-148; Salisbury Water Supply

Company, D.P.U. 91-122, at 2-6 (1992); Duck Farm Springs Water Company, D.P.U. 89-259, at 4-5 (1990); Salisbury Water Supply Company, D.P.U. 87-215, at 10-11 (1988). Given the magnitude of the project, the Company financed the Hingham/Hull WTP using a project finance approach, through the creation of a special-purpose affiliate and dedicated stream of revenue intended to cover the debt service associated with the facility. D.P.U. 08-27, at 169, citing D.P.U. 95-118, at 58-65.[186] This approach resulted in a lower cost to ratepayers than financing and construction under traditional utility financing. D.P.U. 95-118, at 77-78. Because the surcharge was implemented to provide a dedicated revenue stream for the Hingham/Hull WTP lease and operating costs, the Hingham/Hull WTP and its associated costs are not included in the Company's ACOSS (Exhs. JFG-1 (Rev.), Sch. 2; Towns 3-11). See D.P.U. 08-27, at 169.

Hingham and Hull propose to reallocate a portion of the Hingham/Hull WTP surcharge to customers in Service Area B under what they contends is a revenue neutral approach to ensure that treatment costs in each service area are paid only by the customers in that service area (Exhs. TOWNS-DFR at 22-23; TOWNS-DFR (Supp.) at 20-21). Hingham and Hull's proposed allocation method requires identification of total treatment costs incurred in Service Area B (Exh. TOWNS-DFR (Supp.) at 20). While the Company was able to identify treatment and purification expenses in Millbury and Oxford, these expenses do not

186 If directly owned by the Company when constructed, the Hingham/Hull WTP would have increased the Company's plant in service by approximately 144 percent. D.P.U. 08-27, at 169. The Department has previously rejected a separate treatment plant surcharge for a facility that was not of comparable magnitude and did not involve a project financing approach. D.P.U. 08-27, at 167-160.

include capital costs (Exh. Towns 3-15, Att. A). Moreover the revenue requirement associated only with treatment and purification costs included in base rates is not separately identified in the ACOSS, which apportions costs among functional categories versus geographic locations (Exhs. JFG-1 (Rev.), Schs. 2-7; Towns 3-11). As a result, we decline to adopt Hingham and Hull's proposed allocation of the Hingham/Hull WTP.

However, the Department recognizes that customers in Service Area A bear all treatment and purification costs in Service Area A, as well as a portion of those for Service Area B, thus, implicating the Department's goal of fairness. A reallocation of such costs could result in a significant increase in rates to Service Area B, raising issues of rate continuity. These issues are equally applicable in allocation of costs through a surcharge as in establishing base rates. Evaluating the appropriate allocation of treatment and purification costs across the two service areas would require detailed information on the respective treatment and purification plant and operating expenses, as well as cost causation on a service area basis. See D.P.U. 08-27, at 168. Accordingly, any potential reallocation of treatment and purification costs must be thoroughly evaluated in the context of an ACOSS.

The Department does not intend to revisit its approval of single tariff pricing for Aquarion and re-establish community-specific rates. In establishing single tariff pricing for Aquarion, the Department recognized benefits to customers associated with operational and functional consolidation. D.P.U. 08-27, at 166-168, citing D.P.U. 95-118, at 173; Commonwealth Gas Company, D.P.U. 1120, at 83-84 (1982); D.P.U. 243, at 38. Further, single-tariff pricing is consistent with the goal of administrative simplicity. NSTAR Electric

Company/Western Massachusetts Electric Company, D.P.U. 17-05-B at 87 (January 5, 2018); D.P.U. 10-55, at 556-557; D.P.U. 08-35, at 247; Dedham Water Company, D.P.U. 13271, at 8 (1961). 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, such as rate impacts and disparate customer classifications associated with legacy companies. D.P.U. 17-05-B at 95; Colonial Gas Company, D.P.U. 86-27-A at 77-85 (1988); Boston Gas Company, D.P.U. 17885, at 5 (1974). However, the Department will examine the Company's cost allocation as part of its next rate case, and it will investigate possible adjustments to the Hingham/Hull WTP surcharge, as well as whether to eliminate the Hingham/Hull WTP surcharge and consolidate the associated costs into system-wide rates.[187] Accordingly, the Department directs the Company to conduct an ACOSS, as part of its next general rate increase, that includes both (1) an analysis that incorporates the Hingham/Hull WTP costs into the Company's system-wide rates for the Department's examination and (2) an analysis of average day, maximum day, and peak hour demands on a service area basis, as well as an analysis of the treatment and purification plant and operating expenses on a service area basis. This ACOSS shall be provided as part of the Company's next general rate increase application.

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[187] Elimination of the Hingham/Hull WTP surcharge may have implications on the Company's project finance approach for the Hingham/Hull WTP, including the current lease arrangement. See D.P.U. 95-118, at 61, 77-79. These issues are more appropriately examined in a future proceeding.

D. Rate Design

1. Introduction

The Department approved the Company's existing rate structure in D.P.U. 08-27, and the Company is not proposing any changes to this rate structure in the current matter. See D.P.U. 08-27, at 176-186. Specifically, the Company designed its rates so that all non-fire related customer costs would be collected through the quarterly and monthly service charges according to meter size (Exhs. JFG-1 (Rev.), Sch. 12 & Sch. 17, at 1; DPU 1-8). The Company's current rates involve a two-block rate structure for its residential (R1), commercial (G1), and public authority (G2) customers, with the first block rate applying to the first three thousand gallons ("TG") per month or nine TG per quarter (Exh. JFG-1 (Rev.), Sch. 12 & Sch. 17, at 1; proposed M.D.P.U. No. 3, Original Sheet Nos. 22-23).[188] The Company established the first block rate by increasing the existing rate by approximately 25 percent, or slightly more than the second block rate increase (Exhs. JFG at 11; JFG-1 (Rev.), Sch. 12 & Sch. 17, at 1; proposed M.D.P.U. No. 3, Original Sheet No. 22). The Company developed the second block rates to collect the remaining metered service revenue requirement, which is not collected through either the service charge or the first block rate for each rate class (Exhs. JFG at 11; JFG-1 (Rev.), Sch. 12 & Sch. 17, at 1). According to the Company, the resultant rate differential between the first and second block rates provides a reasonable price signal to conserve water (Exh. JFG at 11).

188 Service Area A usage rates are charged per hundred cubic feet and Service Area B usage rates are charged per thousand gallons (Exh. DPU 1-29; proposed M.D.P.U. No. 3, Original Sheet Nos. 22-23).

The industrial (G3) and large industrial (G4) rate classes each have a single usage rate for all consumption (Exh. JFG-1 (Rev.), Sch. 12 & Sch. 17, at 1; proposed M.D.P.U. No. 3, Original Sheet Nos. 22-23). The Company developed each of these usage charges to collect the remaining revenue requirement for the G3 and G4 rate classes not already collected through the service charge (Exhs. JFG at 11; JFG-1 (Rev.), Sch. 12).

The Company designed its fire service rates to collect the revenue requirement for fire service, which includes costs associated with capacity, billing, and hydrants (Exh. JFG-1 (Rev.), Schs. 1 & 13). Aquarion allocated capacity costs according to service size (Exhs. JFG-1 (Rev.), Schs. 13 & 14; DPU 16-7). The Company allocated billing costs exclusively to private fire service (Exh. JFG-1 (Rev.), Sch. 13). Aquarion allocated non-capacity related hydrant costs to private and public fire service proportional to the number of hydrants of each (Exhs. JFG-1 (Rev.), Sch. 13; Oxford-1-1). The Company applied a 1.25 multiplier to the single private hydrant identified as being located outside of its service territory consistent with the Company's existing rate design (Exhs. DPU 1-10; DPU 1-11). The Company charged to public hydrants that it owns and maintains the public portion of the non-capacity-related hydrant costs (Exhs. JFG-1 (Rev.), Sch. 14; DPU 1-13). In addition, Aquarion allocated capacity-related costs associated with public hydrants to each town according to the number of public hydrants in each town's system during the last rate case (Exhs. DPU 1-13; DPU 6-9). No party commented on this issue.

2. Analysis and Findings

a. Rates for Metered Service

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, 2. The Company's method of designing rates is consistent with the method approved in D.P.U. 08-27. The Department discussed the Company's rate design extensively in that case and will not repeat that discussion here because Aquarion is not proposing changes to its base rate design. See D.P.U. 11-43, at 230-231; D.P.U. 08-27, at 176-186. Accordingly, the Department (1) approves the Company's method of establishing rates for metered service, (2) directs the Company to recalculate its rates in compliance with the updated revenue requirement approved in this Order, and (3) directs the Company to incorporate these new rates in the Company's compliance tariff filing to this Order.

b. Fire Protection Charge

The Company's fire service rates are designed to collect the revenue requirement for fire service as determined by the ACOSS (Exhs. JFG at 12-13; JFG-1 (Rev.), Schs. 1 & 13). The Department has reviewed this method and finds that it is consistent with the method approved in D.P.U. 08-27. Accordingly, the Department approves the resulting rates. The Department directs the Company to recalculate its fire protection charges in compliance with the revenue requirement approved in this Order and incorporate these new rates in the Company's compliance tariff filing to this Order.

c. Linden Ponds Wheeling Charge

The Company supplies water to Linden Ponds, an age-restricted housing development located in Hingham, through a displacement arrangement with Cohasset. 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 an agreement ("Wheeling Agreement") that the Department approved (Exhs. JPW at 7-8; AG-3-99 & Att. A; DPU 7-23). D.P.U. 08-27, at 41, 191; D.T.E. 03-WC-1. The terms of the Wheeling Agreement specify that the wheeling charge may be revised to recognize rate changes approved by the Department (Exh. AG-3-99, Att. A at 8-9). D.P.U. 08-27, at 192, citing 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 \$1.47 per TG to \$1.639 per TG (Exhs. JPW at 8; JFG at 14; JFG-1 (Rev.), Sch. 19). Aquarion calculated the proposed wheeling charge by first determining how much of the Company's revenue requirement is related to transmission and distribution (Exh. JFG-1 (Rev.), Sch. 19). The Company removed transmission and distribution related expenses that were accounted for in the service charge and fire service revenues, and then it divided the sum by total metered sales for the system (Exh. JFG-1 (Rev.), Sch. 19). This calculation resulted in a \$1.059 per TG wheeling charge. Pursuant to the terms of the Wheeling Agreement, the Company then added a five cents per TG adjustment for pumping and sampling, and a 53 cents per TG adjustment for leakage (calculated based on fifteen percent of the sum of O&M expense and metered consumption), producing a total wheeling charge of $1.639 per TG (Exhs. JFG-1 (Rev.), Sch. 19; AG 3-99, Att. A at 8-9, 47). The Department has reviewed this calculation and finds it to be consistent with the calculation of the wheeling charge approved in D.P.U. 08-27. Accordingly, the Department approves the Company's method of calculating the wheeling charge. We direct the Company to submit a recalculated wheeling charge, based on the revenue requirement approved in this Order as part of the Company's compliance filing.

XI. HINGHAM/HULL WATER TREATMENT PLANT SURCHARGE

In 1995, the Company was in the process of constructing the Hingham/Hull WTP. D.P.U. 95-118, at 7-10. At that time, the Company's then-parent, American Water Works Company, formed Massachusetts Capital Resources Company ("MassCapital") as a wholly owned special-purpose company for the purpose of financing and constructing the Hingham/Hull WTP, using a project finance approach. Aquarion Water Company of Massachusetts, D.T.E. 05-94-A at 2 (2007); D.P.U. 95-118, at 58. On July 1, 1995, MassCapital purchased the partially constructed Hingham/Hull WTP from the Company and obtained access to $37.7 million 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 40.5-year operating lease for the Hingham/Hull WTP. D.P.U. 95-118, at 78-79; see also D.T.E. 05-94-A at 2.

The Hingham/Hull WTP operating lease rent consists of (1) a fixed amount that is required to recover debt service cost; and (2) a variable amount that is calculated based on the volume of water treated at the Hingham/Hull WTP in excess of 30 million gallons per month, multiplied by an annual percentage rate (Exhs. JAU at 8, JAU-1; 3, Sch. 1, at 1). D.P.U. 11-43, at 239. The Hingham/Hull WTP operating lease rent and O&M expenses, which include property taxes, chemical costs, power costs, waste disposal costs, and heating costs, are recovered from ratepayers through the Hingham/Hull WTP surcharge applicable to customers in Service Area A (Exh. JAU at 10; proposed M.D.P.U. No. 3, Original Sheet No. 29). D.P.U. 11-43, at 239. The Hingham/Hull WTP surcharge has two parts: (1) a fixed charge that varies by meter size ("facilities charge") and recovers 66.67 percent of the Hingham/Hull WTP operating lease, and (2) a volumetric charge ("consumption charge") that recovers the remaining 33.33 percent of the operating lease and all of the associated O&M expenses (Exh. JAU at 10). D.P.U. 11-43, at 239.

A. Company's Proposal[189]

During the test year, the Company booked $2,821,531 for the operating lease and $1,352,175 for O&M expenses (Exhs. 3 (Rev. 3), Sch. 1, at 1; 3 (Rev. 3), Sch. 2, at 1). The Company proposes to increase the amount collected through the surcharge for the operating lease by $94,907, which consists of $59,709 in Hingham/Hull WTP operating lease payments, $28,598 in cash working capital allowance, and $6,600 for income taxes

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189 Hingham and Hull's arguments regarding allocation of water treatment costs between Service Areas A and B are addressed in Section X.C.3.

associated with the cash working capital component (Exh. 3 (Rev. 3), Sch. 1, at 1).[190] These adjustments result in a total proposed amount for the operating lease of $2,916,437 (Exh. 3 (Rev. 3), Sch. 1, at 1). Next, Aquarion proposes to decrease the amount charged during the test year for O&M expenses by $76,910, representing the net effect of a decrease of $85,300 in operating expenses and increases of $6,817 for cash working capital and $1,573 for income taxes (Exh. 3, Sch. 2, at 1). These adjustments result in a proposed Hingham/Hull O&M expense of $1,275,265 (Exh. 3 (Rev. 3), Sch. 2, at 1).

B. Analysis and Findings

1. Hingham/Hull WTP Expenses

Through the surcharge, Aquarion proposes to recover $2,916,437 in operating lease expense, cash working capital, and income taxes and $1,275,265 in O&M expenses (Exhs. 3 (Rev. 3), Sch. 1, at 1; 3 (Rev. 3), Sch. 2, at 1). This represents an increase to test year operating lease expense of $94,907 and a decrease from test year O&M expense of $76,910 (Exhs. 3 (Rev. 3), Sch. 1, at 1; 3 (Rev. 3), Sch. 2, at 1). 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.

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190 The Company initially proposed an increase of $98,128 in Hingham/Hull WTP lease expense (Exh. 3, Sch. 1, at 1). During the course of this proceeding the Company revised its proposed increase to $94,907 based on (1) a reduction in the effective income tax rate from 39.22 percent to 27.29 percent, and (2) a change in the Company's weighted cost of equity from 4.72 percent to 4.94 percent (Exhs. AWC-TMD-1, at 8-10, 15; 3 (Rev. 3), Sch. 1).

The Department has reviewed Aquarion's calculations and supporting data related to its proposed Hingham/Hull WTP operating lease expense. Based on this review, the Department finds that the proposed change to the test year amount is based on the Hingham/Hull WTP operating lease agreement and, therefore, is known and measurable (Exh. 3 (Rev. 3), Sch 1, at 1). Additionally, the Department finds that the bills provided by the Company for property taxes, chemicals, waste disposal, and heating expenses associated with the Hingham/Hull WTP represent known and measurable changes to test year cost of service (Exhs. 3 (Rev. 3), Sch. 2, at 1; DPU 4-29; DPU 4-30; DPU 4-36; DPU 11-1; DPU 14-18, Atts. A & B; AG 3-84; AG 4-3; AG 6-6; RR-DPU-18). The Company's proposed O&M expense includes $250,748 in purchased power expense (Exh. 3 (Rev. 3), Sch. 2). Consistent with the Department's findings in Section IV.C., above, the Department has recalculated the Company's purchased power expense associated with the Hingham/Hull WTP based on the rates effective July 1, 2017, and test year consumption, including the prompt payment discount of ten percent, to be $278,264, which is an increase of $27,516 compared to the $250,748 proposed by the Company. Based on this adjustment, the Department finds that, excluding cash working capital and income taxes, the total lease expense associated with the Hingham/Hull WTP surcharge is $2,881,239 and that the associated O&M expense is $1,294,391.

The Department has calculated cash working capital and associated income taxes for both the operating lease expense and O&M expense based on a 45/365-day cash working capital allowance factor and effective income tax rate of 27.29 percent (Exh. 3 (Rev. 3), Sch. 2, at 1). These calculations are provided in Schedule 10, below.

The aforementioned adjustments result in a recoverable level of Hingham/Hull WTP operating lease expense of $2,916,424 (including cash working capital and income taxes) and a recoverable O&M expense of $1,303,114 (including cash working capital and income taxes). See Section XVII, Schedule 10, below. Accordingly, the Department approves a total Hingham/Hull WTP expense of $4,219,538.

2. Hingham/Hull WTP Surcharge

In Aquarion's last rate case, the Department directed the Company to maintain a facilities charge that recovers 66.67 percent of the Hingham/Hull WTP annual lease costs, with the remaining 33.33 percent recovered through the consumption charge. D.P.U. 11-43, at 245. In accordance with this directive, the Company proposes to increase the facilities charge from $10.25 to $11.47 per month for a customer with a 5/8-inch meter and to increase its consumption charge from $1.7461 per CCF to $1.8349 per CCF (Exhs. 4 (Rev. 3), Sch. 4, at 2; DPU 14-3, Att. A; proposed M.D.P.U. No. 3, Original Sheet No. 29).[191]

The fixed aspect of the rate (i.e., the service charge or customer charge) is typically designed to collect customer-related investments such as meters and services, as well as billing and accounting expenses, whereas the volumetric portion of the rate is designed to

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191 The Company determined the facilities charge for other meter sizes based on the ratio between the current 5/8-inch meter facilities charge and the facilities charges for other meter sizes (Exh. 4, Sch. 4, at 2; Tr. 5, at 679-680).

collect the remaining revenue requirement, including supply, treatment, and distribution investments as well as related costs (Exhs. JFG at 11; JFG-1 (Rev.), at Schs. 5, 6, 12). Glacial Lake Charles Aquifer Water Company, D.P.U. 88-197, at 37 (1989); D.P.U. 87-215, at 18.[192] Additionally, the Department has previously found that there is an imperfect correlation between meter sizes and customer demand, which supports placing more of the costs in a volumetric charge. D.P.U. 11-43, at 243; D.P.U. 08-27, at 203. The proposed Hingham/Hull WTP surcharge design, which would continue to collect two-thirds of the annual lease expense through a fixed charge, would collect approximately 54 percent of the revenue requirement for the Hingham/Hull WTP costs through consumption rates (see Exh. 3 (Rev.), Schs.1 & 2).[193] The Department has evaluated the effect of increasing the portion of the annual lease cost recovered through the consumption charge. Based on an analysis of the resulting bill impacts on customers, the Department finds that the Hingham/Hull WTP surcharge can be modified to recover 60 percent of annual lease expenses through the fixed charge, and the remaining 40 percent through the consumption component with minimal impacts on high consuming customers.[194] The Department,

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192 Departures from these general principles are, nevertheless, warranted when necessary to satisfy the Department's ratemaking goals. See, e.g., Witches Brook Water Company, D.P.U. 88-196, at 18 (1989).

193 (($1.8349/CCF * 1,224,815 CCF)/$4,191,702)*100 percent ~ 54 percent

194 In D.P.U. 11-43, the Department declined to modify the Hingham/Hull WTP surcharge to recover one-half of the total through the consumption charge because that change would have resulted in an excessive and disproportionate level of Hingham/Hull WTP costs being imposed on higher volume users, contrary to the

therefore, directs Aquarion to revise the Hingham/Hull WTP surcharge so that the facilities charge recovers 60 percent of the lease expense, and that the remaining 40 percent is recovered through the consumption charge.

XII. TERMS AND CONDITIONS

A. Introduction

The Company proposes a number of changes to its tariffed terms and conditions (Exh. SCO at 21-23; see generally proposed M.D.P.U. No. 3). Specifically, Aquarion proposes revisions to several provisions regarding the discontinuance of service (sections 14, 17, 25) (Exh. SCO at 21-23; proposed M.D.P.U. No. 3). Additionally, the Company proposes revisions that (1) clarify the definitions of service connection and customer service connection (sections 2 and 5); (2) clarify the application processes for water service and new connections (sections 3 and 4); (3) establish housing requirements for meters installed for temporary or construction purposes (section 6); (4) revise the requirements regarding location and number of meters for single and multifamily residential construction (section 9); (5) require Company approval of any plumbing work in connection with Company mains or appurtenances before provision of service (section 10); (6) require Company approval of fire pumps and booster pumps prior to connection (section 11); (7) prohibit the use of hydrants for street sweeping (section 15); (8) identify the demarcation location between the Company's and customer's responsibility for private fire service and private hydrants (section 16); and

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Department's rate design goals. D.P.U. 11-43, at 243-244, citing D.P.U. 08-27, at 203; D.P.U. 95-118, at 174-175; Salisbury Water Supply Company, D.P.U. 84-90, at 9 (1987).

(9) update provisions regarding Annual Restrictions and Drought Restrictions (section 25) (Exh. SCO at 21-23; proposed M.D.P.U. No. 3).[195] No party addressed the proposed changes to the terms and conditions on brief.

B. Analysis and Findings

A company's terms and conditions of service constitute a part of its tariffed rates to which customers should be able to refer for an accurate description of their rights and obligations. D.P.U. 14-120, at 148; D.P.U. 13-163, at 103; D.P.U. 87-228, at 33; Oxford Water Company, D.P.U. 1219, at 27-28 (1983). The Department reviews terms and conditions to ensure that such terms are just and reasonable. The Berkshire Gas Company, D.P.U. 96-67, at 5-6 (1996). Terms and conditions should accurately describe Department regulations and be consistent with Department precedent. D.P.U. 13-163, at 102; Salisbury Water Supply Company, D.P.U. 1142 (1983); Hingham Water Company, D.P.U. 1118 (1983); D.P.U. 1270/1414; D.P.U. 1015; Haverhill Gas Company, D.P.U. 115 (1982). If a tariff is in conflict with Department regulations, including 220 CMR 25.00, the Department's regulations will control. D.P.U. 17-35-C at 174, citing 220 CMR 25.01(1).

Aquarion proposes revisions to its terms and conditions that would permit the Company to discontinue service in the following situations: (1) in the event that a customer refuses or fails to permit the Company the right to install, inspect, or replace a meter; (2) based on a customer's willful or indifferent wasting of water; and (3) for a second and

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195 As addressed in Section XIII.C., below, Aquarion also proposes revisions to provisions regarding its Water Balance Program (sections 4, 6, and 9) (Exh. SCO at 21-23; proposed M.D.P.U. No. 3).

subsequent violations of Aquarion's water conservation or drought restrictions (Exh. SCO at 21-23; proposed M.D.P.U. No. 3, §§ 14, 17, & 25).

Section 14 of the Company's tariff addresses meter tests and test fees. Aquarion proposes to include language in this section that would allow discontinuance of service for a customer's refusal or failure to permit the Company to install, inspect, or replace a meter, applicable to both residential and non-residential customers (proposed M.D.P.U. No. 3, Original Sheet No. 13, § 14(c)). As discussed above, the Department has found that customers must be able to refer to a company's terms and conditions of service for an accurate description of their rights and obligations. D.P.U. 14-120, at 148; D.P.U. 87-228, at 33. We determine that all provisions providing for the discontinuance of service also must be addressed within the section of the tariff titled "Discontinuance of Water." This will ensure that customers have access to an accurate and complete description of their rights and obligations with respect to the discontinuance of service in a single location within the tariff.

Regarding the application of this provision to non-residential customers, we note that Section 17(b)(6) of the Company's existing tariff addresses the discontinuance of service to non-residential customers for failure to provide reasonable access to meters (Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet No. 14). The Department directs the Company to include language within Section 17(b) to address the discontinuance of service for refusal or failure to permit the Company to install, inspect, or replace a meter.

Regarding the application of this provision to residential customers, Department regulations generally prohibit termination of service for residential customers for any reason other than failure to pay a bill, unless the Department certifies its approval after giving both parties an opportunity to be heard. 220 CMR 25.01; 25.02(3).[196] The Department has long expected utility companies to adhere strictly to the anti-termination provisions of 220 CMR 25.02(3). See, e.g., Boston Gas Company, D.P.U. 1098, at 7 (1983); Haverhill Gas Company, D.P.U. 928, at 6 (1983). The proposed language would permit the Company to send a notice threatening discontinuance of service to any residential customer and further would allow the Company to discontinue service 14 days after such notice (proposed M.D.P.U. No. 3, Original Sheet No. 13, § 14(c)). This contemplates neither the restrictions on notices of termination, nor the further process for residential customers required by both 220 CMR 25.02 and 220 CMR 25.03. Accordingly, we disallow this provision as it relates to residential customers. Any discontinuance of a residential customer for refusal or failure to permit the Company to install, inspect, or replace a meter must be consistent with the requirements of 220 CMR 25.00 et seq., and, thus, is more appropriately addressed within the Company's existing discontinuance provisions. We direct the Company to revise Section 14(c) to apply only to non-residential customers.

Additionally, the Company proposed a provision permitting discontinuance of service for residential customers based on the willful or indifferent wasting of water, such as a customer's failure to repair a service leak (proposed M.D.P.U. No. 3, Original Sheet No. 13, § 17(a)(3)). During the proceeding, the Company determined that these instances

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[196] However, 220 CMR 25.00 will not prevent termination for reasons of safety, health, cooperation with civil authorities, or any other reason for which termination power is specifically granted in Massachusetts General Laws. See, e.g., G.L. c. 21G, c. 15.

should instead be addressed within the Company's existing discontinuance provisions and, consistent with the requirements of 220 CMR 25.02(3), without the addition of this provision (Exh. DPU 7-5(c)). Accordingly, we direct the Company to remove this provision from the tariff filed in compliance with this Order.

The Company also proposes a provision that would permit the Company to discontinue service for the second and subsequent violations of Aquarion's water conservation or drought restrictions (Exh. SCO at 21-23; proposed M.D.P.U. No. 3, Original Sheet Nos. 18-20, § 25). While it is important for customers to understand that a violation of water use restrictions is a serious matter, we find that resorting to termination of service for the second violation of the Company's water conservation and drought restrictions is too harsh. D.P.U. 13-163, at 110. Termination of service raises public health considerations and may cause a failure of homeowner appliances (e.g., furnace or water heater failure). D.P.U. 13-163, at 110, citing D.T.E./D.P.U. 06-53, at 42. However, in order to ensure that violations of mandatory water use restrictions do have some consequences, the Department will authorize a termination of service if a customer has had three or more violations of mandatory water use restrictions within a calendar year. D.P.U. 13-163, at 110-111. Our intent here is to focus on chronic violations, as opposed to occasional violations resulting from inadvertence. D.P.U. 13-163, at 111. Consistent with the directive above, all provisions providing for the discontinuance of service must be included in the section of the tariff titled "Discontinuance of Water" rather than only within other sections of the tariff. The Department directs that the Company include language within Section 17 to address the discontinuance of service for three or more violations of mandatory water use restrictions within a calendar year. Further, we direct that the language added to Section 17(a) reflects the continued applicability of G.L. c. 165, § 11B and 220 CMR 25.03 to any discontinuance of service for a residential customer.

Finally, in addition to the limitations on discontinuance of service pursuant to the Department's regulations, water companies are prohibited from intentionally shutting off water service where a seriously ill person resides when the company has received written notice of such illness pursuant to G.L. c. 165, § 11B.[197] Accordingly, we determine that the Company shall revise section 17 to include a reference to this statute (see Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet No. 13; proposed M.D.P.U. No. 3, Original Sheet No. 13).

The Department has reviewed the remaining revisions to the Company's terms and conditions and finds that all remaining proposed changes are minor in nature and serve to appropriately clarify customer rights and responsibilities and, thus, are reasonable. Aquarion shall revise its terms and conditions consistent with the directives above in the tariff filed in compliance with this Order.

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197 The Department's regulations under 220 CMR 25.03 impose a two-part requirement prohibiting service discontinuance for failure to pay a bill. Specifically, service may not be terminated if the customer certifies, in part, that (1) the customer or someone living in the customer's home is seriously ill and (2) is unable to pay any overdue bill, or a portion thereof, due to a financial hardship. 220 CMR 25.03(1)(a)(1)&(b). In contrast, G.L. c. 165, § 11B does not require a showing of financial hardship.

XIII. WATER BALANCE PROGRAM

A. Introduction

Under the Company's Water Balance Program ("WBP"), all new users of water above a certain threshold must offset new usage by either performing water conservation work; identifying and developing a supplemental source of supply for Aquarion; or paying a water banking or "mitigation" fee to fund Company-performed water conservation work (Exhs. DPU 7-7 & Att. C at 1, 5; DPU 7-8; DPU 15-31; DPU 22-9(b); Tr. 2 at 320, 358). The WBP applies to all applicants for new and expanded water service, except for (1) a residential development with only a single service connection or consisting of a single dwelling unit; (2) any private fire service connection or public fire hydrant service connection; and (3) developments that are expected to require less than 100,000 gallons of water per year (Exhs. SCO at 21; DPU 7-7; Att. C at 1; Aquarion Water Company of Massachusetts, M.D.P.U. 2-A, Original Sheet No. 3).[198] The Company implemented the WBP as a result of an Administrative Consent Order entered into with the MassDEP (Exhs. DPU 7-7(b)(ii); DPU 22-4, Att. A at 2; DPU 24-6(b)&(c)). The program offsets proposed additional water demand of new development with reductions in existing water demands in order to ensure that the Company does not exceed its Water Management Act Registration limit (Exhs. DPU 22-12; DPU 24-10; DPU 24-11).

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198 The Company first implemented the WBP in 1999 for Service Area A and expanded the program to include Service Area B after Department approval in D.P.U. 08-27 (Exhs. DPU 7-7(a)(ii); DPU 22-4, Att. A at 2). D.P.U. 08-27, at 221, 223-224.

Aquarion proposes a number of changes to the terms and conditions provisions addressing the WBP. Specifically, the Company proposes to (1) exempt private hydrant service connections (section 4); (2) limit the exemption for residential single dwelling units to individual single-family dwellings with three bedrooms or less (section 4); and (3) clarify applicability of the WBP to other types of new services and projects, such as new, temporary, and existing customers that seek to expand water service demand by 100,000 gallons or more per year (section 4), transient, temporary, or special purpose water service (section 6), and when an existing service connection and meter is to be reused due to a change in the original use of the property (section 9) (see proposed M.D.P.U. No. 3).[199] Additionally, the Company proposes to include a provision that would allow the Company to amend or modify the WBP including "its requirements, exemptions, application forms, and mitigation fee rates" (proposed M.D.P.U. No. 3, Original Sheet No. 3, § 4(b)).

B. Positions of the Parties

Aquarion asserts that it has a finite amount of water that the Company can supply to its customers based on its Water Management Act Registration limit (Company Brief at 78, citing Exh. DPU 24-11). Aquarion maintains that if new or expanded customers are connected to the system, there is a strong potential that the Company will exceed its established limit (Company Brief at 78). Aquarion contends that, without new sources of

[199] Aquarion also proposes revisions throughout to replace references to "Water Balance Plan" with "Water Balance Program."

water, it would be forced to deny service to new customers because the Company's allowable withdrawal limit will be reached (Company Brief at 78, citing Exh. DPU 24-11).

The Company maintains that it established the WBP to contain consumption and stay within its registration limit by requiring all new customers of water above a certain threshold to either offset their water usage through performing water conservation work or pay a mitigation fee to fund water conservation elsewhere to offset their usage (Company Brief at 78-79, citing Exh. DPU 7-7). The Company explains that the mitigation fees go into a Water Balance fund and are used towards water conservation, demand management, or supplemental supply development work (Company Brief at 79, citing Exh. DPU 7-8). No other party addressed this issue on brief.

C. Analysis and Findings

The Company's current tariff provides that applicants for construction of new water service are subject to the requirements of "any water conservation, water balance, water demand management or water supply management plan or program (as the same may be amended or modified from time to time, the 'Water Balance Plan') implemented by the Company" (Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet Nos. 2-3). The Company proposes to revise this provision to provide that the WBP, "including its requirements, exemptions, application forms, and mitigation fee rates may be amended or modified from time to time by the Company" (proposed M.D.P.U. No. 3, Original Sheet No. 3, § 4(b)).

Aquarion maintains that this proposed language is intended to allow the Company to amend the WBP should water system conditions change (Exh. DPU 22-11). Specifically, this would include changing the methods of estimating proposed water demands; implementation of provisions for offsetting a demand ratio greater than one for one; assessing and evaluating mitigation fee rates to be representative of the actual costs incurred by the Company in order to pay for offsetting the proposed usage; and adjusting the content and format of the application form in order to explain and document the WBP in a concise manner for ease of use and consistency (Exh. DPU 22-11). Aquarion states that it is important that the Company maintain flexibility in the management of the WBP and determination of the mitigation fee because the Company must continuously evaluate whether existing water is available for a proposed project by evaluating current and proposed demands (Exh. DPU 22-13(b)). The Company states that this flexibility is needed to ensure service to its existing customers, while also allowing for new growth within each service area (Exh. DPU 22-13(b)).

The Company's tariff identifies the new and expanded water service applications to which the WBP requirements apply, including any exemptions (see Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet Nos. 2-3; proposed M.D.P.U. No. 3, Original Sheet Nos. 2-3). Applicants for projects subject to the WBP are required to offset the demands the project places on the system, subject to Aquarion's approval, through one of three options: (1) identifying and implementing water conservation activities through retrofits approved by Aquarion; (2) paying a mitigation fee to fund the Company's conservation efforts; or (3) identifying, developing, and financing a supplemental source of supply (Exhs. DPU 7-7, Att. C at 1; DPU 15-31; DPU 22-9(a)). These options are set out in the Company's WBP application form (see Exh. DPU 7-7, Att. C).

To the extent that the applicability and requirements under the WBP program are not set out in the Company's tariff, applicants will be unable to rely on the tariff for an accurate description of their rights and obligations. The WBP applies to both prospective and existing customers (Exh. DPU 7-7, Att. C at 1; Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet Nos. 2-3; proposed M.D.P.U. No. 3, Original Sheet Nos. 2-3). As discussed above, the Department has found that customers must be able to refer to a company's terms and conditions of service for an accurate description of their rights and obligations. D.P.U. 14-120, at 148; D.P.U. 87-228, at 33. This is particularly essential where a non-residential customer's failure to comply with requirements of the WBP constitutes grounds for discontinuance of service (Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet Nos. 3, 14, Sections 4(c) and 17(b)(5); proposed M.D.P.U. No. 3, Original Sheet Nos. 3, 14, §§ 4(c) and 17(b)(5)). Accordingly, we determine that section 4 of the Company's tariff must include all provisions establishing the applicability of the WBP, including any exemptions, as well as the three options available to applicants to satisfy the program's requirements. This will ensure that applicants have access to an accurate and complete description of their rights and obligations with respect to the WBP in a single location within the tariff. As a result, we disallow the proposed tariff provision that would provide the Company with discretion to amend or modify the requirements or exemptions of the WBP outside of a tariff revision.

In asserting that the Company requires discretion in its management of the WBP, Aquarion identifies a need for flexibility to change the methods of estimating proposed water demands; implement provisions for offsetting a demand ratio greater than one for one;[200] and adjust the content and format of the application form in order to explain and document the WBP in a concise manner for ease of use and consistency (Exh. DPU 22-11). We determine that these elements of the Company's WBP require a measure of flexibility that cannot be addressed within a tariff (see Exh. DPU 22-11).[201] We find that these types of program details are appropriately set forth in the application form, so long as the WBP provision in the Company's tariff contains clear reference to the application form as a source for more detailed information about the WBP. Further, we determine that the Company should have the ability to adjust and update the application form.

The Company's current WBP application provides that the Company has the discretion to modify the mitigation fee for projects with an estimated average daily water demand greater than 10,000 GPD (Exh. DPU 7-7, Att. C at 5; Tr. 2, at 346-347). As noted

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[200] The Company notes that the Commonwealth's 2018 Water Conservation Standards recommend that all water suppliers have a water banking program, similar to the program now in place at Aquarion, except that the new 2018 Conservation Standards recommend a two for one savings requirement, rather than the one for one savings requirement under the Company's existing program (Exh. DPU 24-7(b)).

[201] The Company's current WBP application form identifies the methods by which applicants may calculate their estimated demand (Exh. DPU 7-7, Att. C at 1, 4).

above, the Company proposes to include a tariff provision that would allow it to amend or modify the WBP "mitigation fee rates" (proposed M.D.P.U. No. 3, Original Sheet No. 3, § 4(b)). The Company states that this would allow Aquarion to assess and evaluate mitigation fee rates to be representative of the actual costs incurred by the Company in order to pay for offsetting the proposed usage (Exh. DPU 22-11).

Payment of a mitigation fee to fund the Company's conservation efforts is one of the three options for a WBP eligible project to meet the program's requirements (Exh. DPU 7-7, Att. C at 1). The Company's current tariff references a mitigation fee applied by the Company, but does not set out the amount of the fee (Exhs. DPU 14-17(a); DPU 24-9(a)); see generally Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A). As noted above, customers must be able to refer to a company's terms and conditions of service for an accurate description of their rights and obligations. D.P.U. 14-120, at 148; D.P.U. 87-228, at 33. Additionally, a proposed tariff must have sufficient detail to explain the basis for the rate to be charged for the offered service. D.P.U. 17-05, at 764; Boston Gas Company, D.P.U. 92-259, at 47-48 (1993); D.P.U. 13271, at 10; see also 220 CMR 5.02(3)(b). This standard applies to the rates charged to customers and the fees charged to customers, as well. D.P.U. 13-90, at 265.

Aquarion states that it does not include the mitigation fee in its tariff because the mitigation fee is only charged to developers (Exh. DPU 14-17). However, under the provisions of the Company's tariff, the WBP and, thus, the mitigation fee could also be applied to customers (e.g., sections 4(c), 6(a), and 9(e)) (Aquarion Water Company of

Massachusetts, M.D.P.U. No. 2-A, Original Sheet Nos. 1, 3; proposed M.D.P.U. No. 3, Original Sheet Nos. 1, 5, 8, 11). Further, the Company's SDCs, which are also assessed to developers, are in the Company's tariff (see Exh. Towns 7-16, Att. A at 3, 13; Tr. 2, at 334-336; Aquarion Water Company of Massachusetts, M.D.P.U. No. 2-A, Original Sheet No. 27; proposed M.D.P.U. No. 3, Original Sheet No. 27). Accordingly, we direct Aquarion to revise its tariff to include the mitigation fee. As a result, we disallow the proposed tariff provision that would provide the Company with discretion to amend or modify the mitigation fee outside of a tariff revision. The Department will now evaluate the basis for the Company's mitigation fee.

The Company has previously charged a mitigation fee of $10 per GPD (Exhs. DPU 7-7, Att. C at 5; DPU 22-6(b); DPU 22-7; DPU 22-9(b)&(c); DPU 24-9(b); DPU 24-17; Tr. 2, at 345-347). As addressed in Section XIV.B., below, the Department has found that fees for various services are intended to reimburse a company for the actual costs incurred to provide these particular services. D.P.U. 17-35-C at 176-177; D.P.U. 08-27, at 46; D.T.E. 01-42, at 28; D.T.E. 95-118, at 84. In developing the mitigation fee of $10 per GPD, Aquarion identified various methods and approaches to conserving water that the Company could implement and then estimated the potential annual savings for each water conservation device and method (Exhs. DPU 7-8(a); DPU 14-17, Att. A; DPU 22-6(b)). The Company then converted annual savings to average daily savings by dividing by 365 days per year (Exh. DPU 22-6(b)). The costs of each option, device, and method were then calculated using estimated unit costs (Exhs. DPU 14-17, Att. A; DPU 22-6(b)). The total estimated cost of the program was then divided by the anticipated conservation savings ($ divided by gallons per day of savings), resulting in the total water conservation cost of $10 per GPD (Exhs. DPU 7-8(a); DPU 14-17, Att. A; DPU 22-6(b)). The Department has reviewed the Company's calculations and assumptions and finds that the $10 per GPD mitigation fee is cost based and, thus, is reasonable.

For two recent projects with estimated demands greater than 10,000 GPD, the Company considered charging $20 per GDP to more closely track the cost of the Company's corresponding water conservation work for that particular project, but subsequently declined to do so (Exh. DPU 22-9(b)&(c); Tr. 2, at 344-347). However, the record does not contain evidence of the costs of conservation work for projects with demands greater than 10,000 GPD. Accordingly, the Department is unable to determine whether a mitigation fee of $20 per GDP is reasonable.

However, we determine that where the estimated average daily water demand is greater than 10,000 GPD some measure of flexibility in establishing a mitigation fee is warranted by the need for the Company to remain within its Water Management Act Registration limit and to ensure service to its existing customers, while also allowing for new growth within each service area (Exhs. DPU 22-9(b)&(c); DPU 22-12; DPU 24-10 & Att. A; DPU 24-11; Tr. at 136-137). In allowing for this flexibility, we find that the Company must include in its tariff a description of the analysis the Company will apply in determining a mitigation fee that is representative of the actual costs incurred by the Company in order to pay for offsetting the proposed usage for these projects. We find that this will provide the Company with the required flexibility, while also ensuring that the tariff has sufficient detail to explain the basis for the fee to be charged. The Department has reviewed the remaining tariff changes related to the WBP and has determined that they appropriately clarify customer rights and responsibilities, and are otherwise reasonable.

XIV. MISCELLANEOUS FEES

A. Introduction

The Company proposes increases to eight of its miscellaneous charges and fees (see proposed M.D.P.U. No. 3, Original Sheet Nos. 27-28). Specifically, in its initial filing, Aquarion proposed to increase the fee from $49 to $68 for seasonal meter set and turn on, seasonal meter removal and turn off, business hours reconnection, business hours turn on services, and drought condition termination and restoration during business hours services (proposed M.D.P.U. No. 3, Original Sheet Nos. 27-28). Additionally, the Company proposed to increase the fees from $294 to $409 for after-hours callouts and reconnections (see proposed M.D.P.U. No. 3, Original Sheet Nos. 27-28). The Company subsequently corrected the benefit percentage rate used in the underlying calculation to derive the rates and now proposes fees of $65 and $392, respectively (Exh. DPU 15-16). No party addressed the proposed fees on brief.

B. Analysis and Findings

Utility companies are required to perform specific activities to carry out certain ancillary business activities and services as part of their day-to-day operations. The Department has found that fees for various services, such as after-hours calls, turn on and turn off fees, meter testing, processing returned checks, and cross connection inspection fees, are intended to reimburse a company for the actual costs incurred in providing these particular services. D.P.U. 17-35-C at 176-177; D.P.U. 08-27, at 46; D.T.E. 01-42, at 28; D.T.E. 95-118, at 84. Consequently, the Department has found that fees for these various services must be based on the costs that the company actually incurred associated with these functions. D.P.U. 08-35, at 58; Whitinsville Water Company, D.P.U. 89-67, at 4 (1989); D.P.U. 956, at 62.

The Company proposes to increase its fees from $49 to $65 for the following services: (1) seasonal meter set and turn on; (2) seasonal meter removal and turn off; (3) business hours reconnection; (4) business hours turn on services; and (5) drought condition termination and restoration during business hours (Exhs. DPU 1-32; DPU 15-16; proposed M.D.P.U. No. 3, Original Sheet Nos. 27-28).[202] The Company calculated the proposed increase based on a test year service technician, or Serviceman A, rate of $35.29 per hour (Exhs. DPU 1-32; DPU 15-16; DPU 15-17). Aquarion applied a benefit rate of 61 percent and a general administrative and overhead rate of 15 percent, using the test

[202] The Department acknowledges that the increase in the fee for seasonal meter sets and removals in the Company's last rate case, from $5 to $49, represented a significant increase. D.P.U. 11-43, at 250. However, as the Department noted at that time, the nominal $5 fee that those customers were charged previously did not cover the Company's costs to providing that service. D.P.U. 11-43, at 250. These fees continue to be a point of contention with Aquarion's seasonal customers (see Comment Fagrey). However, the Department's rate setting goal of fairness dictates that customers pay the cost to serve them. Accordingly, the cost to provide these services should be charged to the customers that cause these costs, rather than be subsidized by other customers.

year rate of $35.29 per hour, resulting in an hourly cost of $65.33 (Exhs. DPU 15-16; DPU 15-18). As of April 4, 2018, the rate for the service technician increased to $36.09 per hour under the union contract (Exhs. AG 3-42, Att. B at 11; DPU 15-16; DPU 15-17).[203] Applying the same calculation to the increased rate of $36.09 per hour results in an hourly cost of $66.82. The average time for the Company to complete service for these types of calls is one hour (Exh. DPU 15-16). The Department has reviewed the Company's calculations and assumptions and finds that the Company's method appropriately calculates the costs incurred associated with these functions. Additionally, based on the calculated hourly cost of $66.82 and average of one hour per service call, we find that the proposed fees of $65 are cost based and, thus, reasonable (Exhs. DPU 1-32; DPU 15-16).

The Company proposes to increase its fees from $294 to $392 for the following services: (1) after-hours callouts; (2) after-hours reconnections; and (3) after-hours terminations and restorations during drought conditions (Exhs. DPU 1-32; DPU 15-16; proposed M.D.P.U. No. 3, Original Sheet Nos. 27-28). Under the Company's union contracts, after-hours callouts are subject to a three to four hour minimum, at time and a half or double the employee's hourly rate (Exhs. AG 3-42, Att. A at 13-15; AG 3-42, Att. B at 14-17; DPU 15-16; DPU 15-19(a)). Based on the same hourly cost of $65.33, addressed above, the Company proposes to calculate the fee for an after-hours callout at four hours of time and a half, or $391.98 (Exhs. DPU 15-16; DPU 15-17). This approach reduces the

203 The Company did not propose an increase in the fee based on this increase in the hourly rate.

complexity that would be associated with the use of differing overtime policies and ensures that the overall costs incurred for after-hours callout services are supported by the proposed fees (Exh. DPU 15-19(a)). Further, the Department approved a similar calculation method in D.P.U. 08-27. D.P.U. 08-27, at 46 (finding that, on balance between the two service areas, after-hours callout fees based on one and one half times employees' regular pay and a four hour minimum fairly represented the costs incurred by Aquarion). The Department has reviewed the Company's calculations and assumptions and finds that these are consistent with the method approved in D.P.U. 08-27. Based on the calculated hourly cost of $66.82, at four hours of time and a half (i.e., $400.92), we find that, on balance, the proposed after-hours fees of $392 are cost based and thus reasonable (Exh. DPU 15-16). See D.P.U. 08-27, at 46.

XV. LOW-INCOME DISCOUNT

A. Introduction

Since 2009, Aquarion has operated a shareholder-funded, low-income assistance program ("Customer Assistance Program") for eligible customers (Exhs. Towns 2-6; AG 10-5; DPU 10-38). D.P.U. 11-43, at 237-238; D.P.U. 08-27, at 206-207. Under the Customer Assistance Program, up to 400 eligible customers each year are granted a $50 voucher per year that is applied as a credit to their Aquarion bill (Exhs. Towns 2-6; Towns 4-7(e); DPU 10-36(d); DPU 10-38). To qualify, a customer must be a homeowner or renter in Aquarion's service territory, receive a quarterly bill, and be a recipient of one or more of the following programs: Emergency Aid to Elderly, Disabled, and Children;

Supplemental Security Income; Social Security Disability Insurance; MassHealth; the Section 8 Housing Choice Voucher Program; food stamps; fuel or heating assistance; Medicaid; or veteran's benefits under G.L. c. 115 (Exh. Towns 2-6). Aquarion partners with a local non-profit, community-based organization, Wellspring Multi-Service Center of Hull, to administer the program (Exhs. Towns 2-6; AG 10-5; DPU 10-36). See D.P.U. 11-43, at 236-237; D.P.U. 08-27, at 205. The Company allocates $20,000 annually to this program using shareholder funds, with an average of $8,750 in voucher credits issued each year since 2012 (Exhs. AG 10-5; DPU 10-38). The Company states that it intends to continue to offer the program without modification (Exh. DPU 10-37).

B. Positions of the Parties

Hingham and Hull acknowledge the benefit of the Customer Assistance Program, but argue that the assistance provided is minimal and should be expanded (Hingham/Hull Brief at 17). Hingham and Hull explain that the annual $50 credit represents a very small percentage reduction in annual billings of only four to eight percent for most eligible customers (Hingham/Hull Brief at 17, citing Exhs. Towns 2-6; Towns 4-7). Accordingly, Hingham and Hull recommend that the Company institute a lifeline rate[204] or discount percentage of between ten and 25 percent for low-income customers (Hingham/Hull Brief at 17-18, citing Exh. TOWNS-DFR). Alternatively, Hingham and Hull suggest a flat

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[204] Hingham and Hull's witness described a lifeline rate as a unit rate for a level of consumption approximated by the level of use needed for health and sanitation purposes (Exh. TOWNS-DFR at 31). According to the witness, this unit rate would be significantly less than the cost-based rate determined for that level of use (Exh. TOWNS-DFR at 31).

discount to an eligible customer's total bill (e.g., $25 to $50) (Hingham/Hull Brief at 18). Hingham and Hull state that eligibility should be based on a multiple of the federal poverty level for the area and piggy-backed on an existing program such as those administered by the electric or gas utilities (Hingham/Hull Brief at 18). No other party addressed this issue on brief.

C. Analysis and Findings

Aquarion has offered its shareholder-funded voucher program to qualifying low-income customers since 2009 (Exhs. Towns 2-6; AG 10-5; DPU 10-38). D.P.U. 11-43, at 237-238; D.P.U. 08-27, at 206-207. In the Company's last rate case, the Department recognized the Company's Customer Assistance Program as an innovative program for water utilities in the Commonwealth. See D.P.U. 11-43, at 237. Notably, the Company's existing voucher program is shareholder funded and results in no additional cost burden for customers not receiving the discount. D.P.U. 08-27, at 207, citing Essex County Gas Company, D.P.U. 91-107/110/111, at 19 (1991); D.P.U. 90-121, at 218; D.P.U. 86-27-A at 49. Accordingly, the Department approves the continuation of Aquarion's shareholder-funded Customer Assistance Program in its present form.

Hingham and Hull argue for a lifeline rate or discount percentage for eligible customers rather than the voucher program, with eligibility based on a multiple of the federal poverty level and verification of eligibility based on participation in an existing program such as those administered by the electric or gas utilities (Hingham/Hull Brief at 18; Exh. TOWNS-DFR at 31). Oxford raised a similar argument in the Company's prior rate proceeding. D.P.U. 11-43, at 237. As the Department has previously stated, to properly design a low-income discount rate, it would be necessary to consider the number of potentially eligible customers and the effect of recovering the cost of the discount from other customer classes. D.P.U. 11-43, at 238, citing D.P.U. 92-101, at 65-66; D.P.U. 91-107/110/111, at 19; D.P.U. 86-27-A at 49. The record of this proceeding does not contain the evidence necessary to establish a low-income discount rate or require changes to the eligibility criteria or verification process.[205] Accordingly, we will not require any changes at this time.

As noted above, the Company issued an average of $8,750 per year in voucher credits since its last rate case, despite allocating $20,000 annually to this program (Exhs. AG 10-5; DPU 10-38).[206] The Department will evaluate in the Company's next rate case whether any changes to the program are warranted, such as enhanced outreach to encourage eligible

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[205] The Department notes that eligibility for gas and electric low-income programs is based on a consumer's receipt of any means-tested public benefit program or verification of eligibility for the low-income home energy assistance program, which in turn generally base eligibility on gross household income of no more than 60 percent of the median Massachusetts income or 200 percent of the federal poverty level. See, e.g., 220 CMR 14.03(2A)(b); Investigation by the Department of Public Utilities on its own Motion commencing a rulemaking pursuant to 220 CMR s. 2.00 et seq. revising 220 CMR s. 14.00 and 220 CMR s. 25.00, D.P.U. 08-104-A at 2 (2009); NSTAR Electric Company, M.D.P.U. No. 8A, at 2; Massachusetts Electric Company, M.D.P.U. No. 1306, at Sheet 1; Fitchburg Gas and Electric Light Company, M.D.P.U. No. 290, at Sheet 1; see also Massachusetts Department of Housing and Community Development, Fiscal Year 2019 Low-Income Energy Assistance Program Income Eligibility and Benefit Levels (July 9, 2018), https://www.mass.gov/files/documents/2018/07/09/FY19LIHEAPIncmElgblty.pdf.

[206] The total number of vouchers issued each year ranged from 144 in 2016 to 207 in 2014 (Exh. AG 10-5).

customers to participate. At that time, the Department also will examine whether Aquarion should adopt the eligibility criteria and verification process used by Eversource for its existing low income programs for gas and electric customers. Additionally, the Department intends to investigate whether implementation of a low-income discount is appropriate. Therefore, the Department directs the Company to include in its next rate case filing an analysis of the costs and benefits of implementing a low-income discount. This analysis should address the number of potentially eligible participants; the design and amount of a discount; the method of recovering the costs associated with the discount from other customers, including bill impacts; as well as the potential to coordinate with Eversource's existing verification process.

XVI. SERVICE QUALITY

A. Customer Service and Communications

1. Introduction

In D.P.U. 11-43, at 259, the Department noted that the relationship between Aquarion and the municipalities in its service areas had become so acrimonious that the Company's operations were being adversely affected.[207] The Department determined that Aquarion and

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[207] The Department had found that the Company was quick to assume ulterior motives behind what would normally be considered reasonable requests, and that the towns were quick to conclude that any Company action was the result of mismanagement. D.P.U. 11-43, at 259. As the Captain (played by Strother Martin) said in the 1967 film Cool Hand Luke, "What we've got here … is failure to communicate." COOL HAND LUKE (Warner Brothers/Seven Arts 1967).

The Department's decision in D.P.U. 11-43 was issued the same day as our decision in a Section 93 proceeding involving a main break in Hingham that affected service in its customers would benefit from an in-depth review of the Company's communications practices and, pursuant to its supervisory authority under G.L. c. 165, § 4, the Department directed the Company to engage an independent auditor to assess the communications issues raised in D.P.U. 11-43. D.P.U. 11-43, at 259-260. The Department directed that the audit focus on the following: (1) routine communications with the public and public officials; (2) emergency communications with the public and public officials; (3) day-to-day interactions with the public and public officials; (4) Company processes for evaluating customer needs and expectations; and (5) the role of e-mail, websites, and social media as a means of customer communication. D.P.U. 11-43, at 260.

Based on the results of a Department-supervised RFP process, Aquarion executed an agreement with O'Neill and Associates to conduct the communications audit. Aquarion Water Company, D.P.U. 12-44, at 1-2 (2013). The Company submitted the final communications audit ("Audit Report") to the Department on April 30, 2013. D.P.U. 12-44, at 2.

The Department reviewed the Audit Report and determined that the audit met the directives set forth by the Department in D.P.U. 11-43. D.P.U. 12-44, at 9. Further, pointing to the communications-related measures taken by the Company as identified in the Audit Report, the Department recognized that many of the improvements resulted from the direct and personal efforts of Aquarion's management team. D.P.U. 12-44, at 9, citing

Hull. In relevant part, the Department concluded that the Company's communications with public officials in the wake of the main break were inadequate. Aquarion Water Company of Massachusetts, D.P.U. 09-48, at 22-24, 29 (2012).

Audit Report at 4, 10. The Department stated that these changes needed to be institutionalized and not depend on the particular individual at the Company's helm. D.P.U. 12-44, at 9. The Department directed Aquarion to keep in place all measures related to improving communications that it had implemented to date. D.P.U. 12-44, at 10. Additionally, the Department directed Aquarion to consider the specific recommendations included in the Audit Report and, to the extent that such recommendations were cost-effective, implement them with a goal of improving the Company's communications policies and practice as a whole. D.P.U. 12-44, at 9, 10.

The Audit Report recommendations included the following:

1. Better use of town websites as a means of sharing information;
2. Consideration of the use of a single contact number for Massachusetts;
3. Creation of a standard outreach plan to inform affected customers of routine infrastructure updates;
4. Use of social media, text messaging, and existing town notification systems for emergency situations;
5. Improved customer updating for reverse 911 calling;
6. Routinely requesting customer contact information;
7. Maintain an up-to-date contact list of town officials;
8. Ensure that town official contact lists include all relevant town officials;
9. Establish community relations guidelines in order to institutionalize management personnel's communication efforts;
10. Develop a rapport with local real estate agents to establish contact with new and departing customers;
11. Improve online presence through on-line community involvement news releases;
12. Conduct brief surveys at community events;
13. Train and equip call center and field personnel to obtain customer feedback;
14. Customize a Massachusetts-specific webpage in addition to the Connecticut-based webpage then in use;
15. Collaborate with web managers for the towns in its service territory, and add links to town websites; and
16. Increase Aquarion's active presence on Facebook and Twitter.

(Exh. DPU 6-22, Att. A at 11-30). D.P.U. 12-44, at 4-8, citing Audit Report at 4, 10, 27-30.

2. Positions of the Parties

Aquarion maintains that it has undertaken significant and successful efforts to improve its communications with its customers, the public, and public officials (Company Brief at 40, citing Exhs. JPW at 24-28; TMD at 16). According to the Company, these efforts include communications conducted via e-mail; postings on the Company's website; reverse-911 calls ("CodeRED"); meetings with fire, police, and DPW representatives; attending neighborhood meetings; and press releases (Company Brief at 40, citing Exhs. JPW at 24-31). Additionally, the Company states that (1) it has a communications manager who develops communications plans and documents, conveys information to target audiences, and arranges meetings between Company representatives and customers, the public, and municipal officials; and (2) it has retained outside consultants to assist with communications activities (Company Brief at 40-41, citing Exhs. Towns 1-23; DPU 6-1; DPU 14-20; DPU 23-13; Tr. 2, at 229-230, 259).[208] Further, the Company asserts that it is has two active Customer Advisory Boards ("CABs"), one for Hingham/Hull/North Cohasset and one for Oxford, and it is currently recruiting members for a CAB in Millbury (Company Brief at 40, citing Exh. JPW at 27). The Company contends that CAB members represent a cross-section of the community, meet with Company management several times a year on a variety of topics,

[208] As addressed in Section VIII.L.3., above, the Department expects that the Company will require less assistance from outside communications consultants in the future.

and provide input on what the Company is doing well and on what could be improved (Company Brief at 40, citing Exhs. JPW at 27-28; AG 10-26; Tr. 2, at 246-248). No other party addressed this issue on brief.

3. Analysis and Findings

In D.P.U. 12-44, the Department acknowledged Aquarion's efforts to improve communications in response to the issues identified in D.P.U. 11-43. D.P.U. 12-44, at 9, citing Audit Report at 4, 10. As noted above, the Department directed Aquarion to consider the recommendations in the Audit Report and implement any cost-effective recommendations to improve the Company's communications, policies, and practice as a whole. D.P.U. 12-44, at 9. The Department has reviewed Aquarion's implementation of the Audit Report recommendations and finds that the Company has satisfied the Department's directives in D.P.U. 12-44. Specifically, Aquarion has implemented the recommendations in the Audit Report with the exception of recommendations to use existing town notification systems for emergency situations and develop a rapport with local real estate agents to establish contact with new and departing customers (Exh. DPU 10-15, Att. A).

Regarding the Audit Report's recommendation that the Company use existing town notification systems for emergency situations, the Company relies upon public officials and municipal staff for use of the town notification system (Exhs. JPW at 26, 31; JPW-2, at 3-4; DPU 24-4). For level one emergencies (e.g., main breaks, service leaks, minor mechanical problems),[209] the Company relies on its own emergency notification systems, including e-mails to public officials and town staff, Aquarion's website, social media, and CodeRed[210] (Exhs. JPW-2, at 3; DPU 10-19, Atts. A through C, at 13, 25-77; DPU 24-4). For emergencies beyond level one, the Company additionally follows the response and communication procedures described in the Company's Emergency Response Plans, tailored for each system (Exhs. DPU 10-19, Atts. A through C, at 18-19, 25-77; DPU 24-4). Aquarion states that the Company leaves to the discretion of town officials whether municipal notification systems should be used to communicate about a Company incident (Exh. DPU 24-4). The Department finds that the Company's notification of public officials and town staff appropriately provides the opportunity for the municipalities to use their discretion whether to use municipal notification systems, including town websites, to augment the Company's own emergency notification procedures.

Additionally, the Audit Report contained a recommendation that Aquarion develop a working rapport with local real estate agencies to ensure that new or departing residents contacted the Company as soon as they have move-in or closing dates for their properties in order to facilitate greater customer awareness of Company procedures (Exh. DPU 6-22,

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[209] Aquarion classifies emergencies from level one to level five, depending upon their nature and potential effect on the Company's system and customers (Exhs. DPU 10-19, Atts. A through C, at 13-17).

[210] CodeRed is the trade name of the Company's reverse-911 vendor. D.P.U. 11-43, at 255 n.149. A reverse-911 system is a public safety communications system used to deliver recorded emergency notifications to a distinct set of telephone service subscribers. D.P.U. 11-43, at 254 n.146. The Company does not use CodeRed for an incident occurring in the middle of the night (Exh. JPW-2, at 3).

Att. A at 19-20). The Company reports that in 2013 it instituted a community relations program that includes regular communication with education, civic, and business groups to reach a broad range of customers, as well as an increased presence at community events and leveraged direct mail, email, and social media to communicate with customers directly (Exh. DPU 10-15, Att. A). The Department finds that this outreach program serves to facilitate greater customer awareness of Company procedures, consistent with the Audit Report's recommendation.

As the Department noted in D.P.U. 12-44, at 9, "[u]nless the Company is able to build on these initial efforts and internalize a solid corporate ethic of responsiveness and public service, reciprocated with a spirit of mutual cooperation, the cycle of combativeness and hostility that we have seen between Aquarion, its customers, and municipal officials will remain unbroken." Based on the evidentiary record and public comments, it appears that the Company continues to take efforts to maintain and improve communications with municipal officials and customers and that relationships have begun to improve (see, e.g., Exhs. JPW at 24-32; JPW-2; DPU 10-15, Att. A; Towns 2-7; July 13, 2017 Tr. at 21, 36, 38; July 19, 2017 Tr. at 29, 34; but see July 13, 2017 Tr. at 41, 44-45, 54-55). Nevertheless, continued diligence is required to ensure that these initial efforts provide positive results to both Aquarion and the customers it serves.

B. Unaccounted-For Water

1. Introduction

Unaccounted-for water ("UAW") is 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 reliably estimated and documented amounts used for certain purposes, otherwise referred to as confidently estimated municipal use ("CEMU"),[211] as established by the MassDEP (Exhs. DPU 6-17, Att. A at 17; Towns 1-14). D.P.U. 11-43, at 274; Aquarion Water Company of Massachusetts, D.P.U. 08-27-C at 1 n.2 (2011). The causes of UAW include the following: (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 firefighting uses (Exh. DPU 6-17, Att. A at 17; Tr. 2, at 302-303). D.P.U. 11-43, at 274; D.P.U. 08-27-C at 1 n.2; D.P.U. 08-27, at 215. While industry standards for UAW range between ten and 15 percent, the Water Conservation Standards issued jointly by the Executive Office of Energy and Environmental Affairs ("EOEEA") and the Massachusetts Water Resources Commission ("MWRC"), recommend a goal of ten percent or less (Exh. DPU 6-17, Att. A at 17). D.P.U. 17-115, at 36; Sheffield Water Company/Mountain Water Systems, D.P.U. 16-37, at 29 (2016); D.P.U. 08-27, at 215.

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[211] The MassDEP has established the following categories of CEMU: (1) fire protection and training; (2) hydrant/water main flushing/main construction; (3) flow testing; (4) bleeders/blowoffs; (5) tank overflow and drainage; (6) sewer and stormwater system flushing; (7) street cleaning; (8) source meter calibration adjustments; and (9) major water main breaks (Exh. Towns 1-14).

Aquarion identifies several measures it has taken to address UAW since its last rate case, including meter and mains replacements and the performance of routine leak detection surveys (Exhs. SCO at 19-21; DPU 10-34; DPU 22-3; Tr. 3, at 425-427). The Company reports that its UAW rates in 2017 were 16 percent for its Hingham/Hull/North Cohasset system, twelve percent for its Millbury system, and 16 percent for its Oxford system (Exh. DPU 6-18 (Supp.)).[212] Since 2012, the Company's UAW has ranged between 16 and 23 percent for its Hingham/Hull/North Cohasset system, two and 14 percent for its Millbury system, and twelve and 23 percent for its Oxford system (Exh. DPU 6-18 (Supp.)).

2. Positions of the Parties

a. Hingham and Hull

Hingham and Hull contend that Aquarion's UAW has been high for many years, averaging around 20 percent for the Hingham/Hull/North Cohasset system (Hingham/Hull Brief at 8; Hingham/Hull Reply at 3). Hingham and Hull assert that the Company's UAW level for Service Area A declined to 16 percent in 2010, and then increased to 23 percent in 2013 and 2014, thus creating the appearance that the Company did little to nothing to decrease UAW during that period (Hingham/Hull Reply at 3). Hingham and Hull acknowledge a slight downward trend in UAW levels since 2014, and a recent decline in the 2017 UAW levels, but assert that it is impossible to know if the reported 2017 level is indicative of a trend, or an anomaly or miscalculation, without an additional two to

[212] The Company's 2017 UAWs for the Millbury and Oxford systems were pending MassDEP approval at the close of the record and may be adjusted by MassDEP (Exh. DPU 6-18 (Supp.); Tr. 2, at 303-306).

three years of verified UAW data (Hingham/Hull Brief at 8; Hingham/Hull Reply at 3; see also Exh. DPU 6-18 (Supp.)). Hingham and Hull contend that even the Company's 2017 UAW levels are much higher than MassDEP's goal of ten percent (Hingham/Hull Brief at 8; Hingham/Hull Reply at 3-4).

Hingham and Hull argue that a combination of incentives and expanded Department oversight will encourage continued progress in reducing UAW (Hingham/Hull Reply at 3). Hingham and Hull assert that the Department should require the Company to annually report reductions in UAW and to address how any reduced UAW relates to mains replacements to date (Hingham/Hull Brief at 9; Hingham/Hull Reply at 8-9). In addition, Hingham and Hull propose a reduction to the Company's ROE as a means of encouraging the Company to reach 15 percent UAW (Hingham/Hull Brief at 27).[213]

b. Company

The Company maintains that the UAW for the Company as a whole has been steadily declining, with the UAW for the Hingham/Hull/North Cohasset system consistently declining for the past four years (Company Brief at 66, citing Exh. DPU 6-18 (Supp.); Company Reply at 9-10, citing Exh. DPU 6-18). The Company contends that this is the result of its concerted and systematic efforts to reduce UAW, including through leak detection surveys performed much more frequently than recommended by the MassDEP, meter testing and replacement, water mains replacements, and efforts to address bleeder mains (Company Brief

[213] The Department addresses the Company's allowed ROE in Section IX.C.5.e., above.

at 66, citing Exh. DPU 22-3; Tr. 2, at 301-306; Company Reply at 9).[214] The Company asserts that the state-wide average UAW for 284 public water systems for 2011 through 2017 is approximately 14 percent, and not far below the Company's current DEP approved UAW of 16 percent (Company Brief at 66 (citations omitted); Company Reply at 10).[215] Aquarion asserts that, while the Company is committed to continuing to reduce its UAW, the evidence demonstrates that the Company is getting closer to the norm (Company Brief at 66). Additionally, Aquarion argues that approval of the Mechanism would likely improve UAW as older mains are replaced (Company Reply at 10).

The Company contends that UAW represents the difference between water that is pumped into the system and the water that the Company can measure for use (Company Reply at 7). The Company asserts that while customer-metered consumption is the most prevalent use, other types of water uses do not flow through customer meters, including the use of fire hydrants or leaks (Company Reply at 7-8). The Company argues that to determine UAW, it relies upon municipal departments to provide information on their use of hydrants for street sweeping, paving, and sewer related uses, and that any unreported municipal usage of hydrants must be classified as UAW (Company Reply at 8). The

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[214] Aquarion states that MassDEP's guidelines recommend that public water systems conduct a leak-detection survey as least once every three years, whereas the Company has conducted at least three leak detection surveys per year in Service Area A since 2014 (Company Reply at 9, citing Exh. DPU 10-34).

[215] The Company notes that the ten percent MassDEP target is a requirement for public water systems with a Water Management Act Permit, but is a recommendation for registered public water systems like Aquarion (Company Reply at 10).

Company maintains that it can only account for its overall water use if information from all municipal departments, such as town Departments of Public Works ("DPWs"), is made available to the Company (Company Reply at 8, citing Exhs. Towns 1-14; Towns 4-4). The Company asserts that it received more information about municipal use in 2017 than in prior years, and it urges the Department to request that towns continue to provide accurate and comprehensive usage volumes for hydrant use (Company Reply at 10).

The Company disputes Hingham and Hull's contentions that the UAW data for the Hingham/Hull/North Cohasset system was an anomaly or was miscalculated as being without factual basis (Company Brief at 65-66, citing Hingham/Hull Brief at 8; Company Reply at 9). According to the Company, annual reporting of UAW to the MassDEP is a rigorous process for which the Company submitted 104 pages of documentation in 2017 (Company Reply at 8).

3. Analysis and Findings

The Department has not established a target UAW ratio. While industry standards for UAW have ranged between ten and 15 percent, the 2012 Water Conservation Standards recommend a goal of ten percent or less (Exh. DPU 6-17, Att. A at 17). D.P.U. 17-115, at 36; D.P.U. 16-37, at 29; D.P.U. 11-43, at 275; D.P.U. 08-27, at 218. The Water Conservation Standards are intended to set statewide goals on water conservation and efficient use of water and to provide policy guidance in the area of conservation measures (Exh. DPU 6-17, Att. A). D.P.U. 17-115, at 36 n.19; D.P.U. 16-37, at 29 n.17.

Based on our review of Aquarion's most recent UAW rates (i.e., 16 percent for the Service Area A, and a reported 12 percent and 16 percent for Service Area B, respectively),[216] the Department finds that the Company has made a satisfactory effort in controlling UAW (Exh. DPU 6-18 (Supp.)). Further, Aquarion has implemented a number of ongoing efforts targeted to improve UAW (Exhs. SCO at 19-21; DPU 10-34; DPU 22-3; Tr. 3, at 425-427). In an effort to reduce UAW, Aquarion routinely performs leak detection surveys and performed water audits and conservation studies in 2014, 2015, and 2017 (Exhs. DPU 10-34; DPU 22-3, at 1).[217] In addition, the Company performs meter replacements annually, targeting replacement of residential meters every ten years and approximately 20 large meters (i.e., 1 1/2-inch and 2-inch) each year (Exh. DPU 22-3, at 1). The Company annually tests and calibrates its source water and finish water flow meters (Exh. DPU 22-3, at 1). The Company replaces older water mains with higher leakage rates, and it has taken measures to address and replace the bleeder mains in Service Area A due to wasted water arising from the continuous flow during winter to prevent freezing (Exhs. Towns 1-14; DPU 22-3, at 1-2; Tr. 2, at 339-342; Tr. 3, at 425-427). The Company also separately tracks both UAW and non-revenue water on a monthly basis, based on a

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[216] The UAW rates identified for Millbury and Oxford are based on the 2017 UAW amounts reported to, but not yet approved by, the MassDEP as of the close of the record (Exh. DPU 6-18 (Supp.); Tr. 2, at 303-306). The MassDEP may adjust the reported amounts based on calculations of confidently estimated municipal use and other factors (Exhs. Towns 1-14; Towns 4-4; Tr. 2, at 303-306).

[217] Since 2012, the Company has conducted annual leak detection surveys in both Millbury and Oxford, and at least biannually in Service Area A (Exhs. SCO at 19; DPU 10-34).

rolling 12-month average, to assess and identify any flow or usage trends that need to be addressed (Exhs. SCO at 18; DPU 22-3, at 2-3).[218] Accordingly, the Department is persuaded by the evidence presented in this case that the Company is taking the issue of UAW seriously (see, e.g., Exhs. SCO at 18-21; DPU 22-3). In addition, the Department anticipates that, as the Company accelerates mains replacements under the Mechanism, the Company's UAW is likely to improve. Going forward, we direct the Company to continue to take all reasonable steps to reduce the amount of UAW from current levels on a system wide and a service area basis.

Hingham and Hull request that the Department require the Company to annually report reductions in UAW, including how any reductions relate to mains replacements (Hingham/Hull Brief at 9; Hingham/Hull Reply at 8-9). As addressed above, the Department established annual reporting requirements regarding mains replacements and UAW within the Company's Mechanism. See Section V.C.4.m.

Finally, we note the role of municipalities in ensuring accurate UAW calculations. As described above, UAW is calculated by subtracting CEMU from production and dividing the result by production (Exh. Towns 1-14). The Company relies upon local DPWs and fire and sewer departments to provide accurate information on CEMU (Exhs. SCO at 19-21; Towns 1-14; Towns 4-4; DPU 22-3, at 2, 3; Tr. 2, at 303). Absent documentation to

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218 Non-revenue water is the difference between the amount of water produced and available for consumption and the amount of water used as measured by the sum of all metered customers (Exh. Towns 4-4, at 1; Tr. 2, at 301-302). Non-revenue water includes UAW as well as CEMU (Exh. Towns 1-14, at 1; Tr. 2, at 301-305).

account for municipal use, UAW levels would be higher (Exh. Towns 4-4, at 1). As a result, we encourage the continued cooperation by the municipalities in providing comprehensive reports of municipal usage to Aquarion on a timely basis.

XVII. SCHEDULES

A. Schedule 1 – Revenue Requirements and Calculation of Revenue Increase

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
COST OF SERVICE				
Total O&M Expense	8,206,808	(150,502)	(232,214)	7,824,092
Hingham/Hull WTP Lease and O&M Expense	3,609,090	2,528	607,919	4,219,538
Depreciation & Amortization	2,003,659	120	0	2,003,779
Merchandise and Jobbing Revenue	(56,854)	0	0	(56,854)
Taxes Other Than Income Taxes	1,295,885	21,213	(432,783)	884,315
Income Taxes	(115,462)	54,456	(151,431)	(212,437)
Deferred Taxes	442,876	(170,411)	0	272,465
Return on Rate Base	2,995,505	124,829	(1,590)	3,118,744
Total Cost of Service	18,381,507	(117,766)	(210,099)	18,053,642
OPERATING REVENUES				
Operating Revenues	15,960,894	22,089	(1,755)	15,981,228
Non-Operating Revenues	74,135	0	0	74,135
Total Revenues	16,035,029	22,089	(1,755)	16,055,363
Revenue Deficiency	2,346,478	(139,855)	(208,344)	1,998,279
Rounding Adjustment to Company Schedules	229	786	(1,015)	0
Total Base Revenue Deficiency	**2,346,707**	**(139,069)**	**(209,359)**	**1,998,279**

Numbers may not add due to rounding, and minor discrepancies between these numbers and those in the text are due to rounding.

B. Schedule 2 – Operations and Maintenance Expenses

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Test Year Distribution O&M Expense	8,209,229	0	0	8,209,229
ADJUSTMENTS TO O&M EXPENSE:				
Salaries and Wages	180,584	109,127	(125,635)	164,076
Group Medical, Dental, Life, and Disability	48,787	32,050	(722)	80,115
Post Retirement Healthcare & Pension	193,849	(229,042)	(1,000)	(36,193)
Amortization of Deferred Expenses	206,305	(103,533)	(708)	102,064
Outside Services-Communications	(334,521)	0	(86,805)	(421,326)
Chemicals	(6,470)	20,883	0	14,413
Purchased Electric	(7,377)	(24,986)	17,257	(15,106)
Rate Case Expense	58,723	35,728	(34,161)	60,290
Corporate Insurance	6,417	20,976	0	27,393
Corporate Expenses	(543)	(3,000)	0	(3,543)
Shared IT Services	4,876	(13,329)	(6,364)	(14,817)
Shared Customer Services	25,898	(12,642)	0	13,256
Shared Office Costs	1,882	(2,817)	0	(935)
Payroll and Benefit Allocations	(25,806)	(7,575)	0	(33,381)
Goodwill Fire Charge Credits	(23,553)	0	0	(23,553)
Purchased Water	(275,547)	15,039	5,365	(255,143)
Tangible Property Regulation Credit	(6,722)	0	0	(6,722)
Legal Expense	(170,323)	(14,000)	(626)	(184,949)
Rent Expense	1,654	9	0	1,663
Bad Debt	15,191	(1,933)	0	13,258
Residual O&M Inflation Adjustment	100,252	28,980	1,543	130,775
Interest On Customer Deposits	0	0	14	14
Total Other O&M Expenses	(6,444)	(150,065)	(231,842)	(388,351)
Total Distribution O&M Expense	**8,202,785**	**(150,065)**	**(231,842)**	**7,820,878**
Bad Debt on Proposed Rate Increase	4,023	(437)	(372)	3,214
Total O&M Expense	**8,206,808**	**(150,502)**	**(232,214)**	**7,824,092**

Numbers may not add due to rounding, and minor discrepancies between these numbers and those in the text are due to rounding.

C. Schedule 3 – Depreciation and Amortization Expenses

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Depreciation Expense	2,003,659	120	0	2,003,779
Amortization Expense	0	0	0	0
Total Depreciation & Amortization Expenses	**2,003,659**	**120**	**0**	**2,003,779**

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D. Schedule 4 – Rate Base and Return on Rate Base

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Utility Plant in Service	74,602,394	0	0	74,602,394
Post-Test Year Plant Additions	1,041,000	188,385	0	1,229,385
Post-Test Year Plant Retirements	(59,684)	(179,951)	0	(239,635)
Adjusted Utility Plant in Service	75,583,710	8,434	0	75,592,144
LESS:				
Reserve for Depreciation and Amortization	(18,198,293)	0	0	(18,198,293)
Depreciation Reserve on Retirements	59,684	179,951	0	239,635
Net Utility Plant in Service	57,445,101	188,385	0	57,633,486
ADDITIONS TO PLANT:				
Cash Working Capital	1,011,403	(18,503)	(28,586)	964,314
Materials and Supplies	262,603	0	0	262,603
Total Additions to Plant	1,274,006	(18,503)	(28,586)	1,226,917
DEDUCTIONS FROM PLANT:				
Reserve for Deferred Income Tax	(7,098,992)	0	0	(7,098,992)
Customer Contribution	(12,647,332)	0	0	(12,647,332)
Customer Advances	(151,041)	0	(1,000)	(152,041)
Water Balance Program	(219,874)	0	0	(219,874)
Total Deductions from Plant	(20,117,239)	0	(1,000)	(20,118,239)
RATE BASE	38,601,868	169,882	(29,586)	38,742,164
COST OF CAPITAL	7.76%	0.29%	0.00%	8.05%
RETURN ON RATE BASE	**2,995,505**	**124,829**	**(1,590)**	**3,118,744**

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E. Schedule 5 – Cost of Capital

PER COMPANY	PRINCIPAL	PERCENTAGE	COST	RATE OF RETURN
Long-Term Debt	18,630,000	51.08%	5.81%	2.97%
Short Term Debt	1,462,901	4.01%	1.76%	0.07%
Preferred Stock	0	0.00%	0.00%	0.00%
Common Equity	16,378,826	44.91%	10.50%	4.72%
Total Capital	36,471,727	100.00%		7.76%
Weighted Cost of				
Debt				3.04%
Equity				4.72%
Cost of Capital				7.76%

COMPANY ADJUSTMENTS	PRINCIPAL	PERCENTAGE	COST	RATE OF RETURN
Long-Term Debt	18,440,000	52.96%	5.87%	3.11%
Short Term Debt	0	0.00%	0.00%	0.00%
Preferred Stock	0	0.00%	0.00%	0.00%
Common Equity	16,378,826	47.04%	10.50%	4.94%
Total Capital	34,818,826	100.00%		8.05%
Weighted Cost of				
Debt				3.11%
Equity				4.94%
Cost of Capital				8.05%

PER ORDER	PRINCIPAL	PERCENTAGE	COST	RATE OF RETURN
Long-Term Debt	18,440,000	52.96%	5.87%	3.11%
Short-Term Debt	0	0.00%	0.00%	0.00%
Preferred Stock	0	0.00%	0.00%	0.00%
Common Equity	16,378,826	47.04%	10.50%	4.94%
Total Capital	34,818,826	100.00%		8.05%
Weighted Cost of				
Debt				3.11%
Equity				4.94%
Cost of Capital				8.05%

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F. Schedule 6 – Cash Working Capital

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Total O&M Expense	8,206,808	(150,502)	(232,214)	7,824,092
Less: Bad Debt on Proposed Rate Increase	4,023	(437)	(372)	3,214
Subtotal - O&M Expense	8,202,785	(150,065)	(231,842)	7,820,878
Lead/Lag Factor	0.1233	0	0	0.1233
Total Cash Working Capital Allowance	**1,011,403**	**(18,503)**	**(28,586)**	**964,314**

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G. Schedule 7 – Taxes Other Than Income Taxes

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Payroll Taxes	187,479	8,192	(854)	194,817
Property Taxes	504,004	37,339	(1,692)	539,651
WTP Property Taxes	604,402	(24,318)	(580,084)	0
Excise Taxes	0	0	149,847	149,847
Total Taxes Other Than Income Taxes	**1,295,885**	**21,213**	**(432,783)**	**884,315**

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H. Schedule 8 – Income Taxes

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Rate Base	38,601,868	169,882	(29,586)	38,742,164
Return on Rate Base	2,995,505	124,829	(1,590)	3,118,744
Less: Interest Expense	1,173,497	32,316	(932)	1,204,881
Net Return on Rate Base	1,822,008	92,513	(659)	1,913,863
ADDITIONS:				
Book Depreciation	2,003,659	120	0	2,003,779
Deferred Federal Income Taxes	420,608	(170,411)	0	250,197
Deferred State Taxes	22,268	0	0	22,268
Total Additions	2,446,535	(170,291)	0	2,276,244
DEDUCTIONS:				
Permanent Items	(6,213)	0	0	(6,213)
Other Timing/Normalization Items	(278,628)	0	0	(278,628)
Capitalized Repairs Deduction	(1,421,177)	0	0	(1,421,177)
Tax Depreciation (Bonus)	(961,137)	0	0	(961,137)
Tax Depreciation (Non Bonus)	(1,909,151)	(120)	0	(1,909,271)
Total Deductions	(4,576,306)	(120)	0	(4,576,426)
Taxable Income Base	(307,763)	(77,898)	(659)	(386,319)
Gross Up Factor	1.650000	(0.271700)	(0.002406)	1.375894
Taxable Income	(507,809)	(23,747)	22	(531,534)
Remove State Gross Up on Bonus Depreciation	(127,158)	21,145	2,312	(103,701)
Taxable Income- State	(380,651)	(44,892)	(2,290)	(427,833)
Add Back Bonus Depreciation	961,137	0	0	961,137
Adj. Taxable Income- State	580,486	(44,892)	(2,290)	533,304
State Taxes				
Mass Franchise Tax (8%)	46,439	(3,591)	(183)	42,664
Adjustment to Book	(3,387)	1,778	1,609	0
Total State Franchise Taxes	43,052	(1,813)	1,426	42,664
Federal Taxes				
Taxable Income	(380,651)	(44,892)	(2,290)	(427,833)
Less: State Income Tax	(46,439)	3,591	183	(42,664)
Federal Taxable Income	(427,090)	(41,301)	(2,107)	(470,497)
Federal Income Tax Calculated	(145,210)	46,848	(443)	(98,804)
Adjustment to Book	(13,304)	9,421	3,883	0
Total Federal Income Taxes	(158,514)	56,269	3,440	(98,804)
Total Income Taxes Calculated	(115,462)	54,456	4,866	(56,140)
Amortization of Net Excess Deferred Tax Liability	0	0	(156,297)	(156,297)
Total Income Taxes	**(115,462)**	**54,456**	**(151,431)**	**(212,437)**

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I. Schedule 9 – Revenues

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
OPERATING REVENUES PER BOOKS	15,995,588	0	0	15,995,588
REVENUE ADJUSTMENTS:				
Bill Analysis Adjustment	(43,432)	0	1,413	(42,019)
Unbilled Sales	(177,606)	0	0	(177,606)
Pro Forma Adjustments	126,809	0	0	126,809
Total Revenue Adjustments	(94,229)	0	1,413	(92,816)
Adjusted Operating Revenues	15,901,359	0	1,413	15,902,772
ADD:				
Bill Analysis Adjustment	235	(735)	0	(500)
Other Water Revenues	59,300	22,824	(3,168)	78,956
Total Other Revenues and Adjustments	59,535	22,089	(3,168)	78,456
Adjusted Total Operating Revenues	**15,960,894**	**22,089**	**(1,755)**	**15,981,228**

* The Company proposed to reduce the Bill Analysis Adjustment by $735 and increase Other Water Revenues by $22,824, but did not include these adjustments in its Revision 3 DPU Schedule 9 (Exh. 4 (Rev. 3), Sch. 1, at 1). The Department has subsequently added these adjustments to the Company Adjustment column.

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J. Schedule 10 – Hingham/Hull Water Treatment Plant Lease and Operating Expense

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
WTP Lease Expense	2,881,239	0	0	2,881,239
CWC Allowance	27,568	1,030	0	28,598
Tax Grossup on CWC	10,851	(4,251)	(13)	6,587
Treatment Plant Lease Expense	2,919,658	(3,221)	(13)	2,916,424
Property Taxes	604,402	(24,318)	0	580,084
Chemical Expense	300,812	15,357	0	316,169
Power Expense	272,078	(21,330)	27,516	278,264
Waste Disposal Expense	59,135	0	0	59,135
Heating Expense	48,336	12,403	0	60,739
Total WTP Operating Expense	1,284,763	(17,888)	27,516	1,294,391
Less: Property Tax Expense	604,402	(24,318)	0	580,084
Operating Expense Subject to CWC	680,361	6,430	27,516	714,307
CWC Allowance	6,510	307	273	7,090
Tax Grossup On CWC	2,561	(988)	60	1,633
ADD: Property Taxes	0	0	580,084	580,084
Total Operating Expense	689,432	5,749	607,932	1,303,114
Total Treatment Plant Expense	3,609,090	2,528	607,919	4,219,538

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XVIII. ORDER

ORDERED: That the tariff M.D.P.U. No. 3-B filed by Aquarion Water Company of Massachusetts on November 1, 2017, and amended on February 9, 2018, to become effective November 1, 2018, 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 revenues by $1,998,279; and it is

FURTHER ORDERED: That Aquarion Water Company of Massachusetts shall file a revised tariff, M.D.P.U. No. 4, consistent with the directives herein; and it is

FURTHER ORDERED: That Aquarion Water Company of Massachusetts shall file an appropriate tax credit tariff, M.D.P.U. No. 5, consistent with the directives herein; 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/
Angela M. O'Connor, Chairman

/s/
Robert E. Hayden, Commissioner

/s/
Cecile M. Fraser, 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.