Commonwealth of Massachusetts

Supreme Judicial Court

Suffolk, SS. No. SJ-2018-0029

In Re Milford Water Company

Report and Determination of the Department of Public Utilities in D.P.U. 18-60
pursuant to appointment by the Supreme Judicial Court
according to St. 1881, c. 77, § 9, and G.L. c. 165, § 5

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 18-60 February 26, 2021

Referral to the Department of Public Utilities by the Supreme Judicial Court of the Town of Milford's Petition to Determine the Amount of Compensation to be Paid for the Purchase of the Corporate Property and All Rights and Privileges of the Milford Water Company, pursuant to St. 1881, c. 77, § 9, and G.L. c. 165, § 5.

APPEARANCES: Jed M. Nosal, Esq.
Jesse S. Reyes, Esq.
Amy I. Tierney, Esq.
Brown Rudnick LLP
One Financial Center
Boston Massachusetts 02111
FOR: TOWN OF MILFORD

Jon N. Bonsall, Esq.
Keegan Werlin LLP
99 High Street, Suite 2900
Boston Massachusetts 02110

-and

Joe A. Conner, Esq.
Adam Sanders, Esq.
Baker, Donelson, Bearman, Caldwell & Berkowitz, P.C.
633 Chestnut Street, Suite 1900
Chattanooga Tennessee 37450
FOR: MILFORD WATER COMPANY

TABLE OF CONTENTS

I. INTRODUCTION

A. Procedural History

On March 9, 1881, the Legislature incorporated the Milford Water Company ("Company") for the purpose of furnishing the inhabitants of the Town of Milford ("Town") "with pure water for the extinguishment of fires, and for domestic and other purposes." St. 1881, c. 77 (Exh. TOWN-5) ("Charter"). Section 9 of the Charter grants the Town the right to purchase the corporate property and all the rights and privileges of the Company at a mutually agreed price. Charter, § 9 (Exh. TOWN-5). Section 9 of the Charter further provides that if the Company and Town are unable to agree on a price, the Supreme Judicial Court shall, upon application of either party, appoint three commissioners to determine the compensation to be paid. Charter, § 9 (Exh. TOWN-5).

On January 29, 2018, the Town petitioned the Supreme Judicial Court pursuant to the Charter at Section 9, and G.L. c. 165, § 5, to appoint the Department of Public Utilities ("Department") to determine the compensation to be paid for the purchase of the corporate property and all of the rights and privileges of the Company. On May 31, 2018, a single Justice of the Supreme Judicial Court appointed the Department to determine the amount of compensation to be paid by the Town for its planned purchase. Milford Water Company, Docket No. SJ-2018-0029, Order (May 31, 2018). In her Order, the single Justice noted that the Company agreed to the appointment of the Department. Docket No. SJ-2018-0029, Order at 2 (May 31, 2018). The Department docketed the petition as D.P.U. 18-60.

On November 6, 2018, the Department established the procedural schedule in this proceeding, including deadlines to file prefiled testimony and discovery, evidentiary hearings, and a briefing schedule. The Town sponsored the testimony of four witnesses: (1) John J. Reed, chairman and chief executive officer, Concentric Energy Advisors, Inc., and CE Capital, Inc.; (2) Richard Fedder, senior principal, Woodard & Curran, Inc.; (3) James J. Rivard, senior principal, Woodard & Curran, Inc.; and (4) Webster A. Collins, executive vice president, CBRE Group, Inc. The Company sponsored the testimony of seven witnesses: (1) David Condrey, the Company's manager; (2) Mark Rodriguez, managing partner, MR Valuation Consulting, LLC; (3) Karen Gracey, co-president, Tata & Howard, Inc.; (4) Larry Earl Richards, owner, M3P Consulting; (5) Mark Pomykacz, director, MR Valuation Consulting, LLC; (6) Robert J. Cordy, partner, McDermott Will & Emery; and (7) Robert Reilly, managing director, Willamette Management Associates. The Town and the Company submitted initial briefs on July 12, 2019, and the parties submitted reply briefs on August 2, 2019. The evidentiary record consists of approximately 287 exhibits and responses to seven records requests.[1]

B. Procedural Ruling

During the proceeding, the Company acknowledged that the Department's standard appeal language providing a 20-day appeal to the Supreme Judicial Court is inapplicable here because the Department will be issuing our determination to the Supreme Judicial Court

[1] The Department incorporates by reference pursuant to 220 CMR 1.10(3) the Company's 1915 Annual Return and 2019 Annual Return.

(Tr. 6, at 936). The Company asked, however, that the Department allow the parties to submit motions for recalculation or reconsideration to the Department (Tr. 6, at 936-937; Company Reply Brief at 39). The Town did not comment on this matter.

We recognize the uniqueness of this proceeding. The Department has been asked on only one previous occasion to determine the value of a water company, and the parties in that proceeding ultimately settled with the Department having no role. Williamstown Water Company, D.P.U. 6682 (1942). We also agree with the Company that this is not an adjudicatory proceeding pursuant to G.L. c. 30A and thus the Department's standard appeal language does not apply (Tr. 6, at 936). Pursuant to the plain language of the Charter, the Department is issuing our determination to the Supreme Judicial Court for further review and acceptance. Charter, § 9 (Exh. TOWN-5). In referring the matter to the Department, the single justice of the Supreme Judicial Court stated, in pertinent part, that if either side is aggrieved by the Department's valuation, they may challenge it when it is presented to the Supreme Judicial Court for acceptance. Docket No. SJ-2018-0029, Order at 2 (May 31, 2018). She noted that both sides' interests would be adequately protected by that approach. Docket No. SJ-2018-0029, Order at 2 (May 31, 2018). Based on these factors, we find it inappropriate to build in a period for motions for recalculation or reconsideration after

issuing our determination to the Supreme Judicial Court.[2] Instead, the parties may raise any concerns regarding the Department's determination before the Supreme Judicial Court.[3]

II. OVERVIEW

The Company provides water to approximately 9,000 customers, with an average daily demand between 2.8 and 3.5 million gallons (Exh. MW-DC-1, at 2-3).[4] The Company sources its water supply from three wellfields, the Echo Lake Reservoir, and the Charles River (Exh. MW-DC-1, at 2). The Company operates two treatment plants, three distribution storage tanks, and a transmission and distribution system comprised of approximately 125 miles of mains, varying in size from two inches to 24 inches in diameter (Exh. MW-DC-1, at 2-3).

The Town proposes a purchase price for the Company's assets of $31,574,246 as of December 31, 2018 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14). In determining its proposed purchase price, the Town relies on an original cost less depreciation ("OCLD")

---

2 The Department's regulations allowing post-Order motions are designed for G.L. c. 30A proceedings. 220 CMR 1.01(3), 1.11.

3 On brief, the Company asked the Department to admit into evidence two public materials relating to a proposed settlement between the Town and the Company that were posted to the Town's website in Fall 2017 (Company Reply Brief at 6-7). The information involves a proposed settlement and the Department is not privy to how the parties developed the proposed valuation and other settling information; thus, we do not rely on the materials for our valuation and do not admit them into evidence.

4 Minor discrepancies in any of the amounts appearing in this Order are due to rounding.

valuation (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).[5] The Town states that OCLD reflects the utility's investment in the property (Exh. TOWN-JJR-2, at 13, citing Stow Municipal Electric Light Department, D.P.U. 94-176, at 65 (1996)).

The Town presents an alternative purchase price of $40,000,000 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14). To arrive at its alternative proposal, the Town first determined a replacement cost new less depreciation ("RCNLD") valuation of $71,914,064 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14). The Town states that RCNLD reflects the value that is being taken and that the buyer is receiving, i.e., the value of a reliable system in good condition (Exh. TOWN-JJR-2, at 13, citing D.P.U. 94-176, at 65). The Town then averaged the OCLD valuation of $31,574,246 and the RCNLD valuation of $71,914,064, resulting in $51,744,155 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14). The Town then reduced the $51,744,155 by $1,309,153 for earnings shortfall and by $9,949,776 for the Company's size and its non-public nature, resulting in a fair market valuation of $40,485,226, which the Town rounded to $40,000,000 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).[6]

---

[5] The Town also refers to OCLD as net book value (Exh. TOWN-JJR-2, at 11).

[6] The Town defines fair market value as the highest price a willing buyer would pay a willing seller for the property (Exh. TOWN-JJR-2, at 6 n.5, citing D.P.U. 94-176, at 58; Tr. 2, at 188-189).

The Company proposes a purchase price of $149,000,000 as of December 31, 2018 (Exh. MW-MR-3 (Rev. Errata Pages) at 3, 62, 67).[7] The Company first used an RCNLD cost approach, which it states is based on the principle of substitution that a prudent buyer would pay no more for an asset than the cost to acquire a similar asset of equivalent desirability and utility (Exh. MW-MR-1, at 6, 11). The Company then used an income capitalization approach, also referred to herein as the income approach, which it states is based on the premise that the value of a security or asset is the present value of the future earning capacity that is available for distribution to the subject investor in the asset (Exh. MW-MR-1, at 7). The Company assigned weightings of 60 percent and 40 percent to the cost approach value of $148,000,000 and the income approach value of $112,000,000, respectively, resulting in a value of $133,600,000 (Exhs. MW-MR-1, at 39; MW-MR-3 (Rev. Errata Pages) at 60-61, 68). The Company then added $15,890,000, representing its valuation of water rights, to arrive at its proposed full and fair cash value of $149,000,000 (Exh. MW-MR-3 (Rev. Errata Pages) at 62, 67).[8]

---

[7] On May 17, 2019, the Company submitted errata pages to its initial testimony in Exhibit MW-MR-3; the Department is citing to the Exhibit as (Rev. Errata Pages) for clarity.

[8] The Company also considered a third approach, the market approach, which is a value estimated from prices paid in actual market transactions as well as asking prices for similar assets available for sale (Exh. MW-MR-1, at 7). The Company did not rely on this method in its valuation proposal because the Company represents that such an estimate could not be meaningfully completed because certain necessary adjustments could not be made to the comparable sales (Exhs. MW-MR-1, at 37, 39; MW-MR-3 (Rev. Errata Pages) at 59). Nonetheless, the Company concluded the market

III. TOWN'S PROPOSAL

A. Original Cost Less Depreciation Valuation

The Town determined the OCLD for the Company's assets to be $31,574,246 (Exh. TOWN-JJR-4 (Supp.) at 4, 10; see also Exh. TOWN-MWC 4-12 (Supp.), Att. at 4-5). The Town stated that OCLD is an appropriate valuation component in that it reflects a utility's investment in the assets net of accrued depreciation (Exh. TOWN-JJR-2, at 11, 13, citing D.P.U. 94-176, at 65). The Town stated that its OCLD analysis of the Company's assets is the same method the Department previously used to establish the Company's rate base (Exh. TOWN-JJR-2, at 15).

The Town used data from the Company's 2018 annual returns to determine the OCLD (Exhs. TOWN-JJR-4, at 4; TOWN-MWC 4-12 (Supp.), Att.). Specifically, using the Company's 2018 annual returns, the Town derived gross utility plant of $53,554,005 by adding total plant investment of $51,246,514 with total general equipment of $1,054,625 and unfinished construction of $1,252,865 (Exhs. TOWN-JJR-4 (Supp.) at 4; TOWN-MWC 4-12 (Supp.), Att. at 4). The Town then removed depreciation reserve of $13,364,689 and contributions for extensions of $8,615,070 to arrive at the OCLD of $31,574,246 (Exhs. TOWN-JJR-4 (Supp.) at 4; TOWN-JJR-4 (Rev. Supp.) Rev. Fig. 14; TOWN-MWC 4-12 (Supp), Att. at 5).

---

approach produced a valuation of $69,000,000 as of December 31, 2018 (Exhs. MW-MR-1, at 37; MW-MR-3 (Rev. Errata Pages) at 59).

B. Reproduction Cost Approach Valuation

1. Introduction

The Town calculated an RCNLD valuation of $71,914,064 (Exhs. TOWN-JJR-2, Rev. Fig. 2; TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).[9] The Town defined replacement cost new ("RCN") as the engineering estimate of the cost of replacing an existing asset of similar construction and operational utility by using, to the extent possible, the same materials, design, layout, construction standards, and quality of workmanship, and embodying all the deficiencies, superadequacies,[10] and obsolescence of the subject improvements as of the date of valuation (Exhs. TOWN-RF-3, at 3; TOWN-JR-3 (Corrected) at 2); TOWN-JJR-2, at 16 & n.46, citing The Appraisal of Real Estate, The Appraisal Institute, at 569-570 (14th ed.) (2013)). The Town prepared its RCN estimates using the RSMeans Heavy Construction Cost Data 2012, RSMeans Engineering Department (26th ed.) (2012) ("RSMeans 2012"), which is a standard cost estimation method in the construction industry (Exhs. TOWN-RF-3, at 3; DPU-TOWN 1-7; Tr. 1, at 38-39).[11] The Town

---

9 In its initial testimony, the Town calculated an RCNLD of $69,188,837 (Exh. TOWN-JJR-2, at 17-18). During the proceeding, the Town updated its valuation to $71,914,064 (Exhs. TOWN-JJR-2, Rev. Fig. 2; TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).

10 A superadequacy is a component of real estate that is not necessary to the current or anticipated use and as such adds no value. The Free Dictionary, by Farlex, Inc. https://financial-dictionary.thefreedictionary.com/superadequacy (last visited February 26, 2021).

11 RSMeans 2012 provides material costs, labor costs, and equipment costs related to all construction activities to estimate costs for individual activities on a "per unit" basis (Exh. TOWN-JR-3 (Corrected) at 10). Material costs for each line item represent the

presented its total RCN for the Company's plant equipment as $165,322,722 (Exh. WP TOWN-RF-1 (Rev. 2)).

Because the Company's land, certain buildings, rolling stock, and office equipment were not included in its RCNLD analysis, the Town made two additional adjustments (Exh. TOWN-JJR-2, at 17). First, the Town added $8,582,100 representing the tax assessment valuations for the Company's (1) land in the Town of $3,890,000, (2) land in the Town of Hopkinton ("Hopkinton") of $3,059,700, and (3) buildings of $1,632,400 (Exhs. TOWN-JJR-2, Rev. Fig. 2; WP TOWN-RF-1 (Rev. 2)). Second, the Town added equipment and rolling stock at its net book value of $229,858 (Exhs. TOWN-JJR-2, Rev. Fig. 2; WP TOWN-RF-1 (Rev. 2)).

2. Plant Equipment

a. Introduction

The Town divided the Company's plant assets into what it refers to as horizontal assets and vertical assets (Exh. TOWN-JR-3 (Corrected) at 2).[12] The Town defines

---

average cost for the item based on data collected from manufacturer, dealers, distributors, and contractors (Exh. TOWN-JR-3 (Corrected) at 10-11). Labor costs are based on the average wage rates from 30 major U.S. cities and are determined by labor union agreements for a given year (Exh. TOWN-JR-3 (Corrected) at 11). Equipment costs include rental and operating costs for all the equipment necessary to complete the work for the specific construction activity, including costs of routine maintenance and operating expendables such as fuel and electricity where applicable (Exh. TOWN-JR-3 (Corrected) at 11).

[12] The Company does not use the terms horizontal assets and vertical assets and instead classifies its assets using both site-specific and system-wide criteria (Exh. MW-MR-3, at 39-43).

horizontal assets as the network of assets that allow for the transmission and distribution of potable water to the Company's customers, such as distribution mains, meters, valves, and other assets owned by the Company, but not including assets that are connected to the system but are owned by other parties (Exh. TOWN-JR-3 (Corrected) at 2). The Town defines vertical assets as those that treat, pump, and store the Company's potable water, such as treatment plants, wellfields, pump stations, and storage tanks (Exh. TOWN-JR-3 (Corrected) at 2-3).

The Town calculated an RCN valuation of $126,157,722 for the Company's horizontal assets consisting of $111,868,964 for distribution mains, $4,769,135 for transmission mains, $3,351,813 for valves, $3,363,484 for meters, and $2,804,326 for hydrants (Exh. WP TOWN-RF-1 (Rev. 2), Tab Summary).[13] The Town did not separately identify or value services (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Dist&Trans). The Town calculated an RCN valuation of $39,165,000 for the Company's vertical assets, comprising two water treatment plants with an RCN value of $30,750,000, five water pumping facilities with an RCN value of $3,075,000, and three water storage tanks with an RCN value of $5,340,000 (Exh. WP TOWN-RF-1, (Rev. 2), Tab Summary).

---

[13] The Town's calculation is based on 579,275 linear feet of distribution mains, 16,022 linear feet of transmission mains, 1,345 valves, 9,376 meters, and 907 hydrants (Exh. WP TOWN-RF-1 (Rev. 2), Tabs HA-Dist&Trans, HA-Valves, HA-Metering, HA-Hydrants).

b. Horizontal Assets

i. Introduction

The Town's RCN cost estimates for horizontal assets are based on linear footage for mains and quantity by size for other horizontal assets (Exh. TOWN-JR-3 (Corrected) at 2, 10). The Town noted that, because these assets are buried and inaccessible, it was unable to physically inspect them (Exh. TOWN-JR-3 (Corrected) at 3). For mains, the Town calculated cost estimates based on size using data from RSMeans 2012 (Exhs. WP TOWN-JR-1 (Corrected Rev. 2); DPU-TOWN 1-7). Because the RSMeans 2012 data only provides for direct costs, the Town adjusted the calculated linear footage costs for inflation and location by including a 20 percent multiplier for contractor overhead and profit, and a ten percent adder for contingencies (Exh. WP TOWN-JR-1 (Corrected Rev. 2); see also Exh. DPU-TOWN 1-7; Tr. 5, at 677-678). For the other horizontal assets where the Town calculated cost estimates based on quantity and size, the Town developed a unit price using RSMeans 2012 data for each size and type of asset and extended those values based on asset quantity (Exh. TOWN-JR-3 (Corrected) at 10-11). The Town then adjusted the construction cost estimates to reflect inflation of construction costs from 2012 to 2019, as well as the Town's higher-than-average construction costs (Exh. TOWN-JR-3 (Corrected) at 11).[14]

---

[14] RSMeans 2012 provides an historical cost index to update past editions for future use (Exh. TOWN-JR-3 (Corrected) at 11). The RSMeans 2012 index to inflate costs from 2012 to 2019 produced a 16.8 percent cost increase, and the Town had a location factor increase of 10.2 percent (Exh. TOWN-JR-3 (Corrected) at 11).

ii. Transmission Mains

The Town calculated an RCN value of $4,769,135 for transmission mains based on 16,022 linear feet of transmission mains (Exh. WP TOWN-RF-1 (Rev. 2), Tab Summary). The Town states that the list of transmission mains, which the Company provided in a map through discovery, did not contain all of the mains that were identified in a separate list of assets, which was also provided through discovery (Exh. TOWN-JR-3 (Corrected) at 13, citing Exhs. TOWN-MWC 2-9, Att.; TOWN-MWC 1-23, Att. C). The Town further states that the scale on the map provided by the Company uniformly understated the measured linear footage of mains by 15 percent as compared to the scaled measured distances found on Google Maps[15] (Exh. TOWN-JR-3 (Corrected) at 13). To account for this difference, the Town applied a 15 percent correction factor to all lengths of main from the maps (Exhs. TOWN-JR-3 (Corrected) at 13; TOWN-MWC 1-23, Att. C). The Town proposed a useful expected life of 60 years to the transmission mains (Exhs. WP TOWN-RF-1 (Rev. 2), Tab HA-Dist&Trans; TOWN-RF-4, at 17).

iii. Distribution Mains

The Town calculated an RCN of $111,868,964 for distribution mains based on 579,275 linear feet of distribution mains (Exh. WP TOWN-RF-1 (Rev. 2), Tabs Summary, HA-Dist&Trans). The Town applied a 15 percent correction factor to all lengths of mains to coincide with the measured distances it calculated by overlaying the Company's map onto

---

[15] Google Maps is a web mapping service developed by Google, LLC, and found at https://www.google.com/maps.

Google Maps (Exhs. TOWN-JR-3 (Corrected) at 13; TOWN-MWC 1-23, Att. C). The Town proposed useful expected lives ranging from 30 to 80 years depending on material to the distribution mains (Exhs. WP TOWN-RF-1 (Rev. 2), Tab HA-Dist&Trans; TOWN-RF-4, at 17).

iv. Valves

The Town calculated an RCN value of $3,351,813 for a quantity of 1,345 valves (Exh. WP TOWN-RF-1 (Rev. 2), Tabs Summary & HA-Valves). The Town used the valve data provided by the Company without modification (Exh. TOWN-JR-3 (Corrected) at 13). The Town applied a 60-year expected useful life for all valves (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Valves).

v. Meters

The Town calculated an RCN value of $3,363,484 for a quantity of 9,376 meters (Exh. WP TOWN-RF-1 (Rev. 2), Tabs Summary & HA-Metering). The Town states that because the data set provided by the Company had missing installation dates or purchase dates for some meters, the Town made several modifications to the data (Exh. TOWN-JR-3 (Corrected) at 13). First, in cases where both purchase and installation dates were provided, the Town used the later of the two dates for the beginning of the depreciation period (Exh. TOWN-JR-3 (Corrected) at 13). Second, where only one date was provided, the Town used that date as the beginning of the depreciation period (Exh. TOWN-JR-3 (Corrected) at 13). Finally, where no dates were provided, the Town assumed the meter was installed in

2009 based on the average in-service life of meters in the Company's system of approximately 10.8 years (Exh. TOWN-JR-3 (Corrected) at 13).

vi. Hydrants

The Town calculated an RCN value of $2,804,326 for 907 hydrants (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Hydrant). Because the hydrant data was provided without installation dates, the Town assumed for purposes of its analysis that all hydrants were installed in 1982 (Exh. TOWN-JR-3 (Corrected) at 14). The Town's assumption gave the hydrants in the system an age of one year less than half of their useful lives (Exh. TOWN-JR-3 (Corrected) at 14). The Town applied an RCN cost of $3,091.87 to furnish and install one hydrant (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Hydrant).

c. Vertical Assets

i. Introduction

The Town's RCN valuation of the Company's vertical assets was based on a November 20, 2018 site visit to complete a high-level condition assessment of each facility in the distribution system, a review of the discovery documents provided by the Company, and the professional experience of Woodard and Curran (i.e., the Town's engineering consultant) with cost estimating and pricing received for similar types of facilities (Exh. TOWN-JR-3 (Corrected) at 3). The Town included an adjustment upwards or downwards by ten percent, where the engineer's assessment of each asset was "better-than-expected" or "worse-than-expected," respectively, given the age of each facility; no adjustment was made for assets that were in line with expectations (Exh. TOWN-RF-3, at 7).

ii. Treatment Plant

The Town performed RCNLD inspections and valuations on the Company's Godfrey Brook Water Treatment Plant and Dilla Street Water Treatment Plant (Exhs. TOWN-JR-3 (Corrected) at 9; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Town calculated an aggregate RCN valuation of $30,750,000 for both water treatment plants (Exhs. TOWN-JR-3 (Corrected) at 9; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Town rated the Godfrey Brook Water Treatment Plant's condition as worse than expected because the facility is operating at a reduced capacity and is in need of improvements (Exh. TOWN-JR-3 (Corrected) at 7). The Town calculated an RCN valuation of $8,000,000 for the Godfrey Brook Water Treatment Plant (Exh. TOWN-JR-3 (Corrected) at 7). The Town noted that the Dilla Street Water Treatment Plant was built in 2013 (Exh. TOWN-JR-3 (Corrected) at 8). The Town determined that the Dilla Street Water Treatment Plant should be rated as better than expected given its age and it calculated a $22,750,000 RCN valuation based on the Company's original 2013 construction cost inflated by three percent to adjust the construction costs to 2018 dollars (Exh. TOWN-JR-3 (Corrected) at 8).

iii. Pumping and Wells Facilities

The Town calculated RCN valuations of $3,075,000 for the Company's five water pumping facilities (see Exhs. TOWN-JR-3 (Corrected) at 9; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Godfrey Brook Wells Pump Station was built in 1983, has a reported maximum daily pumping volume of 0.79 million gallons per day ("MGD"), and a Town-calculated RCN valuation of $1,125,000 (Exhs. TOWN-JR-3 (Corrected) at 4-5, 9;

WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Clark's Island Wellfield and Pump Station was built in 2015, has a reported maximum daily pumping volume of 0.80 MGD, and a Town-calculated RCN valuation of $500,000 (Exhs. TOWN-JR-3 (Corrected) at 5, 9; MW-MR-3, at 440).[16] The Charles River Raw Water Pump Station was built in 1977, is typically limited to use in the spring, and has a Town-calculated RCN valuation of $500,000 (Exh. TOWN-JR-3 (Corrected) at 5, 9). The Congress Street Booster Pump Station was built in 1980 and has a Town-calculated RCN valuation of $500,000 (Exh. TOWN-JR-3 (Corrected) at 5-6, 9). The Dilla Street Wells and Pump Station was built in 1984, has a maximum daily pumping volume of 0.675 MGD, and a Town-calculated RCN valuation of $450,000 (Exh. TOWN-JR-3 (Corrected) at 6, 9).

iv. Tanks

The Town calculated an aggregate RCN value of $5,340,000 for the Company's three storage tanks (see Exhs. TOWN-JR-3 (Corrected) at 8, 9; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Company's Bear Hill tank was constructed in 1987 and has a capacity of 2.65 million gallons, the Congress Street tank was constructed in 1927 and has a capacity of 1.1 million gallons, and the Highland Street was constructed in 1964 and has a capacity of 0.271 million gallons (Exhs. TOWN-JR-3 (Corrected) at 8; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Town's RCN valuations are $3,400,000 for Bear Hill,

[16] The Town was unable to perform a visual assessment of the Clark's Island wells as they are submersible and could not be accessed (Exh. TOWN-JR-3 (Corrected) at 4).

$1,400,000 for Congress Street, and $540,000 for Highland Street, based on the typical construction cost of similarly sized tanks (Exh. TOWN-JR-3 (Corrected) at 8-9).

d. Observed Depreciation

The Town calculated observed depreciation to arrive at its RCNLD. The Town evaluated both physical depreciation and book depreciation associated with the Company's plant equipment (Exhs. TOWN-JJR-2, at 16; WP TOWN-RF-1 (Rev. 2)). Specifically, the Town stated that the Department has found that the appropriate method of calculating depreciation for an RCNLD analysis is a composite calculation consisting of 50 percent straight-line depreciation, and 50 percent observed depreciation (Exh. TOWN-JJR-2, at 16 n.49, citing D.P.U. 94-176, at 73). The Town further explained that its average RCNLD value is produced by two estimates of "Indexed RCNLD" as a means to establish the reasonableness of the Town's RCNLD calculations (Exhs. TOWN-JJR-2, at 16; DPU-TOWN 3-2). Specifically, the Town explained that its Indexed RCNLD results were developed by scaling back its RCN and RCNLD estimates to each asset's year of construction using the Handy Whitman Index (Exh. DPU-TOWN 3-2).[17] The Town explains that Indexed RCNLD is an attempt to quantify the remaining value of an asset based on the original cost of construction, rather than the current RCN (Exh. TOWN-RF-3, at 3). Thus, in its depreciation analysis, the Town sought to estimate the remaining productive economic life of the assets that a potential buyer would receive in purchasing the Company's water

---

[17] The Handy Whitman Index is a data series that is based on the change in the actual cost of construction of water infrastructure over time (Exh. TOWN-RF-3, at 4).

system assets (Tr. 1, at 153). In the case of vertical assets such as supply, treatment, and storage facilities, the Town proposed remaining useful lives as a percentage of RCN ranging from zero to 91.7 percent (Exh. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). In the case of transmission and distribution mains, the Town proposed useful lives ranging from 30 to 80 years depending on material, and proposed remaining useful lives as a percentage of RCN ranging from zero to over 80 percent depending on main segment (Exhs. TOWN-RF-4, at 17; TOWN-RF-1 (Rev. 2), Tab HA-Dist&Trans).

The Town first calculated the Company's RCNLD value using book depreciation, defined as using straight-line depreciation based on the depreciable life values used by the Company in the rate base working papers (Exh. TOWN-RF-3, at 3, citing Exh. TOWN-MWC 1-18, Att. A). The Town determined the book depreciation RCNLD was $60,413,066 (Exhs. TOWN-JJR-2, Rev. Fig. 2; WP TOWN-RF-1 (Rev. 2), Tab Summary).

The Town then calculated the Company's RCNLD with observed depreciation using physical depreciation, defined as using straight-line depreciation from the year of installation based on the expected useful life of the material or equipment (Exh. TOWN-RF-3, at 3). The Town's physical depreciation analysis of the Company's mains involved a review of industry guidelines and experience as to when breakage is experienced at significant enough rates to warrant asset replacement (Exhs. TOWN-RF-3, at 3; DPU-TOWN 1-4 & Att.; Tr. 1, at 86). The Town deemed this point to be the probable effective useful life of the asset based also on age of materials and construction (Exh. WP TOWN-RF-1 (Rev. 2);

Tr. 1, at 86-88). The Town determined the physical depreciation RCNLD was $65,791,145 (Exhs. TOWN-JJR-2, Rev. Fig. 2; WP TOWN-RF-1 (Rev. 2), Tab Summary). The Town calculated the average of the book depreciation RCNLD and physical depreciation RCNLD as $63,102,106 (Exhs. TOWN-JJR-2, Rev. Fig. 2; WP TOWN-RF-1 (Rev. 2), Tab Summary).

e. Conclusion

Based on the results of its analysis, the Town concluded that the RCNLD associated with plant assets was $69,751,149 based on physical depreciation and $60,413,066 based on book depreciation, with a weighted average RCNLD of $63,102,106 (Exh. TOWN-JJR-2, Rev. Fig. 2).

3. Land, Easements, and Buildings

The Company's real property consists of land in the Town and Hopkinton, as well as nine buildings including a commercial office building that serves as its headquarters and training facility (Exhs. MW-MR-3, at 40 & App. 8; DPU-TOWN 2-2, Att. at 13, 15, 17, 19, 27, 29, 43, 47, 65). Because these assets are real property and not included in the Town's RCN and RCNLD valuations, the Town calculated an aggregate tax-assessed land valuation of $6,949,700 for Company-owned land in the Town (tax-assessed at $3,890,000) and Hopkinton (tax assessed at $3,059,700) (Exhs. TOWN-JJR-2, Rev. Fig. 2; DPU-TOWN 2-2, Att.). The Town did not value easements separately and stated that an easement is an interest that transfers by use but not ownership (Exh. TOWN-WC-3, at 21).

The Town valued the Company's nine buildings at $1,632,400 based on their tax assessments (Exhs. TOWN-JJR-2, at 17-18; TOWN-JJR-2, Rev. Fig. 2; DPU-TOWN 2-2,

Att. 13, 15, 17, 19, 27, 29, 43, 47, 65). Specifically, the Town valued the commercial office building at $397,900, and valued the remaining eight buildings at $1,234,500 (Exh. DPU-TOWN 2-2, Att. at 13, 15, 17, 19, 27, 29, 43, 47, 65).[18]

4. General Equipment

The Town included in its valuation $229,858 related to equipment and rolling stock (Exhs. TOWN-JJR-2, at 17-18 & n.50; TOWN-MWC 1-18, Att. A; TOWN-JJR-2, Rev. Fig. 2). The Town's valuation represents the net book value of the Company's assets in account numbers 114 (office equipment), 115 (shop equipment), 116 (store equipment), 117 (transportation equipment), 118 (laboratory equipment), and 119 (miscellaneous equipment) (Exhs. TOWN-JJR-2, at 17; TOWN-MWC 1-18, Att. A; DPU-TOWN 2-4). The Town calculated its equipment and rolling stock net book value of $229,858 by subtracting the accumulated depreciation from the original cost (Exh. DPU-TOWN 2-4).

C. Water Rights

The Town did not ascribe a separate value to water rights in its valuation (Exh. TOWN-JJR-3, at 53-54). According to the Town, because any value for the Company's water rights granted either as part of its Charter or through subsequent legislation

---

[18] Based on the Town's property assessment cards, the remaining eight buildings consist of the following: (1) a 2,144 square foot PMP/VLV HS building built in 1900; (2) a 4,800 square foot PMP/VLV HS building built in 1983; (3) a 11,000 square foot tank UT industrial building built in 2012; (4) a 120 square foot PMP/VLV HS building built in 1985; (5) a 560 square foot utility building build in 1989; (6) a garage built in 1909; (7) a 1,024 square foot PMP/VLV HS building built in 1983; and (8) a 2,054 square foot one-family dwelling built about 1880 (Exh. DPU-TOWN 2-2, Att. at 13, 15, 17, 27, 29, 43, 47, 65).

has been subsumed into the Town's valuation, a separate provision for water rights would constitute double counting for which a purchaser would be unwilling to pay (Exhs. TOWN-JJR-3, at 54-55; MWC-TOWN 2-30; DPU-TOWN 2-4, at 1-2). The Town analogizes the Company's water rights to a purchased power agreement, where the entitlement to purchased power would not increase the value of the purchasing electric company (Exh. TOWN-JJR-3, at 54).

D. Weighting

The Town stated that, consistent with the asset valuation method employed in D.P.U. 94-176, its proposed fair market valuation of the Company's system of assets relies on a hybrid method of combining OCLD and RCNLD, with each given a 50 percent weighting (Exhs. TOWN-JJR-1, at 5; TOWN-JJR-2, at 13-15, citing D.P.U. 94-176, at 65; Stow Municipal Electric Department v. Department of Public Utilities, 426 Mass. 341, 347 (1997)). The Town stated that regulated utility rates are driven by the net book value of a Company's assets and, as such, an OCLD valuation of a company's assets blended equally with RCNLD determines a fair cash value for a municipal purchase of a utility system (Exh. TOWN-JJR-2, at 14). The Town determined its OCLD to be $31,574,246, its RCNLD to be $71,914,064, and its 50/50 average of these amounts to be $51,744,155 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).

E. Market Metric and Other Valuation Considerations

The Town stated that the Company's fair market value should be evaluated in the context of the market for water utilities generally and the specific financial situation of the

Company to determine the value that a willing buyer and willing seller would assign to the Company in an arm's length transaction (Exh. TOWN-JJR-2, at 18). The Town's market metric analysis relied on data from two sources: (1) publicly traded valuations for water companies (i.e., the comparison group analysis); and (2) comparable sales of water systems (i.e., the comparable sales analysis) (Exh. TOWN-JJR-2, at 18).

The Town's comparison group comprises eight companies classified as water utilities by Value Line Investment Survey ("Value Line") (Exh. TOWN-JJR-2, at 19).[19] The eight companies are publicly traded and share operating and financial characteristics with the Company (Exh. TOWN-JJR-2, at 18).[20] The Town then determined the price-to-earnings ratio ("P/E ratio") and the market-to-book ratio ("M/B ratio") for the comparison group (Exh. TOWN-JJR-2, at 19).[21] The Town calculated two ranges of P/E ratios for the

---

19 The water companies comprising this group are American States Water Company, American Water Works Company, Inc., Aqua American, Inc., California Water Service Group, Connecticut Water Service Inc., Middlesex Water Company, SJW Corporation, and York Water Company (Exh. TOWN-JJR-2, at 19).

20 The Town stated that because fair market value is a market-based concept and the Company is not publicly traded, it was helpful to establish a group of companies that were both publicly traded and generally comparable to the Company in certain fundamental business and financial respects (Exh. TOWN-JJR-2, at 18).

21 The P/E ratio is a measure of the market value of a company's stock as compared to its earnings and is a common valuation tool that, for companies with relatively stable earnings such as water utilities, provides a measure of what investors are willing to pay for one dollar of income (Exh. TOWN-JJR-2, at 19). The M/B ratio is a measure of the market value of a company's stock as compared to the book value of its assets (Exh. TOWN-JJR-2, at 24). For publicly traded companies, the M/B ratio is the ratio of the stock price to the book value per share (Exh. TOWN-JJR-2, at 24). The M/B ratio is a frequently used financial valuation metric providing a measure of

comparison group from the minimum to the maximum and including the median, the first using 2017 financial data and the second using 2018 financial data (Exh. TOWN-JJR-2, at 23 & Sch. 2). The Town multiplied the Company's net income by the P/E ratios and added the outstanding debt to determine what investors would likely be willing to pay for the Company if it were publicly traded (Exh. TOWN-JJR-2, at 21 & Sch. 1). Using 2017 financial data, the Town calculated valuations in the range of $36.0 million to $43.9 million with a median of $38.5 million (Exh. TOWN-JJR-2, at 23 & Sch. 2). Using 2018 financial data, the Town calculated valuations in the range of $28.0 million to $31.7 million with a median of $29.3 million (Exh. TOWN-JJR-2, at 23 & Sch. 2).

For the M/B ratios, the Town also used 2017 and 2018 financial data (Exh. TOWN-JJR-2, at 25 & Schs. 2, 3). The Town then multiplied the book value of the Company's equity by the M/B ratios and added the value of total debt to create a range of valuation for 2017 from $50.9 million to $68.0 million with a median value of $54.4 million (Exh. TOWN-JJR-2, at 25-26 & Sch. 2). The Town also calculated a range using 2018 data from $51.5 million to $68.3 million with a median of $55.2 million (Exh. TOWN-JJR-2, at 25-26 & Sch. 2).[22] The Town presented the results of its market metrics analysis to

---

what investors are willing to pay for one dollar of book value of a company's assets (Exh. TOWN-JJR-2, at 24).

[22] The Town provided a comparable sales valuation by applying a similar approach to the data of two water companies that were sold in recent transactions (Exh. TOWN-JJR-2, at 26). The Town selected the comparable sales from Bloomberg Finance L.P.'s merger and acquisition database, filtered to include North American acquisitions announced between January 1, 2011 and December 31, 2018 for water companies with a minimum value of $10,000,000 (Exh. TOWN-JJR-2,

substantiate its valuation rather than as a direct input into the calculation (Exh. TOWN-JJR-2, at 38).

In addition, the Town stated that the Company's authorized return on equity ("ROE") is 10.0 percent (Exh. TOWN-JJR-2, at 23, citing Milford Water Company, D.P.U. 17-107, at 175 (2018)). Nonetheless, the Town stated that the Company has a persistent history of underearning and, therefore, the Town calculated an earnings shortfall adjustment (Exh. TOWN-JJR-2, at 29-30). The Town states that a hypothetical buyer would discount the compensation it would be willing to pay by its expected earnings shortfall until the buyer is able to remediate the shortfall, a period the Town estimates as five years (Exh. TOWN-JJR-2, at 29-30). Discounting the shortfalls over that period on a uniform basis, the Town calculates a present value of $1,309,153 (Exhs. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14; TOWN-JJR-3, at 13-14; see also Exh. TOWN-JJR-2, at 29-30, 38).[23]

The Town's valuation also includes a downward adjustment to account for (1) the fact that the Company is not publicly traded, (2) the Company's size, and (3) the Company's policies and documentation that result in business uncertainties (Exh. TOWN-JJR-2, at 30). Because the Company is not a publicly traded company, the Town characterizes it as an

---

at 26-27). Because the sample size of the comparable sales group was so small, the Town did not rely on it to adjust the results of the comparison group of publicly traded companies (Exh. TOWN-JJR-2, at 27).

[23] The Town's forward-looking analysis applies an earned ROE of 4.10 percent, representing the average ROE earned by the Company in 2016 and 2017, in year one, and increases to 10.0 percent, representing the most recently authorized ROE for the Company, by year five (Exh. TOWN-JJR-2, at 29-30).

illiquid asset (Exh. TOWN-JJR-2, at 30). The Town stated that illiquidity has been defined as "the inability of the owner of an entire business enterprise to convert his or her investment into cash quickly and at a reasonably low and predictable cost" (Exh. TOWN-JJR-2, at 31, citing Valuing a Business: The Analysis and Appraisal of Closely Held Companies, Shannon P. Pratt and Alina Niculita (5th ed.), at 416 (2008) ("Valuing a Business"). The Town stated the average P/E ratio for the acquisition of private companies is significantly lower than the average P/E ratio for the acquisition of public companies (Exh. TOWN-JJR-2, at 30, citing Valuing a Business, at 443). The Town states that the difference is attributed to factors such as exposure to the market, the quality of accounting and other data, and the size effect (Exh. TOWN-JJR-2, at 30, citing Valuing a Business, at 443). The Town stated that published studies have found illiquidity discounts to be in the range of 37.5 percent to 68 percent (Exh. TOWN-JJR-2, at 31, citing Valuing a Business, at 440).

In addition, the Town stated that smaller companies are generally riskier than larger companies and, thus, investors require a higher return for investment in smaller firms, which is known as the size premium (Exh. TOWN-JJR-2, at 32). To determine the size premium, the Town used the same comparison group of companies that it used for its market metric analysis (Exh. TOWN-JJR-2, at 18-19, 32). The Town used the market capitalization of the comparison companies to categorize them into ten groups, or deciles, from largest to smallest (Exh. TOWN-JJR-2, at 18-19 & Sch. 4, citing Valuation Handbook – U.S. Guide to Cost of

Capital, Duff & Phelps (2017)).[24] The comparison companies fell within the 4th decile with a size premium of 5.59 percent, and the Company was in the 10th decile or smallest category, with a size premium of 0.98 percent (Exh. TOWN-JJR-2, at 32 & Sch. 4). Based on this data, the Town derived a size premium differential of 4.61 percent (Exh. TOWN-JJR-2, at 32 & Sch. 4).

The Town also considered other business uncertainties facing the Company (Exh. TOWN-JJR-2, at 33-34). For example, the Town noted that the Company's Echo Lake Dam was originally constructed in the late 1800s and is classified as a Class 1 (High) hazard potential dam (Exh. TOWN-JJR-2, at 33-34). The Town stated because of the age of the dam and its hazard classification, it should be considered a significant risk factor (Exh. TOWN-JJR-2, at 34). Despite this high-risk factor, the Town noted that the Company does not have in place an accounting provision for asset retirement obligations (Exhs. TOWN-JJR-2, at 34; TOWN-MWC 2-1).[25] In addition, the Town stated that the unavailability of a precise main inventory for the Company's system suggests a lack of complete business records (Exh. TOWN-JJR-2, at 34). Based on the Company's illiquidity, its size, and business uncertainties, the Town reduced the equity by 30 percent, resulting in a

---

[24] Duff & Phelps is a global advisor in the areas of valuation, corporate finance, disputes and investigations, cybersecurity, claims administration, and regulatory issues.

[25] Asset retirement obligations represent the estimated cost of future retirements of utility plant not provided for elsewhere by the reporting company. Massachusetts Electric Company/Nantucket Electric Company, D.P.U. 09-39, at 102 (2009).

reduction of $9,949,776 (Exhs. TOWN-JJR-2, at 38-39; TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).

The Town determined its OCLD and RCNLD 50/50 average to be $51,744,155 (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14). The Town reduced this average for an earnings shortfall adjustment of $1,309,153 and illiquidity, size, and business uncertainties of $9,949,776 to net its proposed $40,000,000 fair market value (Exh. TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).[26]

IV. COMPANY'S PROPOSAL

A. Cost Approach Valuation

1. Introduction

The Company presents an RCNLD-derived cost approach valuation of $148,000,000 of its owned and operated assets (exclusive of water rights) as of December 31, 2018 (Exh. MW-MR-3 (Rev. Errata Pages) at 47, 59, 68, 70). The Company identified the highest and best use[27] of the system to be its current use as a water system (Exhs. MW-MR-1, at 12; MW-MR-3, at 33-35). To arrive at its valuation, the Company identified the RCN value for its assets, added indirect costs and allowance for funds used during construction ("AFUDC"), and subtracted observed physical depreciation, functional

---

[26] The Town rounded each of the numbers to arrive at the $40,000,000 (Exh. Town-JJR-4 (Rev. Supp.), Rev. Fig. 14).

[27] The Company states that a full and fair cash appraisal must meet four criteria of highest and best use: legal permissibility, physical possibility, financial feasibility, and maximum productivity (Exh. MW-MR-3, at 33, citing The Dictionary of Real Estate Appraisal, Chicago Appraisal Institute (6th ed.)).

obsolescence, and economic obsolescence to net a cost approach valuation (Exh. MW-MR-3 (Rev. Errata Pages) at 70).

The Company's proposed $148,000,000 cost approach valuation includes: (1) $31,529,200 for real property; (2) $3,016,517 for sources of supply facilities; (3) $20,236,086 for treatment plant assets; (4) $1,701,107 for water storage facilities assets; (5) $85,494,296 for transmission and distribution assets;[28] (6) $525,693 for general equipment and inventory; (7) $3,712,454 for intangible assets; and (8) $1,908,044 for construction work in progress ("CWIP") (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).[29] The elements of the Company's cost approach valuation are described in further detail below.

2. Land, Easements, and Buildings

The Company's real property consists of land, easements, and buildings and is valued by the Company at $31,529,200 (see Exh. MW-MR-1, at 16; MW-MR-3 (Rev. Errata Pages) at 70). The Company owns 39 non-adjacent parcels of land totaling 550.08 acres (Exh. MW-MR-3, at 148). As of December 31, 2018, the Company's market value assessment of this land was $30,679,200 (Exhs. MW-MR-1, at 16; MW-MR-3, at 40; MW-MR-3 (Rev. Errata Pages) at 70).

---

28 The Company uses the term "raw water mains" to describe the network of mains running from Echo Lake and the Clark's Island Wellfield to the Dilla Street Water Treatment Facility (Exh. MW-MR-3, at 447). The Department uses the term "transmission mains" throughout this decision for consistency with Department convention.

29 The Company rounded the resulting sum of $148,123,397 to $148,000,000 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).

While the Company owns 34 non-adjacent private easements, it has only been able to identify, locate, and confirm 22 of these easements totaling 7.77 acres (Exh. MW-MR-3, at 148). The Company's market value of the 22 confirmed easements is $400,000 (Exhs. MW-MR-1, at 16; MW-MR-3, App. 8, at 149; MW-MR-3 (Rev. Errata Pages) at 70). As of December 31, 2018, the Company assessed the value of its commercial office building at $450,000 (Exhs. MW-MR-1, at 16; MW-MR-3, at 40 & App. 8, at 149).[30] The Company did not provide separate valuations for its other buildings.

3. Plant Equipment

a. Introduction

The Company's above-ground water system is comprised of sources of supply and pumping facilities, treatment plant assets, and water storage facility assets (Exhs. MW-MR-3 (Rev. Errata Pages) at 70; MW-KG-2, at 17-18). The Company based replacement costs for these assets on actual costs that would be incurred to provide the same or equal equipment or structure (Exh. MW-KG-1, at 4). The replacement costs for these assets are based on materials, labor, and building techniques as of December 31, 2018 (Exh. MW-KG-1, at 3). The Company factored labor, materials, permitting, and overhead costs into the replacement costs for foundations, above-ground structures, process and treatment equipment, heating ventilating and air conditioning equipment, and electrical equipment (Exh. MW-KG-1,

---

30 The Company presented cost approach, income approach, and market approach values for its commercial office building of $410,000, $410,000, and $490,000 respectively (Exh. MW-MP-1, at 51-52). The Company considered all three value approaches and concluded the value to be $450,000 (Exhs. MW-MP-1, at 51-52; MW-MR-3, at 40).

at 3-4). Replacement costs for structures include construction costs such as excavation, erosion control, temporary facilities, and testing (Exh. MW-KG-1, at 4).

The Company's cost approach values for its above-ground assets as of December 31, 2018, were determined based on quotes supplied by vendors, recent construction costs adjusted to present day dollars, and the professional opinion of the Company (Exhs. MW-MR-3 (Rev. Errata Pages) at 70; MW-KG-1, at 20; MW-KG-2, App. B). The Company's analysis produced a cost approach value of $24,953,711 (Exhs. MW-MR-3 (Rev. Errata Pages) at 70; MW-KG-2, App. B).

b. Sources of Supply Facilities

The Company's water system is supplied by two surface water sources and three ground water sources (Exh. MW-KG-1, at 5). The Company's surface water sources consist of Charles River and Echo Lake (Exh. MW-KG-1, at 5). The Company's groundwater source facilities consist of two wells at Dilla Street, two wells at Clark's Island, and five wells at Godfrey Brook[31] (Exh. MW-KG-1, at 5). The Godfrey Brook water is treated at the Godfrey Brook Water Treatment Facility; the remaining water is treated at the Dilla Street Water Treatment Facility (Exh. MW-KG-1, at 5, 9).

For the purpose of its cost approach valuation, the Company identified source of supply facilities at six locations: (1) the Godfrey Brook Wellfield; (2) the Clark's Island

---

[31] In addition to these sources, the Company has a gravel-packed well at Cedar Swamp Pond (Exh. MW-MR-3, at 27). This well is currently inactive because of insufficient land ownership/control over the required 400-foot protective radius but it remains available for emergency use (Exhs. MW-MR-3, at 27; TOWN-JR-3, at 6).

Wellfield Pump Station; (3) the Clark's Island Wellfield; (4) the Dilla Street Wells; (5) the Charles River Intake Building; and (6) the Echo Lake Dam Intake (Exhs. MW-KG-1, at 5-7, 29; MW-MR-3 (Rev. Errata Pages) at 70).[32] The Company calculated an aggregate cost approach value for its six source of supply facilities of $3,016,518 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).

c. Treatment Plant Assets

The Company has two water treatment facilities: (1) the Dilla Street Water Treatment Facility, and (2) the Godfrey Brook Water Treatment Facility (Exh. MW-KG-1, at 7).[33] In addition to these facilities, the Company has four ancillary facilities located at the site of the Dilla Street Water Treatment Facility that were associated with the previous water treatment plant: (1) a high lift pump building; (2) a diatomaceous earth building; (3) a slow sand building; and (4) a circular clearwell structure (Exh. MW-KG-1, at 8-9, 20, 29). In aggregate, the Company estimated the cost approach value of its treatment plant assets at $20,236,087, consisting of $19,731,526 for the Dilla Street Water Treatment Facility and

---

[32] These source of supply facilities are distinct from water rights, in that while the facilities are tangible in nature, the water rights associated with these locations are intangible. The Company's proposal regarding water rights is discussed in Section IV.F., below.

[33] The Company notes that the Godfrey Brook Wells and Godfrey Brook Water Treatment Facility are currently inactive due to excessive levels of iron and manganese, as well as decreased capacity available from the Godfrey Brook Wells (Exh. MW-KG-1, at 9).

$504,561 for the Godfrey Brook Water Treatment Facility (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).

d. Water Storage Facility Assets

The Company identified three water storage facilities with a combined capacity of approximately 4.02 million gallons: (1) the Bear Hill Tank (2.65 million gallons); (2) the Congress Street Tank (1.1 million gallons); and (2) the Highland Street Tank (270,000 gallons) (Exhs. MW-KG-1, at 9-10; MW-DC-1, at 5). In addition, the Company identified the Congress Street booster pump station (housing two 800 gallons per minute pumps), and the Congress Street water storage tank vault as part of its water storage facility assets (Exhs. MW-KG-1, at 10; MW-MR-3 (Rev. Errata Pages) at 70). In aggregate, the Company estimated the cost approach value of its water storage facility assets at $1,701,107, consisting of $763,657 for the Bear Hill Tank, $737,705 for the Congress Street Tank and related facilities, and $199,745 for the Highland Street Tank (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).

4. Transmission and Distribution Assets

a. Introduction

The Company's transmission and distribution assets are comprised of transmission mains, distribution mains, hydrants, valves, meters, and services (Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Company stated that it owns 3.2 miles of transmission mains, 125 miles of distribution mains, 957 hydrants, 2,307 valves, 9,382 meters, and approximately 234,550 feet of one-inch copper services (see Exh. MW-KG-1, at 10, 13,

15-16). In aggregate, the Company estimated the cost approach value of its transmission and distribution assets as $85,494,296 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Company's cost analysis of its transmission and distribution assets assumed, to the extent possible, replacement of the same materials and diameters as currently in existence (Exh. MW-KG-1, at 3, 16). The Company used comparable materials for those main types no longer used in the industry or available (Exh. MW-KG-1, at 3). The Company's costs are based on the December 2018 Boston-area Engineering News-Record[34] and unit costs for mains are based on bid prices for recent water main installation projects in New England (Exhs. MW-KG-1, at 16-17; MW-KG-2, App. B).

b. Transmission and Distribution Mains

The Company stated that there are approximately 3.2 miles of 24-inch diameter transmission mains connecting Echo Lake and Clark's Island Wells to the Dilla Street Water Treatment Facility (Exh. MW-KG-1, at 16). In addition to these transmission mains, the Company stated that its water distribution system consists of approximately 125 miles (specifically, 667,937 feet) of distribution mains ranging in size from two inches to 24 inches in diameter and was constructed between 1881 and 2018 (Exh. MW-KG-1, at 10, 13-14). The Company further explained that its water distribution system primarily consists of five types of pipes: asbestos cement, cast iron, cement-lined cast iron, ductile iron, and plastic polyvinyl chloride, i.e., PVC (Exh. MW-KG-1, at 10). The Company estimated a

---

[34] Engineering News-Record provides engineering and construction news, analysis, and commentary and data to construction industry professionals. https://www.enr.com

cost approach value for its water mains (transmission and distribution) of $70,219,640 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).

c. Hydrants, Valves, Meters, Services

The Company stated that it has 957 hydrants[35] in its distribution system with a total cost approach value of $1,408,234 (Exhs. MW-KG-1, at 16; MW-MR-3 (Rev. Errata Pages) at 70). In aggregate, the Company estimated that it has a total of 2,307 valves comprised of five different valve-types with a cost approach value of $2,170,783 (see Exhs. MW-KG-1, at 15; MW-MR-3 (Rev. Errata Pages) at 70). The Company stated that the main valves in the distribution system are shown on its geographic information system ("GIS") (Exh. MW-KG-1, at 14).[36]

The Company stated that its system contains a total of 9,382 meters with a total cost approach value of $1,270,030 (Exhs. MW-KG-1, at 15; MW-MR-3 (Rev. Errata Pages) at 70). The Company explained that most of its residential service lines installed by the Company are one-inch diameter copper (Exh. MW-KG-1, at 13). For purposes of system

---

35 The Company stated that fire hydrant laterals typically include a six-inch diameter water main hydrant lateral with a six-inch gate valve (Exh. MW-KG-1, at 16). The Company states that the hydrant valves are included in the distribution valve inventory (Exh. MW-KG-1, at 16). While no details were available on hydrant laterals, the Company estimated a total of 9,570 linear feet of six-inch hydrant lateral pipe (Exh. MW-KG-1, at 16).

36 The GIS system was created using WaterGEMS software, which is a hydraulic modeling application for water distribution systems that provides geospatial model building and asset management tools (Tr. 6, at 758-761, 818, 825-826). See also https://www.bentley.com/en/products/product-line/hydraulics-and-hydrology-software/watergems (last visited February 26, 2021).

inventory, the Company assumed the average service line length from the main to the curb stop is 25 feet (Exh. MW-KG-1, at 13). Based on this average length, the Company estimated the length of the services as approximately 234,550 feet with a cost value of $10,425,607 (Exhs. MW-KG-1, at 13; MW-MR-3 (Rev. Errata Pages) at 70).

5. General Equipment

The Company's personal property assets include vehicles, supervisory control and data acquisition ("SCADA") equipment, moveable equipment, and inventory (Exh. MW-MR-1, at 16-17, 22; MW-MR-3 (Rev. Errata Pages) at 70). The Company's cost approach produced a valuation of $190,000 for vehicles, $72,179 for SCADA equipment, $187,543 for moveable equipment, and $75,971 for inventory, for a total cost approach value of $525,693 (Exh. MW-MR-3 (Rev. Errata Pages) at 70).

6. Intangible Assets

The Company's intangible assets include support materials such as distribution maps and engineering drawings, a work order database, system records and reports, and licenses and permits (Exhs. MW-MR-1, at 2-3, 17-21; MW-MR-3 (Rev. Errata Pages) at 70).[37] The Company calculated an RCN value for intangible assets of $3,704,492, which it rounded to $3,710,000 (see Exhs. MW-MR-3, at 42; MW-MR-3 (Rev. Errata Pages) at 70).[38]

---

[37] As discussed in Section IV.F, below, the Company also considers water rights to be an intangible asset (Exh. MW-WR-1, at 2-3).

[38] The values for intangible assets provided in Exhibit MW-MR-3 rely in part on rounded numbers (Exh. MW-MR-3, at 41-43). The Department will rely on the unrounded numbers for purposes of our analysis.

The Company stated that the distribution maps and engineering drawings provide main, valve, and hydrant locations necessary for the daily maintenance and expansion of the water distribution system (Exh. MW-MR-1, at 18). The Company calculated the number of labor hours required to reproduce the distribution maps and engineering drawings by applying the labor rates of the employees that would ultimately reproduce such documents (Exh. MW-MR-1, at 18-19). The Company did not include any costs necessary to reproduce historical maps that are no longer used for reference (Exhs. MW-MR-1, at 18; MW-MR-3, at 41). The Company derived an RCN value for distribution maps and engineering drawings of $2,688,728, which it rounded to $2,690,000 (see Exhs. MW-MR-3, at 41; MW-MR-3 (Rev. Errata Pages) at 70).

The Company's work order database is a compendium of historical work orders (Exhs. MW-MR-1, at 19; MR-3, at 41). According to the Company, a typical work order provides a physical description and quantitative information about an asset that was constructed or acquired, including its cost and serial number, as well as various support materials (Exh. MW-MR-1, at 19). The work order database is used to assist in the operation and maintenance of the assets over their service lives (Exh. MW-MR-1, at 19). The Company calculated the total number of hours to reproduce each work order multiplied by quantity and hourly rate of employees involved in the process (Exh. MW-MR-3, at 41). The Company did not include the costs necessary to reproduce work orders that are no longer needed for reference (Exhs. MW-MR-1, at 19; MW-MR-3, at 41). The Company derived an

RCN value for its work order database of $418,193, which it rounded to $420,000 (see Exhs. MW-MR-3, at 42; MW-MR-3 (Rev. Errata Pages) at 70).

The Company's system records and reports include corporate records, easement reports, and property records (Exhs. MW-MR-1, at 20; MW-MR-3, at 42). The Company calculated the total number of hours to reproduce each work order multiplied by quantity and hourly rate of employees involved in the process (Exh. MW-MR-3, at 42). The Company did not include the costs necessary to reproduce system records and reports that are no longer needed for reference (Exhs. MW-MR-1, at 20; MW-MR-3, at 42). The Company derived an RCN value for its system record and reports of $332,482, which it rounded to $330,000 (Exhs. MW-MR-3, at 42; MW-MR-3 (Rev. Errata Pages) at 70).

Throughout its operating history, the Company has procured certain licenses and permits that allow it to conduct business on a day-to-day basis (Exh. MW-MR-1, at 21).[39] The Company calculated the total number of hours to reproduce each license and permit multiplied by quantity and hourly rate of employees involved in the process and then added the total permit fee (Exh. MW-MR-3, at 42). The Company did not include the costs necessary to reproduce licenses and permits that are no longer needed (Exhs. MW-MR-1, at 21; MW-MR-3, at 42). The Company derived an RCN value for its license and permit

---

[39] Examples of licenses and permits include road opening permits, Federal Communications Commission radio licenses, software licenses, a fuel oil storage permit, and public water supply registration (Exh. MW-MR-3 (Rev. Errata Pages) at 43).

fees and internal administrative processing expenses related to such fees of $265,089, which it rounded to $270,000 (see Exh. MW-MR-3 (Rev. Errata Pages) at 43, 70).

7. Construction Work in Progress

The Company identified CWIP as ongoing or unfinished construction activities and paid-to-date expenditures (Exh. MW-MR-1, at 22). In its initial filing, the Company included 27 CWIP projects with a calculated cost approach value of $2,589,832 (Exhs. MW-MR-1, at 22; MW-MR-3, at 70). During the proceeding, the Company updated its filing and identified 24 CWIP projects with a calculated cost approach value of $1,908,044 (Exh. MW-MR-3 (Rev. Errata Pages) at 43, 70, 396).

8. Other Considerations

a. Observed Depreciation

The Company conducted site visits of the water system to determine the condition of the various above-ground assets and, to the extent possible, below-ground assets (Exhs. MW-KG-1, at 21-22; MW-KG-2, at 20). The Company used the asset condition assessments to estimate the observed depreciation of these assets (Exh. MW-KG-1, at 22).

The Company defined observed physical depreciation as the percent reduction applied to the replacement cost of an asset due to physical wear and tear resulting from continued use, exposure to the elements, and physical stresses that reduce the average service life of an asset (Exh. MW-KG-1, at 4). The Company stated that depreciation is generally expressed as a percentage of the replacement cost with consideration of the effective age of the asset along with its average service life (Exhs. MW-MR-3, at 439; MW-KG-1, at 4). The

Company determined the depreciation on plant equipment on the basis of percentages applied to an asset's RCN value, broken down by individual supply, treatment, and storage assets, and by plant type for transmission- and distribution-related assets such as mains and services (Exh. MW-MR-3, at 43-44). Depending on the specific asset type, the depreciation factors ranged from 9.13 percent for the Congress Street tank to 99.7 percent for the Company's slow sand building (Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Company determined an estimate of the level of physical depreciation for its entire system of mains by performing a random sampling based on statistical analyses (Exhs. MW-MP-1, at 3; MW-KG-2, at 20). The Company did not apply any depreciation factor to other general plant, real property, or personal property, with the exception of SCADA equipment to which it applied a 25 percent depreciation factor (Exhs. MW-MR-3, at 40; MW-MR-3 (Rev. Errata Pages) at 70).

As part of the Company's Master Capital Improvements Plan completed in 2010, each main in the Company's system was evaluated and assigned a grade (Exh. MW-KG-1, at 27-28). The grading system was based on age, material break history, soil conditions, pressure, and water quality to assign points (Exhs. MW-KG-1, at 27-28; MW-KG-2, at 25). The Company's weighted average of the observed depreciation percentage for distribution mains is 34 percent (Exh. MW-KH-2, at 25). The Company valued its above-ground assets using observed depreciation based on visual inspection of the facilities, records provided by the Company, and interviews with Company personnel (Exhs. MW-KG-1, at 28-29; MW-KG-2, at 25, 27-28).

b. Indirect Costs

The Company's total cost approach valuation of its assets includes an indirect cost component of $27,360,250 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Company defines indirect costs as expenditures that are normally required to purchase and install a property but are not usually included in the vendor invoice (Exh. MW-MR-1, at 22). For each of its RCN costs, the Company increased the direct costs by 15.84 percent, based on the following indirect costs: (1) construction management fee of 2.5 percent; (2) engineering fee of 2.5 percent; (3) construction permit of 0.5 percent; (4) performance bond of 1.0 percent; and (5) insurance at 9.34 percent, all of which were sourced from the 2018 version of RSMeans (Exhs. MW-MR-1, at 23; MW-MR-3, at 45).

c. Allowance for Funds Used During Construction

The Company's cost approach valuation considered what it would cost to build a new system as of the date of valuation, which it estimates to be $200,674,643 (total RCN plus total indirect costs) (see Exhs. MW-MR-3 (Rev. Errata Pages) at 70; DPU-MWC 1-12, Att. at Tab AFUDC; DPU-MWC 1-4). In addition to direct and indirect costs, the Company considers AFUDC as an appropriate component of RCN construction costs that represents the net cost of borrowed funds and a reasonable rate of return on those funds (Exh. DPU-MWC 1-4). The Company proposes a weighted interest rate of 5.39 percent[40]

[40] To determine the 5.39 percent AFUDC interest rate, the Company applied interest at 4.0 percent and weighted 50 percent for government-owned utilities, and 6.78 percent weighted 50 percent for investor-owned utilities. By calculation: (50 percent x 4.0 percent) + (50 percent x 6.78 percent) = 5.39 percent (Exh. MW-MR-1, at 23).

during an estimated three-year period of construction (Exhs. MW-MR-1, at 23; DPU-MWC 1-4). The Company added its total proposed AFUDC interest payment figure of $16,607,471 to its RCN calculation producing a total RCN of $217,282,114 (Exhs. DPU-MWC 1-12, Att. at Tab AFUDC).

a. Contributions in Aid of Construction

Contributions in aid of construction ("CIAC") is company-owned plant that is financed by cash contributions from customers for extension or upgrade of service to the customers. Aquarion Water Company of Massachusetts, D.P.U. 17-90, at 85 n.70 (2018); Milford Water Company, D.P.U. 11-99, at 3 n.3 (2011); Fitchburg Gas and Electric Light Company, D.T.E. 02-24/25, at 63 (2002). The Company determined that all operating assets, regardless of how they were paid for, are used and useful and have a fair market value (Exh. TOWN-MWC 4-19). Accordingly, the Company did not deduct any CIAC-financed assets from its valuation (Exh. TOWN-MWC 4-19).

b. Functional Obsolescence

The Company defines functional obsolescence as the loss of value due to functional deficiencies, overcapacity, excess capital costs, lack of functional utility, excess operating costs, or inadequacies within the property itself (Exhs. MW-MR-1, at 24; MW-MR-3, at 45). The Company defines an improvement as functionally obsolete when the improvement requires an operation, use, or activity to be completed in a way that the current replacement improvements would not require (Exhs. MW-MR-1, at 24; MW-MR-3, at 45). Based on the capitalization of additional water revenues that could be saved through leak repairs at a rate

of 2.36 percent, the Company determined its total functional obsolescence offset to be $7,780,028, which it removed from its RCN costs (Exh. MW-MR-3 (Rev. Errata Pages) at 46, 70, 399).

c. Economic Obsolescence

The Company defines economic obsolescence as the loss of earnings and value stemming from negative changes in the market or due to other factors external to the property (Exhs. MW-MR-1, at 25; MW-MR-3, at 46).[41] Using a present value analysis of historic free cash flows as compared with required returns and a rate of return of 4.0 percent, the Company determined the total economic obsolescence offset to be $26,352,348, which it removed from its RCN costs (Exh. MW-MR-3 (Rev. Errata Pages) at 47, 70, 432).

B. Income Approach Valuation

In addition to its cost approach valuation, the Company utilized an income approach that employs a discounted cash flow ("DCF") analysis to estimate the value of its system (Exh. MW-MR-3, at 48). The Company's income approach is a set of procedures through which an appraiser derives a value indication for an income-producing property by converting its future benefits (e.g., income, cash flow, and reversion) into present value (Exhs. MW-MR-1, at 27; MW-MR-3, at 48). The Company's income approach resulted in an asset valuation of $112,000,000 as of December 31, 2018 (Exh. MW-MR-3 (Rev. Errata Pages) at 54).

---

41 The Company used the excess earnings shortfall method to measure the economic obsolescence (Exh. MW-MR-3 (Rev. Errata Pages) at 47).

To arrive at the asset value of $112,000,000,[42] the Company used the following parameters in its DCF analysis. The Company proposed a holding period of five years, from 2019 through 2023, to capture a complete set of economic events affecting the cash flow of the assets (Exhs. MW-MR-1, at 28; MW-MR-3, at 49). The Company stated that the holding period is the duration for which investors expect to hold an investment (Exhs. MW-MR-1, at 28; MW-MR-3, at 49). The Company's DCF analysis relied on a terminal period that captures the income generated after the holding period by utilizing a direct capitalization method[43] and then discounting that value back to the appraisal date (Exhs. MW-MR-1, at 28; MW-MR-3, at 49). The Company calculated the terminal value of its assets based on the capitalization theory using the Gordon Growth Model (Exhs. MW-MR-1, at 35; MW-MR-3, at 54).[44]

To calculate the terminal value, the Company selected 3.0 percent as the normalized long-term growth rate (Exhs. MW-MR-1, at 35; MW-MR-3, at 54). The Company stated

---

42 In its initial filing, the Company stated that its income approach valuation was $121,000,000 (Exh. MW-MR-1, at 36, 40). During the proceeding, the Company revised that amount to $112,000,000 as a result of an increase in the discount rate from 5.19 percent to 5.36 percent and an increase in the equity risk premium from 5.0 percent to 5.50 percent, resulting in an increase in the weighted cost of capital from 8.76 percent to 9.45 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 53).

43 The Company stated that direct capitalization makes use of income from a single year and a capitalization rate derived from a long-term sustainable growth rate, such as the expected long-term inflation rate (Exhs. MW-MR-1, at 35; MW-MR-3, at 48).

44 The Gordon Growth Model is a method used in a DCF analysis that assumes the company will grow and generate free cash flows forever at a consistent rate. Boston Gas Company/Colonial Gas Company, D.P.U. 17-170, at 284 n.153 (2018).

that the 3.0 percent inflation rate is based on a forecasted growth for the U.S. water industry of 4.0 percent between 2019 and 2023 as well as the fact that the Company has received approvals for rate increases in recent years that have been substantially higher than normal inflation (Exhs. MW-MR-1, at 29; MW-MR-3, at 50; DPU-MWC 3-4 & Att.).

The Company used its adjusted historical income statements for years 2013 through 2017 and an interim income statement through November 2018 along with a set of forecasted revenues, expenses, depreciation, and capital expenditures for years 2018 through 2023 (Exhs. MW-MR-1, at 28-29; MW-MR-3, at 49). The Company stated that income tax expenses are included because its analysis is performed on a pre-tax basis (Exhs. MW-MR-1, at 29; MW-MR-3, at 50).

The Company adjusted its projections to reflect the economic realities of normal operating conditions by adding non-cash expenses such as depreciation and amortization (Exh. MW-MR-1, at 29). The Company also made additional cash flow adjustments for capital expenditures, taxes other than income tax, and changes in working capital (Exh. MW-MR-1, at 29-30).

The Company also included an analysis for the discount rate for assets, which is known as the weighted average cost of capital ("WACC") (Exhs. MW-MR-1, at 30; MW-MR-3, at 51). The Company considered two scenarios involving the entire pool of potential hypothetical willing buyers: the first scenario assuming a government-owned buyer and the second scenario assuming an investor-owned buyer (Exhs. MW-MR-1, at 30; MW-MR-3, at 51). For the government-owned buyer scenario, the Company determined that

while public entities typically have a capital structure that is made up of nearly 100 percent debt capital, public entities can also use small amounts of cash to pay for water utility transactions (Exhs. MW-MR-1, at 31; MW-MR-3, at 51). Based on these factors, the Company used a capital structure of 95 percent debt and five percent equity for the government-owned buyer scenario (Exhs. MW-MR-1, at 31; MW-MR-3, at 51). For the investor-owned buyer scenario, the Company employed a capital structure of 55 percent debt and 45 percent equity based on its analysis of several water system rate cases, the Company's capital structure, and investor-owned water company debt to equity ratios and capital structures (Exhs. MW-MR-1, at 31-32; MW-MR-3, at 51-52).[45] The Company reconciled the results of its WACC analyses by applying a 50/50 weight to each of the two scenarios, resulting in a capital structure of 75 percent debt and 25 percent equity (Exhs. MW-MR-1, at 30-32; MW-MR-3, at 51-52).

The Company then determined the cost of equity of 9.45 percent, which is the sum of a risk-free rate of 2.87 percent, an equity risk premium of 5.50 percent, a size premium of 2.50 percent,[46] and an industry risk premium of negative 4.00 percent, adjusted for income

---

45 The Company used the term "public water company" and refers to Table L-1 titled "Public Company Capital Structure Analysis," which lists eight publicly traded companies (Exh. MW-MR-3, at 51-52).

46 The Company based the size premium of 2.50 percent on the Duff & Phelps Cost of Capital Navigator estimation for the 9th decile (Exh. MW-MR-1, at 33). Duff and Phelps segments the market into ten deciles by size with the 1st decile being the largest and the 10th decile the smallest and assigns a risk premium from -0.35 percent for the largest to 5.59 percent for the smallest (Exh. TOWN-JJR-2, Sch. 4).

tax at a rate of 27.32 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 53). The Company used a cost of debt of 4.00 percent in the WACC based on a U.S. 20-year treasury rate of 2.87 percent, a Baa-rated corporate bond yield of 5.14 percent, a 20-year utility corporate bond yield of 4.60 percent, and the 20-year municipal bond yield for the Town of 4.25 percent (Exh. MW-MR-1, at 34-35; MW-MR-3 (Rev. Errata Pages) at 53). Based on the capital structure, the cost of equity, and the debt rate as mentioned above, the Company arrived at a pre-tax WACC of 5.36 percent[47] resulting in an income approach value of $112,000,000 (Exh. MW-MR-3 (Rev. Errata Pages) at 54).

C. Water Rights

The Company proposes to include $15,890,000 in water rights as a separate component in its weighted RCNLD and income approach valuations (Exh. MW-MR-3 (Rev. Errata Pages) at 62).[48] The Company first determined that its current maximum baseline withdrawal of 3.31 MGD is equivalent to 10.16 acre-feet per day or 3,708 acre-feet per year (Exhs. MW-MR-3, at 100, 127; MW-MR-3 (Rev. Errata Pages) at 62; Tr. 5,

---

47 The equity-to-capital weight of 25 percent times the cost of equity of 9.45 percent equals 2.36 percent, the debt-to-capital weight of 75 percent times the debt rate of 4.0 percent equals 3.00 percent, and the resulting 2.36 percent and 3.00 percent equal 5.36 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 54).

48 The Company states that water rights are not considered within the income approach to valuation and, thus, it is necessary to add a separate water rights component to avoid the need to make an arbitrary adjustment to the results of its RCNLD approach for water rights (Exh. MW-MR-1, at 40).

at 670).[49] The Company then determined a cost per acre-foot of $4,285, based on a 2016 proposal by the Town of Shrewsbury ("Shrewsbury") to connect to the water system of the Massachusetts Water Resources Authority ("MWRA") (Exhs. MW-MR-3, at 106; MW-MR-3 (Rev. Errata Pages) at 62; MW-MR-1, at 41; DPU-MWC 1-1).[50] The Company stated that MWRA's buy-in fee represents the cost of reserving a supply of water and is thus analogous to the cost that a water user would pay to acquire the Company's Massachusetts Water Management Act ("WMA") permits to withdraw water (Exh. MW-MR-3, at 106). G.L. c. 21G; 310 CMR 36.[51] The Company then multiplied the 3,705 acre-feet by the Shrewsbury buy-in cost of $4,285 per acre-foot, producing what it considers to be the full and fair cash value of its water rights of $15,890,000 (Exhs. MW-MR-3, at 106; MW-MR-3 (Rev. Errata Pages) at 62).

---

49 According to the Company, an acre-foot of water represents the volume of water over a surface area of one acre at a depth of one foot (Exh. DPU-MWC 1-1). An acre-foot of water is equivalent to approximately 325,800 gallons (i.e., 7.48 gallons per cubic foot x 43,560 square feet in an acre) https://www.convertunits.com/from/acre+foot/to/gallons (last visited February 26, 2021).

50 Under this proposal, Shrewsbury was to pay MWRA a buy-in fee of $20,880,000 in exchange for access to 4,873 acre-feet of water per year, representing a cost of $4,285 per acre-foot (Exhs. MW-MR-3, at 106; DPU-MWC 1-1).

51 In preparing its direct case, the Company also examined various interconnection agreements between it and adjacent water systems that provided for annual rates ranging from $1,229 per acre-foot to $3,152 per acre-foot (Exh. MW-MR-3, at 104-106). Because the Company's consultant could not disaggregate the treatment and infrastructure costs incorporated into these agreements, it did not rely on interconnection agreements to derive the value of its water rights (Exhs. MW-MR-3, at 106; MW-MR-1, at 41).

D. Weighting

The Company assigned weightings of 60 percent and 40 percent to the cost approach value of $148,000,000 and income approach valuation of $112,000,000, respectively, and added these results together to net $133,600,000 (Exhs. MW-MR-1, at 39; MW-MR-3 (Rev. Errata Pages) at 60, 68). To this amount, the Company added $15,890,000, representing its valuation of water rights, to arrive at its proposed full and fair cash value of $149,000,000 (Exh. MW-MR-3 (Rev. Errata Pages) at 62, 67).[52]

V. POSITIONS OF THE PARTIES

A. Valuation Method

1. Town

The Town asserts that neither the Charter nor G.L. c. 165, § 5 set forth a specific formula or method that must be considered to determine the price (Town Brief at 4). Accordingly, the Town maintains that the Legislature granted the Department the discretion to determine an appropriate methodology and valuation (Town Brief at 7, citing Stow, 426 Mass. at 344). The Town argues that it would be improper to infer from the Charter's language that the Legislature intended the Department to follow the valuation methodology used in eminent domain cases because the Legislature did not include explicit language related to eminent domain or takings (Town Brief at 6-7, citing Dartt v. Browning-Ferris Industries, Inc., 427 Mass. 1, 8 (1998); General Electric Company v. Department of

---

[52] By calculation, the Company's full and fair valuation of its owned and operated assets is ($148,000,000 x 60 percent) + ($112,000,000 x 40 percent) + $15,890,000 = $149,000,000 (Exh. MW-MR-3 (Rev. Errata Pages) at 60, 62, 67, 68, 70).

Environmental Protection, 429 Mass. 798, 803 (1999)). Moreover, the Town avers that the Department should not constrain itself to the valuation method used in eminent domain cases because Massachusetts courts have previously rejected the argument that a sale of water company assets under the terms of a special act is a taking by eminent domain where the special act includes a right to purchase condition in favor of the municipality (Town Brief at 6-7, citing Oxford v. Oxford Water Company, 391 Mass. 581, 591 (1984); Town Reply Brief at 2-3).

The Town also alleges that in the context of public utility valuation, absent special circumstances, the proper value of the utility's assets for assessment purposes is the net book value (Town Brief at 8 & n.3, citing Boston Gas Company v. Board of Assessors of Boston, 458 Mass. 717, 718-719 (2011)). The Town maintains that before the Department may consider other methods beyond net book value, such as income capitalization, a sales comparison, or RCNLD, the Company must demonstrate there are special circumstances that would induce a buyer to pay more than net book value (Town Brief at 8; Town Reply Brief at 3-4). The Town contends that special circumstances may exist when a potential change in law has a reasonable possibility of making the investment more attractive, among other scenarios (Town Brief at 8-9, citing Boston Gas, 458 Mass. at 719; Boston Edison Company v. Board of Assessors of Watertown, 387 Mass. 298, 305-306 (1982) ("Watertown I")). The Town asserts, however, that the fair market value of the Company's assets, regardless of the method used, "cannot be 'proved with mathematical certainty and must ultimately rest in the

realm of opinion, estimate, and judgement'" (Town Brief at 8, quoting Montaup Electric Company v. Board of Assessors of Whitman, 390 Mass. 847, 854 (1984)).

The Town also contends that case law does not require the Department to value the Company's assets based on RCNLD (Town Brief at 9, citing Boston Edison Company v. Board of Assessors of Watertown, 393 Mass. 511, 512-514 (1984) ("Watertown II"); Stow, 426 Mass. at 345-346; Town Reply Brief at 3, 5-6, citing Correia v. New Bedford Redevelopment Authority, 375 Mass. 360, 362-367 (1978)). In addition, the Town argues that it is within the Department's discretion to determine the weight to give a valuation based on RCNLD because Massachusetts courts have found RCNLD to only be potentially representative of fair cash value for special purpose property, not that RCNLD is determinative of value (Town Brief at 9-10, citing Stow, 426 Mass. at 345; Watertown II, 393 Mass. at 511-512). Moreover, the Town alleges that the courts have found that the RCNLD method is the least favored approach (Town Brief at 10, citing General Electric Company v. Assessors of Lynn, 393 Mass. 591, 606 (1984); Town Reply Brief at 6-7, citing Correia, 375 Mass. at 363, 367). The Town argues that income capitalization and comparable sales methods are more reliable than RCNLD and can be used to determine the value of the Company's assets because the Department's goal is to determine the value of the entire business enterprise as a whole, unlike cases where RCNLD was used to value specific assets devoted to a special purpose within a company's system (Town Brief at 10, citing D.P.U. 94-176).

The Town maintains that the Department's role in this proceeding is undisputed; that is, to determine the fair market value of the Company's entire business enterprise as a going concern (Town Brief at 10-11). The Town claims that fair market value is defined as "the highest price that a normal purchaser not under peculiar compulsion will pay at the time, and cannot exceed the sum that the owner after reasonable effort could obtain for his property" (Town Brief at 11, quoting Boston Gas Company v. Assessors of Boston, 334 Mass. 549, 566 (internal quotes and emphasis removed)). The Town asserts that the Department's determination of fair market value should be tested against market-based metrics because the fair market value determined under the Charter at Section 9 can be no greater than what the Company should be able to obtain on the market (Town Brief at 11). The Town argues that the fair market value of the Company's assets is its net book value of $31,574,246 because the Company fails to demonstrate why a likely buyer would be induced to pay more (Town Brief at 71). Alternatively, the Town maintains that if the Department finds special circumstances exist then the fair market value of the Company's assets is $40,000,000 (Town Brief at 73).

2. Company

The Company asserts that the Charter does not contain an explicit valuation method (Company Brief at 3, 6; Company Reply Brief at 3). The Company maintains that without a Charter provision regarding a purchase formula, the Department is required to apply the same valuation standards that are applied to determine damages when a property is taken by eminent domain (Company Brief at 3, citing Exh. MW-RJC-2, at 2; Company Reply Brief

at 9, citing Exh. MW-RJC-1, at 1). Accordingly, the Company argues that the Department must determine reasonable compensation for the Company's assets, which Massachusetts courts have held to mean "the fair market value of the property at the time of the taking" (Company Brief at 3, 5, citing Exh. MW-RJC-2, at 2; Correia, 375 Mass. at 361). The Company contends that fair market value is the highest price a hypothetical willing buyer would pay to a hypothetical willing seller in an assumed free and open market (Company Brief at 4, citing Newton Girl Scout Council, Inc. v. Massachusetts Turnpike Authority, 335 Mass. 189, 193 (1956)). The Company asserts that the Legislature's delegation to the Department to determine the price to be paid by the Town does not affect the constitutional standard that must be applied (Company Brief at 8).

In addition, the Company maintains that the Department is not bound by D.P.U. 94-176 or any other precedent to apply a particular pricing formula (Company Brief at 6, 10). The Company argues that the Charter is materially different from contemporaneously enacted water company charters in that the absence of any referral to "actual cost" or similar language in the Charter evinces a Legislative intent for a different valuation to apply in this proceeding (Company Brief at 7). Additionally, the Company argues that the standard applied to acquisition premiums in the Department's review under G.L. c. 164, § 96, is irrelevant to this proceeding and that the Town misplaces its reliance on tax assessment cases because tax assessments are not the same as market value (Company Reply Brief at 4-5, 11-12, citing Tr. 3, at 398, 427-428). The Company asserts that the Department should not be influenced by the tax assessment precedent or the Department's

decision in D.P.U. 94-176 to consider OCLD because OCLD is an accounting convention appropriate for setting rates, not for business valuation (Company Brief at 46, citing D.P.U. 94-176; Company Reply Brief at 2, citing Tr. 4, at 589-590).

The Company contends that Massachusetts courts have recognized three sound valuation methodologies, or a combination thereof, to determine the fair market value of property being taken: (1) the cost approach, particularly RCNLD; (2) the income approach; and (3) the market or sales comparison approach (Company Brief at 8, citing Exh. MW-RJC-2, at 3). The Company asserts that a water utility system is considered a special purpose property under takings case law and that for special purpose property the RCNLD methodology is the favored approach (Company Brief at 8, citing Correia, 375 Mass. at 364). The Company argues that the application of the established cost and income methods yields a fair market value of $149,000,000, which comprises 60 percent of the Company's $148,000,000 RCNLD value and 40 percent of the Company's income approach value plus $15,890,000 for the Company's water rights (Company Brief at 12-13, 39-42).

B. Original Cost Less Depreciation

1. Town

The Town maintains that the Company submitted no evidence that the Town incorrectly calculated the OCLD value and that the Company does not challenge the validity of the numbers contained in its 2018 annual return (Town Brief at 11). The Town asserts that the Department should find that the OCLD value of $31,574,246 is the proper value for

utility valuation absent special circumstances that would induce a buyer to pay more than net book value (Town Brief at 12, 29, citing Boston Gas, 458 Mass. at 718-719). The Town contends that the Company has not demonstrated that there are any such special circumstances (Town Brief at 12, 29). The Town maintains that the Supreme Judicial Court has found that special circumstances may include a showing that (1) the Company's net earnings exceed or are expected to exceed the allowed rate of return, (2) the profit available from the transaction may exceed that which an investment of comparable risk could bring in the open market, (3) there is reasonable possibility of a change in law making the investment more attractive, or (4) there is potential for growth in a utility's business (Town Brief at 29, citing Boston Gas, 458 Mass. at 719, Montaup Electric, 390 Mass. at 852-853; Watertown I, 387 Mass. at 305-306). The Town asserts, however, that the possibility of these special circumstances must be based on more than mere speculation (Town Brief at 29-30, citing Montaup Electric, 390 Mass. at 853).

Finally, the Town takes issue with the Company's position that OCLD is not a business valuation indication but is only a general accepted accounting principle (Town Reply Brief at 9). The Town maintains that such a position is contrary to utility valuation case law because the Supreme Judicial Court has explicitly recognized that a determination of a property's net book value is an appropriate method used to value utility property (Town Reply Brief at 9, citing Boston Gas, 458 Mass. at 717).

2. Company

The Company urges the Department to disregard the use of OCLD in the Department's valuation approach (Company Brief at 45-47; Company Reply Brief at 2). The Company maintains that OCLD gives a quasi-indication of rate base and that utility systems regularly sell for multiples of OCLD (Company Brief at 46; Company Reply Brief at 2, citing Tr. 4, at 589-590). The Company also posits that fair market value does not equal net book value because, if so, the net book value and, thus, fair market value could be simply ascertained by a quick review of the Company's annual returns rather than having advanced expert testimony during the extended proceeding (Company Reply Brief at 2).

The Company also argues that OCLD is an accounting convention and is flawed because (1) it is not a good indicator of the value of tangible assets and (2) OCLD does not include intangible assets (Company Brief at 46, citing Tr. 4, at 589-591). In addition, the Company maintains that OCLD is more appropriately used for setting rates (Company Reply Brief at 1, 11, citing Exh. MWC-Town 2-11, Att. D at 13-14; Tr. 2, at 224). The Company argues that, in the absence of statutory language requiring the Department to use OCLD in its valuation of the Company's assets, the appropriate means of determining fair market value is a combination of the cost, income, and/or market approaches (Company Brief at 45, citing Exh. MW-RJC-2, at 3).

C. Land, Easements, and Buildings

1. Town

The Town maintains that the tax-assessed land value is comprised of $3,890,000 for tax-assessed land in the Town, and $3,059,700 for tax-assessed land in Hopkinton, for a total of $6,949,700 (Town Brief at 20). The Town asserts that, although the Company has not provided record evidence of the original cost of each parcel of land, the original cost of the Company's land that is accounted for totals approximately $1,889,724 (Town Brief at 19, citing Exh. TOWN-MWC 4-12 (Supp.), Att. at 15). On that basis, the Town argues that the inclusion of $6,949,700 for the tax-assessed value of the Company's land is generous (Town Brief at 20).

The Town argues that although the Company correctly identified that the highest and best use of its owned land is as currently improved (i.e., a water utility system), the Company's appraisal disregards the current use of land as a regulated water utility and, instead, values each parcel of land as individual parcels whose highest and best use is either residential or industrial development (Town Brief at 50, citing Exh. MW-MR-3, at 34-35). Further, the Town argues that the Company's land valuation of use as either residential or utility fails to account for the physical encumbrances, regulatory limitations, bylaws, zoning requirements, or any restrictions on the Company's ability to sell the parcels (Town Brief at 51-53). The Town asserts that the Company's failure to consider the valuation of land owned by a utility and encumbered by government regulations renders the Company's land valuation to be unreliable under Massachusetts case law (Town Brief at 53, citing Tennessee

Gas Pipeline Company v. Board of Assessors of Agawam, 428 Mass. 261, 265 (1998)). The Town also argues that the Company valued its land as if nothing was on it (Town Brief at 51, citing Exh. MW-MP-3, at 34-35). The Town further argues that the Company cannot dispose of any land or easements taken or acquired for the protection of the people in their right to the conservation, development, and utilization of water unless provided for by a law enacted by a two-thirds vote by each branch of the general court (Town Brief at 52, citing Mass. Const. art. XCVII).

In addition, the Town asserts that the Company's disregard of the highest and best use of the land parcels as a functioning water company is contrary to the Uniform Standards of Professional Appraisal Practice ("USPAP") (2018-2019 Ed.), Standards Rule 1-4(e) (Town Brief at 53-54). The Town maintains that USPAP Standards Rule 1-4(e) provides that when analyzing the assemblage of the various estates or component parts of a property, an appraiser must analyze the effect on value, if any, of the assemblage; an appraiser must refrain from valuing the whole solely by adding together the individual values of the various or components parts (Town Brief at 54, citing Exh. TOWN-WC-1, at 12). In this instance, the Town asserts that the Company's land valuation merely added the individual values of the various component parts without analyzing the effect on the value on the whole of the assemblage (Town Brief at 54, citing Exh. TOWN-WC-1, at 12).

The Town further asserts that, under USPAP Standards Rule 1-2(g), it is impermissible for an appraiser to use any type of hypothetical condition[53] in developing an appraisal (Town Brief at 55, citing Exh. TOWN-WC-1, at 19). The Town argues that contrary to the Company's assertions, the Company made use of several impermissible hypothetical conditions in its appraisal (Town Brief at 55-56). For example, the Town asserts that the Company's disregard for the highest and best use of the Company's land as a functioning water company and instead valuing the land as if vacant is an impermissible hypothetical condition under USPAP Standard Rule 1-2(g) as it assumes conditions contrary to known facts (Town Brief at 55, citing Exh. TOWN-WC-1 at 19).

As it relates to developable lots, land-locked parcels, or sliver parcels,[54] the Town asserts that the Company's appraisal contains several flaws (Town Brief at 57). Specifically, the Town asserts that the Company's sliver parcels are undevelopable as supported by the Land Use Codes assigned by the Town on the tax assessor filed cards, which are consistent with industry-standard classification codes published by the Massachusetts Division of Local Services (Town Brief at 57, citing Exhs. TOWN-WC-4, TOWN-WC-1, at 15; Tr. 3, at 407).

---

53 The Town asserts that under USPAP definitions, a hypothetical condition is defined as "a condition directly related to a specific assignment which is contrary to what is known by the appraiser to exist on the effective date of the assignment results, but is used for purposes of analysis" (Town Brief at 55, citing USPAP FAQ, No. 217).

54 The Town defines a sliver parcel as a parcel that is an "undevelopable remnant parcel, narrow in width, impacted by shape and size that has little 'economic utility'" (Town Brief at 57, citing Exh. TOWN-WC-3, at 21-22). The Town asserts that of the 19 lots that the Company identified as undevelopable, six are sliver parcels (Town Brief at 57).

Due to the nature of these sliver parcels, the Town asserts that the fair market value of these properties is well below that determined by the Company (Town Brief at 57, citing Tr. 3, at 406). The Town also asserts that the Company improperly valued a specific land parcel based on residential sales where the land is zoned for industrial business (Town Brief at 57-58).[55] In addition, the Town asserts that the Company did not account for the fact that the required minimum lot sizes are fixed in the Town's bylaw 2.4.9 (Town Brief at 58). Specifically, the Town asserts that the Town's bylaw 2.4.9 controls the number of lots into which a parcel can be divided (Town Brief at 58).

In addition to these specific criticisms, the Town asserts that the value of the Company's land is already encompassed in the total value of the Company, and thus should not be valued separately (Town Brief at 19). The Town argues that should the Department decide to separately value the land for a cost valuation, the Company's land value should be net book value absent special circumstances that would otherwise induce a buyer to pay more for the land (Town Brief at 19, citing Tennessee Gas Pipeline, 428 Mass. 261). The Town argues that the Company has not demonstrated any special circumstances that would allow a valuation above net book value (Town Brief at 19, 29-30).

Turning to the Company's easements, the Town asserts that because these easements are necessary for the provision of water, to value them separately disregards the value of the whole (Town Brief at 56, citing Tr. 3, at 421-422). The Town asserts that the value of an

---

[55] The land parcel is the 27.79 acres of land where the Company's commercial office building is located (Town Brief at 57).

easement is typically subsumed in the highest and best use (Town Brief at 56, citing Tr. 3, at 421-422). Further, the Town argues that an easement is an interest in real property that transfers the use but not the ownership of a portion of the owner's property (Town Brief at 56, citing Exh. TOWN-WC-3, at 20). The Town also argues that the Company appraised its easements as fee simple and did not consider the water utility infrastructures on the easements or impediments under the Massachusetts Constitution to the sale or transfer of any easement that the Company has taken or acquired by eminent domain (Town Brief at 57, citing Exh. MW-MP-1, at 28-29, Mass. Const. art. XCVII). The Town maintains that due to these shortcomings, the Company's valuation of its easements does not comport with either USPAP standards or Massachusetts case law for valuing utility property and should therefore be given no weight (Town Brief at 57, citing Tennessee Gas Pipeline, 428 Mass. at 265; USPAP Standards Rule 1-4(e); USPAP Standards Rule 1-2(g)).

The Town asserts that, based on the tax assessment information, the value of the Company's buildings is $1,632,400 (Town Brief at 20, citing Exh. TOWN-JJR-2, at 17 & Rev. Fig. 2).[56] The Town contends that its valuation proposal for the buildings was reasonable, if not generous, to the Company (Town Brief at 19-20).

---

[56] On brief, the Town mistakenly refers to $1,632,400 as being the value of only the commercial office building, but then cites to evidence showing that value is for all nine buildings (Town Brief at 20, citing Exh. TOWN-JJR-2, at 17 & Rev. Fig. 2).

2. Company

The Company asserts that its $30,679,200[57] land valuation was appraised under the assumption of highest and best use and is fully supported by its real property appraisal (Company Brief at 25, citing Exh. MW-MR-3, at 147-336). The Company contends that the real property interests (land and easements) must be included in the cost-based approach because building a water system would necessitate the acquisition of land parcels appraised under the assumption of highest and best use (Company Brief at 24-25). The Company asserts that, while the Town acknowledged that it could not operate the water system under a replacement scenario without first acquiring the real property and easements owned by the Company, the Town nevertheless did not appraise these assets (Company Brief at 25, citing Tr. 1, at 53, Tr. 3, at 377). Instead, the Company maintains that the Town included only the tax-assessed value of the land as a component of its cost approach despite the Town's acknowledgement that assessed tax value is not the same as market value (Company Brief at 25, citing Tr. 2, at 238-239; Tr. 3, at 398). Consequently, the Company asserts that the Town undervalued the Company's assets by not including an appraised value for the land or easements (Company Brief at 25-26). The Company asserts that the Department should reject the Town's approach as undervaluing the Company's land assets (Company Brief at 25-26).

---

[57] On brief, the Company asserted its proposed land valuation was $39,769,200 but in the cited supporting documentation, the Company's land valuation is $30,679,200 (Company Brief at 25, citing Exh. MW-MR-3, at 147-336; see also Exh. MW-MR-3 (Rev. Errata Pages) at 70).

In addition, the Company argues that the Town is incorrect to assert that the Company disregards the use of its land for a regulated water utility in favor of valuing each parcel of land as if its highest and best use is residential or an industrial development (Company Reply Brief at 28). The Company counters that its cost approach valuation considered the current use of the land (Company Reply Brief at 28-29). In support of its position, the Company asserts that the fundamental premise of its analysis was to apply a standard valuation procedure to determine what it would cost to reproduce the assets of the Company's system in their current state (Company Reply Brief at 28-29). Further, the Company argues that the Town's assertion that it is improper to value land as if vacant under the cost approach is contradicted by The Appraisal of Real Estate, The Appraisal Institute, at 345 (14th ed.) (2013), which states "[a]n improved site is always valued as though vacant and available for its highest and best use" (Company Reply Brief at 29, citing Exh. MWC-5; Tr. 3, at 404-405). The Company further argues that valuing the land as though it was vacant makes sense in that it avoids ascribing any value to the improvements currently on the land, as doing so would double count the value of the improvements (Company Reply Brief at 29).

The Company maintains that the Town's position that the Company cannot dispose of any land or easements unless provided for by law enacted by a two-thirds vote by each branch of the general court is a misrepresentation of Massachusetts Constitution Article XCVII (Company Reply Brief at 30, citing Town Brief at 52). The Company argues that Article XCVII does not apply to the Company because it is a private entity, and this Article only applies to land, easements, and interest therein held by the Commonwealth of

Massachusetts or any of its agencies or political subdivisions such as cities, towns, and counties (Company Reply Brief at 30).

In addition, the Company disagrees with the Town's critique that the Company merely added together the proposed individual values of the various component parts without analyzing the effect on the value of the whole of the assemblage (Company Reply Brief at 31, citing Town Brief at 54). Specifically, the Company asserts the Town relied on the same approach that it critiques the Company for by adding together the tax-assessed values of these parcels, as opposed to their fair market value of the parcels as performed by the Company (Company Reply Brief at 31). In addition, the Company argues that valuing its real property parcels as an assemblage as proposed by the Town would have resulted in a higher valuation (Company Reply Brief at 31). In other words, the Company contends that its fully assembled collection of real property necessary to operate a water system is worth more than the additive fair market value of those same parcels individually (Company Reply Brief at 31-32). The Company also argues against the Town's position that the Company valued its easements as fee simple (Company Reply Brief at 32). Rather, the Company asserts that its easement properties were adjusted downward from the value of fee simple property based on factors including easement shape (producing a 20 percent adjustment), and the fact that easement rights are less than fee simple rights (producing a 50 percent adjustment) (Company Reply Brief at 32). The Company also maintains that the Town improperly criticized the Company for valuing sliver parcels of land because the valuation for sliver parcels should not be premised on the amount that the Company could obtain by liquidating its sliver parcels,

but rather, what the market-based price would be to acquire sliver parcels if one were building a water system (Company Reply Brief at 32).

The Company asserts that, despite the Town's acknowledgement that both easements and land would need to be purchased under a replacement scenario, the Town failed to include any value for the Company's easements and included only the tax-assessed value for the land (Company Brief at 25). The Company asserts that the Town's position on this matter has contributed to the undervaluation of the Company's water system assets (Company Brief at 25-26).

The Company asserts that the appraised value of its commercial office building is $450,000 as detailed in its appraisal (Company Brief at 26, citing Exh. MW-MR-3, at 147-336). The Company maintains that the Town did not appraise the commercial building but instead relied on its tax-assessed value (Company Brief at 26, citing Tr. 1, at 70, Tr. 2, at 181). The Company contends that the Department should rely on the Company's full appraisal on the commercial office building rather than the Town's use of tax-assessed value (Company Brief at 26). In support of its position, the Company contends that the Town conceded that tax-assessed value is not the same as market value (Company Brief at 26, citing Tr. 3, at 398).

D. Transmission and Distribution Mains

1. Town

The Town contends that, despite having requested from the Company a list of "pipe – linear footage by diameter, year installed, material type," the Company responded by

directing the Town to a map of the Company's mains and a table of mains by street, main size, material, date installed, and a reference to a corresponding map number (Town Brief at 16, citing Exh. TOWN-MWC 1-23 & Att. C). The Town asserts that the table and maps on the Company's infrastructure did not include date of installation, main size, or material for many entries, or, most importantly, lineal footage (Town Brief at 16, citing Exh. TOWN-MWC 1-23, Att. C at 62-72). The Town also maintains that the linear footage of mains as reported by the Company was 45,315 feet more than the lineal footage of mains reported in the Company's 2018 Annual Return (Town Brief at 16, 41, citing RR-DPU-6). The Town asserts that, despite the Company having the GIS mapping model, the Company did not update its sworn annual returns to reflect and attest to the main inventory in the GIS model (Town Brief at 41, citing Tr. 6, at 870-871).

The Town argues that because the Company chose not to attest to the linear footage contained in the GIS shapefiles provided by the Company's engineering consultant Tata and Howard, the Town concluded that the most accurate information regarding main inventory was that produced by the Company in discovery (Town Brief at 17). Thus, the Town used the table and corresponding maps provided by the Company to determine the length of the system's mains (Town Brief at 16-17, citing Exh. TOWN-RF-3, Tr. 1 at 77-78).

The Town contends that its own RCN analysis of the Company's horizontal assets was developed through data provided by RSMeans 2012, which the Town maintains is a resource frequently relied on in the industry to estimate construction project costs throughout the country (Town Brief at 17, citing Exh. DPU-TOWN 1-7; Tr. 1, at 38-39). The Town points

out that it adjusted the RSMeans 2012 cost data for linear footage of the Company's mains for inflation and location and included both a 20 percent multiplier for contractor overhead and profit and a ten percent adder for contingencies (Town Brief at 17, citing Exhs. WP TOWN-JR-1 (Corrected Rev. 2); DPU-TOWN 1-7; Tr. 1, at 48). The Town asserts that the inconsistencies between the buried asset inventory data relied on by the Company, the inventory data produced by the Company in discovery, and the inventory data sworn to in the Company's 2018 annual return are significant and undermine the credibility of the Company's entire cost approach valuation analysis (Town Brief at 41-42, citing, e.g., Exhs. TOWN-1-23, Att. C; MW-KG-2, Tables 4.1, 4.2; RR-DPU-6).

2. Company

The Company maintains that its assets include 667,937 feet of mains with RCN values for transmission mains of $6,316,130, distribution mains of $98,243,660, and services of $20,952,460, producing an aggregate RCN value of $125,512,250 (Company Brief at 16, 19, citing Exh. MW-KG-2, at 17). To determine its main inventory, the Company contends that it relied on the GIS shapefiles as compiled by its engineering consultant Tata & Howard (Company Brief at 16-17). The Company asserts that reliance on GIS shapefiles is an accurate measure and an industry-standard means for an engineer to determine the length of mains in a water system (Company Brief at 17, citing Tr. 6, at 826). The Company asserts that, despite having provided the Town with the Company's GIS profiles of its mains on numerous occasions over the years, the Town elected to not use this resource (Company Brief at 17). Instead, the Company asserts that the Town undervalued the Company's mains

by relying on an annually updated ledger that identifies the Company's length of mains to be 622,622 feet (Company Brief at 17). Moreover, the Company asserts that the Company's 2018 annual return, which was the source of the Town's assessment of 622,622 linear feet, may contain record inaccuracies as it relates to documentation of the addition or retirement of certain main and instances where several main types were combined under one category (Company Brief at 17 n.7).[58]

The Company maintains that once it determined a lineal foot inventory of its mains, it developed an RCN for those mains based on bid prices for recent water main installation projects in New England to represent the most current and accurate data available (Company Brief at 18). The Company maintains that it made certain adjustments to account for the fact that a current-day replacement of the system would not use materials no longer sold or in frequent use (Company Brief at 18).

E. General Equipment and Inventory

1. Town

The Town proposed a net book value of $229,858 for assets identified as equipment and rolling stock (Town Brief at 20, citing Exhs. DPU-TOWN 2-4; TOWN-JJR-2, Rev. Fig. 2; TOWN-MWC 1-18, Att. A). The Town asserts that, based on the relatively short useful lives of the Company's equipment and rolling stock, net book value is a

---

[58] The Company contends that it files its annual returns using historical records to maintain consistency with previously filed reports (Company Brief at 17 n.7).

reasonable measure of fair market value (Town Brief at 20, citing Exh. DPU-TOWN 2-4, at 1).

2. Company

The Company maintains that its personal property assets are comprised of vehicles, SCADA equipment, moveable equipment, and inventory (Company Brief at 26-27). The Company maintains that, by using Kelley Blue Book and Commercial Truck Trader, it estimated the value of its twelve vehicles at $190,000 (Company Brief at 26, citing Exh. MW-MR-3, at 340-365). The Company asserts that it determined the replacement cost of its SCADA system (prior to depreciation and other adjustments) to be $97,100 (Company Brief at 27, citing Exh. MW-MR-3, at 40). The Company also owns various moveable equipment including a track loader, backhoe, trailers, air compressor, generator, and other items and using industry-recognized websites, and the Company asserts that this equipment has a value of $230,000 (Company Brief at 27, citing Exh. MW-MR-3, at 40, 366-378). The Company maintains that it assessed the value of its spare parts inventory, including meters, adapters, extensions, and piping, at $93,170 (Company Brief at 29, citing Exh. MW-MR-3, at 43).

The Company asserts that the Town provided no property valuation for the Company's vehicles, SCADA, moveable equipment, or inventory (Company Brief at 27, 29, citing Tr. 1, at 70-72). The Company asserts that its valuation of these used and useful personal property assets is appropriate, reliable, and consistent with the Charter (Company Brief at 27, 29).

F. Construction Work in Progress

The Company argues that it has a number of ongoing projects booked to CWIP that represent capital-related improvements, such as lead service line replacements and booster station improvements, that the Town will obtain and receive benefit from if it acquires the Company's assets (Company Brief at 29). The Company maintains that it has appropriately revised its CWIP balance to exclude certain items that are unrelated to capital investments, producing a revised valuation of $2,340,000 (Company Brief at 29, citing Exh. MW-MR-3 (Rev. Errata Pages) at 396; RR-DPU-4). The Town did not address CWIP on brief.

G. Intangible Assets

1. Town

The Town asserts that certain intangible assets, e.g., engineering maps, work order databases, and systems records and reports, should be excluded from the Company's cost valuation (Town Brief at 49-50). The Town argues that these intangible assets were prepared in the normal course of the Company's business, and there is no evidence that their preparation cost was incremental to ordinary expense (Town Brief at 49). In support of its argument, the Town asserts that the Department previously determined that mapping projects are expense items, not capital items (Town Brief at 49, citing Commonwealth Gas Company, D.P.U. 87-122, at 45 (1987); The Berkshire Gas Company, D.P.U. 1490, at 27 (1983); Milford Water Company, D.P.U. 92-101, at 12 (1992)). In addition to engineering maps, the Town similarly asserts that the costs associated with the Company's work order databases and system records and reports were previously created and expensed in the normal course of

business (Town Brief at 49). Thus, the Town asserts that to include these assets in the valuation of assets would amount to double compensation for the Company (Town Brief at 49). The Town also asserts that the value of these intangible assets is questionable given the purported inadequacy of the Company's record-keeping and map quality (Town Brief at 49, citing Exhs. DPU-TOWN 2-4; DPU-TOWN 2-7; MW-MR-3, at 59; TOWN-MWC 4-12 (Supp.), Att.). Finally, the Town argues that, to the extent the RCNLD valuation contemplates a "new" system, the value of these intangible assets would be negligible (Town Brief at 50).

2. Company

The Company asserts that its assessment of the intangible assets is accurate, reliable, and necessary in arriving at an appropriate value of the Company's system assets (Company Brief at 28, citing Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Company contends that the Town did not dispute that these assets were important to the operation of the system (Company Brief at 28, citing Tr. 2, at 241-242). The Company argues that the Town's position that the Company already expensed the cost of its intangible assets and were compensated for them in rates is incorrect (Company Reply Brief at 27). The Company argues that its customers have not paid for the intangible assets but instead paid for the service made possible through the existence of these assets (Company Reply Brief at 27). The Company further argues that the Town failed to provide testimony or evidence to refute the Company's position that its intangible assets are valuable, have a certain cost associated

to them, and the Company should therefore be compensated for them (Company Reply Brief at 28).

H. Post-2018 Capital Expenditures

1. Town

The Town argues that the Company's proposal to include capital expenditures incurred after December 31, 2018, is improper (Town Reply Brief at 21). The Town maintains that the Company seeks to include value that has not been subject to cross-examination and ignores the fact that the entire water system will continue to depreciate over time and that the depreciation should reduce the updated value of the Company (Town Reply Brief at 21). Further, the Town argues that there was no testimony or hearings on these capital investments to ensure that the Company is not capitalizing costs as part of the investments that are already included in rates (Town Reply Brief at 21-22).

2. Company

The Company maintains that the Department's final valuation should include capital expenditures incurred after December 31, 2018 (Company Brief at 66 n.14). The Company contends that the inclusion of these capital expenditures and additions is consistent with the Company's good husbandry obligations to operate, maintain, and improve the system up until the time of an actual municipal acquisition (Company Brief at 66 n.14, citing Milford Water Company, D.P.U. 18-75 (2018); Cohasset Water Company v. Town of Cohasset, 321 Mass. 137, 146-147 (1947)).

I. Contribution in Aid of Construction

1. Town

The Town asserts that the Department should exclude CIAC from the Company's appraisal (Town Brief at 48-49). The Town maintains that the Company's 2018 annual return identifies $8,615,070 in CIAC, and that the Company made no adjustment to exclude the asset (Town Brief at 48, citing Exh. TOWN-MWC 4-12 (Supp.), Att. at 5). The Town argues that, although CIAC is Company-owned plant, it is financed by cash contributions from customers and provides no earnings to the Company (Town Brief at 48, citing Exh. TOWN-JJR-3, at 51). The Town maintains that the Department excludes CIAC from rate base in base distribution rate cases because ratepayers would otherwise pay twice for the same plant (Town Brief at 48, citing Exh. TOWN-JJR-3, at 51).

2. Company

The Company defends its inclusion of CIAC in its valuation, arguing that the Town's own valuation analysis does not exclude CIAC (Company Reply Brief at 25 n.5).[59] In addition, the Company asserts that the Town's insistence that CIAC be removed from the Company's RCNLD asset valuation is an attempt by the Town to import ratemaking principles into an entirely different exercise of fair market valuation (Company Reply Brief at 25). The Company argues that the Town's witness admitted to being unaware of any case

[59] The Company maintains that the Town subtracted CIAC in its OCLD analysis but did not subtract CIAC in its cost approach valuation and then then averaged the OCLD with the cost approach valuation to arrive at the Town's fair market valuation of $40,000,000 (Company Reply Brief at 25 n.5).

law requiring the exclusion of CIAC from the fair market value of a utility's assets (Company Reply Brief at 26, citing Tr. 2, at 226-227).

Further, the Company maintains that the Charter provides no direction on the exclusion of contributed assets that are, nevertheless, owned by the Company, maintained by the Company, depreciated by the Company, or taxed by the taxing authorities with tax paid by the Company (Company Reply Brief at 26, citing Tr. 2, at 225-226). The Company asserts, therefore, that the onus is on the Town to prove that it is entitled to take substantial, valuable assets of the Company that are used and useful in providing water service without paying for them (Company Reply Brief at 26). Lastly, the Company argues that its customers' payment of rates is for service only, not for interest in plant used to supply that service (Company Reply Brief at 26-27, citing Board of Public Utility Commissioners v. New York Telephone Company, 271 U.S. 23, 32 (1926)). Because of this, the Company asserts that customers are precluded from paying twice for the same plant as claimed by the Town (Company Reply Brief at 27).

J. Indirect Costs

1. Town

The Town notes that its valuation includes a 20 percent multiplier for contractor overhead and profit, as well as a ten percent adder for contingencies (Town Brief at 17, citing Exhs. WP TOWN-JR-1 (Corrected Rev. 2); DPU-TOWN 1-7; Tr. 1 at 48). The Town argues that engineering costs, as well as other "soft costs," are incorporated in its 20 percent multiplier (Town Brief at 17).

2. Company

The Company claims that the Town's RCN valuation does not include indirect costs, which the Company defines as those expenditures that "may be necessary for the purchase and installation of an asset but typically are not directly attributable to the purchase and installation of a property and are not usually included in the vendor invoice" (Company Brief at 30, citing Exh. MW-MR-3, at 45). The Company argues that its proposed indirect cost components are taken from the 2018 version of RSMeans, which has been long been used as a cost estimating system as acknowledged by the Town itself (Company Brief at 30, citing Exh. MW-MR-3, at 45; Tr. 1, at 38-39).

K. Allowance for Funds Used During Construction

The Company asserts that the absence of an AFUDC component in the Town's RCN calculation effectively and implausibly assumes that the system could be built overnight (Company Brief at 31, citing Tr. 4, at 596). The Town did not address AFUDC on brief.

L. Observed Depreciation

1. Town

The Town asserts that its depreciation analysis is an appropriate estimation of the remaining productive economic life of the water system assets (Town Brief at 18, citing Tr. 1, at 153). The Town asserts that the Company's depreciation analysis does not appropriately measure the value a buyer would receive (Town Brief at 41-48; Town Reply Brief at 7). Specifically, the Town maintains that the Company's analysis was based on information that varies from that provided elsewhere during discovery and from the

Company's annual returns provided to the Department (Town Brief at 41, citing Exhs. TOWN-MWC 1-23, Att. C; TOWN-MWC 2-9, Att.; MW-KG-2, Tables 4.1, 4.2). According to the Town, this variance resulted in discrepancies including the inclusion of an additional 43,315 linear feet of mains as well as the inclusion of 50 hydrants that are not actually owned by the Company (Town Brief at 41-42, citing Exh. TOWN-MWC 7-39, Tr. 6, at 812-813, RR-DPU-6). In addition, the Town maintains that an asset's current condition is not an indicator of how much useful life is left before it needs to be replaced (Town Brief at 42, citing Tr. 1, at 90).

The Town also questions the relevance of the Company's 2010 capital improvement plan as a basis for its depreciation analysis (Town Brief at 44). The Town argues that it is not typical industry practice to use the asset management scoring feature of a capital improvement plan as the basis for a depreciation study (Town Brief at 44, citing Exh. TOWN-RF-4, at 7). According to the Town, asset management scoring systems of this type are typically used to prioritize for future capital projects and do not provide an objective method of determining the remaining economic lives of individual assets (Town Brief at 44-45, citing Exh. TOWN-RF-4, at 7).

The Town further argues that the Company's depreciation analysis produces unreasonably optimistic average service lives and, thus, should not be accorded any weight (Town Brief at 44, citing Exh. TOWN-RF-4, at 21). According to the Town, the Company's depreciation study yields a weighted average depreciation rate of 34 percent for a system that is over 130 years old, which the Town considers to be significantly lower than

what would be reasonably expected for water utility infrastructure in Massachusetts based on manufacturing guidance, industry guidelines, and field experience (Town Brief at 43, citing Exhs. MW-KG-1, at 28; TOWN-RF-3, at 12-18). The Town asserts that the Company's engineers had separately recommended the expected useful life of 100 years for all mains located within the new Dilla Street Water Treatment Plant, which is significantly less than implied by the depreciation study for the majority of the Company's below-ground mains (Town Brief at 44, citing Exh. MW-MR-5).

In addition, the Town contends that the results of the Company's distribution main stratified sampling process are unreviewable and unreliable (Town Brief at 45). Specifically, the Town contends that the Company's site selection process contained several areas for potential biases, which, given the small sample size, renders the Company's analysis as little more than an ad hoc spot check rather than a statistically reliable result (Town Brief at 45, 48). The Town points to the witness' lack of engineering experience and absence of discussions with the Company's engineering consultants, as well as the Company's reliance on streets rather than main segments as the basis for sample selection (Town Brief at 45-46, citing Exhs. TOWN-MWC 5-2; MW-LER-3, at 1; MW-KG-2, at 43-78; Tr. 6, at 802; RR-DPU-6, at 1). The Town further argues that these problems were compounded by the lack of instructions on how to choose the specific excavation sites on any given street, thereby introducing a considerable amount of subjectivity to the site selection process (Town

Brief at 46, citing Exh. TOWN-MWC 1-23, Att. C at 62-72).[60] The Town also questions the Company's decision to select alternative sampling locations for two of its ten samples without providing any contemporaneous documentation as to its explanation (Town Brief at 46-47, citing Exhs. MW-LER-1, at 10-11; MW-KG-2, at 22; DPU-MWC 1-2(b); Tr. 6, at 864-866, 927-928).

2. Company

The Company argues that its depreciation calculations are more accurate than those provided by the Town, whose analysis understates the value of the Company's assets (Company Brief at 23-24; Company Reply Brief at 23). In support of its position, the Company asserts that the Town applied straight-line depreciation with little to no regard to the actual condition of the assets in the field (Company Brief at 22). The Company maintains that it conducted a detailed evaluation of the assets' condition as they exist today, including consideration of information such as age, material, break history, soil conditions, pressure, and water quality (Company Reply Brief at 20, citing Exh. MW-KG-2, at 25).

In addition, the Company disputes the Town's reliance on expected useful lives, noting that the Town will be acquiring the water system as it is today, not as it may exist sometime in the future, and that whether certain assets may be replaced in the future for

---

60 The Town also maintains that the Company's consultant had no role in selecting the sampling locations because these had been chosen by the Company and its affiliate R.H. White (Town Brief at 46, citing Tr. 6, at 801-802). The Town contends that as a financially interested party to the results of the depreciation analysis, the Company should have had no role in picking the sample sites and that the process should have been left to its outside engineering company (Town Brief at 46).

operational reasons is unknowable and irrelevant (Company Reply Brief at 20). The Company maintains that the Town's depreciation approach resulted in the Town assigning zero value to significant portions of the Company's systems on the basis of pre-determined expected useful lives despite the fact that those assets were continuing to provide useful service (Company Brief at 22-23).[61]

M. Functional Obsolescence

1. Town

While the Town does not directly challenge the Company's functional obsolescence offset, the Town questions the Company's use of different discount rates in its valuation, including the 2.46 percent used in the functional obsolescence offset (Town Brief at 40). The Town maintains that the discount rate should be the same in both the cost valuation and income valuation analyses (Town Brief at 40, citing Exh. TOWN-JJR-3, at 49).

2. Company

The Company argues that unaccounted-for water is a key driver of functional obsolescence (Company Brief at 31). The Company contends that its use of annual leak surveys performed by a third party produce a functional obsolescence offset of $7,780,028 (Company Brief at 31-32, citing Exh. MW-MR-3 (Rev. Errata Pages) at 46, 399).

---

61 Specifically, the Company argues that the Town assigned no asset values to approximately 150,000 feet of mains, 288 valves, the Echo Lake Dam or the Congress Street Tank (Company Brief at 23, citing Tr. 1, at 104, 109-111, 114-115, 151).

N. Economic Obsolescence

1. Town

The Town maintains that the Company's adjustment for economic obsolescence offset is both incorrect and internally inconsistent (Town Brief at 39). According to the Town, the Company's economic obsolescence offset is derived from the Company's DCF analysis used in its income valuation, which the Town argues contains numerous errors in the discount rate, long-term growth rate, and property tax expense components (Town Brief at 39, citing Exh. TOWN-JJR-3 at 48–51; see also Town Reply Brief at 7). The Town contends that if the Company's DCF analysis is corrected for these three components, the Company's cost valuation would be reduced from $148 million to $68 million (Town Brief at 39-40, citing Exh. TOWN-JJR-4, at 13).

Moreover, the Town questions the Company's use of different discount rates in its cost valuation and income valuation, arguing that the discount rate should be the same for both approaches (Town Brief at 40). The Town contends that use of a consistent discount rate for the cost approach and income approach would produce a further reduction in the Company's RCNLD valuation to approximately $58 million (Town Brief at 40, citing Exh. TOWN-JJR-4, at 13, Rebuttal Sch. TOWN-JJR-3 (Supp.)).

2. Company

The Company defends its economic obsolescence offset, arguing that economic obsolescence is essentially a recognition that the earnings generated by a set of assets may fall short of the required return on the cost of those assets (Company Brief at 31). The

Company argues that an economic obsolescence offset may be calculated using the excess earnings shortfall method, where losses resulting from RCNLD and functional obsolescence multiplied by rate of return on the tangible assets are compared to the projected free cash flow of the operations and discounted to present value (Company Brief at 31). The Company contends that the appropriate economic obsolescence offset is $26,352,348 (Company Brief at 31-32, citing Exh. MW-MR-3 (Rev. Errata Pages) at 47, 432).

O. Income Approach Valuation

1. Town

The Town asserts that the Company's income approach value of $112,000,000 is wrong as a "mathematical certainty" because it does not equal the net book value of $31,574,246 (Town Brief at 59). The Town reasons that any likely buyer would have to operate the business at cost-based rates, meaning the business's return would equal its cost of capital (Town Brief at 59, citing Exh. TOWN-JJR-3, at 28; Tr. 2, at 303-304). The Town asserts that when a utility earns a return equal to its cost of capital, its value will be its net book value when rate base reflects OCLD and the discount rate used is equal to the utility's cost of capital (Town Brief at 59, citing Exh. TOWN-JJR-3, at 28; Tr. 2, at 303-304).

In addition, the Town maintains that the Company committed multiple errors in its DCF analysis (Town Brief at 60). The Town contends that the cumulative effect of correcting these errors would result in a DCF valuation of $33,000,000 (Town Brief at 64, citing Exhs. TOWN-JJR-3, at 47; TOWN-JJR-4, at 13; Rebuttal Sch. TOWN-JJR-2 (Supp.) at 4). Specifically, the Town argues that the holding period of five years used by the

Company is too short and extremely sensitive to the terminal value growth rate (Town Brief at 63). The Town notes that this short holding period results in the terminal value being responsible for approximately 90 percent of the net present value derived from the DCF analysis (Company Brief at 63-64). The Town contends that if an income approach is used, it should de-emphasize the dependence of the value on a single assumption by using a 30-year holding period or making adjustments to net book value (Town Brief at 64, citing Tr. 2, at 303-304, 330-331).

The Town also maintains that using a terminal growth rate of 3.0 percent is inappropriate given the Federal Open Market Committee's recent affirmation of a 2.0 percent inflation target and the existence of well-respected financial forecasts predicting inflation at significantly below 3.0 percent (Town Brief at 64, citing Exh. TOWN-JJR-3, at 46).[62] By way of illustration, the Town asserts that a reduction in the terminal year growth rate of just 50 basis points results in a corresponding reduction of $21,000,000 in the outcome of the DCF analysis (Town Brief at 64, citing Exh. TOWN-JJR-3, at 45).

For the discount rate, or WACC, the Town maintains that although the Company recognizes that government-owned utilities have different cost structures from investor-owned utilities, the Company developed a blended discount rate that results in a discount rate that is too high for a government-owned utility and too low for an investor-owned utility (Town Brief at 60). The Town also challenges the use of 9.45 percent as the pre-tax cost of equity

---

62 The Federal Open Market Committee is within the Federal Reserve System and is responsible for setting the Federal Funds Rate. D.P.U. 17-170, at 275 n.147.

to determine the WACC (Town Brief at 61, citing Exhs. MW-MR-3 (Rev. Errata Pages) at 53-54; TOWN-JJR-3, at 29, 32). The Town argues that the Department approved an ROE of 10.00 percent in the Company's last base distribution rate case, equivalent to a 13.76 percent pre-tax cost of equity, which is 431 basis points higher than the 9.45 percent pre-tax cost of equity used by the Company (Town Brief at 61, citing Exhs. MW-MR-3 (Rev. Errata Pages) at 53-54; TOWN-JJR-3, at 29, 32). The Town also contends that the after-tax cost of equity of 6.87 percent used by the Company is well outside the range of reasonableness because the seven rate cases reviewed by the Company all support a higher cost of equity (Town Brief at 61, citing Exh. TOWN-JJR-3, at 34, 35 & Fig. 6). The Town maintains that an appropriate discount rate would be 8.29 percent (Exh. TOWN-JJR-2, at 1).

The Town also maintains that the Company's analysis contains errors regarding the cost of debt (Town Brief at 62). Specifically, the Town maintains that the Company inappropriately applied a risk-free rate based on a 20-year U.S. Treasury rate when a 30-year U.S. Treasury rate would provide a more reliable estimate because the utility operation will continue in perpetuity (Town Brief at 62, citing Exh. TOWN-JJR-3, at 38; Tr. 2, at 322-323). In addition, the Town argues that the Company's analysis wrongly applied a size risk premium for companies in the 9th decile while even at the Company's inflated valuation it would only be in the 10th decile (Town Brief at 62, citing Exh. TOWN-JJR-3, at 38-39).[63]

---

[63] On brief, the Town asserted that the Company should have updated the equity risk premium to 5.50 percent noting that the Company agreed to do so during the proceeding (Town Brief at 62, citing Exh. TOWN-JJR-3, at 38; Tr. 5, at 688). Prior

According to the Town, the Company also erred by not including property taxes in the DCF analysis (Town Brief at 62). The Town notes that while the Company posited that the government-owned utility will not pay taxes, the Company also acknowledged that if the Town purchases the Company, it will forgo receiving property tax payments (Town Brief at 62-63, citing Tr. 5, at 694, 696). The Town maintains that because it will lose property tax revenues, the property tax amount of $794,598 should have been included as an expense (Town Brief at 63, citing Exh. TOWN-JJR-3, at 44).[64]

2. Company

The Company contends that the Town's critique that the DCF analysis is facially erroneous because it does not equal net book value is incorrect (Company Reply Brief at 33). The Company asserts that the results of a properly conducted DCF analysis would not necessarily equal the Company's net book value because, if so, there would be no need to conduct a DCF analysis (Company Reply Brief at 33). The Company also argues that buyers of regulated utilities typically pay multiples of net book value (Company Reply Brief at 33). The Company maintains, for example, that intangible assets are not a part of rate base and yet have value for which sellers expect to be paid (Company Reply Brief at 33, citing Tr. 4, at 573).

---

to the briefing period, the Company did update its equity risk premium to 5.50 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 53).

64 The Town maintains that had the Company performed two separate DCF analyses rather than blending the government-owned and utility-owned analyses, the issue of property tax would have been avoided (Town Brief at 63).

The Company asserts that its proposed holding period of five years is appropriate (Company Brief at 35). The Company contends that the length of the holding period does not affect the ultimate outcome and, thus, the final value should be the same whether the Company uses a one-, five-, six-, or ten-year period (Company Brief at 35, citing Tr. 5, at 711). Contrary to the Town's assertions, the Company maintains that its growth rate used in conjunction with the holding period is conservative and that the Town did not provide any evidence that contradicts this fact (Company Reply Brief at 35). The Company asserts that its growth rate took into consideration both general inflation projections and specific water industry projections (Company Reply Brief at 35, citing Exh. DPU-MWC 3-4 & Att.; Tr. 5, at 704). In addition, the Company asserts that there are multiple housing developments planned in the Town, which further bolsters the Company's use of a 3.0 percent growth rate for its DCF analysis (Company Brief at 36, citing Tr. 6, at 887).

In addition, the Company takes issue with the Town's assertion that the Company should have developed two separate DCF analyses, one for government-owned buyers and one for investor-owned buyers (Company Reply Brief at 34). The Company maintains that this approach is, in essence, what it did by using two scenarios in its analysis and then averaging the results (Company Reply Brief at 34, citing Exh. MW-MR-3, at 51). The Company argues that the result would be the same had the Company developed two separate DCF analyses and then averaged them (Company Reply Brief at 34).

The Company also disagrees with the Town's assertion that the Company should have used a cost of equity similar to the 10.0 percent ROE approved in its last base distribution

rate case (Company Reply Brief at 34-35). The Company contends that it employed a cost of capital that blended an investor-owned utility and a government-owned utility buyer, effectively replicating the result that would be attained by using the Town's recommended approach of performing separate DCF analyses for each class of buyer (Company Reply Brief at 34). The Company maintains that the Town fails to recognize that it is real-world market values that drive a fair market value determination, not idiosyncratic features that may affect the system's value to a particular owner (Company Reply Brief at 34-35, citing Tr. 5, at 616).

With respect to the Town's argument that it used the wrong decile in determining the size equity premium, the Company asserts that no valuation treatise supports the use of equity size premium data to establish an illiquidity valuation discount whether for lack of control, lack of marketability, or lack of liquidity (Company Brief at 59, citing Exh. MW-RR-2, at 42). The illiquidity valuation, it contends, is applicable only to the valuation of a non-controlling stock interest (Company Brief at 59, citing Tr. 4, at 550-551). The Town had additional critiques regarding the Company's DCF analysis, such as the risk rate used in its cost of equity and the inclusion of property tax; the Company did not address these critiques in its reply brief.

P. Market Metric and Other Valuation Considerations

1. Town

The Town asserts that the results of its market analysis confirm that the valuation of $40,000,000 is in line with the value that the market would assign to the Company (Town

Brief at 25, citing Exhs. TOWN-JJR-2, at 26-39 & Schs. 2, 3; TOWN-JJR-3, at 19-21; TOWN-JJR-4, at 10; Town Reply Brief at 18). The Town maintains that its comparison group was appropriate because the Department has recognized that it is not necessary or possible to find a group that matches a particular company in every detail (Town Reply Brief at 18-19, citing Milford Water Company, D.P.U. 12-86, at 266 (2013)). The Town also takes issue with the Company's dismissal of the comparison group based on the fact it was derived from Value Line (Town Reply Brief at 19). The Town asserts that the Department frequently accepts market data from Value Line (Town Reply Brief at 19, citing D.P.U. 12-86, at 267; D.P.U. 17-90, at 286; Boston Gas Company/Colonial Gas Company, D.P.U. 17-170, at 271 (2018)). The Town contends that the Department has previously accepted the companies included in the comparison group as an appropriate comparison group for the Company (Town Reply Brief at 19, citing D.P.U. 12-86, at 267).

In addition, the Town argues that a potential purchaser in an arm's length transaction would pay less for an asset with lower earnings (Town Brief at 21, citing Exh. TOWN-JJR-2, at 22). The Town maintains that the Company has a consistent record of underearning, with an average annual return over the past ten years of 4.25 percent, or less than half of the currently authorized ROE of 10.0 percent (Town Brief at 21, citing Exhs. TOWN-JJR-2, at 22, Fig. 5; TOWN-JJR-4, at 5). The Town maintains that ignoring the Company's history of underearning paints an incomplete picture of the Company's value to a potential buyer (Town Reply Brief at 16, citing Exh. TOWN-JJR-2, at 28-30). The Town asserts that it used a conservative assumption to determine that a prospective buyer

could restore the Company's earnings to the allowed rate within five years and would continue to earn that return on a going-forward basis (Town Brief at 21).

The Town also asserts that illiquidity affects the value of the Company to its potential buyers (Town Brief at 22, citing Exh. TOWN-JJR-2, at 31). The Town argues that contrary to the Company's assertion, illiquidity adjustments are made for controlling ownership interest regardless of what method is being used to value the business (Town Reply Brief at 17-18, citing Exh. TOWN-JJR-2, at 30).

With respect to the Company's size, the Town argues that because smaller companies are generally riskier investments, a higher return is required for investments (Town Brief at 23). The Town asserts that a potential buyer would require an ROE that is 4.6 percent higher than the ROE an investor would require when investing in the comparison group (Town Brief at 23). The Town also maintains that the Department has recognized that small companies are inherently riskier than large companies (Town Reply Brief at 20, citing D.P.U. 12-86, at 268). In addition, the Town argues that a potential buyer would likely consider the Company's lack of an accounting provision for asset retirement obligations and poor recordkeeping (Town Brief at 23, citing Exh. TOWN-JJR-2, at 33-34). Based on these considerations, the Town maintains that there is support for separate discounts to the Company's equity for illiquidity (between 37 percent to 68 percent) and for a size premium (4.6 percent), as well as additional discounts for business uncertainties (Town Brief at 23, citing Exhs. TOWN-JJR-2, at 34-35; TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14; Tr. 2,

at 288). The Town asserts that, nonetheless, it applied a combined, conservative discount of 30 percent to the value of the Company's equity (Town Brief at 23).

2. Company

The Company argues that the market metric analysis performed by the Town is irrelevant for valuation of an asset transaction (Company Brief at 64). The Company maintains that market metrics are appropriate only for the valuation of stocks (Company Brief at 64, citing Tr. 4, at 587).

In addition, the Company argues that the Town's market metric analysis is flawed and should not be relied on (Company Brief at 62). The Company maintains that the Town did not provide reasonable screening criteria for selecting the companies included in the comparison group and that inclusion in Value Line is inadequate justification (Company Brief at 62-63). For example, the Company contends that the comparison group companies are orders of magnitude larger than the Company (Company Brief at 63). The Company argues that for comparison purposes, a company must be similar and relevant to the appraisal subject (Company Brief at 63, citing Exh. MW-RR-2, at 33-34). The Company also argues that none of the companies in the comparison group operate in Massachusetts and thus are under different regulatory regimes and face different operating conditions (Company Brief at 63, citing Exh. MW-RR-2, at 37). In addition, the Company maintains that many of the companies in the comparison group have other lines of business, including significant non-regulated business operations, such as water and wastewater line repair and protection solutions, real estate businesses, and insurance programs (Company Brief at 63-64). In sum,

the Company maintains that the dissimilarity of the comparison group makes the market metric analysis unreliable (Company Brief at 64).

The Company also takes issue with the Town's earnings shortfall adjustment and contends that the Town employed an asset accumulation approach to valuation (Company Brief at 57). The Company maintains that while it disagrees with the Town's valuation approach in general, an earnings shortfall adjustment is only appropriately applied to the valuation of stock, not assets (Company Brief at 57-58).

In addition, the Company argues that the adjustments for illiquidity and size are unjustified and unsupportable (Company Brief at 57). Specifically, the Company maintains that the Town's use of an asset-based approach means that no further adjustments are warranted (Company Brief at 57-59). The Company contends that illiquidity is applicable to the valuation of stock but that the Town is inappropriately applying it to the valuation of the Company's assets (Company Brief at 58). Similarly, the Company maintains that size premium is applicable to the cost of equity capital under the income approach, and that the Town is inappropriately applying it to the cost approach as a deduction to the value of assets (Company Brief at 61).

Q. Water Rights

1. Town

The Town argues that the Department should not recognize water rights as a separate valuation component (Town Brief at 66-68). The Town reasons that the Company did not claim that these water rights were in excess of those needed to serve customers, but rather

had been acquired through the Charter itself or through subsequent legislation (Town Brief at 66, citing Tr. 5, at 671). Consequently, the Town maintains that the water rights are integral to the very nature of the Company's business, and thus have been fully incorporated in the Company's DCF analysis (Town Brief at 67). Additionally, the Town argues that it would be implausible for a water company with no source of supply to generate income, and without this ability to buy and sell water, the Company would have no value (Town Brief at 67, citing Exh. TOWN-JJR-3 at 53-54; Tr. 5, at 671-672). The Town argues that because the Company's water rights do not represent a discrete value and do not generate additional earnings through rate base inclusion, no potential buyer would ascribe a separate value to the Company's water rights, and thus there is no justification to add $15,900,000 for water rights as a cost component of valuation (Town Brief at 67).

The Town also challenges the underlying assumptions behind the Company's valuation approach. Specifically, the Town argues that the Company's own consultant recognizes that there is limited precedent for the type of transaction envisioned by the Company's permit (Town Brief at 68. citing Exh. MW-MR-3, at 102). The Town maintains that a buying entity would only need to apply for a new permit and that permanent transfers of WMA permits simply involve a change of name on the permit (Town Brief at 68, citing Exh. MW-MR-3, at 102). The Town also questions the Company's reliance on the proposed Shrewsbury buy-in because it was a proposal and there is no evidence that the buy-in was ever finalized (Town Brief at 68, citing Tr. 5, at 669-670).

2. Company

The Company argues that water rights are critical to the assets of its system, noting that without such rights, the system itself would not function and be unable to generate income (Company Brief at 40-41, citing Tr. 5, at 672; Company Reply Brief at 37). The Company maintains that without such water rights a buyer of its system would need to interconnect with MWRA's system to obtain access to a water supply (Company Brief at 40-41). The Company contends that the Town offered no evidence to support its claim that the Company's water rights have no value, or that a buyer could reproduce the water system's full operating capacity without having to acquire and pay for water rights (Company Reply Brief at 37). The Company asserts that the Town's argument that the water rights are so essential to the very nature of the business enterprise that they cannot be valued is illogical (Company Reply Brief at 37, citing Town Brief at 67). Based on these considerations, the Company argues that the Department should reject the Town's claim that the Company's water rights have no value (Company Reply Brief at 37, citing Gloucester Water Supply Company v. City of Gloucester, 179 Mass. 365, at 374 (1901)).

In addition, the Company defends its valuation method, arguing that MWRA's buy-in fee arrangement for municipal water supply provides the closest analogous measure of the value of the Company's water rights (Company Brief at 41). The Company contends that its consultant's database is the largest and most comprehensive pricing source for water transactions throughout the country, and that the $4,285 per acre-foot valuation associated with the Shrewsbury buy-in provides the most reliable measure of water rights valuation

(Company Brief at 41). The Company claims that the Town provides no evidence to support its argument that reliance on the Shrewsbury buy-in produces an excessive valuation (Company Reply Brief at 37, citing Town Brief at 68). The Company concludes that its proposed valuation of $15,890,000 is appropriate (Company Brief at 41-42).

R. Weighting

1. Town

The Town maintains that its approach of equally weighting OCLD and RCNLD, along with certain adjustments, is the correct method for arriving at the fair market value of the corporate property and all the rights and privileges of the Company (Town Brief at 72-73). The Town asserts that the market metric it conducted validated its weighting approach (Town Reply Brief at 20).

2. Company

The Company argues that the Town's decision to apply a 50/50 weighting of OCLD and RCNLD is built on an unjustified reliance on D.P.U. 94-176 (Company Brief at 45-47). The Company argues that the Department's decision in D.P.U. 94-176 was based on a statute that included language requiring the Department to include OCLD as a component in the valuation of an electric utility property (Company Brief at 45). The Company argues that corresponding language does not exist in the Charter and, as such, applying the D.P.U. 94-176 formula in the instant proceeding would be a misapplication of the findings in that case, and would wrongly deprive the Company of the right to be paid the fair market value of its assets (Company Brief at 45, citing Exh. MW-RJC-2, at 4).

VI. ANALYSIS AND FINDINGS

A. Introduction

To determine the value of the Company's assets, we first analyze the valuation methods proposed by the Town and the Company and determine the appropriate valuation methods to use in this proceeding. We then calculate valuations for the various assets under those methods, including RCN and other components used to determine RCNLD, such as indirect costs and observed depreciation. We then evaluate the various offset factors proposed by the parties, followed by evaluation of the income approach and the Company's water rights valuation. Finally, we assign weight to the valuations methods and derive an overall valuation.

B. Valuation Method

In the Supreme Judicial Court's Order referring the Town's petition for a valuation to the Department, the Court left to the Department the determination of what valuation method(s) were to be used. Docket No. SJ-2018-0029. The parties advocate two distinct methods to determine the fair market value of the Company's assets and, as discussed above, generate vastly different conclusions of value.

To determine the compensation to be paid for the Company's assets, the Department must first consider whether the statutory language or case law require the Department to employ a specific valuation method in this proceeding. The only time the provisions of G.L. c. 165, § 5 have been previously invoked to value a water company for purchase by a municipality was in 1942, when the Department was called upon to determine the appropriate

purchase price of Williamstown Water Company; that case was ultimately settled by the parties and no Department decision was rendered. D.P.U. 6682.[65] In the case of water companies, the condition of the acquired company's physical plant or the interpretation of buyout provisions contained in legislative charters may affect the merger or acquisition purchase price. Plymouth Water Company, D.P.U. 14-120, at 112-113 (2015); Dover Water Company/Dover WaterWorks, D.T.E. 01-55, at 2-3, 7-8 (2003); Oxford, 391 Mass. at 585-592.[66] As both parties acknowledge, the Legislature did not define a specific valuation method or combination of methods to determine the purchase price in the Charter (Exh. TOWN-5). In the same timeframe that the Legislature enacted the Charter, it also enacted charters for other water companies and in those charters specified the method for determining a purchase price. See, e.g., St. 1880, c. 73, § 7 (Exh. MWC-3) (establishing Southbridge Water Supply Company and setting purchase price at actual cost); St. 1881, c. 76, § 7 (Exh. MWC-4) (establishing Uxbridge Water Company and setting purchase price

---

65 The Department has undertaken valuations on only two prior occasions, both of which involved electric utilities and were governed by the provisions of G.L. c. 164, § 43. D.P.U. 94-176; Chester Electric Light Company, D.P.U. 2917 (1928).

66 Depending on the condition of the assets, water systems can sell for significantly less than book value or even require the acquired company to pay the acquiring company for the transaction. See, e.g., D.T.E. 01-55, at 2-3 (assets of 15-customer water system valued at $181,069 sold for nominal $1, and customers assessed $162,686 to cover upgrades and transaction costs); Hingham Water Company/Nantasket Beach Water Works, D.P.U. 85-76, at 3 (1985) (54-customer water system with net book value of $45,407 acquired for $12,500).

at actual cost). Thus, unlike charters for other water companies, the Department finds no guidance from the Charter's statutory language.

The Town's argument that OCLD is the proper value unless the Company demonstrates there are special circumstances is inconsistent with more recent precedent on the standard for valuing a public utility's personal property. The Town relies on Watertown I, in which the Supreme Judicial Court first established the requirement that assessments of public utility assets in excess of net book value must be supported by substantial evidence of special circumstances that would induce a buyer to pay more. Watertown I, 387 Mass. at 301-306. In reaching its decision, the Supreme Judicial Court relied on the Department's position on carry-over rate base:

> Of particular significance to this case is the apparently longstanding position of the Department of Public Utilities that, if a regulated utility sells an asset to another regulated, public utility, the basis of that asset in the hands of the transferee remains the same as that of the transferor for ratemaking purposes.

Watertown I, 387 Mass. at 301.

As the Department discussed in D.P.U. 94-176, however, in 1994 the Department's policy regarding mergers and acquisitions evaluated under G.L. c. 164, § 96 changed. D.P.U. 94-176, at 61, citing Mergers and Acquisitions, D.P.U. 93-167-A (1994). The Department's policy is now that an acquisition price higher than net book value, categorized as an acquisition premium, would be reviewed on a case-by-case basis. D.P.U. 93-167-A at 7. Under this policy, utility plant may be acquired for more than its net book value. D.P.U. 94-176, at 61. In 2011, the Supreme Judicial Court held that the Appellate Tax Board of Boston's equal weighting of RCNLD and net book value was adequately supported

by a finding that the cited cases and the Department's decisions on acquisitions premiums since 1994 amply demonstrated the type of regulatory change anticipated in Watertown I, justifying the use of a valuation method other than net book value. Boston Gas, 458 Mass. at 722-725, citing D.P.U. 93-167-A at 7, 18-19; Stow, 426 Mass. at 347; Attorney General v. Department of Telecommunications and Energy, 438 Mass. 256, 258 (2002); Watertown I, 387 Mass. at 305-306. As these appellate decisions demonstrate, the Department's policy change with respect to acquisition premiums is the type of regulatory change contemplated by Watertown I that may induce a hypothetical buyer to pay more than net book value for the Company. Accordingly, we disagree with the Town's contention that the Department should not consider valuations based on RCNLD or income capitalization in the determination of fair market value for the Company's property, rights, and privileges.

The Company asserts that Massachusetts courts have used three methods or a combination of these three methods in determining the fair market value of property being taken: (1) the cost approach, particularly RCNLD; (2) the income capitalization approach; and (3) a market or sales comparison approach (Company Brief at 8, citing Exh. MW-RJC-2, at 3). The Department disagrees with the Company's characterization of this proceeding as the equivalent of a taking because the Company assented to the Town's right to purchase when it accepted its Charter (Tr. 4, at 497-498). Oxford, 391 Mass. at 591, 593; Cohasset, 321 Mass. at 145. Nonetheless, the courts' affirmation of these valuation methods to determine fair market value in the context of takings is persuasive and instructive to our goal.

The Company also maintains that a determination of value based on the cost approach, specifically RCNLD, is the favored approach for special purpose property and argues that because the Company's assets are special purpose property they should be valued based on RCNLD (Company Brief at 8, citing Correia, 375 Mass. at 364). As the Town notes on brief, however, the Supreme Judicial Court has viewed the RCNLD valuation with disfavor unless the special character of the property makes it impossible to value based on income capitalization or comparable sales (Town Brief at 10, citing, e.g., General Electric, 393 Mass. at 606). Notably, the Company's own experts did not rely entirely on an RCNLD determination of value; rather, they gave significant weight to a valuation based on an income capitalization method (Exh. MW-MR-3 (Rev. Errata Pages)).

Regarding using an RCNLD analysis compared to an OCLD analysis in the cost approach, the Department finds that RCNLD provides a better estimate for fair market value because it values the cost to recreate the system in today's market and factors in depreciation. This is particularly important here, where parts of the system are over 100 years old. The original cost is removed from today's market to an extent that it does not provide a meaningful comparison. Further, the Department's reliance on the OCLD valuation in D.P.U. 94-176 was predicated on G.L. c. 164, § 43, which requires the consideration of original cost. That valuation method is not applicable here because G.L. c. 164, § 43 does not apply to water companies. See G.L. c. 165, § 2. Further, the present case is distinguishable because based on the plain language of the Charter, the Department has discretion to apply the valuation we find most appropriate for these circumstances. Because

the Department has discretion in determining the valuation method to apply, in assessing the cost approach, the Department will only consider an RCNLD valuation.

Regarding the use of the income capitalization approach, the Department notes that it is commonly used in the valuation of water utility systems, in the form of a DCF analysis that forecasts the appropriate cash flow stream over an appropriate period of time, and then discounts that cash flow stream back to its present value using an appropriate discount rate (Exhs. MW-MR-1, at 7; MW-MR-3, at 32-35; 48). Both the Company and the Town agree that the income capitalization approach is appropriate to consider in this type of valuation analysis (Exh. MW-MR-3, at 48; Tr. 3, at 432; Tr. 4, at 542).

After due consideration, the Department determines that the RCNLD cost approach and income capitalization approach are valid methods for the Department to use in determining the fair market value of the Company's assets. Using the Department's experience, technical competence, and specialized knowledge, the Department will evaluate the probative value of all the record evidence relevant to the parties' proposals and determine what weight, if any, to accord an RCNLD cost approach and income capitalization approach in our determination of the compensation to be paid for the Company, property, rights, and privileges.[67]

---

[67] As set forth in Section III.B, above, the Town's proposed reproduction cost valuation includes a combination of RCN, indirect costs, and observed depreciation (Exhs. WP-RF-1 (Rev. 2); WP TOWN-JR-1 (Corrected Rev. 2)). Similarly, the Company's proposed cost approach valuation, as set forth in Section IV.A., above, includes a combination of RCN, indirect costs, AFUDC, observed depreciation, functional obsolescence, and economic obsolescence (Exh. MW-MR-3 (Rev. Errata

C. Cost Approach Valuation

1. Land, Easements, and Buildings

a. Land

As of December 31, 2018, the Company owns 39 non-adjacent parcels of land across the Town and Hopkinton (Exh. MW-MR-3, at 148). The Town assessed the value of the land by adding the tax assessments for each parcel, totaling $6,949,700 (Exhs. TOWN-JJR-2, Rev. Fig. 2; DPU-TOWN 2-2, Att.). The Company conducted a market assessment of the land, deriving a total valuation of $30,679,200 (Exhs. MW-MR-1, at 16; MW-MR-3, at 40; MW-MR-3 (Rev. Errata Pages) at 70). The Department finds that while both approaches contain flaws, as further outlined below, the Company's valuation provides a better measure of fair market value.

RCNLD valuation assumes a reproduction or replacement of the assets with a similar construction and operational utility (Exhs. TOWN-RF-3, at 3; TOWN-JR-3 (Corrected) at 2; TOWN-JJR-2, at 16 & n.46, citing The Appraisal of Real Estate, The Appraisal Institute, at 569-570 (14th ed.) (2013)). Thus, in the RCNLD valuation, the Department must assume that the land is being purchased as if new, or unimproved. The Department rejects the Town's argument that the separation of the land valuation from the rest of the Company's assets is an improper hypothetical because this valuation is being conducted for legal

---

Pages) at 70). To derive the Department's valuation, we first determine the RCN and then add the various components.

purposes and separating the land from the assets is required to prevent double counting (see Town Brief at 55-56; Exh. TOWN-WC-3, at 10).

Further, because the land is being considered unimproved, any encumbrances that may or may not apply to the parcel specifically because it is owned by the Company should not be included in an RCNLD valuation because those encumbrances would not take effect until after the Company acquired the land. The Department is not persuaded by the Town's arguments to the contrary. The Town cites to Tennessee Gas Pipeline, 428 Mass. 261 (Town Brief at 19). That case does not apply here because it concerned valuing land with public utility-related improvements for tax assessment purposes. As the Court there found, the tax assessment needed to take into account the encumbrances on the land because the land was assessed as improved. Tennessee Gas Pipeline, 428 Mass. at 264-267. In contrast, RCNLD concerns the replacement or recreation of a water system and the land is being valued as if unimproved, without company-specific encumbrances. Thus, Tennessee Gas Pipeline does not apply.

Pursuant to the Charter at Section 2, the Company enjoys the right to obtain land necessary for the operation of the water system through eminent domain. Charter, § 2 (Exh. TOWN-5). Thus, if the water system were to be replaced or recreated, the value for the land would be determined via an eminent domain action by a water company. In an eminent domain action, the value of the land is the fair market value without considering any special characteristics that make it useful for water supply purposes. The Young Men's

Christian Association of Quincy v. Sandwich Water District, 16 Mass.App.Ct. 666, 675 (1983), citing Sargent v. Merrimac, 196 Mass. 171, 174 (1907).[68]

The Town's reliance on the land's tax assessments similarly does not provide an accurate fair market value because tax assessment values are not the same as fair market values (Tr. 3, at 397-398). The Town does not provide any authority to the contrary. Indeed, in eminent domain proceedings, tax assessments are generally not considered as a determination of land value without further, supporting evidence, such as three years' worth of assessments and an indication that within the prior five years a comprehensive reevaluation had been completed. See G.L. c 79, § 35; Stewart v. Town of Burlington, 2 Mass.App.Ct. 712, 713-714 (1974). The Town does not provide any such support for its tax assessment. The Town used the tax assessment records because it was the best information it had at the time (Tr. 2, at 236-237). For these reasons, the Department declines to rely on the Town's tax-assessed value of the Company's land for purposes of determining fair market value.

As discussed below, the Company's assessment of the fair market value for its land contains errors in its calculations and assumptions. Regardless, it provides a market-based value and for this reason, as fully described below, the Department accepts the Company's value for land with some modifications.

---

[68] The value may also include any value a purchaser would add because of the chance that the land might one day be used for a water system. The Young Men's Christian Association of Quincy, 16 Mass.App.Ct. at 675-676. Neither party ascribed any value to this chance; therefore, there is no accordingly added value.

In its calculations, the Company multiplied an estimated adjusted dollar per lot/square foot by the parcel's minimum lot size/usable square foot (Exh. MW-MR-3, at 208-209, Table L-9). In review of the Company's calculations, the Department determined that the Company erroneously multiplied some of the parcel's estimated adjusted dollar per lot/square foot by the parcel's total acres (Exh. MW-MR-3, at 208-209, Table L-9). For example, in line one, Parcel No. R34-014-000, Granite Street, the Company's proposed fair market value is $1,728,000, but its land-adjusted dollar per lot is $144,000 with eight lots, which should yield a fair market value of $1,152,000 (Exh. MW-MR-3, at 208-209, Table L-9). The Company further miscalculated some of the parcel's number of lots by multiplying the parcel's minimum lot size per zoning (square foot) by the usable square footage, multiplied again by 75 percent (Exh. MW-MR-3, at 208-209, Table L-9). For example, in line one, Parcel No. R34-014-000, Granite Street, although there are eight lots at this location, its usable square footage is 522,720 with a minimum lot size per zoning (square foot) of 52,000, which should yield ten lots (Exh. MW-MR-3, at 208-209, Table L-9). Another error in the Company's Table L-9 calculations pertains to the minimum lot size per zoning (square foot), wherein the Company imputed the incorrect size for some parcels according to its Table L-1, Zoning Minimum Square Footage (compare Exh. MW-MR-3, at 194, Table L-1 with Exh. MW-MR-3, at 209, Table L-9). For example, Parcel No. 106, Purchase Street, is zoned Rural Residential C, which should have a minimum lot size per zone of 30,000 square feet according to Table L-1, but is listed in Table L-9 with a minimum lot size per zone of

52,000 square feet (Exhs. MW-MR-3, at 194, Table L-1; MW-MR-3, at 209, Table L-9). The Department has corrected these miscalculations. See Table 1, below.

The Company also made assumptions that are unsupported and detract from the reliability of the Company's value. For example, the Company relied on municipal zoning bylaws in many respects, but never produced them (see, e.g., Exh. MW-MR-3, at 194).[69] This is an administrative adjudication and, as such, formal rules of evidence do not strictly apply. 220 CMR 1.10(1). Nonetheless, a court cannot take notice and apply municipal bylaws that have not been produced. Gaunt v. Board of Appeals of Methuen, 327 Mass. 380, 381 (1951). Additionally, the bylaws that the Company relies on are for the Town, which do not apply to the land located in Hopkinton (Exh. MW-MR-3, at 194). This detracts from the credibility of the Company's valuation.

Additionally, the Company assumes zoning variances will be obtained for parcels without stating any criteria for obtaining a variance (Exh. MW-MR-3, at 193; Tr. 5, at 725-726). In general, variances are to be sparingly granted and a party needs to provide evidence that a parcel satisfies the specific requirements for a variance. Dion v. Board of Appeals of Waltham, 344 Mass. 547, 555-556 (1962). The Company does not state the requirements for seeking a variance in either the Town or Hopkinton. The Company's expert relies only on the size of the parcel and his experience (Tr. 5, at 726). The Company also

---

[69] The Town provided portions of zoning bylaws for the Town and Hopkinton as evidence against the Company's assumption (Exhs. TOWN-WC-1, at 25; TOWN-WC-3, at 13).

does not account for the additional cost in its valuation for having to obtain variances or adequately explain why needing a variance would not impact the value of any particular parcel. Although this is an administrative adjudication and the rules of evidence are relaxed, the Department determines that the Company has not adequately shown that any parcel would obtain a zoning variance and the Department will adjust the values accordingly.

For Town land, the Department's adjustment is to treat it similar to the Company's industrial zones. The Department applied $165,000 per usable acre and removed any adjustments for Zoning and Minimum Lot Size and Subdivision Adjustment to Single Lot because the Company reserved these two adjustments for residential parcels (Exh. MW-MR-3, at 207-208). Regarding parcel number 28010, 68 Dilla Street, however, the parties disagree on its correct zoning district. The Company states that the property is zoned 75 percent industrial and 25 percent residential and half of the lot is unusable acreage (Exh. MW-MR-3, at 207-209). It applied a weighted rate per usable acre of $161,250 for a total value of $2,240,569 (Exh. MW-MR-3, at 207-209). The Town states that the property is zoned entirely industrial and does not reference any percentage as unusable (Exh. TOWN-WC-3, at 14).[70] The Town does not provide a fair market value for the property, only the tax assessment, which the Department is not accepting as fair market value as noted above. Without more record evidence regarding parcel number 28010's zoning, the Department declines to adjust that parcel's value and accepts the Company's proposed value.

---

[70] If the parcel is zoned entirely industrial and all 27.79 acres are usable, the total value would be approximately $4,585,350.

For the land in Hopkinton, the Town identifies that some of the Company's land is in Hopkinton's Water Resources Protection Overlay District, which is not addressed in the Company's valuation (Exh. TOWN-WC-1, at 29-30). There is not, however, sufficient evidence as to the effect on the value of the land from the Water Resources Protection Overlay District or how to properly adjust the Company's valuation to correct for its improper assumption of residential use. The relevant Hopkinton bylaws were not provided. Therefore, the Department declines to make any adjustment to the Hopkinton land's value and accepts the Company's proposed value.

Finally, the Town identified a number of allegedly undevelopable or sliver parcels and a Town bylaw regarding the minimum lot shape factor (Exhs. TOWN-WC-1, at 21-22, 25-26; TOWN-WC-3, at 10-16). The record does not contain, however, adequate information to adjust the Company's valuation to account for these alleged errors. The Town provided a critique of the Company's land appraisal but did not appraise the land itself (Tr. 2, at 238-239). The Town only provided the assessed value of the identified parcels (Exh. TOWN-WC-3, at 12), but as stated above, the tax assessed value is not the same as the market value and, therefore, is not instructive on the Company's land valuation.[71]

Despite these faults, on balance, the Department finds that the Company's market-based approach is closer to the fair market value for the land as compared to the

---

[71] The Department also declines to apply an assemblage premium because, even if appropriate, there is insufficient evidence as to what that premium should be because neither party calculated it.

Town's tax assessment records. Without any other market-based value for the land in the record, the Department accepts the Company's valuation, with certain adjustments as outlined above, for a total of $35,946,104. See Table 1, below, for a summary of the Department's calculations and adjustments.

Table 1 – Land Valuation

Town	Parcel #	Property Description	Total Area (Acres)	Percent Wetlands	Usable Acres	Usable SF	Minimum Lot Size per Zoning (SF)	Number of Lots	Land Unadjusted $/Lot	Land Unadjusted $/SF	Total Adjustments	Land Adjusted $/Lot	Land Adjusted $/SF	Fair Market Value
Hopkinton	R34-014-000	Granite Street	12	0%	12.00	522,720	52,000	10	$160,000		-10%	$ 144,000		$ 1,447,532
Hopkinton	R34-015-000	Echo Lake	288.2	75%	72.05	3,138,498	52,000	60	$160,000		-20%	$ 128,000		$ 7,725,534
Hopkinton	R34-015-00B	Hayden Rowe Street	1.43	90%	0.14	6,229	52,000	0	$160,000	$3.67	-10%		$ 3.31	$ 20,592
Hopkinton	U25-008-000	Granite Street	17.001	30%	11.90	518,394	52,000	10	$160,000		0%	$ 160,000		$ 1,595,060
Hopkinton	U25-009-000	Granite Street	22.87	30%	16.01	697,352	52,000	13	$160,000		0%	$ 160,000		$ 2,145,699
Hopkinton	R30-013-000	5 Granite Street	2.363	30%	1.65	72,053	52,000	1	$160,000		15%	$ 184,000		$ 254,955
Hopkinton	R30-011-000	49 Granite Street	0.681	0%	0.68	29,664	52,000	1	$160,000	$3.67	0%		$ 3.67	$ 108,960
Hopkinton	R30-012-000	Granite Street	26.003	80%	5.20	226,538	52,000	4	$160,000		10%	$ 176,000		$ 766,744
Milford	106	Purchase Street	2.10	0%	2.10	91,476	30,000	3	$160,000	$3.67	15%		$ 4.22	$ 386,400
Milford	15011	Cedar St Rear	0.31	50%	0.16	6,752	52,500	0	$160,000	$3.67	0%		$ 3.67	$ 24,800
Milford	15016	Cedar St Rear	1.39	50%	0.70	30,274	52,500	1	$160,000	$3.67	0%		$ 3.67	$ 111,200
Milford	1507	Cedar St	1.96	75%	0.49	21,344	52,500	0	$160,000		0%	$ 160,000		$ 65,050
Milford	1509	Cedar St	1.40	75%	0.35	15,246	52,500	0	$160,000		0%	$ 160,000		$ 46,464
Milford	19012	I-495	2.20	0%	2.20	95,832	14,000	7	$160,000		-10%	$ 144,000		$ 985,701
Milford	19017	Cedar St Rear	1.40	40%	0.84	36,590	[redacted]	[redacted]	$165,000		0%	$ 165,000		$ 138,600
Milford	28010	68 Dilla Street	27.79	50%	13.90	605,266	[redacted]	[redacted]	$161,250		0%	$ 161,250		$ 2,240,569
Milford	405	Cedar St Rear	2.50	90%	0.25	10,890	52,500	0	$160,000	$3.67	0%		$ 3.67	$ 40,000
Milford	2701	Dilla St Rear	3.96	10%	3.56	155,248	14,000	11	$160,000		-10%	$ 144,000		$ 1,596,835
Milford	609	Cedar St	5.00	60%	2.00	87,120	52,500	2	$160,000		15%	$ 184,000		$ 305,335
Milford	605C	Cedar St	0.14	30%	0.10	4,269	52,500	0	$160,000	$3.67	0%		$ 3.67	$ 15,680
Milford	604	Cedar St Rear	4.80	10%	4.32	188,179	52,500	4	$160,000		10%	$ 176,000		$ 630,848
Milford	53021	14 South Cedar St	39.80	90%	3.98	173,369	[redacted]	[redacted]	$165,000		0%	$ 165,000		$ 656,700
Milford	480650	16 West Pine St	0.78	30%	0.55	23,784	5,000	5	$160,000		-20%	$ 128,000		$ 608,864
Milford	408	Cedar St Rear	3.00	0%	3.00	130,680	52,500	2	$160,000		5%	$ 168,000		$ 418,176
Milford	406	Cedar St Rear	11.20	50%	5.60	243,936	52,500	5	$160,000		5%	$ 168,000		$ 780,595
Milford	4011	Cedar St Rear	5.70	0%	5.70	248,292	52,500	5	$160,000		-5%	$ 152,000		$ 718,864
Milford	4010	Cedar St Rear	14.73	70%	4.42	192,492	52,500	4	$160,000		0%	$ 160,000		$ 586,641
Milford	36024	Highland St	0.67	0%	0.67	29,185	14,000	2	$160,000		5%	$ 168,000		$ 350,222
Milford	35016	Congress St	5.01	0%	5.01	218,236	14,000	16	$160,000		-10%	$ 144,000		$ 2,244,709
Milford	3010	Haven St Rear	0.02	0%	0.02	871	52,500	0	$160,000	$3.67	-10%		$ 3.31	$ 2,880
Milford	2808	Dilla St	6.90	60%	2.76	120,226	14,000	9	$160,000		-10%	$ 144,000		$ 1,236,606
Milford	28010A	64-66 Dilla St	1.38	0%	1.38	60,113	14,000	4	$160,000		0%	$ 160,000		$ 687,003
Milford	27074	Dilla St	0.92	0%	0.92	40,075	14,000	3	$160,000		5%	$ 168,000		$ 480,902
Milford	407	Cedar St Rear	6.60	0%	6.60	287,496	52,500	5	$160,000		-5%	$ 152,000		$ 832,369
Milford	480649	16 West Pine St	0.18	0%	0.18	7,841	5,000	2	$160,000		0%	$ 160,000		$ 250,906
Milford	305	Haven St Rear	4.00	0%	4.00	174,240	52,500	3	$160,000		0%	$ 160,000		$ 531,017
Milford	53014	Central St Rear	11.16	0%	11.16	486,130	14,000	35	$160,000		-25%	$ 120,000		$ 4,166,825
Milford	10044	Pine Island Rd	1.33	20%	1.06	46,348	30,000	2	$160,000		10%	$ 176,000		$ 271,907
Milford	1503	Cedar St Rear	11.20	70%	3.36	146,362	52,500	3	$160,000		5%	$ 168,000		$ 468,357
												Total Land Value		**$35,946,104**

b. Easements

The Company owns 34 private easements but could only identify 22 easements, which it valued at $412,446[72] (Exh. MW-MR-3, at 148, 178, 212).[73] The Town did not offer a value for the easements, but rather argued that because they are necessary to the Company's operation as a water system, their value is subsumed in the value of the Company as a whole (Town Brief at 56-57). Similar to land, the Company's easements carry value because they are assets that will be transferred to the Town on purchase. The Department is not persuaded by the Town's arguments that the easements' value is included in an RCNLD approach in the Company's value as a whole because the easements are not included elsewhere in the Department's valuation analysis. Under an RCNLD approach, it is assumed that the water system is being replaced or reproduced as if new (Exhs. TOWN-RF-3, at 3; TOWN-JR-3 (Corrected) at 2; TOWN-JJR-2, at 16 & n.46, citing The Appraisal of Real Estate, The Appraisal Institute, at 569-570 (14th ed.) (2013)). Thus, the easements would need to be acquired as if new, or in other words, unimproved, which would undoubtably carry a cost. Thus, the Department will assign a value to the easements.

The only value for the easements in the record is provided by the Company for the 22 easements it identified (Exh. MW-MR-3, at 211-212). The Department notes that the

---

[72] In its proposal, the Company rounded the $412,446 to $400,000 (Exh. MW-MR-2, at 148, 178, 212).

[73] It is unclear from the record evidence why the Company was unable to identify all its easements (Exh. MW-MR-3, at 40, 148).

Company's assessment of its easements is flawed. Not all easements are created equally, and the value of an easement can depend on its scope. See Wasserman v. City of Peabody, 20 Mass.App.Ct. 781, 785-87 (1985). The value of an easement is also generally determined by comparing the value of the affected property before and after the taking of the easement. In re Boston Edison Company, 341 Mass. 86, 93-94 (1960). The Company did not consider the scope of the 22 easements nor the value of the affected property. Instead, the Company applied the same value to all easements without acknowledging that their scopes, and therefore, value, may be different (Exh. MW-MR-3, at 212). Further, the Company based its singular value on an adjusted ownership price per square foot and did not consider the value of the affected property either with or without the easement (Exh. MW-MR-3, at 211-212). Lacking any other proposed value for the easements in the record, however, the Department accepts the Company's valuation of $412,446.

c. Buildings

The Town provided a total tax-assessed value of $1,632,400 for nine buildings owned by the Company (Exhs. TOWN-JJR-2, Rev. Fig. 2; DPU-TOWN 2-2, Att. at 13, 15, 17, 19, 27, 29, 43, 47, 65). The Company valued only the commercial office building separately at $450,000 (Exh. MW-MR-3, at 40). The Company did not provide any building-specific valuation proposals for the remaining eight buildings (see Exhs. DPU-TOWN 2-2, Att. at 13, 15, 17, 19, 27, 29, 43, 47, 65; MW-MR-3 (Revised-Errata Pages) at 70). Because the Company did not provide any separate values for the remaining buildings, we must rely on the tax-assessed values provided by the Town for these structures. However, since the Town

also included values for some of the nine buildings elsewhere in its valuation, the Department must first remove from this building valuation section any buildings that were included elsewhere in the Town's valuation and then determine the remaining buildings' values (see, e.g., Exh. TOWN-JR-3 (Corrected) at 5-7, citing Exh. TOWN-MWC 3-2, Att.).

The Town provided tax assessments for three buildings on Dilla Street: (1) $199,900 for the 2,144 square foot PMP/VLV HS building; (2) $169,000 for the 4,800 square foot PMP/VLV HS building; and (3) $593,400 for the 11,000 square foot tank UT industrial building (Exh. DPU-TOWN 2-2, Att. at 13, 15, 17). The record demonstrates that the Town considered these three structures as part of the Dilla Street Water Treatment Facility but did not develop separate valuations for them within that valuation because of their age or limited use (Exh. DPU-TOWN 2-3; Tr. 1, at 130-132; RR-DPU-1). The Company did, however, develop separate valuations for them as part of the Dilla Street Water Treatment Facility (Exh. MW-MR-3 (Rev. Errata Pages) at 70). Thus, to avoid double counting, the Department will not include their tax-assessed values of $962,300 in our building valuation.

The Town provided a tax assessment for the PMP/VMV HS building on Congress Street (Exh. DPU-TOWN 2-2, Att. at 27). The Town also included this structure in its vertical assets as part of the Congress Street booster pump station (Exh. TOWN-JR-3 (Corrected) at 5-6). To avoid double counting, the Department will not include the tax-assessed value of $2,800 in our building valuation.

The Town provided a tax assessment for a PMP/VMV HS building on South Cedar Street (Exh. DPU-TOWN 2-2, Att. at 47). The Town also included this structure in its

vertical assets as part of the Godfrey Brook Water Treatment Plant (Exh. TOWN-JR-3 (Corrected) at 7). To avoid double counting, the Department will not include the tax-assessed value of $48,900 in our building valuation.

The remaining four buildings do not appear elsewhere in the Town's valuation. These include the commercial office building with a tax-assessed value of $397,900, the utility building located on Highland Street with a tax-assessed value of $24,800; the garage on West Pine Street with a tax-assessed value of $35,000; and the one-family dwelling on West Pine Street with a tax-assessed value of $160,700 (Exh. DPU-TOWN 2-2, Att. at 19, 29, 43, 65). These structures also do not appear to be incorporated in the Company's land or other tangible property valuations (Exh. MW-MR-3, at 39, 209-210). On this basis, the Department finds that these four structures are appropriate to include in the buildings' valuation.

Having determined that there are four buildings to be included in the building valuation section, the Department must determine each building's value. The Company values its commercial office building at $450,000, while the Town values the same building at $397,900, representing a difference of $52,100, or 13 percent. While the parties' valued the Company's office building based on different approaches, there is relatively little difference in their overall outcomes. As the valuation proposal amounts were similar and reasonable, the Department determines the office building value to be the average of the two proposals, or $423,950.

For the three remaining buildings presented by the Town, there is nothing on the record to indicate that these three structures are not used as part of the Company's operations.[74] Because the Company did not provide any separate values for these structures, we must rely on the tax-assessed values provided by the Town. We find that the Town provided sufficient data and assumptions to support its valuations. Therefore, the Department includes in our RCN valuation $220,500 for buildings, representing the Town's proposed aggregate tax-assessed value for the Highland Street structure of $24,800, the manager's house at West Pine Street of $160,700, and the garage/storage facility at West Pine Street of $35,000. Table 2, below, identifies a total of $644,450 that the Department will include for buildings.

Table 2 – Building Valuation

	Tax Assessment Information					
Location	Description	Year Built	Sq. Ft.	Town	Company	Department
Dilla Street, Milford	PMP/VMV HS Building	1900	2,144	$199,900		$0
Dilla Street, Milford	PMP/VMV HS Building	1983	4,800	$169,000	Not Provided	$0
Dilla Street, Milford	TANK UT	2012	11,000	$593,400		$0
Dilla Street, Milford	OFFICE	1987	7,344	$397,900	$450,000	$423,950
Congress Street, Milford	PMP/VMV HS Building	1985	120	$2,800		$0
Highland Street, Milford	UTIL BLDG	1989	560	$24,800		$24,800
West Pine Street, Milford	GARAGE Building	1909	NA	$35,000	Not Provided	$35,000
South Cedar Street, Milford	PMP/VMV HS Building	1983	1,024	$48,900		$0
West Pine Street, Milford	ONE FAM	1880	2,054	$160,700		$160,700
TOTAL				**$1,632,400**	**$450,000**	**$644,450**

(Exh. DPU-TOWN 2-2, at 13, 15, 17, 19, 27, 29, 43, 47, 65).

74 The facilities at West Pine Street serve as the manager's house, along with Company shop and garage facilities (Exh. TOWN-MWC 4-12 (Supp.), Att. at 15). See also D.P.U. 12-86, at 160.

2. Vertical Assets

The Company's vertical assets are comprised of sources of supply and pumping facilities, the two treatment plants, and water storage facilities. In aggregate, the Company presents an RCN valuation for its vertical assets of $34,285,210, while the Town presents an RCN valuation for the vertical assets of $39,165,000, a difference of only $4,879,790 (see Exhs. MW-MR-3 (Rev. Errata Pages) at 70; WP TOWN-RF-1, Rev. 2, Tabs Summary, Vertical Assets). The Department has reviewed the RCN values presented by both the Town and Company and finds that both RCN valuation methods are reasonable. Because of this and the proximity in amount of the Company's and Town's values, the Department accepts both the Company's and Town's vertical asset RCN proposals. Therefore, for those vertical assets for which valuations were provided by both the Town and the Company, the Department will calculate average RCN valuations for those individual assets.

The Town did not provide a valuation for every vertical asset (Tr. 1, at 56-60, 74-75; Tr. 2, at 240-241). First, the Town did not provide a valuation for the Echo Lake dam because (1) the Town's appraiser did not consider themselves qualified to evaluate the dam, and (2) the Town considers the dam to be fully depreciated (Exh. DPU-TOWN 2-3; Tr. 1, at 56-60, 73-74; Tr. 2, at 240). Regardless of whether Echo Lake dam is fully depreciated, it would still have an associated RCN value because the dam is essential to maintaining the physicality of Echo Lake, which is a significant source of supply. In the absence of an opposing RCN valuation proposal, the Department accepts as reasonable the Company's $3,950,000 RCN valuation for Echo Lake dam. Although the Department has averaged the

valuations of both the Town and the Company for most of the Company's vertical assets, we are persuaded that averaging the Company's $3,950,000 valuation with the Town's zero valuation would produce inequitable results. Therefore, the Department will apply an RCN valuation of $3,950,000 to the Echo Lake dam.

Similarly, the Town did not provide separate RCN valuations for the high lift building, diatomaceous earth building, slow sand building, and circular clearwell building located at the site of the Dilla Street Water Treatment Facility (Exh. DPU-TOWN 2-3; Tr. 1, at 74-75).[75] The Town considers these structures to have little to no value, and the Company recognizes that the slow sand building and circular clearwell structure are almost fully depreciated (Exhs. MW-MR-3, at 442; MW-KG-5, at 4; RR-DPU-1). Nonetheless, these facilities remain in use as office and storage space, and some pumping equipment is housed in the high lift building (Exhs. MW-MR-3, at 442; MW-KG-5, at 4; RR-DPU-1). In the absence of an opposing RCN valuation proposal, the Department accepts as reasonable the Company's RCN valuation of these four structures with an aggregate value of $3,664,500 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).[76] As with the valuation of the Echo Lake dam, we are persuaded that averaging the Company's $3,664,500 valuation with the Town's

---

[75] The Town states that while it assessed these structures as part of the Dilla Street Water Treatment Plant, it determined that these structures had little to no remaining value (Exh. DPU-TOWN 2-3; RR-DPU-1).

[76] By calculation: $2,546,230 (high-lift pump building) + $233,000 (diatomaceous earth building) + $77,270 (slow sand building) + $808,000 (circular clearwell structure) (Exh. MW-MR-3 (Rev. Errata Pages), at 70).

zero valuation would produce inequitable results. Therefore, the Department will apply an RCN valuation of $3,664,500 to these four structures.

The Company stated that the Congress Street tank was renovated in 2010[77] and provided an RCN value of the associated Congress Street water storage tank vault at $18,720 (Exh. MW-KG-1, at 10). The Company's combined RCN for the Congress Street booster pump and Congress Street water storage tank vault is $148,100 ($129,380 and $18,720, respectively). The Town presents $500,000 as the RCN value for both the Congress Street booster pump and Congress Street water storage tank vault.[78] For purposes of these assets' valuations, the Department finds it appropriate to combine the Company's RCN valuations for both the Congress Street booster pump and the Congress Street water storage tank vault and average that result with the RCN provided by the Town. Based on this method, the Department calculates an RCN of $324,050 for the Congress Street booster pump, inclusive of the associated water storage tank vault.[79] Because the Department has accepted the Company's use of a separate observed depreciation factor for the water storage tank vault in Section VI.C.11.e., below, and in view of the relatively small portion of the facility that is

---

77 These upgrades included cleaning, painting, repairing sidewall rivets, and installing a new aluminum dome roof (Exh. MW-KG-1, at 10).

78 The Town did not provide a separate RCN for the Congress Street water storage tank vault because it considered it to be an incidental structure assessed as part of the Congress Street booster pump station (Exh. DPU-TOWN 2-3).

79 The Department calculates $324,050 as the average RCN for the Congress Street booster pump (inclusive of the associated storage tank vault). By calculation: ($148,100 + $500,000)/2 = $324,050.

represented by the tank vault, the Department finds that the RCN for the Congress Street booster pump itself is $305,330 and that the RCN for the water storage tank vault is $18,720. Based on the foregoing, the Department calculates an aggregate vertical asset RCN valuation of $40,532,355.

3. Transmission and Distribution Assets

a. Overview

The Company's transmission and distribution assets (also called "horizontal assets") consist of: (1) water distribution mains, (2) water transmission mains (i.e., raw water), (3) hydrants, (4) valves, (5) meters, and (6) services (Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Company estimates the aggregate RCN value of its transmission and distribution assets to be $135,225,083 (Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Town calculates an aggregate RCN value of $126,157,722 for the Company's mains, hydrants, valves, meters, and services (Exh. WP TOWN-RF-1 (Rev. 2), Tab Summary). Below is a summary of the Company's horizontal assets for valuation as presented by both the Town and Company.

	Quantity			RCN		
	Town	Company	Difference	Town	Company	Difference
Distribution Mains (linear feet)	579,275	667,937	-88,662	$111,868,964	$98,243,658	$13,625,306
Transmission Mains (linear feet)	16,022	16,896	-874	$4,769,135	$6,316,125	($1,546,990)
Hydrants	907	957	-50	$2,804,326	$4,019,400	($1,215,074)
Valves	1,345	2,307	-962	$3,351,813	$3,053,560	$298,253
Customer Meters	9,376	9,382	-6	$3,363,484	$2,639,880	$723,604
Customer Services (linear feet 1" pipe)	0	234,550	-234,550	$0	$20,952,460	($20,952,460)
Total				$126,157,722	$135,225,083	($9,067,361)

b. Transmission and Distribution Mains

The Company relied on the GIS shapefiles to determine the length of transmission and distribution mains in its system, which the Company states is the most accurate method of

determining main inventory (Exh. MW-KG-1, at 4, 13-14; Tr. 6, at 825-827). Using its GIS shapefiles, the Company represents that it has 667,937 linear feet of distribution mains and 16,896 linear feet of transmission mains in its system (Exh. MW-KG-1, at 10, 13-14, 16).

The Town states that the Company uniformly overstated the linear footage of its distribution mains by 15 percent (Exh. TOWN-RF-3, at 5-6). The Town based this on a comparison of a street map with the Company's system overlayed on it, provided by the Company, to Google Maps of the same area (Exh. TOWN-RF-3, at 5-6). To account for this alleged discrepancy, the Town applied a 15 percent correction factor to all lengths of transmission and distribution mains (Exh. TOWN-RF-3, at 6). With these adjustments, the Town proposes to base the valuation on 579,275 linear feet of distribution mains in the Company's system (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Distr&Trans).[80] The Town also proposes to base its valuation on 16,022 linear feet of transmission mains (see Exh. WP TOWN-RF-1 (Rev. 2) Tab HA-Distr&Trans).

The Department has concerns with both the Company's and Town's methods to assess the length of transmission and distribution mains within the Company's system. The Town's method relies neither on a scientific nor industry-recognized standard to estimate length of underground mains but, instead, applies a largely unsubstantiated correction factor to a map of the Company's system. Conversely, while the Company's method applies what it states is the most accurate approach for estimating main length, the Department is not convinced that

---

80 The Town included services with the Company's distribution mains (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Distr&Trans).

the Company's GIS modeling proposal is more accurate than the data provided in the Company's 2018 Annual Return, which provides a combined transmission and distribution main length of 622,622 linear feet (Exh. TOWN-MWC 4-12 (Supp.), Att. at 25; Tr. 6, at 816-818). Specifically, in its 2018 Annual Return, the Company attested that, as of December 31, 2018, its transmission system consisted of 16,022 linear feet of mains and its distribution system consisted of 606,600 linear feet of mains (see Exh. TOWN-MWC 4-12 (Supp.), Att. at 25).

The Company's 2018 Annual Return is relevant to the valuation in the instant proceeding because, among other things, the Company's 2018 Annual Return is a representation of the Company's assets and financial standing as of December 31, 2018. When submitting the 2018 Annual Return, the Company's officers attested, under the penalty of perjury, that the information provided to the Department was reliable because it was based on information known to the Company at the time (Exh. TOWN-MWC 4-12 (Supp.), Att. at 34; Tr. 6, at 894-896). The Company stated that it found some discrepancies in older annual returns with no accompanying notes explaining the discrepancies (Tr. 6, at 894-895). The Company noted that historical information was carried forward each year (Tr. 6, at 896).

Companies are under an obligation to ensure that their accounting records are accurate and to correct any errors that are found. Boston Edison Company, D.P.U./D.T.E. 97-95, at 78 (2001). When accounting errors have been identified, the Department has directed companies to make the appropriate corrections. Plymouth Water Company,

D.T.E./D.P.U. 06-53, at 9-10 (2007) (Department accepted proposed adjustments to plant records); D.T.E. 97-95, at 78, 92-93 (Department accepted corrections to Account 186 and required credit to ratepayers of return on excess investment, along with proof of journal entries to correct company's financial records); Colonial Gas Company, D.T.E. 98-128, at 49 n.33 (1999) (Department directed company to submit revised pages of 1997 Annual Return showing correct equity value); Assabet Water Company, D.P.U. 95-92, at 3-4 (1996) (Department highlighted errors and deficiencies in company's annual returns and required submission of corrected annual returns); Witches Brook Water Company, D.P.U. 92-226, at 14 (1993) (Department directed company to recharacterize loans as dividends on its financial statements and submit amended 1992 Annual Return to reflect change). The Department's annual return forms specifically recognize that adjustments to previous data may be warranted from time to time. For example, page 202 of the Department's annual return form for water companies makes explicit accommodations for adjustments to correct errors from past years associated with plant account balances (Exh. TOWN-MWC 4-12 (Supp.), Att. at 6).[81]

The Department developed an RCN based on the 16,022 linear feet of transmission main and 606,660 linear feet of distribution main attested to in the Company's 2018 Annual

---

[81] The Company's apparent decision to disregard reporting errors in its annual returns is troubling. The Department notes that the Company has yet to correct these admitted errors in a subsequent filing or annual return. See Company's 2019 Annual Return. The Department "has no obligation to insulate shareholders who, through the actions of their own management, sustain self-inflicted wounds." Fitchburg Gas and Electric Light Company, D.P.U. 11-01/D.P.U. 11-02, at 21-22 (2011); D.P.U./D.T.E. 97-95, at 49.

Return. With regard to the RCN value of the mains, the Department finds that the Company's RCN pricing analysis by main type is detailed, reasonable, and based on the Company's actual experience with pricing main replacement. The Department, therefore, accepts the Company's RCN pricing analysis by main type. The Department calculates a transmission main RCN of $5,989,403 and a distribution main RCN of $89,221,892 based on the main type and lengths presented in the 2018 Annual Return, multiplied by the installed pricing by main type provided by the Company (Exh. MW-KG-1, at 17). Based on these factors, the Department finds that the total RCN transmission main cost is $5,989,403 and that the total RCN distribution main cost is $89,221,892. See Table 3, below.

c. Valves

The Company states that its system contains 2,307 valves with an RCN of $3,053,560 (Exh. MW-KG-1, at 15-20). The Company provides a summary of its system valve count by valve type based on its GIS shapefiles (Exh. MW-KG-1, at 14-15; see also Exh. MW-KG-2, at 13). The Company included gate, corporation, butterfly, blow off, and hydrant gate valves (Exh. MW-KG-1, at 14-15). The Town states that there are 1,345 valves with an RCN of $3,351,813 (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Valves). The Town states that it used the valve data provided by the Company without modification (Exhs. WP TOWN-RF-1 (Rev. 2), Tab HA-Valves; TOWN-JR-3 (Corrected) at 13).[82]

---

[82] The Department notes that it appears that the Town did not include blow off or hydrant gate valves (Compare WP TOWN-RF-1 (Rev. 2), Tab HA-Valves with Exh. MW-KG-1, at 15).

The quantity of valves presented here by the Company, and similarly relied on by the Town, depends on the length of main estimated by the GIS shapefiles (Exhs. MW-KG-1, at 14-15; TOWN-JR-3 (Corrected) at 13). As discussed in the transmission and distribution section above, the GIS shapefiles were rejected by the Department as a means to determine total main length. Thus, we will not rely on them here. Moreover, the Company reports that its valuation approach includes 957 hydrant valves in the total number of distribution valves (Exh. MW-KG-1, at 13, 15). Hydrant valving, however, is a component of the hydrant connection itself, the cost of which is booked to Account 112, Hydrants. See 220 CMR 52.00, Plant Investment Accounts, Account 112. Thus, hydrant valving is distinct from transmission and distribution system valving.

Further, the Company's attested-to 2018 Annual Return identifies a total of 1,846 valves in use as of December 31, 2018 (Exh. TOWN-MWC 4-12 (Supp.), Att. at 27). Consistent with the application of the Company's 2018 Annual Return for other distribution assets noted herein, the Department similarly accepts the Company's 2018 Annual Return to ascertain the quantity of valves within the Company's system. To determine the cost, the Department used the costs provided for each type of valve from Exhibits MW-KG-1, at 19 and MW-KG-2, Appendix B, Table B-4.4. Where cost information was not provided for a specific valve type, the Department used the bid prices contained in Exhibit MW-KG-3 as a proxy (see Exh. MW-KG-3, at 263-264). Based on these factors, the Department finds that the total RCN valve cost is $3,535,103. See Table 3, below.

d. Hydrants

The Company states that its system contains 957 hydrants with an RCN of $4,019,400, whereas the Town states that there are 907 hydrants with an RCN of $2,804,326 (Exhs. MW-KG-1, at 16; MW-MR-3, at 29; MW-MR-3 (Rev. Errata Pages) at 70; WP TOWN-RF-1 (Rev. 2), Tab HA-Hydrants). The Department notes that, according to the Company's 2018 Annual Return, there were 912 hydrants (comprising 813 public hydrants and 99 private hydrants) on the system (Exh. TOWN-MWC 4-12 (Supp.), Att. at 28). For the reasons set forth above, the Department will rely on the Company's 2018 Annual Return to determine the quantity of hydrants. The Company's unit cost of $4,200 is based on recent actual bid prices for water main projects that included the installation of hydrants (Exh. MW-KG-5, at 3). The Department finds that the Company's per-hydrant valuation is reasonable and based on credible evidence. Based on these factors, the Department finds that the total RCN hydrant cost is $3,830,400. See Table 3, below.

e. Meters

The Company states that its system contains 9,382 meters with an RCN of $2,639,880, whereas the Town states that there are 9,376 meters with an RCN of $3,363,484 (Exhs. MW-KG-1, at 15; MW-MR-3 (Rev. Errata Pages), at 70; WP TOWN-RF-1 (Rev. 2), Tab HA-Metering). The Department notes that the Company's 2018 Annual Return identifies 9,320 Company-owned meters in use on December 31, 2018, with an additional 919 meters

on hand (Exh. TOWN-MWC 4-12 (Supp.), Att. at 29).[83] For the reasons set forth above, the Department will apply the Company's 2018 Annual Return to determine the quantity of meters. The Company's meter cost estimates were obtained from meter vendors and range from $230 for a 5/8-inch meter to $8,230 for an 8-inch compound meter, including remote read equipment (Exh. MW-MR-3, at 449-450). The Department finds that the Company's meter valuations are reasonable and based on credible evidence. The Department will calculate the meter RCN cost by multiplying the Company's average per unit cost of $281.38 by 9,320 meters. Based on these factors, the Department finds that the total RCN meter cost is $2,622,462. See Table 3, below.

f. Services

The Company's services are made of a variety of materials, including lead, steel, plastic, copper, and cast iron (Exh. TOWN-MWC 4-12 (Supp.), Att. at 26). For purposes of its cost valuation analysis, the Company assumed that most of its services have an average length of 25 feet and further assumed that a system built to RCN standards would rely on services consisting of one-inch diameter copper pipe running from the main to the curb stop (Exh. MW-KG-1, at 13). Based on these factors, the Company estimated 234,550 feet of one-inch diameter copper services with an RCN cost value of $20,952,460 (Exhs MW-KG-1, at 13; MW-MR-3 (Rev. Errata Pages) at 70). The Town did not separately identify, and

[83] The 919 meters on hand are considered inventory and will be valued as such. See Section VI.C.4., below.

subsequently did not separately value, services because it included them with the Company's distribution mains (Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Distr&Trans).

The Department recognizes that services are an integral part of a company's water transmission system of assets and therefore must be accounted for when a valuation assessment is performed. Further, they are not accounted for elsewhere in the Department's valuation. The Department calculates that, based on the service information provided above, the cost to install one linear foot of one-inch copper pipe is $89.33 per linear foot.[84] Based on comparative total installation data provided by the Company for other pipe types, the Department finds that an installed cost of $89.33 per liner foot is a reasonable RCN value for one-inch copper pipe. The Department therefore accepts $89.33 as the cost per linear foot of installed one-inch copper pipe.

Next, the Department accepts the Company's estimate of 25 feet of services from main to curb stop. Using the 9,320 meters in use as reported in the Company's 2018 Annual Return, the Department determines that a system built to RCN standards would have 233,000 feet of one-inch copper services (Exh. TOWN-MWC 4-12 (Supp.), Att. at 29). Coupled with the Department's acceptance of the $89.33 per lineal foot RCN, the Department finds that the total RCN services cost is $20,813,890. See Table 3, below.

---

[84] By calculation: $20,952,460 RCN/234,550 linear feet of pipe = $89.33 RCN for one linear foot of installed one-inch copper pipe.

Table 3 – Mains, Hydrants, Valves, Meters, Service Lines Valuations

	Quantity				RCN			
	Town	Company	Difference	Department	Town	Company	Difference	Department
Distribution Mains (linear feet)	579,275	667,937	-88,662	606,600	$111,868,964	$98,243,660	$13,625,304	$89,221,892
Transmission Mains (linear feet)	16,022	16,896	-874	16,022	$4,769,135	$6,316,130	($1,546,995)	$5,989,403
Hydrants	907	957	-50	912	$2,804,326	$4,019,400	($1,215,074)	$3,830,400
Valves	1,345	2,307	-962	1,846	$3,351,813	$3,053,560	$298,253	$3,535,103
Customer Meters	9,376	9,382	-6	9,320	$3,363,484	$2,639,880	$723,604	$2,622,462
Customer Services (linear feet 1" pipe)	0	234,550	-234,550	233,000	$0	$20,952,460	($20,952,460)	$20,813,890
Total					$126,157,722	$135,225,090	($9,067,368)	$126,013,150

4. General Equipment and Inventory

The Company's general equipment consists of office equipment, shop and stores equipment, vehicles, laboratory equipment, and miscellaneous equipment (Exh. TOWN-MWC 4-12 (Supp.), Att. at 6; RR-DPU-7, at 1-2). The Department has reviewed the Town's valuation based on original net book value of $229,858 and the Company's valuation of $525,693 based on price comparisons with comparable equipment less economic obsolescence offsets applied to SCADA software and movable equipment (Exhs. TOWN-JJR-2, at 17-18; TOWN-JJR-2, Rev. Fig. 2; MW-MR-3, at 40; MW-MR-3 (Rev. Errata Pages) at 70). The Town's valuation includes all of the Company's general plant accounts but excludes SCADA software (Exh. TOWN-JJR-2, at 17-18). In contrast, the Company's valuation includes vehicles, SCADA software, and moveable equipment booked as miscellaneous equipment (Exhs. MW-MR-3 (Rev. Errata Pages) at 70; TOWN-MWC 4-12 (Supp.), Att. at 6). While much of the Company's general equipment, such as vehicles and computers, have a relatively short life as compared to longer-lived plant equipment, the Department considers the Company's use of data based on comparable equipment to offer a more accurate valuation of its general equipment than the Town's use of book value (Exh. MW-MR-3, at 338-375). Therefore, the Department accepts the

Company's RCN valuation of $94,100 for its SCADA software, and its unrounded valuations of $194,646 and $234,700 for its vehicles and movable equipment, respectively (see Exh. MW-MR-3, at 341 (App. 10), 367 (App. 12)).[85]

The Company's valuation excludes office equipment, stores equipment, shop equipment, and laboratory equipment, as well as some moveable equipment booked to Account 119 (Exhs. MW-MR-3 (Rev. Errata Pages) at 70; TOWN-MWC 1-18, Att. A). To ensure that all of the Company's assets are included in the Department's valuation, we find it appropriate to include these items. Our examination of the evidence indicates that the aggregate net book value of the Company's office equipment, stores equipment, shop equipment, and laboratory equipment is $43,392, with the equipment booked to Account 119 being fully depreciated (Exh. TOWN-MWC 1-18, Att. B at 21-24). The Company did not provide a value of comparable equipment for these items. On this basis, with only the aggregate net book value available, the Department will include an additional $43,392 in general equipment to the Company's RCN valuation.

The Company also maintains an inventory of spare parts (Exhs. MW-MR-3, at 43; 379-394; MW-MR-3 (Rev. Errata Pages) at 43). The Company proposed a valuation of $75,971 based on its book value of $93,170 less an economic obsolescence offset of $17,199 (Exh. MW-MR-3 (Rev. Errata Pages) at 43, 70). The parties raise no issues concerning the

---

[85] The Company's valuation method does not include indirect costs, AFUDC, or physical depreciation for vehicles and movable equipment (Exh. MW-MR-3 (Rev. Errata Page) at 70). Thus, the RCN and RCNLD for these items are identical for purposes of our analysis.

Company's inventory, and the Department finds that the use of book value for inventory is acceptable. Therefore, the Department includes inventory of $93,170 in the Company's valuation. Accordingly, the Department will include $660,008 associated with general equipment and inventory in our determination of the appropriate purchase price for the Company's assets. The Department addresses the appropriate economic obsolescence offset in Section VI.C.13, below.

5. Construction Work in Progress

The Company calculated $2,342,157[86] in CWIP as of December 31, 2018 (Exh. MW-MR-3 (Rev. Errata Pages) at 43, 70, 396).[87] Although CWIP is excluded from rate base as part of the ratemaking process, the underlying expenditures represent assets to the Company that will be conveyed to the Town. Consequently, it is appropriate to include CWIP in the valuation.

The Company's CWIP includes $679,194 associated with the Lake Louisa project, a now-abandoned water supply project that the Company is amortizing over a period of seven years (Exh. MW-MR-3 (Rev. Errata Pages) at 396). D.P.U. 17-107, at 134-138. Because the Department allowed the Company to recover these project costs, we will include the Lake Louisa project costs of $679,194 in CWIP. D.P.U. 17-107, at 134-138. Therefore, the Department includes CWIP of $2,342,157 in the Company's valuation.

---

86 In its proposal, the Company rounded the $2,342,157 to $2,340,000 (Exh. MW-MR-3 (Rev. Errata Pages) at 396).

87 The Town did not address CWIP on brief.

6. Intangible Assets

The Company's intangible assets consist of $2,688,728 in distribution maps and engineering drawings, $418,193 for a work order database, $332,482 for system records and reports, and $265,089 for licenses and permits, which the Company rounded to a total of $3,710,000 (see Exhs. MW-MR-3, at 41-43; MW-MR-3 (Rev. Errata Pages) at 70). The Town opposes inclusion of intangible assets and states that these items have already been expensed in the ordinary course of business, are duplicative of indirect cost components, and would not apply in an RCNLD scenario (Exh. DPU-TOWN 2-4; Tr. 2, at 241).[88]

The intangible assets are indisputably essential to the operation of any water system, whether acquired by the Town or retained by the Company (Exhs. MW-RR-2, at 42; DPU-MWC 1-3). While the Town questions the need for these materials given their overall quality and the Company's assumption of a hypothetical new system with no need of legacy distribution maps and system records, they nonetheless remain valuable assets that would be indispensable to the operation of a water system, whether hypothetical or actual. See D.P.U. 12-86, at 34; 310 CMR 22.19(6). The Town's argument highlights a flaw in this assumption. In reality, this is not a newly built water system and the lack of legacy distribution maps and system records would severely hinder the Town's ability to operate the

---

88 The Town states that if the Department decides to include licensing and permit fees in the Company's valuation, the Company's calculations are justifiable and may be reasonable to use in determining a valuation if the costs are appropriate under D.P.U. 94-176 (Exh. DPU-TOWN 2-5, citing Exh. DPU-TOWN 2-4; Tr. 2, at 241-242).

water system in compliance with DEP requirements. See 310 CMR 22.19(6). Accordingly, the Department will include these costs to the extent they are not included elsewhere in the Department's valuation.

Turning to the Company's distribution maps and engineering drawings, while some of the engineering drawings may have been incurred as part of utility construction projects, the Company's description of these materials leads the Department to conclude that the costs associated with these maps and drawings have been booked in accordance with 220 CMR 52.00 to Account 608, Miscellaneous Transmission and Distribution Supplies and Expenses (Tr. 4, at 673-574). The Company's valuation of $2,688,728, which it rounded to $2,690,000, is based on an estimate of the total number of hours required to reproduce the materials, multiplied by the quantity and hourly rate of employees involved in the process (see Exhs. MW-MR-3, at 41-42; MW-MR-3 (Rev. Errata Pages) at 70). To the extent that some costs may have been capitalized or that the number of hours required to create them may be overstated, the Department will take this into consideration when determining the appropriate weighting of the RCNLD method. See Section VI.G., below. The Department accepts the unrounded valuation of $2,688,728. Therefore, the Department will include $2,688,728 in distribution maps and engineering drawings in our determination of the value of the Company's system.

The Company's work order database provides descriptive and quantitative information about plant assets, along with associated support materials such as cost estimates, field notes, and correspondence (Exh. MW-MR-3, at 41). The Company's valuation of $418,193, which

it rounded to $420,000, is based on an estimate of the total number of hours required to reproduce the materials, multiplied by the quantity and hourly rate of employees involved in the process (see Exhs. MW-MR-3, at 41-42; MW-MR-3 (Rev. Errata Pages) at 70). While the Town questions the need for a work order database in an RCNLD analysis that is predicated on the costs of a hypothetical new system, the creation of the database program gives rise to a valuable asset that would be indispensable to the operation of a water system, whether hypothetical or actual (Exh. DPU-MWC 1-3; Tr. 6, at 764-767). See also D.P.U. 12-86, at 34; 310 CMR 22.19(6). Thus, the Department will include these costs. To the extent that the number of hours required to create the work order data base may be overstated, the Department will take this into consideration when determining the appropriate weighting of the RCNLD method. The Department accepts the unrounded valuation of $418,193. Therefore, the Department will include $418,193 of work order database costs in our determination of the value of the Company's system.

The Company's system records included in this valuation consist of customer service cards, production and quality reports, and right-to-know data (Exh. MW-MR-3, at 42). The Company's valuation of $332,482, which it rounded to $330,000, is based on an estimate of the total number of hours required to reproduce the materials, multiplied by the quantity and hourly rate of employees involved in the process (see Exhs. MW-MR-3, at 42; MW-MR-3 (Rev. Errata Pages) at 70). While the Town questions the need for these system records in an RCNLD analysis that is predicated on the costs of a hypothetical new system, the existence of these records is indispensable to the operation of a water system, whether

hypothetical or actual (Exh. DPU-MWC 1-3). See also 310 CMR 22.17; 310 CMR 22.04(5). The costs of the system records are not incorporated in the Company's cost analysis approach, but rather are booked to operating expenses such as Account 603-5, Miscellaneous Pumping Station Supplies and Expenses, and Account 610-2, General Office Supplies and Expenses. 220 CMR 52.00. To the extent that the number of hours required to create the system records may be overstated, the Department will take this into consideration when determining the appropriate weighting of the RCNLD method. See Section VI.G., below. The Department accepts the unrounded valuation of $332,482. Therefore, the Department will include $332,482 of system record costs in our determination of the value of the Company's system.

The Company's license and permit valuation is $265,089, which it rounded to $270,000 (see Exh. MW-MR-3 (Rev. Errata Pages), at 43, 70). The Company derived its valuation based on the total number of hours required to reproduce the materials, multiplied by the quantity and hourly rate of employees involved in the process, plus the fees for a variety of licenses and permits, including road openings, Federal Communications Commission ("FCC") radio licensing, software licenses, fuel oil storage, and DEP-related activities (Exh. MW-MR-3, at 42-43). The Department examined the basis and assumptions behind each of the Company's license and permit fees. The Department finds that the Company's engineering and construction permit fee components incorporate construction-related permit costs, such as for road openings (Exhs. DPU-TOWN 2-4; MW-MR-3, at 45). Inclusion of road opening permit fees in the valuation of intangible plant

would thus constitute double counting of those costs. Therefore, the Department excludes $9,456 in road opening permit fees from our valuation analysis (see Exh. MW-MR-3, at 43).

Similarly, based on our interpretation of 220 CMR 52.00 and our familiarity with the development of additional water supplies by water companies, the Department finds that new source approval fees would be capitalized as part of any new source of supply project, and recovered through a combination of depreciation expense and return on rate base associated with sources of supply. See D.P.U. 95-92, at 6-7. Inclusion of new source of supply fees in the valuation of intangible plant would thus constitute double counting of those costs. Therefore, the Department excludes $194,298 in new source approval fees from our valuation analysis (see Exh. MW-MR-3, at 43).

The remaining licenses and permits are associated with the Company's FCC radio license ($1,288), water withdrawal registration ($62), software license ($11,058), fuel oil storage permit ($88), WMA withdrawal permit fees ($45,990), CSX railroad crossing permit ($2,600), and public water supply registration ($249) (Exh. MW-MR-3, at 43). These licenses and permits are essential to the operation of the water system (Exh. DPU-MWC 1-3). Based on the Company's description of these licenses and permits, the costs would in all probability be treated as operating expenses booked to Account 610-11. 220 CMR 52.00; Barnstable Water Company, D.P.U. 91-189, at 6 (1992). Therefore, the Department includes these license and permit fees totaling $61,335 in our valuation analysis. Based on the foregoing analysis, the Department will apply an intangible asset valuation of $3,500,738 in determining the Company's valuation.

7. Post-2018 Capital Additions

The Company reported that its total capital expenditures between March 18, 2019 and December 31, 2019, were $2,520,396, most of which were related to the rehabilitation of the Highland Street storage tank, the Godfrey Brook Well project, and the ongoing lead service line replacement program (Exh. MW-DC-3 (updated through December 31, 2019) at 1). The Company also reported that its total capital expenditures between January 1, 2020 and December 31, 2020, were $1,352,212, and its total capital expenditures for January 2021 were $299,061, most of which were related to the Godfrey Brook Well project, rebuilding the inlet wall at Echo Lake, and the replacement of water meters (Exhs. MW-DC-3-A (updated through December 31, 2020) at 1; MW-DC-3-A (updated through January 31, 2021) at 1). The Company argues that it is necessary to include these costs in the valuation as they were made pursuant to its good husbandry requirements pending the Town's acquisition and possession of title (Company Brief at 66 n.14).[89] The Town opposes these costs because the underlying expenditures have not been subject to examination (Town Reply Brief at 21-22).[90]

---

89 At the evidentiary hearing, the Company requested that the presiding officer extend the close of the record to allow submission of these post-2018 expenses (Tr. 6, at 935-936). The presiding officer took the request under advisement. This Order constitutes the ruling on the matter.

90 The Town also expressed its concern that some costs for these projects may have already been incorporated in the Company's base distribution rates (Town Reply Brief at 21). Because these costs were incurred after the date of the Department's Order in the Company's last base distribution rate case, D.P.U. 17-107, i.e., August 31, 2018, we are persuaded that none of these costs are incorporated in the Company's base distribution rates.

On January 7, 2015, the Legislature amended Section 9 of the Charter to state that the Town's authority to purchase the Company is granted upon the condition that the price, either as agreed upon or determined, shall be accepted by the Town by a 2/3 vote of the voters present and voting thereon at a meeting called for that purpose. St. 2014, c. 480 (Exh. TOWN-4). In addition, the Supreme Judicial Court has found that the date of valuation should be based on the date a Town votes to acquire a water company. Cohasset, 321 Mass. at 144. Once the vote to acquire passes, a company would be "bound to sell" and "had no future from the investment standpoint." Cohasset, 321 Mass. at 144. After that time and prior to a Town's acquisition of title and possession, a company would be under a good husbandry requirement to keep the system preserved and in repair, making replacements as required to ensure that a necessary public service should not suffer interruption or impairment. Cohasset, 321 Mass. at 145-147.[91]

Here, the Town's vote to acquire the Company comes after the purchase price is determined. St. 2014, c. 480 (Exh. TOWN-4). As such, there has not been a vote by the Town that has bound the Company to sell and the good husbandry requirement, as described in Cohasset, 321 Mass. 137, has not been triggered. Further, both parties based their valuation analysis on information available as of December 31, 2018 (Exhs. TOWN-JJR-2, at 36 n.81; TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14; MW-MR-3, at 148; MW-MR-3 (Rev.

---

[91] The Supreme Judicial Court 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.

Errata Pages) at 3).[92] Accordingly, the Department finds it appropriate to similarly determine the value of the Company as of December 31, 2018, for purposes of the Town's vote to acquire the Company.

In addition, the Company provided journal entries to represent its post-2018 capital expenditures and continued to provide these entries after the close of the record (Exhs. MW-DC-3-A (updated through December 31, 2020); MW-DC-3-A (updated through January 31, 2021)). The Legislature did not clarify whether the purchase price to be voted on by the Town includes future capital expenditures beyond the valuation date. St. 2014, c. 480 (Exh. TOWN-4). Therefore, the Department will not include the Company's post-2018 capital investments of $4,171,669 in the amount of compensation to be paid by the Town for the Company's corporate property, rights, and privileges. This does not preclude the parties from seeking further relief or negotiations regarding these expenses.

8. Contributions in Aid of Construction

The Town proposes to deduct CIAC from the valuation of the Company's plant, while the Company opposes any adjustment for CIAC (Town Brief at 48; Company Reply Brief at 25-26). The inclusion or exclusion of CIAC-financed plant in determining the valuation of a utility has been previously addressed by the Supreme Judicial Court. Oxford, 391 Mass. at 590-591. In Oxford, however, the treatment of CIAC-financed plant was based on

---

92 The Town's valuation analysis was initially based on information available as of December 31, 2017, but was subsequently updated based on information available as of December 31, 2018 (Exhs. TOWN-JJR-2, at 36; TOWN-JJR-4 (Rev. Supp.), Rev. Fig. 14).

provisions in that company's legislative charter requiring that valuations be based on "actual cost," which the Supreme Judicial Court construed to exclude CIAC-financed plant. Oxford, 391 Mass. at 590-591. As noted by the Company, the Charter provides no direction on the determination of valuation in general, much less the valuation of CIAC (Exh. TOWN-5).

The RCNLD valuation approach assumes a reproduction or replacement of the assets with a similar construction and operational utility (Exhs. TOWN-RF-3, at 3; TOWN-JR-3 (Corrected) at 2; TOWN-JJR-2, at 16 & n.46, citing The Appraisal of Real Estate, The Appraisal Institute, at 569-570 (14th ed.) (2013)). While it is possible that a newly created water system may be financed in part through CIAC, there is no evidence here to suggest that the reproduction or replacement of the Company's existing plant would entail CIAC as a financing source. On this basis, the Department finds it unnecessary to adjust the Company's valuation for CIAC-financed plant. Therefore, the Department declines to make any adjustment for CIAC here.

9. Indirect Costs

Indirect costs represent expenditures that are normally required, or may be required, to purchase and install assets but typically are not directly attributable to such purchases and installations or usually included in the vendor invoice (e.g., engineering and permit fees) (Exh. MW-MR-1, at 22-23). The Town proposes to apply $25,796,152 in indirect costs to its RCN valuation of distribution mains and meters, consisting of a 20 percent adder of $16,120,720 for contractor overhead and profit, further increased by an additional ten percent adder of $9,675,432 for construction contingencies (see Exh. WP TOWN-JR-1 (Corrected

Rev. 2)). The Company proposes to apply $27,360,250 in indirect costs in the form of a 15.84 percent adder to its RCN valuation of plant equipment, intangible assets, and SCADA computer software, consisting of: (1) 2.5 percent construction management fee; (2) 2.5 percent engineering fee; (3) 0.5 percent construction permit fee; (4) 1.0 percent performance bond; and (5) 9.34 percent for insurance (see Exhs. MW-MR-1, at 23; MW-MR-3, at 45; MW-MR-3 (Rev. Errata Pages) at 70; Tr. 5, at 677-678).

The Department has reviewed the Town's and Company's calculations and assumptions. While the Town's indirect cost adders appear to be reasonable for planning and budgeting purposes, the use of a ten percent construction contingency factor is more relevant to a cost estimate for a construction project, such as an entirely new water system, than a determination of the value of an existing system. Massachusetts-American Water Company, D.P.U. 95-118, at 10 (1996); Boston Edison Company/Massachusetts Water Resources Authority, D.P.U. 89-31/149/150, at 9 (1989). The Department finds that the Company's more detailed indirect cost data better represent the elements of indirect costs that would be associated with an RCNLD analysis. Therefore, the Department will apply an indirect cost adder of 15.84 percent to the level of direct costs for plant equipment, intangible property, and SCADA computer software as established herein to determine the valuation of the Company's property. This produces a total indirect cost of $26,950,230.

10. Allowance for Funds used During Construction

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. D.T.E./D.P.U. 06-53, at 4 n.3, 5-7; Fitchburg Gas and Electric Light Company, D.P.U. 19084, at 8 (1977); Boston Edison Company, D.P.U. 18515, at 53 (1976). The Company proposes an AFUDC interest component of $16,607,471 in its valuation, representing interest payments over three years (i.e., the time estimated to build a new water system) on total project costs of $200,674,643 (see Exhs. MW-MR-3 (Rev. Errata Pages) at 70; DPU-MWC 1-12, Att., Tab AFUDC).[93] The AFUDC has been distributed proportionally among those Company plant items eligible for AFUDC (see Exh. MW-MR-3 (Rev. Errata Pages) at 70).

The Department has reviewed the Company's underlying calculations and assumptions. While we accept the proposed three-year construction estimate and interest rate, the Company's calculation inappropriately recasts AFUDC into a construction loan of $200,674,643 to be drawn upon in a single tranche to construct a water system that will not go into operation until every well has been placed on-line and every section of main has been installed (Exh. DPU-MWC 1-12, Att.). In addition to this unrealistic assumption, the Company's calculation suggests a fundamental misconception of AFUDC. When a part of a capital project is placed in operation and ready for service, but the project as a whole remains incomplete, that part of the cost of the project placed into operation is treated as plant in service and no longer accrues further AFUDC. Fitchburg Gas and Electric Light

---

[93] The Town did not present an AFUDC analysis and did not comment on the appropriateness of the Company's AFUDC proposal on brief.

Company, D.P.U. 07-71, at 29-30 (2008); Boston Edison Company, D.P.U. 18200, at 25 (1976).[94] This treatment is especially appropriate for a project such as that envisioned by the Company's hypothetical water system, where elements of the water system can be placed into service before other elements. See, e.g., Agawam Springs Water Company, D.P.U. 13-163, at 3-4 (2014); Pinehills Water Company, D.T.E. 01-42, at 2-5 (2001). The Company's valuation approach effectively allows AFUDC to continue accruing on all plant until a full build-out, regardless of completion dates. Thus, the Department finds that the Company has overstated the required AFUDC component in its valuation analysis.

In the absence of specific construction timetables for a hypothetical system, the Department will recalculate the Company's proposed AFUDC on the assumption that plant is being placed into service on a levelized monthly basis during the three-year construction period. This adjustment results in reducing the AFUDC component by half, to $8,303,736 (see Exh. MW-MR-3 (Rev. Errata Pages) at 70). This amount must be further revised to recognize the level of total direct and indirect RCN costs determined in this proceeding less land and easements.[95] The Company allocated its AFUDC component proportionally among those plant items eligible for AFUDC such that AFUDC represents approximately

---

94 While the cited cases pertain to electric companies, the Department applies the same general AFUDC principles to water companies. Milford Water Company, D.P.U. 84-135, at 12 (1985).

95 AFUDC is not applied to land because: (1) the land already exists upon its acquisition; and (2) any site preparation or improvements made to the land are more appropriately booked to those plant accounts benefiting from the improvements, such as structures. D.T.E./D.P.U. 06-53, at 6.

8.28 percent of the sum of each plant component's RCN value and indirect costs (see Exh. MW-MR-3 (Rev. Errata Pages) at 70). Consistent with this ratio and the Department's findings above regarding the construction loan tranche, the Department will determine AFUDC by multiplying one half of the 8.28 percent ratio, or 4.14 percent, by the sum of direct costs and indirect costs eligible for AFUDC as determined in this decision. Based on a total direct cost of AFUDC-eligible plant (i.e., total plant less land and easements, buildings, CWIP, and non-SCADA personal property) of $170,140,343 and associated indirect costs of $26,950,230, the Department finds that the associated AFUDC is $8,159,550. Accordingly, the Department applies an AFUDC component of $8,159,550 to determine the Company's valuation. The AFUDC has been distributed proportionally among those Company plant items eligible for AFUDC.

11. Observed Depreciation

a. Introduction

Depreciation expense allows a company to recover its capital investments in a timely and equitable fashion over the service lives of the investments. Aquarion Water Company of Massachusetts, D.P.U. 08-27, at 110 (2009); Fitchburg Gas and Electric Light Company, D.T.E. 98-51, at 75 (1998); Boston Gas Company, D.P.U. 96-50 (Phase I) at 104 (1996); Milford Water Company, D.P.U. 84-135, at 23 (1985); Boston Edison Company, D.P.U. 1350, at 97 (1983)). Compare D.P.U. 94-176, at 71-72 (Department found because municipal light plants use depreciation as a means of raising capital, statutory depreciation rate of three percent was not necessarily related to plant lives). Although the parties did not

provide depreciation studies in support of their valuations, their analyses contain significant elements found in depreciation studies, such as determinations of useful lives (Exhs. TOWN-RF-3, at 5; TOWN-RF-4, at 17; WP TOWN-RF-1 (Rev. 2); MW-MR-3, at 43-44; MW-MR-3 (Rev. Errata Pages) at 70). Therefore, the Department's policies regarding depreciation studies are instructive here.

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. Cambridge Electric Light Company, D.P.U. 92-250, at 64 (1993); 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.[96] 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

---

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

assertion that judgment and experience warrant a particular conclusion does not constitute evidence. Eastern Edison Company, D.P.U. 243, at 16-17 (1980); D.P.U. 200, at 20-21; Lowell Gas Company, D.P.U. 19037/19037-A at 23 (1977).

Due to the high costs associated with depreciation studies, in the case of small water utilities, the Department has accepted the use of the depreciation guidelines set forth in the National Association of Regulatory Utility Commissioners' publication, "Depreciation Practices for Small Water Utilities" (August 15, 1979) ("NARUC Depreciation Manual"). D.P.U. 13-163, at 43-44; D.P.U. 12-86, at 227-228; D.P.U. 84-135, at 22-24. A company can depart from a strict use of the NARUC Depreciation Manual's rates, provided it is able to demonstrate that its results are consistent with the NARUC Depreciation Manual's rates or can articulate a convincing reason why a different result is warranted. D.T.E. 01-42, at 17; D.P.U. 95-92, at 15-18.[97]

b. Analytical Methods

RCNLD valuations are typically based on replacement costs less physical depreciation or book depreciation, with depreciation being generally expressed as a percentage of the replacement cost with consideration of the effective age of the asset along with its average service life (Exhs. MW-MR-3, at 439; MW-KG-1, at 4; TOWN-RF-3, at 3). The Department has previously acknowledged the value of observed condition in valuation

---

97 The Company has historically relied on the accrual rates provided in the NARUC Depreciation Manual, modified as warranted, in determining its depreciation expense for ratemaking purposes. D.P.U. 12-86, at 227-228; D.P.U. 84-135, at 22-24.

analyses. D.P.U. 94-176, at 72. The Town's analysis of vertical assets was based on information provided by the Company, physical inspection of assets, and professional judgement including engineering assessments of age-related condition (Exhs. TOWN-JR-3 (Corrected) at 1, 3-4; TOWN-RF-3 at 1, 3; WP TOWN-RF-1 (Rev. 2)). The Town's analysis of horizontal assets was based on a review of industry guidance and its experience with determining when assets warrant replacement (Exhs. TOWN-JR-3 (Corrected) at 1, 10-11; TOWN-RF-3 at 1, 7; WP TOWN-RF-1 (Rev. 2)). The Company's analysis of above-ground assets relied on Company records, visual inspection of the facilities, and interviews with Company personnel (Exh. MW-KG-1, at 27-28). The Company's analysis of below-ground assets relied on visual inspection when possible, industry experience, soil and main conditions, and interviews with Company personnel (Exh. MW-KG-1, at 21-27).

The Town's depreciation analysis produces depreciation factors representing the percentage of the remaining lives of the assets being studied (Exh. WP TOWN-RF-1 (Rev. 2)).[98] Conversely, the Company's depreciation analysis produces depreciation factors representing observed depreciation as a percentage of the assets' RCN values (Exhs. MW-KG-2, at 25; MW-MR-3 (Rev. Errata Pages) at 70). Thus, a straight

---

98 The Town's analysis seeks to estimate the remaining productive economic life of the assets that a potential buyer would receive in purchasing the Company's water system assets (Exh. TOWN-JJR-2, at 16; Tr. 1, at 153). While a buyer would likely be interested in the remaining life of assets sought to be acquired, the Town will be acquiring the Company's assets in the condition at the time of the conveyance, not their condition at some point in the future. Nevertheless, because knowing an asset's remaining life along with its installation data is an important input in determining observed depreciation, the issue appears to be largely one of semantics.

comparison of the Town's and Company's depreciation factors would be meaningless. To facilitate comparisons between the Town's data and the Company's data, the Department will convert the Town's percentage of remaining life factors based on physical depreciation as provided in Workpaper TOWN-RF-1 (Rev. 2) to their equivalent observed depreciation factors as a percentage of RCN values.[99] Consistent with our findings in Section VI.B, above, to only consider the RCNLD valuation approach, the Department will not consider the use of the Town's book depreciation calculations.

c. Supply-Related Assets

The Town calculates that the combined Godfrey Brook Wellfield and treatment facilities are 97.20 percent depreciated, while the Company calculates observed depreciation of 55.47 percent for Godfrey Brook Wellfield only (Exhs. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets; MW-MR-2, at 28; MW-MR-3 (Rev. Errata Pages) at 70). While the Town notes the current off-line status of this wellfield, this status is attributable to current capacity and water supply conditions, and the Company is currently working to redevelop this wellfield (Exhs. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets; MW-KG-5, at 7). See also D.P.U. 18-75, at 17. As such, the Department finds that the Company's depreciation calculations for the Godfrey Brook Wellfield takes into consideration individual components that provide a more accurate result than the Town's composite average (Exh. MW-KG-2,

---

[99] For example, the Town's 84.8 percent of original life remaining for the Dilla Street Water Treatment Facility would correspond to a depreciation factor of 15.2 percent (i.e., 1 - .848) under the Company's approach (Exhs. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets; MW-MR-3 (Rev. Errata Pages) at 70).

at 33). Therefore, the Department accepts the use of a 55.47 percent depreciation factor for the Godfrey Brook Wellfield.

The Town's analysis assigns no value to the Echo Lake dam and Charles River pumping station because it considered these assets fully depreciated (Exh. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). The Company calculates depreciation factors of 38.30 percent for Echo Lake dam and 48.34 percent for Charles River pumping station (Exh. MW-MR-3 (Rev. Errata Pages) at 70). As the Town notes, certain long-lived assets may be performing in the field well after the original cost of the assets has been fully depreciated for ratemaking purposes (Exh. TOWN-JJR-2, at 12). Both of these assets remain in service (Exhs. TOWN-MWC 2-3; MW-KG-5, at 4). In the case of the Echo Lake dam, a well-built masonry dam can have a service life of 250 years, and the most recent survey indicates that the Echo Lake dam is in satisfactory condition and is well-maintained (Exh. MWC-1; MW-KG-5, at 4, 7).[100] Moreover, the Echo Lake dam expansion project in 1991 resulted in a higher proportion of the dam's value being of more recent vintage, which would tend to push down the associated depreciation factor (Exh. MW-MR-3, at 99). The Department finds that the Company's analysis more fully recognizes the useful life of the dam, as well as the condition of the dam, than does the Town's assumption of a fully

---

[100] Although the Echo Lake dam is classified as a high hazard dam, the Department of Conservation and Recreation's dam safety regulations establish dam ratings based on the potential for loss of life and damage to property that failure of that dam could cause downstream of the dam, with no relationship to the current structural integrity, operational status, flood routing capability, or safety condition of the dam or its appurtenances. 302 CMR 10.03, 10.06.

depreciated structure (Exhs. MW-KG-2, at 32; MW-KG-3, at 2; MW-KG-5, at 4-5; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). Similarly, the Charles River pumping station incorporates various improvements made over the years and the Company's component-specific depreciation factors provide a more accurate depiction of the condition of this facility than the Town's assumption of a fully depreciated asset (Exhs. MW-KG-2, at 32-33; MW-KG-3, at 2; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). See D.P.U. 12-86, at 37-38. Based on this analysis, the Department accepts the use of a 38.3 percent depreciation factor for the Echo Lake dam and intake and a 48.34 percent depreciation factor for the Charles River pumping station (Exh. MW-MR-3 (Rev. Errata Pages) at 70).

The Company calculates depreciation factors of 44.48 percent for the Clarks Island wellfield pump station, 8.91 percent for the Clarks Island wellfield, and 90.0 percent for the Dilla Street wellfield (Exh. MW-MR-3 (Rev. Errata Pages) at 70). The Department finds that the Company's depreciation factors for these sources of supply and facilities are appropriate and take into consideration individual components that provide a more accurate result than the Town's composite average (Exhs. MW-KG-2, at 32; MW-KG-3, at 1-3; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). Therefore, the Department accepts the use of the Company's proposed depreciation factors for these supply sources and related facilities (Exh. MW-MR-3 (Rev. Errata Pages) at 70).

d. Treatment-Related Assets

The Town calculates that the combined Godfrey Brook Water Treatment Facility and associated wellfield are 97.2 percent depreciated, while the Company calculates an observed depreciation factor of 58.78 percent for the Godfrey Brook Water Treatment Facility only (see Exhs. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets; MW-KG-2, at 28; MW-MR-3 (Rev. Errata Pages) at 70). While the Town assumes that the Godfrey Brook Water Treatment Facility is in poor condition for its age by virtue of being off-line, as noted above, its off-line status is attributable to current capacity and water supply conditions that are in the process of being remedied (Exhs. MW-KG-5, at 7; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). Consistent with our findings on the Godfrey Brook Wellfield, the Department finds that the Company's depreciation calculations for the Godfrey Brook Water Treatment Facility are appropriate and take into consideration individual components that provide a more accurate result than the Town's composite average (Exhs. MW-KG-2, at 39-40; MW-KG-3, at 60-62; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). Therefore, we accept the use of a 58.78 depreciation factor for the Godfrey Brook Water Treatment Facility.

The Town calculates that the Dilla Street Water Treatment Facility is 15.2 percent depreciated, and the Company calculates an observed depreciation factor of 11.07 percent (see Exhs. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets; MW-KG-2, at 28; MW-MR-3 (Rev. Errata Pages) at 70). While the Town reports that this facility is in better condition than its age would otherwise indicate, the Town did not factor this condition into its proposed depreciation factor (see Exh. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets). Conversely,

the Department finds that the Company's depreciation calculations are appropriate and take into consideration individual components that provide a more accurate result than the Town's composite average (Exh. MW-KG-2, at 34-36). Therefore, the Department applies an observed depreciation factor of 11.07 percent to the Dilla Street Water Treatment Facility.

The site of the Dilla Street Water Treatment Facility includes several ancillary facilities associated with the former treatment plant, consisting of two below-grade slow sand filters, two surface slow sand filters, a high-lift pump building, a diatomaceous earth building, a slow sand building, and a below-grade circular clearwell (Exhs. DPU-TOWN 2-3; MW-MR-3, at 442; Tr. 1, at 74-75). The Town considered these facilities as part of the Dilla Street Water Treatment Facility and did not develop separate valuations for them because of their age or use as storage facilities instead of water system operational assets (Exh. DPU-TOWN 2-3; Tr. 1, at 130-132; RR-DPU-1). The Company calculates individual depreciation factors as follows: (1) 86.15 percent for the high lift pump building; (2) 82.25 percent for the diatomaceous earth building; (3) 99.70 percent for the slow sand building; and (4) 91.29 percent for the circular clearwell structure (Exh. MW-MR-3 (Rev. Errata Pages) at 70). Together, these produce an overall average depreciation factor of 88.95 percent for these structures (see Exhs. MW-KG-1, at 29; MW-KG-2, at 28; MW-MR-3 (Rev. Errata Pages) at 70; MW-KG-3, at 109-111).[101]

---

[101] The Company's below-grade slow sand filters had been abandoned and their remaining costs amortized pursuant to a 2011 settlement. D.P.U. 12-86, at 233.

While the surface slow sand filters retain the valving necessary to act as an additional detention area for water from the Charles River, the ancillary facilities at Dilla Street were built in the early 1900s and are now largely limited to storage and office space, along with pumping at the high-lift pump station[102] (Exhs. MW-MR-3, at 442; TOWN-JR-3 (Corrected) at 7-8; RR-DPU-1). In view of their age, condition, and limited use, the Department finds that the Company's proposed depreciation factors of 82.25 percent for the diatomaceous earth building and 91.29 percent for the circular clearwell structure overstate the value of these facilities (Exh. MW-MR-3 (Rev. Errata Pages) at 70). Nonetheless, the diatomaceous earth building retains some residual value in the form of storage and office space. In recognition of these factors, the Department finds it appropriate to apply a depreciation factor of 95 percent to the diatomaceous earth building and circular clearwell structure. In contrast, the high-lift pump building remains in use to house pumping equipment that had been installed when the Dilla Street Water Treatment Facility was built, and the slow sand filters retain some water management value (Exhs. MW-MR-3, at 442; MW-KG-1, at 21; MW-KG-5, at 4). Therefore, the Department accepts the Company's proposed depreciation factors of 86.15 percent for the high-lift pump building and 99.70 percent for the slow sand building.

---

[102] Some of the equipment in the high-lift pump station, such as a high-lift pump, was installed in conjunction with the construction of the Dilla Street Water Treatment Facility; the Company included the associated costs as part of the Dilla Street Water Treatment Facility (Exh. MW-KG-1, at 21).

e. Storage-Related Assets

The Town calculates that depreciation factors for the Company's storage-related assets as follows: (1) 51.70 percent for the Bear Hill Tank; (2) 100 percent for the Congress Street tank; (3) 90 percent for the Highland Street tank; and (4) 95 percent for the Congress Street booster pump station (see Exh. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets).[103] The Company calculates observed depreciation factors as follows: (1) 41.82 percent for the Bear Hill tank; (2) 39.32 percent for the Congress Street tank; (3) 74.48 percent for the Highland Street tank; (4) 45.28 percent for the Congress Street booster pump station; and (5) 9.13 percent for the Congress Street tank vault (Exhs. MW-KG-2, at 28; MW-MR-3 (Rev. Errata Pages) at 70; MW-KG-3, at 173-174). The Town's calculations rely heavily on industry standards regarding the timing of asset replacements. While such standards have probative value, they must be considered in conjunction with specific conditions, as may be identified through physical inspection and discussions with management and other utility personnel. D.P.U. 905, at 13-15. The Town's analysis does not fully take into account the actual experience associated with the Company's storage assets. For example, the Town's assumption that the Highland Street tank is 90 percent depreciated and that the Congress Street tank is fully depreciated fails to take into account the improvements made over the years at these facilities (Exhs. MW-KG-2, at 10; WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets; Tr. 1, at 110-114). Based on this analysis, the Department will not use the Town's

---

[103] The Town did not calculate a depreciation factor for the Congress Street tank vault (see Exh. WP TOWN-RF-1 (Rev. 2), Tab Vertical Assets).

depreciation factors. The Department finds that the Company's proposed depreciation factors more fully consider both the anticipated life of the asset components and actual experience, including the role of interim improvements made at these facilities (Exhs. MW-KG-2, at 40-41; MW-KG-3, at 173-174). Therefore, the Department accepts the use of the Company's proposed depreciation factors for its storage tanks and related facilities.[104]

f. Transmission and Distribution Mains

The Town calculates that the Company's transmission mains are 84.5 percent depreciated and that the Company's distribution mains are 65.1 percent depreciated (see Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Distr&Trans). In contrast, the Company calculates an observed depreciation factor of 19.92 percent for transmission mains and an observed depreciation factor of 33.98 percent for distribution mains (Exhs. MW-KG-2, at 28, 78-79; MW-MR-3 (Rev. Errata Pages) at 70). Unlike with above-ground assets such as well stations and storage tanks, it is more difficult to observe the condition of below-ground assets such as transmission and distribution mains. The Company thus undertook a sampling process to identify the condition of its transmission and distribution mains (Exh. MW-KG-2, at 20).

---

104 The Department has determined above that the combined RCN value of the Congress Street booster pump and Congress Street water storage tank vault is $324,050. For purposes of determining the observed depreciation associated with these plant items, the Department attributes $18,720 of this valuation to the Congress Street water storage tank vault and the remaining $305,330 to the Congress Street booster pump.

The Department has some concerns with the Company's statistical approach. Although small sample sizes can be used in statistical modeling, the Company provides no evidence that the selected sample size of ten locations is statistically significant (Exhs. TOWN-MWC 5-5; DPU-MWC 1-9; Tr. 6, at 810-811). Moreover, the Company's reliance on streets versus main segments in selecting sampling locations may tend to skew the sampling results (Exhs. MW-LER-3; MW-KG-2, at 43-79; RR-DPU-6, at 1).[105] The Town also disputes the relevance of the Company's 2010 Capital Improvement Plan in the determination of deprecation. Asset management systems of this type are used to establish priorities for capital replacement (Exh. TOWN-RF-4, at 7). See also D.P.U. 17-90, at 21; Aquarion Water Company of Massachusetts, D.P.U. 11-43, at 34 (2012). While the asset evaluations provided in the Company's 2010 Capital Improvement Plan can provide useful information to be considered in the qualitative aspects of a depreciation analysis, such evaluations are insufficient to calculate an asset's useful life (Exh. TOWN-RF-4, at 7-8). Therefore, the Department will accord the 2010 Capital Improvement Plan limited weight in evaluating the depreciation component of the Company's valuation.

---

105 The Town also expresses concerns over the role of R.H. White at the actual sampling locations (Town Brief at 46-47). The selection process involved sampling main locations along segments that had been installed at various times throughout the Company's history (Exhs. MW-KG-1, at 24-25; MW-LER-2, at 1, 5, 7-14). Under those conditions, the only means of influencing the sampling process would have been for the Company or R.H. White to have prior knowledge of main conditions, which the Department finds to have been highly unlikely. The Department finds that there was little, if any, opportunity for R.H. White to influence the sampling process.

While the Company's analysis has statistical limitations and elements of subjectivity, the Town's analysis has similar limitations through its extensive on industry standards regarding the timing of asset replacement. Given the limitations of the Town's and the Company's analyses, the Department finds it appropriate to apply a depreciation factor of 52.2 percent, representing the approximate midpoint of both the Town's and the Company's results, to the Company's transmission mains. For the same reasons, and in consideration of the limited value of the 2010 Capital Improvement Plan, the Department finds it appropriate to apply a depreciation factor of 49.5 percent to the Company's distribution mains. Therefore, the Department applies an observed depreciation factor of 52.2 percent to the Company's transmission mains and an observed depreciation factor of 49.5 percent to the Company's distribution mains.

g. Valves

The Town calculates that the Company's valves are 65.7 percent depreciated, while the Company calculates an observed depreciation factor of 30.49 percent (Exhs. WP TOWN-RF-1 (Rev. 2), Tab HA-Valves; MW-KG-2, at 28, 140; MW-MR-3 (Rev. Errata Pages) at 70). The Department finds that the Company's observed depreciation factor is based more on actual experience than the Town's reliance on industry standards (Exh. MW-KG-2, at 105-140). Therefore, the Department accepts the use of an observed depreciation factor of 30.49 percent for valves.

h. Services

The Town includes the Company's services as part of distribution mains, to which it applies a depreciation factor of 65.1 percent (see Exh. WP TOWN-RF-1 (Rev. 2), Tab HA-Distr&Trans). The Company calculates an observed depreciation factor of 34.0 percent on the basis that service lines are assumed to be in the same physical condition as mains (Exhs. MW-KG-2, at 28; MW-MR-3 (Rev. Errata Pages) at 70; DPU-MWC 4-1). The Department's experience with depreciation analyses demonstrates that service lines have shorter service lives than distribution mains. See D.P.U. 08-27, at 118-121. Consistent with our decision above regarding the observed depreciation factor for distribution mains, and considering the shorter lives associated with services, the Department finds it appropriate to accord greater weight to the Town's proposed depreciation factor of 65.1 percent. Based on this analysis, the Department finds it appropriate to weigh the Town's depreciation factor approximately twice as much as the Company's observed depreciation factor. Therefore, the Department applies an observed depreciation factor of 54.7 percent for services.[106]

i. Meters

The Town calculates that the Company's meters are 48.0 percent depreciated, while the Company calculates an observed depreciation factor of 52.96 percent (Exhs. WP TOWN-RF-1 (Rev. 2), Tab HA-Metering; MW-KG-2, at 28, 349; MW-MR-3 (Rev. Errata Pages) at 70). In view of the similarity of results between the Town and the

[106] (65.1 percent x .667) + (34 percent x .333) = 54.7 percent.

Company, the Department finds it appropriate to apply an observed depreciation factor of 50.5 percent, representing the approximate midpoint of both the Town's and the Company's results.

j. Hydrants

The Town calculates that the Company's hydrants are 50.7 percent depreciated, while the Company calculates an observed depreciation factor of 33.19 percent (see Exhs. WP TOWN-RF-1 (Rev. 2), Tab HA-Hydrants; MW-KG-2, at 28, 104; MW-MR-3 (Rev. Errata Pages) at 70).[107] Because of the absence of information about hydrant installation dates, the Town's analysis assumes that all hydrants were installed in 1982, while the Company takes what it considers to be a more conservative position that the hydrants were installed on the same date as the associated water mains (Exhs. TOWN-JR-3 (Corrected) at 14; MW-KG-5, at 3). Given the data limitations faced by both the Town and the Company, the Department finds it appropriate to apply an observed depreciation factor of 41.9 percent, representing the approximate midpoint of both the Town's and the Company's results.

12. Functional Obsolescence

The Company proposes a functional obsolescence offset of $7,780,028 (Exh. MW-MR-3 (Rev. Errata Pages) at 399). The Company relied on

---

[107] While the parties disagree as to the actual number of hydrants to include in the Company's valuation, the Department finds that this difference would have minimal effects on the observed depreciation factor that would be applied to the selected hydrant RCN.

unaccounted-for-water as a proxy for functional obsolescence. The Company derived its functional obsolescence offset by multiplying water lost through identified distribution system leaks for the years 2015 to 2017 by the average retail rate per million gallons, and then dividing the product by a capitalization factor equal to the weighted cost of equity of 2.36 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 399).

There are many causes of unaccounted-for-water, some of which are unrelated to the physical condition of a water system. D.P.U. 17-90, at 346; D.P.U. 11-43, at 274; D.P.U. 08-27-C at 4. Current industry standards for unaccounted-for-water range between ten percent and 15 percent, and the 2012 Water Conservation Standards recommend a goal of ten percent or less. Eversource Energy/Macquarie Utilities Inc., D.P.U. 17-115, at 36 (2017).[108] The evidence indicates that the Company is able to achieve this standard (Exh. TOWN-MWC 4-8). Given the various causes of unaccounted-for-water and the fact that some level of unaccounted-for-water will likely exist on any water system, the use of unaccounted-for-water as a proxy for functional obsolescence has some limitations.

While the Company attempts to recognize these limitations by confining its unaccounted-for-water data to distribution system leaks, its analysis assumes that reductions in unaccounted-for water will result in increased revenues through increased metered

---

[108] The Water Conservation Standards, issued jointly by the Executive Office of Energy and Environmental Affairs and the Massachusetts Water Resources Commission, 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. D.P.U. 17-115, at 36 n.19.

throughput (Exhs. MW-MR-1, at 25; MW-MR-3, at 399-400, 406, 413, 420; MW-MR-3, (Rev. Errata Pages) at 46, 399). This assumption is erroneous. A decrease in unaccounted-for-water does not affect the amount of water measured at meters. Rather, the economic benefits of reducing unaccounted-for water are derived from lower treatment and purification costs associated with water that enters the distribution system but is lost before it reaches meters. D.P.U. 08-27-C at 18-19. In view of the Company's flawed analysis, the Department will determine what, if any, functional obsolescence offset is warranted based on potential cost savings rather than unachievable revenue increases.

During 2018, the Company booked $300,982 in purchased electric power and $327,002 in purification expense (Exh. TOWN-MWC 4-12 (Supp.), Att. at 13). The sum of these cost components equals $627,984. The Company's unaccounted for water over this same period was estimated to be 8.4 percent (Exh. TOWN-MWC 4-8). Based on this information, the Department finds that the annual cost savings that the Company could achieve if its unaccounted for water was zero percent would be equal to 8.4 percent of the Company's combined purchased electric power and purification expense, or $52,751.[109]

Turning to the capitalization rate, the Company's proposed rate of 2.36 percent corresponds to a 9.45 percent cost of equity multiplied by its proposed equity-to-capital

---

109 The Department recognizes that a portion of the Company's electric power expense is associated with non-pumping activities, such as lighting or operating computer equipment, but the evidentiary record does not provide that level of cost detail. Given the imprecise nature of utility valuation and the relative size of the non-pumping to pumping electric use, the Department finds that the booked electric power expense provides a sufficient approximation.

weight of 25 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 54). Based on the revised WACC of 6.15 percent and revised terminal year growth rate of 2.3 percent as discussed in Section VI.D.3, below, the Department calculates a revised capitalization rate of 3.85 percent. The revised cost savings of $52,751, divided by the revised capitalization ratio of 3.85 percent, produces a revised functional obsolescence offset of $1,373,151. Therefore, the Department applies a functional obsolescence offset of $1,373,151.

13. Economic Obsolescence

The Company relied on an excess earnings shortfall method to develop its economic obsolescence offset. Under this approach, the Company first determined that the RCNLD valuation, less functional obsolescence, of its tangible assets (excluding land, easements, commercial office building, and vehicles) is $142,756,547 (Exhs. MW-MR-3, at 46-47; MW-MR-3 (Rev. Errata Pages) at 46-49, 432). The Company then multiplied this valuation by four percent, representing the expected rate of return that a financial institution would require as a return on the value of the tangible assets, producing a return requirement of $5,710,262 (Exhs. MW-MR-3, at 46-47; MW-MR-3 (Rev. Errata Pages) at 432). The Company then performed a net present value analysis on the difference between its return requirement and its free cash flow and concluded that its economic obsolescence offset is $26,352,348 (Exhs. MW-MR-3, at 46-47; MW-MR-3 (Rev. Errata Pages) at 432).

The Department has reviewed the Company's underlying calculations and assumptions. While we accept the underlying premise and overall method, several adjustments to the Company's calculations are warranted. First, as described in

Section VI.C.14, below, the Department has calculated an RCNLD valuation of the Company's tangible assets (excluding land, easements, structures, and vehicles) of $116,637,532. Second, as described in Section VI.C.12, above, the Department has calculated a functional obsolescence offset of $1,373,151. These components produce a net valuation of $115,264,381. Third, the Department finds that the Town's 20-year municipal bond yield of 4.25 percent fairly represents the Town's cost of debt that would be incurred if it were to construct its own water system and, thus, represents the appropriate rate of return on tangible assets (Exhs. MW-MR-1, at 34-35; MW-MR-3 (Rev. Errata Pages) at 53). Substituting these valuations and rate of return to the net present value calculations provided in Exhibit DPU-MWC 1-12, Att. Tab EO, produces an economic obsolescence offset of $63,168,982. Therefore, the Department finds that the appropriate economic obsolescence offset is $63,168,982.

14. Conclusion

After consideration of all the evidence presented, the Department finds that the Company's assets' RCN values are as follows: (1) $37,002,999 for real property; (2) $5,768,000 for raw water assets; (3) $30,223,955 for treatment plant assets; (4) $4,540,400 for water storage facility assets; (5) $126,013,150 for transmission and distribution assets; (6) $660,008 for personal property; (7) $3,500,738 for intangible assets; and (8) $2,342,157 for CWIP. To these, the Department includes the following indirect costs: (1) $913,651 in raw water assets; (2) $4,787,474 in treatment plant assets; (3) $719,199 in water storage facility assets; (4) $19,960,483 in transmission and distribution

assets; (5) $14,905 in personal property; and (6) $554,517 in intangible assets. The Department also includes AFUDC as follows: (1) $276,620 in raw water assets; (2) $1,449,473 in treatment plant assets; (3) $217,747 in water storage facility assets; (4) $6,043,308 in transmission and distribution assets; (5) $4,513 in personal property; and (6) $167,888 in intangible assets. After making these adjustments, the Company's total RCN asset value is $245,161,188, broken down as follows: (1) $37,002,999 in real property; (2) $6,958,272 in raw water assets; (3) $36,460,903 in treatment plant assets; (4) $5,477,347 in water storage facility assets; (5) $152,016,942 in transmission and distribution assets; (6) $679,426 in personal property; (7) $4,223,142 in intangible property; and (8) $2,342,157 for CWIP.

Next, the Department uses the depreciation factors as calculated above and determines that the following amounts are to be removed from the RCN valuation: (1) $2,995,337 from raw water assets; (2) $10,167,126 from treatment plant assets; (3) $2,516,276 from water storage facility assets; (4) $75,618,891 from transmission and distribution assets; and (5) $28,380 from personal property. These adjustments produce a total depreciation offset of $91,326,010, resulting in a net RCNLD of $153,835,178. The Department will also remove functional obsolescence in the amount of $1,373,151 and economic obsolescence in the amount of $63,168,982, as outlined above. Finally, the Departments adds $269,804 in water rights as described in Section VI.F., below. These final adjustments provide an RCNLD value as determined by the Department of $90,092,606. The attached Appendix provides a summary of the Department's RCNLD valuation.

D. Income Approach Valuation

1. Introduction

To conduct a proper DCF analysis, one must make assumptions about the discount rate, the holding period, the terminal value, and future cash flows (Exh. MW-MR-1, at 27-28). D.T.E. 98-51, at 112-113; D.P.U. 905, at 51-52; Massachusetts Electric Company, D.P.U. 800, at 45-46 (1982); D.P.U. 200, at 56; Dedham Water Company, D.P.U. 205, at 38 (1981); Barnstable Water Company, D.P.U. 482, at 24 (1981). The Company and the Town disagree on the assumptions made for these inputs. We address each of these inputs below.

2. Discount Rate

In the DCF approach, the discount rate can serve as a tool to quantify the level of business risk assumed when contemplating the purchase of a particular asset or set of assets (Exh. MW-MR-1, at 7). For example, riskier assets are assigned a higher discount rate, which results in a corresponding lower present value (see Exh. Rebuttal Sch. TOWN-JJR-2, at 4). Conversely, less risky assets are assigned a lower discount rate, which results in a corresponding higher present value (see Exh. MW-MR-3, at 72).

The Company proposes a pre-tax discount rate of 5.36 percent based on a hypothetical capital structure representing the blending of two hypothetical buyers, i.e., an investor-owned utility and government-owned utility (Exh. MW-MR-3 (Rev. Errata Pages) at 54, 73). The Town proposes a pre-tax discount rate of 8.29 percent based on the Company's most recent allowed WACC (Exhs. TOWN-JJR-3, at 33; Rebuttal Sch. TOWN-JJR-2, at 1).

The Company's proposed discount rate is based on a blended approach that gives equal consideration to the capital cost rates of a government-owned utility and an investor-owned utility (Exh. MW-MR-3 (Rev. Errata Pages) at 54). Based on this assumption, the Company opines that a government-owned utility would rely on a capital structure consisting of 95 percent debt and five percent equity, whereas an investor-owned utility would rely on a capital structure consisting of 55 percent debt and 45 percent equity (Exh. MW-MR-3 (Rev. Errata Pages) at 54). This capital structure, in conjunction with a proposed cost of debt of 4.00 percent based on long-term U.S. treasuries rates, corporate bond yields, and municipal bond yields, and a proposed cost of equity of 9.45 percent, resulted in the Company's proposed pre-tax discount rate of 5.36 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 54). The Company's proposed pre-tax discount rate uses a pre-tax cost of debt of 4.00 percent and a cost of equity of 9.45 percent (Exh. MW-MR-3 (Rev. Errata Pages) at 73).

The Town first calculated a discount rate of 6.78 percent based on the Company's WACC pursuant to D.P.U. 17-107 (Exh. TOWN-JJR-3, at 34). The Town then grossed-up the Company's equity portion to arrive at a pre-tax discount rate of 8.29 percent (Exh. TOWN-JJR-3, at 34). This WACC consists of 59.51 percent long-term debt at a cost of 4.66 percent, 0.99 percent preferred stock at a cost of 6.0 percent, and 39.51 percent common equity at a rate of 10.0 percent (Exh. Rebuttal Sch. TOWN-JJR-3, at 34).

The Company used a 2.36 percent capitalization rate when calculating functional obsolescence in its RCNLD analysis, a 4.00 percent cost of debt for discounting earnings

associated with economic obsolescence, and a 5.39 percent interest rate when calculating AFUDC (Exhs. MW-MR-3 (Rev. Errata Pages) at 399, 432; MW-MR-1, at 23; DPU-MWC 1-4). The Company's use of different discount rates throughout its valuation analysis diminishes the reliability of its valuation outcome (Exh. TOWN-JJR-3, at 42). In addition, we are not convinced that using a blended approach to determine the Company's cost of capital provides for a more reliable basis on which to determine the Company's discount rate. In contrast, the Department has long recognized the role of a company's WACC in the selection of discount rates. Fitchburg Gas and Electric Light Company, D.P.U. 15-42, at 5, 17 (2015); Grid Modernization, D.P.U. 12-76-C at 18-19 (2014); NSTAR Pension, D.T.E. 03-47-A at 40-41 (2003). Municipally owned utility companies have also relied on investor-type discount rates calculated using the acquired business' capital structure and regulator-approved rate of return, as evidenced by EPCOR Utilities' purchase in 2012 of two water companies operating in Arizona and New Mexico (Exhs. MWC-2, at 21-22; TOWN-JJR-3, at 37 nn.62, 63). Thus, the Department finds that the Town's use of the Company's WACC as provided in D.P.U. 17-107 provides a more realistic basis for the discount rate than the Company's reliance on a hybrid government-owned/investor-owned system.

Nonetheless, as noted above, the Town takes one additional step by grossing-up the Company's equity portion of its WACC to account for income taxes associated with its equity portion, resulting in a pre-tax WACC of 8.29 percent (Exh. TOWN-JJR-3, at 34). The Company does not rely on its capital structure but rather relies on a number of assumptions

to determine a pre-tax WACC of 5.36 percent (Exhs. MW-MR-1, at 30; MW-MR-3, at 51; MW-MR-3 (Rev. Errata Pages) at 73). As stated above, we consider the Town's use of the Company's WACC as provided in D.P.U. 17-107 a more realistic basis for the discount rate. Nonetheless, we disagree with the Town's approach of grossing up the Company's equity portion for the purpose of this calculation. The only appropriate tax implication warranted for this calculation should be to account for the fact that the Company's share of interest payments on its debt is tax deductible. See, e.g., East Northfield Water Company, D.P.U. 19-57, at 44 (2020); Andrews Farm Water Company, D.P.U. 17-35-C, at 132-133 (2018). Based on the foregoing considerations, the Department finds that the Company's most recent capital structure with a WACC that considers the tax deductibility of debt but excludes a gross-up component is the appropriate basis for determining the Company's discount rate.

Therefore, the Department will calculate the discount rate relying on the Company's capital structure as of December 31, 2018, consisting of $17,269,083 in long-term debt, $374,100 in preferred stock, and $13,635,543 in common equity (Exh. TOWN-MWC 4-12 (Supp.), Att. at 5). These balances correspond to a capital structure consisting of 55.21 percent long-term debt, 1.20 percent preferred stock, and 43.59 percent common equity (see Exh. TOWN-MWC 4-12 (Supp.), Att. at 5, 8). Based on the effective interest rates associated with the Company's various debt issuances, the Department applies an overall cost of 4.41 percent, tax-adjusted to an effective rate of 2.38 percent, on long-term debt (see Exh. TOWN-MWC 4-12 (Supp.), Att. at 8). The Department also applies a return

of 6.0 percent on preferred stock and an ROE of 10.0 percent based on the Company's most recent rate case. D.P.U. 17-107, at 166, 172. These ratios and cost rates produce a WACC of 6.15 percent (see Exh. TOWN-MWC 4-12 (Supp.), Att. at 5, 8).[110]

3. Growth Rate and Terminal Value

When a firm's cash flows grow at a constant rate forever, the present value of those cash flows can be expressed as:

Value = Expected Cash Flow Next Period / (r-g)

R = Discount rate (Cost of Equity or Cost of Capital)

G = Expected growth rate

(Exh. MW-MR-3, at 72).

Both the Company and the Town use their respective proposed growth rates as the basis for establishing the appropriate terminal value (see Exhs. MW-MR-3 (Rev. Errata Pages) at 72; Rebuttal Sch. TOWN-JJR-3, at 4). The Department has recognized that the selection of the appropriate growth rate, such as the long-term growth expectations of investors used in DCF analyses, can be difficult and controversial. Fitchburg Gas and Electric Light Company, D.T.E. 99-118, at 83 (2001); D.T.E. 98-51, at 120; Commonwealth Electric Company, D.P.U. 88-135/151, at 125 (1989). In this case, the Company and the Town differ on their selected growth rate used in their respective DCF

---

110 The Company's cost of capital percent has been adjusted to take into account the tax-deductibility of interest on debt, as represented by the following formula: (Debt-to-Capital x Cost of Debt) x (1- tax rate) (Exh. MW-MR-3 (Rev. Errata Pages).

analyses. The Company states that its proposed growth rate of 3.0 percent is based on a forecasted stabilized long-term inflation rate and takes into consideration both the likelihood of future rate increases and further residential development in the Town (Exh. MW-MR-3, at 50; Tr. 6, at 887-889). The Town states that its proposed growth rate of 2.2 percent is more in line with market forecasts and other factors, including the Federal Open Market Committee's recent affirmation of a 2.0 percent inflation target and credible financial forecasts (Exhs. TOWN-JJR-3, at 46-47; Rebuttal Sch. TOWN-JJR-2, at 4).[111]

The Department is not convinced, based on historical, recent, and forecasted inflation rates, that the Company's proposed growth rate of 3.0 percent is appropriate in this case. The Federal Reserve Bank has recently affirmed a two percent target. Federal Open Market Committee, Minutes of Meeting November 4-5, 2020, at 11-13 (Released November 25, 2020). Federalreserve.gov/monetarypolicy/fomccalendars.htm. In addition, a basic valuation principle states that the stable growth rate cannot, over the long run, exceed the growth rate of the economy, but can be at a lower rate. Massachusetts Electric Company/Nantucket Electric Company, D.P.U. 18-150, at 474 (2019); D.P.U. 07-71, at 136. The Department finds that the Town's proposed growth rate is more in line with current and projected inflation trends. Federal Open Market Committee, Minutes of Meeting November 4-5, 2020, at 11-13 (Released November 25, 2020).

---

[111] The Federal Open Market Committee is a part of the Federal Reserve System and is charged with overseeing the United States' open market operations. Federalreserve.gov/monetarypolicy/fomc.htm (last updated December 21, 2020).

Federalreserve.gov/monetarypolicy/fomccalendars.htm. Therefore, the Department places greater weight on the Town's proposed growth rate in determining the appropriate growth rate to apply in this proceeding.

Based on these considerations and taking into account current and projected levels of interest rates, inflation, and GDP, the Department finds that a terminal growth rate of 2.3 percent is appropriate in this case. Therefore, the Department uses a terminal growth rate of 2.3 percent to derive the Company's valuation using the income valuation approach.

4. Holding Period

The Town states that the holding period used by the Company is too short and indicates that the Company should either use a significantly longer holding period or adjust its net book value (Exh. TOWN-JJR-3, at 45-46; Tr. 2, at 303-304). The Company states that its proposed holding period of five years is appropriate, and that the length of the holding period does not affect the ultimate outcome of the DCF analysis (Tr. 5, at 711).

The duration of the holding period is an important component of the DCF analysis. An unreasonably short holding period can result in biasing a DCF-determined required rate of return upward. Bay State Gas Company, D.P.U. 777, at 44 (1982). Conversely, an unreasonably long holding period can understate a DCF-determined required rate of return by diminishing the terminal valuation's effect on a company's ultimate valuation. Despite the Town's concern over the Company's selected holding period, there is no record evidence as

to whether a shorter or longer period is more appropriate in this case.[112] Moreover, holding periods of three to ten years are consistent with the business cycles[113] of regulated utilities such as the Company, and the use of similar holding periods is common in multi-stage DCF analyses (Exhs. MW-MR-3, at 49; DPU-MWC 3-3; Tr. 5, at 703-704). See, e.g., D.P.U. 07-71, at 125 (company used holding periods of five and ten years in multi-stage DCF analysis). The Company's selected holding period is consistent with its own business cycle as measured by its recent base distribution rate case filing history. D.P.U. 17-107, at 101; D.P.U. 12-86, at 206. Therefore, the Department finds that the Company's proposed five-year holding period is reasonable for purposes of determining the value of the Company.

5. Cash Flow and Property Taxes

A well-prepared DCF valuation can serve as a tool for estimating an asset's intrinsic value; the Department has long relied on DCF analyses in determining a company's allowed return on common equity. D.P.U. 18-150, at 474-475; D.P.U. 17-170, at 282, 291-292; Fitchburg Gas and Electric Light Company, D.P.U. 11-01/D.P.U. 11-02, at 413-414 (2011); Bay State Gas Company, D.T.E. 05-27, at 297 (2005); NYNEX Price Cap, D.P.U. 94-50, at 459-460, 484-485 (1995); Boston Gas Company, D.P.U. 17885, at 2 (1974). In a DCF

---

112 For example, although the Town provided several iterations of its income valuation correcting what it considered to be errors in some of the inputs used by the Company, the Town relied on a five-year holding period in its DCF analyses (Exh. Rebuttal Sch. TOWN-JJR-2).

113 In this context, a regulated utility's business cycle represents the period between base distribution rate cases (Tr. 5, at 703-704).

analysis, the expected value of an asset can be viewed as the present value of the expected cash flows on the asset, with either the cash flows or the discount rate adjusted to reflect the risk of the asset (Exh. MW-MR-3, at 49).

The Company's cash flow analysis used in its income valuation approach first develops net operating income, then deducts depreciation and amortization expense, as well as taxes other than income taxes, to produce earnings before interest and taxes (Exhs. MW-MR-3, at 72; MW-MR-3 (Rev. Errata Pages) at 72). The Company adds back depreciation and amortization expense, then subtracts capital expenditures and changes in working capital, to produce free cash flow (Exhs. MW-MR-3, at 72; MW-MR-3 (Rev. Errata Pages) at 72). Although the Company's calculations are represented as excluding taxes other than income taxes, a comparison of the expenses used in the Company's valuation calculations with the corresponding expenses reported in its financial forecasts demonstrate that the valuation analysis significantly understates the taxes other than income taxes component (Exhs. DPU-MWC 3-10, Att.; TOWN-MWC 1-2, Att. C).

According to the Town, the Company improperly excluded property taxes in determining the cash flow component of its DCF analysis (Town Brief at 62-63). The Company justifies its exclusion of property taxes based on its use of a hybrid capital structure (Tr. 5, at 695-697). Nonetheless, property taxes have been long recognized as a legitimate operating expense. New England Gas Company, D.P.U. 08-35, at 150 (2009); D.P.U. 96-50 (Phase I) at 109; Colonial Gas Company, D.P.U. 84-94, at 19 (1984). Moreover, property taxes are distinct from income taxes in that neither of their primary

components (i.e., assessed valuation and mill rates) are related to a company's earnings; property taxes exist independent of income taxes or capitalization. NSTAR Electric Company/Western Massachusetts Electric Company, D.P.U. 17-05, at 250-252 (2017); G.L. c. 59, § 2. If the Company were being purchased by a rate-regulated entity such as an investor-owned utility, property tax expense would indisputably be factored into the acquiring entity's cash flow analysis as would any other operating expense (Exh. TOWN-JJR-3, at 44). Conversely, if the Company was being purchased by a non-rate-regulated entity such as the Town, the purchaser is likely to either arrange for payments in lieu of taxes or consider the foregone property taxes in its decision-making process (Exh. TOWN-JJR-3, at 44; Tr. 5, at 696). Either approach would justify the consideration of property taxes in a DCF analysis (Exh. TOWN-JJR-3, at 44). We find that there is no logical basis to assume that a prospective buyer or seller would disregard property tax expense when determining a company's free cash flow.

On this basis, the Department finds that the Company's income valuation approach understates the deduction for taxes other than income taxes, and consequently overstates the Company's free cash flow. Therefore, the Department adjusts the Company's taxes other than income taxes component to derive the Company's valuation using the income valuation approach.

6. Conclusion

The Department has recalculated the Company's income approach valuation as described in Exhibit MW-MR-3, Appendix 4. Specifically, the Department has revised the

Company's net operating income to exclude property taxes from earnings before interest and taxes, producing revised earnings before interest and taxes ranging from $2,351,343 in Year 1 to $2,081,789 in the terminal year (Exh. DPU-MWC 3-10, Att. at 2). The use of these revised earnings before interest and taxes produces revised free cash flows ranging from $1,561,546 in Year 1 to $2,063,735 in the terminal year. The Department also applies a holding period of five years, a discount rate of 6.15 percent, and a terminal year discount rate of 2.3 percent. The terminal value of the free cash flow is $50,598,109. Based on these adjustments, the Department calculates a revised income approach valuation of $50,598,109. The Department finds that this valuation is appropriate and consistent with the evidentiary record. Therefore, the Department uses an income approach valuation of $50,598,109 in determining the Company's valuation based on the evidentiary record.

E. Market Metrics and Other Valuation Considerations

1. Adjustment for Under-Earnings, Illiquidity, and Small Size

The Town applied a discount to its valuation due to the Company earning less than its allowed ROE each year from 2008 to 2017 (Exh. TOWN-JJR-2, at 22, 29-30). The Department finds it reasonable to discount an income approach valuation because of an ongoing earnings shortfall. In 2018, however, the Department approved a base distribution rate increase of approximately 17.8 percent for the Company (Exh. DPU-MWC 3-1). D.P.U. 17-107-A at 6. Cost of service rate regulation establishes rates that provide a company with the opportunity to meet its cost of service, including a fair and reasonable return on prudently invested capital. Boston Gas Company v. Department of Public Utilities,

367 Mass. 92, 97 (1975); Lowell Gas Company v. Department of Public Utilities, 324 Mass. 80, 94, cert. denied, 338 U.S. 825 (1949); Donham v. Public Service Commissioners, 232 Mass. 309, 326 (1919). Such a return would be consistent with what an unregulated company in a competitive market with similar risk characteristics would be expected to earn. See Bluefield Water Works Improvement Company v. Public Service Commission, 262 U.S. 679, 692-693 (1923); Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591, 605 (1944). Therefore, the earnings deficiency as of December 31, 2018 should have been remedied by the establishment of higher rates. There is no evidence on the record to the contrary. Further, the allowed rate of return established in the Company's prior base distribution rate case was used as the discount rate in the income approach valuation discussed in Section VI.D., above. The persistent earnings deficiency as of December 31, 2018, therefore, has been accounted for and no further adjustment is necessary.

The Town also reduced its valuation of the equity portion of the Company's capital by 30 percent to account for the small size and illiquidity of the Company (Exh. TOWN-JJR-2, at 32, 37-38). The Town states that an illiquidity discount applies to asset-based valuation methods for controlling ownership interests in closely held businesses (Exh. TOWN-JJR-2, at 31, citing Valuing a Business, at 445 (2008)). The Company states that an illiquidity adjustment is warranted only when valuing a non-marketable, non-controlling interest in a stock transaction for purposes such as determining gift and estate taxes, the value of charitable contributions, and asset apportionments in divorce proceedings (Tr. 4, at 550-553).

The Department has recognized a company's size and closely held nature in determining an appropriate ROE. D.P.U. 17-35-C at 157; D.P.U. 12-86, at 268; North Attleboro Gas Company, D.P.U. 86-86, at 24 (1986). Nonetheless, the evidentiary record before the Department does not allow us to apply our general knowledge about the risk characteristics of small, closely held companies to draw any conclusions with respect to the propriety of a size and illiquidity adjustment. Moreover, our obligation in this proceeding is to determine the value of the entire Company, as demonstrated through the use of a discount rate based on the Company's cost of capital, as opposed to the value of the Company based on its equity portion alone, which would warrant a higher discount rate. There is insufficient evidence to determine whether an additional discount for illiquidity or small size would apply to an asset acquisition of the type proposed here and, if so, at what amount. Thus, the Department declines to apply a discount for illiquidity and small size.

2. Market Metrics

To support its valuation, the Town provided an analysis of the P/E and M/B ratios of a comparison group of companies, an analysis which the Company states is flawed and should not be relied on (Exhs. TOWN-JJR-2, at 18; MW-RR-2, at 33-34). The Company argues that the comparison group companies are dissimilar to the Company and that the P/E and M/B ratios are not applicable to the sale of a company's assets (Company Brief at 62-64).

The companies in the comparison group are considerably larger than the Company with a mean market capitalization of $3.6 billion (Exh. TOWN-JJR-2, at 30, 32). The

comparison group companies are also engaged in additional activities that are unregulated and operate outside of the Commonwealth (Exhs. TOWN-JJR-2, at 19; MW-RR-2, at 33-38). While the comparison group is less than ideal, the companies are in the same industry and derive the majority of revenues from water distribution operations (Exhs. TOWN-JJR-2, at 19; MW-RR-2, at 37-38). The Department acknowledges the disparity in size of the publicly traded companies in the comparison group and accepts that a comparison group consisting of smaller publicly traded companies would be preferable. Given that there are only nine such publicly traded water companies in the United States, of which eight have been included in this comparison, we find that compiling a more suitable comparison group would not be achievable (Exh. TOWN-JJR-2, at 19).

The Company further argues that the use of financial metrics employed by stock market investors is inappropriate in valuing the assets of a water utility (Company Brief at 64). The Department questions whether the Town's analysis regarding the valuation of stock is applicable here, where there will be an acquisition of assets. As such, the Department concludes that the use of financial metrics like the P/E ratio and the M/B ratio offer minimal value to our analysis. In doing so, we note that the Town did not rely on the market metric analysis in determining a valuation, but rather to serve as a form of validation for its ultimate valuation. Based on these considerations, we decline to make separate adjustments for financial metrics. Nonetheless, the Department will take into account the limitations of the comparison group and the use of stock valuation methods in consideration of how much weight should be afforded to the income valuation analysis.

F. Water Rights

Water rights represent an incorporeal hereditament involving the legal rights of property owners to access and use bodies of water adjacent to lands that they hold. See G.L. c. 241, § 36. A corporation that holds water for public use has a valuable right of property in those water rights that has been secured by the franchise. Gardner Water Company v. Inhabitants of Gardner, 185 Mass. 190, 194-195 (1904). The Company holds a statutory right to draw water from springs and streams in the Town pursuant to the Charter, as well as the statutory right to take certain land in Hopkinton for the purpose of water supply pursuant to St. 1882, c. 188 (Exh. TOWN-MWC 4-12 (Supp.), Att. at 16). Charter (Exh. TOWN-5). St. 1882, c. 188 (Exh. TOWN-MWC 4-24, Att. at 6).[114] From time to time thereafter, the Company acquired additional land and flowage rights for water supply purchases through purchase, lease, or eminent domain proceedings (Exh. TOWN-MWC 4-25, Atts. A, B). The use of these water sources is governed by the provisions of the WMA, which regulates the quantity of water that may be withdrawn from surface and ground water resources. G.L. c. 21G; 310 CMR 36.00. The Company's WMA

---

114 In 2015, the Company booked $16,741 to the water rights account, and the Department determined it represented compliance costs associated with the WMA, which do not represent payments for water rights and, thus, are not appropriate for capitalization. D.P.U. 17-107, at 114; 220 CMR 52, Balance Sheet, Account 113-A. Therefore, the Company's water rights are not included in its plant investment accounts (Exh. TOWN-MWC 1-1 (2015 Annual Return) at 265).

permits authorize a maximum baseline withdrawal of 3.31 MGD (Exh. MW-MR-3, at 118, 127).[115]

Water rights have long existed in Massachusetts in the form of legislative grants of authority to draw water from general or specific surface sources. St. 1880, c. 73 (Exh. MWC-3, at 1). St. 1881, c. 76 (Exh. MWC-4, at 1-2). Charter (Exh. TOWN-5, at 2). St. 1882, c. 188 (Exh. TOWN-MWC 4-24, Att. at 6). See also An Act Incorporating Individuals for Purpose of Bringing Fresh Water into Boston, Acts of 1794, c. 55 (Approved February 27, 1795). After the WMA became effective in March 1986, water users with withdrawals averaging 0.100 MGD were required to register their existing water withdrawals based on historic water use. An Act Relative to the Establishment of a Massachusetts Water Management Act, St. 1985, c. 592, § 5 (Approved December 18, 1985); 310 CMR 36.03. In 1988, a permitting process was established that allowed these registration holders to exercise their withdrawal rights under the conditions set forth in their permits. G.L. c. 21G, § 7; 310 CMR 36.03, 36.16. The Commonwealth's extensive regulatory powers under the WMA and the Interbasin Transfer Act, G.L. c. 21, § 8B-8D,[116] does not alter the legal

---

115 Baseline withdrawal volumes represent the total annual amount of water that can be withdrawn under a WMA permit without the imposition of mitigation measures by the Massachusetts Department of Environmental Protection (Exh. MW-MR-3, at 100, 118, 127).

116 The Interbasin Transfer Act authorizes the Massachusetts Water Resources Commission to approve or deny transfers of water or wastewater outside of the river basin of origin and requires protection of the donor basin and sound water supply management practices by the applicant prior to a transfer of water resources between river basins (Exh. MW-MR-3, at 102). G.L. c. 21, § 8D. In-basin transfers are

existence of water rights, but rather ensures that permit holders exercise these rights in a manner that ensures adequate water supplies for current and future water needs.

There is a distinction between water rights acquired through land purchases and water rights acquired by purchasing flowage rights. Massachusetts follows the common law doctrine of ground water rights, which vests absolute ownership of ground water in the owner of the overlying land. Gamer v. Town of Milton, 346 Mass. 617, 620-21 (1964) (citations omitted). Consequently, private landowners still retain ownership rights over groundwater found on their property; ownership itself creates the water right. A buyer of the Company's wellfields would indisputably be able to enjoy the rights to use those assets for water supply purposes once the WMA permits had been properly transferred.[117] Therefore, to the extent that there are water rights associated with the Company's groundwater supplies at Dilla Street and Godfrey Brook, they have been subsumed into the land itself. Similarly, the land associated with the Company's source of supply at the Clark's Island wellfield is leased from the Town (Exhs. TOWN-MWC 4-25, Att. A at 35-37; MW-MR-3, at 174). It

---

reviewed by the Massachusetts Department of Environmental Protection (Exh. MW-MR-3, at 103).

[117] The Department is familiar with the various mergers and acquisitions among investor-owned water systems, municipal water systems, and water districts. See, e.g., Sheffield Water Company/Mountain Water Systems, D.P.U. 16-37 (2016); D.T.E. 01-55; High Wood Water Company/Mashpee Water District, D.P.U. 90-57/89-93/88-180 (1990); Hingham Water Company/Oxford Water Company/Massachusetts-American Water Company, D.P.U. 89-134 (1989); Wannacomet Water Company, D.P.U. 87-91/87-98 (1987); D.P.U. 85-76. There is no evidence that any of these transactions involved significant issues with the sale or transfer of WMA permits.

thus follows that to the extent there are water rights associated with this supply source, they have been subsumed into the land owned by the Town. On this basis, the Department concludes that the Company's water rights associated with groundwater have been subsumed into the associated land and hence do not warrant a separate valuation.

In contrast, the common law rule for surface water was set forth in Stratton v. Mt. Hermon Boys' School, 216 Mass. 83, 84-85 (1913). In that case, the Supreme Judicial Court noted that although "[t]he right to flowing water is incident to the title to land, there is no right of property in such water in the sense that it can be the subject of exclusive appropriation and dominion. The only property interest in it is usufructuary." Stratton, 216 Mass. at 84-85. Consequently, water rights derived from the right to draw from surface sources exist independently from whatever land may be associated with those surface sources. Thus, this right of withdrawal has a value that is not incorporated into an RCNLD analysis and must be accounted for separately. As is the case with groundwater, the Commonwealth's extensive regulatory powers under the WMA and the Interbasin Transfer Act does not alter the legal existence of water rights.

The water rights associated with the Charles River are derived from both statutory authority and through purchase. The Charter authorizes the Company to take, hold, and convey through the Town water from any spring or springs, or from any stream or streams, necessary for the purposes of the corporation. Charter, § 2 (Exh. TOWN-5).[118] In addition

---

[118] In November 1880, the organizers of the Company obtained certain water diversion rights from the Charles River through an arrangement with various mill owners, without an actual purchase (1915 Annual Return of Milford Water Company at 13).

to this general authority, in September 1902, the Company purchased certain flowage rights associated with the Charles River for $200 (Exh. TOWN-MWC 4-25 & Att. A at 12-13). Under the Uniform System of Accounts for Water Companies, one-time payments made for the right to perpetually take water from a particular source are capitalized and booked to Account 113-A, Water Rights. 220 CMR 52.00. This purchase, however, was not recorded in the Company's plant investment accounts because Account 113-A was not established until sometime before 1935, some years after the Department's Uniform System of Accounts for Water Companies was created in 1923.

In 1882, the Company was granted legislative authority to take and hold any real estate south of Granite Street in Hopkinton as necessary for any source of water supply, including the creation of any dams or reservoirs to meet this purpose. St. 1882, c. 188 (Exh. TOWN-MWC 4-24, Att. at 6). A dam was subsequently constructed at Deer Brook in Hopkinton, and the resulting reservoir became known as Echo Lake, which also serves as both an intake and outlet for the Charles River (Exh. MW-MWC-3, at 109, 172; Company's 1915 Annual Return at 13).[119] Echo Lake currently serves as the Company's primary source of supply (Exh. MW-MR-3, at 28, 34, 99, 172). While Echo Lake sits on Company-owned land, the supply at Echo Lake is not obtained from groundwater under the bottom of the

---

The Department considers this arrangement to have been made in anticipation of the water diversion rights being sought for the then-inchoate Company.

[119] In 1902, the Company acquired more land and raised the dam to enlarge Echo Lake (Exh. Town-MWC 4-25, Att. A at 12-13).

lake, but rather comes from the surface water and flowage covering that land area, as well as the original flowage rights associated with the Charles River (Exh. MW-MR-3, at 28, 34, 99, 164, 168, 172). Consequently, neither the Charles River water rights nor the Echo Lake water rights have been subsumed into the Echo Lake watershed or land at the bottom of the reservoir, nor have they been represented elsewhere in the RCNLD analysis. Therefore, to ensure that all of the Company's assets are fully considered in the valuation process, the Department finds it appropriate to make some provision for the combined Charles River and Echo Lake water rights in the Company's valuation.

The Company proposes to add its water rights valuation as a separate component to its valuation approach, claiming that water rights are not considered within the income approach to valuation (Exh. MW-MR-1, at 40). The Department disagrees. As discussed in Section VI.D., above, the income valuation approach is based on a company's earnings, which in turn are influenced by a number of factors including the level of rate base. Under the concept of original cost rate base, the actual payment made to acquire those water rights would be capitalized and booked to Account 113-A, which represents a plant account, and is thus a component of rate base. 220 CMR 52.00; Butterworth Water Company, D.P.U. 85-152, at 6-7 (1987). See also D.P.U. 91-189 at 6. Although purchases of water rights in the late 19th and early 20th centuries occurred at prices that appear minimal in present dollars, the purchases did occur and are included. Whether such purchases were, in fact, capitalized and booked to Account 113-A does not distort the results of the income approach. On this basis the Department finds that a company's water rights are taken into

account through the income approach. Therefore, the Department finds the Company's proposed separate treatment of water rights to be unwarranted.

Consequently, the water rights valuation should be included in the cost approach valuation because it represents the cost that a hypothetical buyer would pay a hypothetical seller in the open market. While permanent transfers involving raw water typically occur when one entity acquires an entity holding a WMA permit and changes the name of the permitholder to that of the acquiring entity, it is possible to purchase an existing WMA permit and then retire it to support the issuance of a new permit (Exh. MW-MR-3, at 102-103). RCNLD valuation assumes a reproduction or replacement of the assets with a similar construction and operational utility (Exhs. TOWN-RF-3, at 3; TOWN-JR-3 (Corrected) at 2; TOWN-JJR-2, at 16 & n.46, citing The Appraisal of Real Estate, The Appraisal Institute, at 569-570 (14th ed.) (2013)). Thus, in the RCNLD valuation, the Department must assume that the water rights are being purchased anew as a reproduction or replacement, even if the Town merely changes the name on the current WMA permit. Accordingly, the Department will include the cost of these water rights in the cost approach valuation.

The Company's WMA permits authorize a combined surface water maximum daily withdrawal of untreated water from Charles River, Echo Lake, and Lake Louisa of 6.3 MGD

(Exh. MW-MR-3, at 100).[120] This volume, however, is based on the capability of the Dilla Street treatment plant to process surface water as opposed to the actual firm yields from these individual sources (Exh. MW-MR-3, at 121). In 1997, the Company conducted a reservoir firm yield study that quantified a combined firm yield for Charles River and Echo Lake of 1.57 MGD; the study did not determine a firm yield for Lake Louisa (Exh. MW-MR-3, at 121). Echo Lake represents most of this total firm yield because the Charles River is comparatively smaller and is only typically used during the spring when the river is running at its highest level (Exh. MW-MR-3, at 28, 441). The Department finds that this firm yield represents credible evidence as to the extent by which the Company can exercise its water rights associated with surface water. The 1.57 MGD firm yield equates to 4.818 acre-feet per day, or 1,758.6 acre-feet per year.[121] Therefore, the Department finds that the firm yield associated with the Company's surface water sources associated with the Charles River and Echo Lake is 1,578.6 acre-feet per year of untreated water. Accordingly, the Department will use this volume in determining the valuation of the Company's water rights.

Both WMA regulations and the Interbasin Transfer Act influence the ability to establish the market value of water rights (Exh. MW-MR-3, at 102). The Company relies on

---

120 Lake Louisa has never been developed as a source of supply because of adverse environmental effects, local opposition, and financial considerations (Exh. MW-MR-3, at 100, 105). See also D.P.U. 17-107, at 129-130.

121 1.57 MG divided by 0.3258 MG in an acre-foot https://www.convertunits.com/from/gallons/to/acre+foot (last visited February 26, 2021).

the proposed Shrewsbury buy-in rate of $4,285 per acre-foot as a proxy for the market value of its water rights permit (Exhs. MW-MR-3, at 106; MW-MR-3 (Rev. Errata Pages) at 62; MW-MR-1, at 42). A WMA permit is necessary to exercise water rights, and such permits are not traded in an open and competitive market. As a practical matter, the universe of potential buyers of the Company's WMA permits is limited to the Town or other investor-owned water companies because: (1) the Massachusetts Department of Environmental Protection's transfer approval process is more favorably disposed towards maintaining the same type of permit use (Exh. MW-MR-3, at 103); and (2) a stand-alone sale of the Company's WMA permits would breach the Company's public service obligations. See Charter, § 1 (Exh. TOWN-5).[122]

The Department is familiar with the process by which the Company and other water systems develop additional sources of supplies. D.P.U. 19-57, at 3; D.P.U. 17-107, at 128-136; D.P.U. 12-86, at 236-238; D.P.U. 08-27, at 9-11, 21-24; South Egremont Water Company, D.P.U. 95-119/D.P.U. 95-122, at 4-5 (1996); D.P.U. 95-118, at 9-10. MWRA is the largest water supplier in the Commonwealth and has reliable access to significant supplies (Exh. MW-MR-3, at 103). While it is unclear whether the Shrewsbury buy-in rate of $4,285 per acre-feet is for treated or untreated water, the Department is persuaded that the

---

122 The Company's valuation study states that existing or newly formed government entities would be extremely interested in purchasing the Company's WMA permits (Exh. MW-MR-3, at 22). With the exception of the Town itself, however, special legislation would be necessary to make such an acquisition possible. See G.L. c. 40, § 38. The Department considers it highly unlikely that a municipality would seek, much less receive, such extraterritorial authority.

arrangement with MWRA would have been for treated water.[123] Regardless, it exceeds the rate for treated water under the various interconnection arrangements examined (Exh. MW-MR-3, at 106). On this basis, the Department finds that the Shrewsbury buy-in rate does not represent credible evidence as to a full and fair cash value for the Company's water rights permits.

Notwithstanding the inapplicability of the Shrewsbury buy-in rate, the evidentiary record provides some reliable proxy data to determine the value of the Company's water rights. The Company's source of supply at Clarks' Island is leased from the Town under the terms of a 1969 agreement, which provides a monthly rate of $65 per million gallons of untreated water (Exh. TOWN-MWC 4-25, Att. A at 35-37). While this rate may have been influenced by the Town's understanding that the lease costs would be ultimately included in rates billed to customers, the Department finds that the Clarks' Island lease provides the most reliable evidence of the fair market value of similar water rights in the Company's area.

The $65 per million gallons corresponds to a lease rate of $21.18 per acre-foot.[124] In view of the approximately 50 years that have elapsed since the lease was originally executed in 1969, the Department finds it appropriate to increase the rate to present-value dollars. The $21.18 lease rate represents an equivalent rate of $153.42 in current dollars.[125] This

---

123 See http://www.mwra.com/04water/html/watsys.htm (accessed August 17, 2020).

124 See footnote 121, above, regarding converting gallons to acre-feet.

125 The following formula can be used: $FV = PV (1 + i)^n$, where:
FV: Future Value
PV: Present Value

$153.42, multiplied by the 1,758.6 acre-feet associated with the Company's water rights for the combined Charles River and Echo Lake, produces a water rights component of $269,804. Based on the foregoing analysis, the Department finds that the value of the Company's water rights is $269,804.[126]

G. Weighting

As acknowledged by the parties, the Charter does not specify which valuation method to use nor how to weight any chosen valuation methods. As noted previously, the Legislature, at the time of enacting the Charter, also enacted charters for other water companies and specified the method for determining a purchase price. See, e.g., St. 1880, c. 73, § 7 (Exh. MWC-3). St. 1881, c. 76, § 7 (Exh. MWC-4). The Department cannot know why in the late 1880s, the Legislature chose to distinguish the Charter from other water company charters. Regardless, the Department presumes that this omission was intentional. See Leary v. Contributory Retirement Appeal Board, 421 Mass. 344, 348 (1995). Thus, the Department assumes discretion in weighting the valuation approaches.

A valuation of this type cannot be done with mathematical precision because it involves a balancing of qualitative factors and the exercise of judgment as to what constitutes fair value. Boston Edison Company v. Board of Assessors of Boston. 402 Mass. 1, 16 (1988). The Department determined that the appropriate RCNLD cost approach and income

---

i: Interest rate (inflation)
n: Number of times the interest is compounded, i.e., number of years.

[126] 1,758.6 acre-feet x $153.42 per acre-foot.

approach valuations for the Company's assets are $90,092,606 and $50,598,109, respectively. See Sections VI.C., D, above.

The Department finds, however, that the RCNLD cost approach is less reliable than the income approach because, as the Department has indicated throughout its analysis and findings, the available information in the record contains gaps that hinder developing a precise RCNLD cost valuation.[127] For example, this is particularly true for land, which represents a large portion of the RCNLD value, as well as easements. See Sections VI.C.1.a, b, above. While the Department accepts the Company's value for land, with modification, and easements because they are the only values in the record, these faults lower the weight of the RCNLD approach.

The record for the Company's buildings is also underdeveloped. See Section VI.C.1.c., above. Some buildings' valuations were included as vertical assets, while others were not, and even the parties appeared less than certain as to exactly which buildings were assessed (Exh. DPU-TOWN 2-3; Tr. 1, at 74-75, 130-132; RR-DPU-1). While the Department was able to estimate an approximate value using the tax assessments, the lack of clarity as to whether certain buildings were included in certain sections lowers the reliability

---

[127] Courts have also been hesitant to utilize the RCNLD approach because it risks overvaluing the assets if depreciation and obsolescence are not sufficiently accounted for. Correia, 375 Mass. at 364; Commonwealth v. Massachusetts Turnpike Authority, 352 Mass. 143, 148 (1967). These concerns are not present here because the Department adjusted the RCN value appropriately.

of the RCNLD valuation. Further, the record is incomplete regarding whether to apply an illiquidity discount to an asset acquisition and, if so, at what rate.

Thus, to determine the ultimate purchase price, the Department will apply a weighted average to the two amounts, with a slightly lower weight for the RCNLD value to reflect these issues with the record. The Department will apply a 40 percent weight for the RCNLD cost approach and a 60 percent weight for the income approach. Applying these weights, the Department determines that the final purchase price for the Company's assets is $66,395,908.[128]

VII. DETERMINATION

Accordingly, after hearing and consideration, it is

DETERMINED: That the price to be paid for the assets of the Milford Water Company is $66,395,908; and it is

---

[128] Forty percent of the RCNLD cost approach value of $90,092,606 is $36,037,042, and 60 percent of the income approach value of $50,598,109 is $30,358,865, resulting in $66,395,908.

ORDERED: That the Secretary of the Department shall serve a copy of this Report on the Supreme Judicial Court forthwith.

By Order of the Department,

Matthew H. Nelson, Chair

Robert E. Hayden, Commissioner

Cecile M. Fraser, Commissioner

Appendix

Summary of Department of Public Utilities' Valuation

Asset Group	Description	RCN	Indirect Cost 15.84%	AFUDC 4.14%	Total RCN	Phys Deprec.	RCN - Phys Dep	RCNLD pre EO	Econ Obsol	Cost Approach Value
Real Property	Land	$35,946,104	N/A	N/A	$35,946,104	N/A	$0	$35,946,104	$0	$35,946,104
Real Property	Easements	$412,446	N/A	N/A	$412,446	N/A	$0	$412,446	$0	$412,446
Real Property	Buildings	$644,450	N/A	N/A	$644,450	N/A	$0	$644,450	$0	$644,450
Total Real Property		$37,002,999	$0	$0	$37,002,999		$0	$37,002,999	$0	$37,002,999
Personal Property	Vehicles	$194,646	N/A	N/A	$194,646	N/A	$0	$194,646	$0	$194,646
Personal Property	SCADA	$94,100	$14,905	$4,513	$113,518	25.00%	$28,380	$85,139	($47,055)	$38,480
Personal Property	Office/Stores/Shop/Lab Equipment	$43,392	N/A	N/A	$43,392	N/A	$0	$43,392	($23,982)	$19,410
Personal Property	Moveable Equip	$234,700	N/A	N/A	$234,700	N/A	$0	$234,700	($129,714)	$104,986
Personal Property	Inventory	$93,170	N/A	N/A	$93,170	0.00%	$0	$93,170	($51,493)	$42,110
Total Personal Property		$660,008	$14,905	$4,513	$679,426		$28,380	$651,047	($252,244)	$399,631
Intangible Assets	Distr. Maps/Engin Drwgs	$2,688,728	$425,895	$128,945	$3,243,568	0.00%	$0	$3,243,568	($1,792,661)	$1,465,977
Intangible Assets	W/O Database	$418,193	$66,242	$20,056	$504,490	0.00%	$0	$504,490	($278,823)	$228,012
Intangible Assets	Sys. Records & Reports	$332,482	$52,665	$15,945	$401,092	0.00%	$0	$401,092	($221,676)	$181,279
Intangible Assets	Lic. & Permits	$61,335	$9,715	$2,941	$73,992	0.00%	$0	$73,992	($40,894)	$33,442
Total Intangible Assets		$3,500,738	$554,517	$167,888	$4,223,142		$0	$4,223,142	($2,334,054)	$1,908,710
Raw Water Assets	Godfrey Brook Wellfield	$728,375	$115,375	$34,931	$878,681	55.40%	$486,789	$391,892	($216,591)	$177,121
Raw Water Assets	Clarks Isl Wellfield Pump	$253,171	$40,102	$12,141	$305,414	44.48%	$135,848	$169,566	($93,716)	$76,638
Raw Water Assets	Clarks Island Wellfield	$207,140	$32,811	$9,934	$249,884	8.91%	$22,265	$227,620	($125,801)	$102,876
Raw Water Assets	Dilla St. Wells	$315,200	$49,928	$15,116	$380,244	90.00%	$342,220	$38,024	($21,015)	$17,186
Raw Water Assets	River Intake Bldg	$314,115	$49,756	$15,064	$378,935	48.34%	$183,177	$195,758	($108,192)	$88,476
Raw Water Assets	Echo Lake Dam intake	$3,950,000	$625,680	$189,433	$4,765,113	38.30%	$1,825,038	$2,940,075	($1,624,926)	$1,328,809
Total Raw Water Assets		$5,768,000	$913,651	$276,620	$6,958,272		$2,995,337	$3,962,934	($2,190,242)	$1,791,105
Treatment Plant Assets	Dilla St. WTP	$21,961,025	$3,478,626	$1,053,202	$26,492,853	11.07%	$2,932,759	$23,560,094	($13,021,237)	$10,648,324
Treatment Plant Assets	High Lift Pump Bldg	$2,546,230	$403,323	$122,111	$3,071,664	86.15%	$2,646,239	$425,426	($235,125)	$192,277
Treatment Plant Assets	Earth building	$233,000	$36,907	$11,174	$281,081	95.00%	$267,027	$14,054	($7,767)	$6,352
Treatment Plant Assets	Slow Sand Building	$77,270	$12,240	$3,706	$93,215	95.00%	$88,555	$4,661	($2,576)	$2,106
Treatment Plant Assets	Circular Clearwell Structure	$808,000	$127,987	$38,750	$974,737	99.70%	$971,813	$2,924	($1,616)	$1,322
Treatment Plant Assets	Godfrey Brook WTP	$4,598,430	$728,391	$220,530	$5,547,352	58.78%	$3,260,733	$2,286,618	($1,263,773)	$1,033,470
Total Treatment Plant Assets		$30,223,955	$4,787,474	$1,449,473	$36,460,903		$10,167,126	$26,293,777	($14,532,094)	$11,883,852
Water Storage Assets	Bear Hill Tank	$2,341,700	$370,925	$112,303	$2,824,928	41.82%	$1,181,385	$1,643,543	($908,356)	$742,823
Water Storage Assets	Congress St. Water Storage Tank	$1,222,000	$193,565	$58,604	$1,474,169	39.32%	$579,643	$894,526	($494,388)	$404,294
Water Storage Assets	Highland Street Tank	$652,650	$103,380	$31,300	$787,329	74.48%	$586,403	$200,926	($111,048)	$90,812
Water Storage Assets	Congress Street Booster Pump	$305,330	$48,364	$14,643	$368,337	45.28%	$166,783	$201,554	($111,395)	$91,095
Water Storage Assets	Congress Street Vault	$18,720	$2,965	$898	$22,583	9.13%	$2,062	$20,521	($11,342)	$9,275
Total Water Storage Assets		$4,540,400	$719,199	$217,747	$5,477,347		$2,516,276	$2,961,071	($1,636,530)	$1,338,299
Trans. & Distr. Assets	Water Mains - Distribution	$89,221,892	$14,132,748	$4,278,882	$107,633,522	49.50%	$53,278,593	$54,354,929	($30,040,984)	$24,566,494
Trans. & Distr. Assets	Water Mains - Transmission	$5,989,403	$948,721	$287,238	$7,225,363	52.20%	$3,771,639	$3,453,723	($1,908,810)	$1,560,960
Trans. & Distr. Assets	Hydrants	$3,830,400	$606,735	$183,697	$4,620,833	41.90%	$1,936,129	$2,684,704	($1,483,787)	$1,213,391
Trans. & Distr. Assets	Valves	$3,535,103	$559,960	$169,536	$4,264,599	30.49%	$1,300,276	$2,964,323	($1,638,327)	$1,339,768
Trans. & Distr. Assets	Customer Meters	$2,622,462	$415,398	$125,767	$3,163,627	50.50%	$1,597,632	$1,565,996	($865,497)	$707,774
Trans. & Distr. Assets	Customer Services	$20,813,890	$3,296,920	$998,188	$25,108,998	54.70%	$13,734,622	$11,374,376	($6,286,411)	$5,140,813
Total Trans. & Distr. Assets		$126,013,150	$19,960,483	$6,043,308	$152,016,942		$75,618,891	$76,398,050	($42,223,818)	$34,529,200
Const. Work in Progress	CWIP	$2,342,157			$2,342,157			$2,342,157		$2,342,157
WATER RIGHTS	Water Rights									$269,804
Sub-Total Assets		$210,051,408	$26,950,230	$8,159,550	$245,161,188		$91,326,010	$153,835,178	($63,168,982)	$91,465,757
									Less: Functional Obsol.	($1,373,151)
								TOTAL RCNLD ***(rounded)***		**$90,092,606**