

June 14, 2019

Victor Carosi, PE  
Commissioner of Public Works  
Town of Greenburgh  
177 Hillside Avenue  
Greenburgh, NY 10607

RE: Results of Hydrant Surcharge Evaluation

Dear Mr. Carosi:

This technical memorandum summarizes the results of the hydrant surcharge evaluation completed by Raftelis Financial Consultants, Inc. ("Raftelis") for the Town of Greenburgh ("Town"). The purpose of the evaluation was to assess alternatives for recovering public fire protection costs from the Town's fire protection districts with Consolidated Water District ("District") rates. The evaluation is necessary because the Town Board plans to shift the recovery of those costs to water rates and has requested that the District and the Town's Water Advisory Committee ("WAC") analyze alternatives for this recovery mechanism.

The Town currently assesses a hydrant rental fee to the fire protection districts within the District to recover a portion of the costs associated with providing public fire protection service (the facilities, operational costs, and water necessary to meet fire district needs for water). The fee, along with other fire district costs, is currently assessed to individual property owners and recovered by fire districts as part of an annual property tax levy. Under this approach, tax-exempt properties do not pay for the public fire protection service costs included in the hydrant rental fee.<sup>1</sup>

Several surcharge alternatives were evaluated as part of the analysis, which included a (1) flat surcharge per water bill, (2) a flat surcharge per water bill that varies by the size of the water service line, (3) a surcharge to be included as part of the Town's volumetric water rates, and (4) a hybrid approach, as well as the current property tax assessment alternative.

The evaluation of these alternatives consisted of the following:

1. Documenting the current hydrant rental fee assessment method, including identifying the fire districts served by the Town's water system, estimating the portion of the property tax rate applicable to the hydrant rental fee, identifying historical annual hydrant fee revenues, estimating the annual cost of public fire protection service realized by typical residential

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<sup>1</sup> In discussions with the Town and the WAC, it has been noted that while shifting recovery of fire protection service costs from the hydrant rental fee to District water rates will increase fairness by requiring tax-exempt properties to pay for their share of the costs, the change should not be assumed to be revenue neutral to customers who will now pay for the fire protection costs through rates instead of fire district tax assessments. Because some, or all, of the fire districts plan to replace hydrant rental fees with other costs, the impact of the change in recovery of fire protection service costs will likely result in an increased financial burden for District customers who will pay higher water rates without a corresponding reduction in taxes paid for fire protection.

and commercial properties as a result of the current hydrant rental fee, and estimating the number and gross assessed value of taxable and tax-exempt properties.

2. Estimating annual public fire protection costs attributable to residential and commercial customers of the Town's water system.
3. Documenting the approach used to develop the surcharge alternatives.
4. Calculating public fire protection surcharges under each alternative.
5. Analyzing the resulting cost impact to residential and commercial customers.

## Evaluation of the Current Hydrant Rental Fee Assessment Method

### *Existing (FY 2018) Tax Rates by Fire District*

The Town currently assesses hydrant rental fees to fire districts to recover a portion of the estimated annual cost of public fire protection service provided by its water system. The hydrant rental fee is assessed on a per hydrant basis (\$395 per hydrant, per year) and the total amount due is dependent on the number of hydrants located within each district. Fire districts recover public fire protection costs, including hydrant rental fees, through tax assessments.

There are ten fire protection districts within the Town. The Fairview, Greenville, and Hartsdale Fire Districts provide fire protection service to properties in their respective areas with their own personnel, facilities, vehicles, and equipment. The other seven fire districts, which include the Chauncey, Donald Park, East Irvington, Glenville, North Elmsford, South Ardsley, and West Elmsford Fire Districts, are served by municipal fire departments that are operated by nearby communities; the Town then contracts with these municipalities to provide fire protection service in these districts. The contracted costs, including applicable hydrant rental fees, are assessed by the Town to the districts. The annual tax rates for these districts recover expenses related to contracted costs for fire protection service between the Town and a neighboring municipality, hydrant rental fees, and other miscellaneous costs.

Water customers in the Chauncey, Donald Park, and South Ardsley Fire Districts receive water service from SUEZ Water. These districts are assessed hydrant rental fees by the Town, which are then remitted to SUEZ Water. Thus, these three districts have been excluded from the evaluation.

The fiscal year ("FY") 2018 tax rates per \$1,000 of taxable assessed value for the Fairview, Greenville, and Hartsdale Fire Districts are shown in Table 1. As shown in the table, the tax rates for these fire districts were approximately \$4.89, \$3.55 and \$5.78 per \$1,000 of taxable assessed value, respectively. The minimum and maximum FY 2018 tax rates for the other fire districts are also included in the table. The tax rates for those districts were substantially less, ranging from approximately \$0.47 to \$0.85 per \$1,000 of taxable assessed value.

The tax rates in Table 1 were calculated to recover all costs included in fire district budgets. Annual budget documents for the fire districts were reviewed and the amount of the hydrant rental fee was compared to the total annual budgeted costs to estimate the portion attributable to hydrant rental fees only. Based on this calculation, it was determined that hydrant rental fees comprised between

1.4 percent and 14.3 percent of each district’s total annual budget. The estimated tax rates applicable to the hydrant rental fee for each fire district are provided in Table 2. As shown in the table, among these fire districts, the estimated tax rate attributable to the hydrant rental fee ranged between about \$0.02 per \$1,000 of taxable assessed value and 0.10 per \$1,000 of taxable assessed value.

**Table 1. Tax Rate per \$1,000 of Taxable Assessed Value (FY 2018)**

Fire Protection District	Tax Rate per \$1,000 of TAV
Fairview	\$4.894526
Greenville	\$3.545901
Hartsdale	\$5.781118
East Irvington	\$0.473399
Glenville	\$0.848329
North Elmsford	\$0.688792
West Elmsford	\$0.679332

TAV = Taxable assessed value

Source: Westchester County 2018 Special District Tax Rates

**Table 2. Estimated Hydrant Rental Fee per \$1,000 of Taxable Assessed Value (FY 2018)**

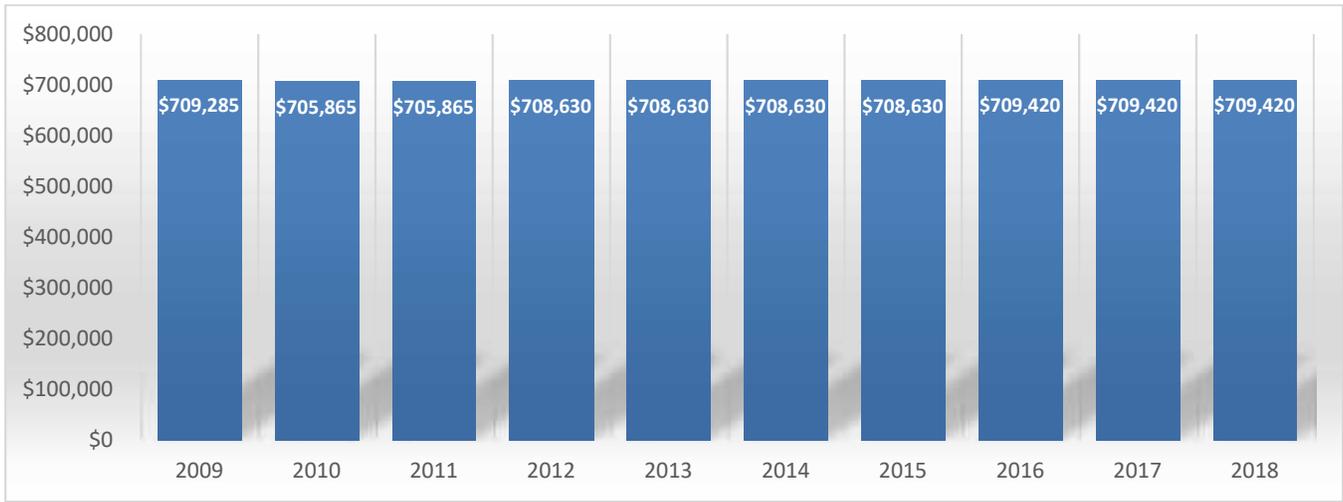
Fire Protection District	Tax Rate per \$1,000 of TAV	Estimated Hydrant Rental Fee %	Portion Attributable to Hydrant Rental Fee per \$1,000 of TAV
Fairview	\$4.894526	2.0%	\$0.097474
Greenville	\$3.545901	1.7%	\$0.059387
Hartsdale	\$5.781118	1.4%	\$0.081150
East Irvington	\$0.473399	14.3%	\$0.067581
Glenville	\$0.848329	7.5%	\$0.064017
North Elmsford	\$0.688792	9.5%	\$0.065317
West Elmsford	\$0.679332	3.0%	\$0.020659

TAV = Taxable assessed value

### *Historical Hydrant Rental Fee Revenues*

Actual hydrant rental fee revenue over the last ten fiscal years, from FY 2009 to FY 2018, is shown in Figure 1. As indicated by the figure, hydrant rental fee revenues have been relatively unchanged in recent years, ranging from about \$706,000 to \$709,000 per year (including pass-through payments from Chauncey, Donald Park, and South Ardsley Fire Districts to SUEZ Water). As will be discussed in the next section of this technical memorandum, the Town is currently under recovering the public fire protection costs incurred by its water system with the existing hydrant rental fees.

**Figure 1. Historical Hydrant Rental Fee Revenues (All Districts)**



Note: Includes pass-through payments from Chauncey, Donald Park, and South Ardsley Fire Districts. Water service is provided by SUEZ Water in these districts. As a result, hydrant rental fees are collected by the Town and remitted to SUEZ Water. It is estimated that in FY 2018, about \$55,000 in hydrant rental fee revenues were collected from these districts.

Source: Town of Greenburgh's Adopted Budgets for FY 2011 through FY 2019.

Budgeted FY 2018 hydrant rental fee revenues for the seven fire districts are provided in Table 3. As shown in the table, hydrant rental fee revenues from each district ranged from about \$6,800 to \$238,000 per year.

**Table 3. Hydrant Rental Fee Revenue by Fire District (FY 2018)**

Fire Protection District	FY 2018 Hydrant Rental Fee Revenue
Fairview	\$237,797
Greenville	141,321
Hartsdale	154,296
East Irvington	14,699
Glenville	24,020
North Elmsford	75,287
West Elmsford	6,812
<b>Total</b>	<b>\$654,233</b>

Source: Town of Greenburgh's Adopted Budget for FY 2018.

*Estimated Annual Cost by Customer by Fire District (FY 2018)*

The estimated annual cost for public fire protection service was estimated for a typical residential property and a typical commercial property within each fire district based on the tax rates estimated to be attributable to hydrant rental fees for each fire district (Table 2), as of FY 2018. The typical taxable assessed value for a residential property was based on a review of recently sold

residential properties within the local region. The typical taxable assessed value for a commercial property was estimated based on a review of asking prices for commercial properties currently for sale within the local region. The estimated annual tax amount associated with fire protection are calculated in Table 4. As shown in the table, the estimated annual tax amount associated with a typical residential property ranged from about \$15 per year to \$73 per year, while the estimated annual tax amount paid by a commercial property ranged from \$284 per year to \$1,340 per year.

**Table 4. Estimated Annual Hydrant Rental Fee Costs by Property Type (FY 2018)**

Fire District	Hydrant Rental Fee Tax Rate	Typical Residential Property	Typical Commercial Property
Fairview	\$0.097474	\$73.11	\$1,340
Greenville	\$0.059387	\$44.54	\$816.57
Hartsdale	\$0.081150	\$60.86	\$1,116
East Irvington	\$0.067581	\$50.69	\$929.24
Glenville	\$0.064017	\$48.01	\$880.23
North Elmsford	\$0.065317	\$48.99	\$898.11
West Elmsford	\$0.020659	\$15.49	\$284.06

TAV = Taxable assessed value

### *Taxable and Tax-Exempt Parcels within the Town of Greenburgh*

Tax-exempt properties do not pay public fire protection costs under the current fire protection cost recovery method, as those costs are recovered through fire district tax assessments.<sup>2</sup> The estimated number of parcels and the amount of gross assessed value that is exempt within the Town was compiled by reviewing property tax data for FY 2018 that was provided by the Town.

A listing of the number of taxable and tax-exempt properties, as well as the gross assessed value within the Town is included in Table 5. As shown in the table, it appears that there are roughly 352 tax-exempt properties within the Town, which represent roughly \$1.5 billion in gross assessed value (about 12.7 percent of total gross assessed value). If public fire protection costs were included in water bills paid by Town water customers, it is estimated that approximately 254 (352 × 72.1 percent) of the tax-exempt properties would contribute to the recovery of these costs.<sup>3</sup>

<sup>2</sup> Tax-exempt properties do pay for the portion of fire protection costs that are not fully recovered by the existing hydrant rental fees and are thus recovered through the Town's water rates.

<sup>3</sup> Based on historical billing data provided by the Town, it was noted that there were 11,106 residential and commercial water customer accounts. However, property tax data provided by the Town indicated there were 15,399 parcels within the Town. Based on discussions with the Town this discrepancy exists because certain portions of the Town are provided water service by SUEZ Water. Therefore, its estimated that about 72.1 percent of all properties in the Town are within the Town's water service area.

**Table 5. Number of Parcels and Gross Assessed Value in the Town of Greenburgh (FY 2018)**

Fire Protection District	Taxable Parcels	Tax-Exempt Parcels	Total Parcels	Taxable Gross Assessed Value	Tax-Exempt Gross Assessed Value	Total Gross Assessed Value
Fairview	5,366	145	5,511	\$2,905,481,000	\$983,697,800	\$3,889,178,800
Greenville	2,500	56	2,556	2,748,030,200	128,247,600	2,876,277,800
Hartsdale	3,606	88	3,694	2,230,217,000	210,862,900	2,441,079,900
East Irvington	454	16	470	356,956,400	4,175,800	361,132,200
Glenville	591	9	600	514,563,000	95,401,200	609,964,200
North Elmsford	1,081	36	1,117	1,347,387,400	119,806,600	1,467,194,000
West Elmsford	289	2	291	501,020,300	2,877,800	503,898,100
<b>Total</b>	<b>13,887</b>	<b>352</b>	<b>14,239</b>	<b>\$10,603,655,300</b>	<b>\$1,545,069,700</b>	<b>\$12,148,725,000</b>

Source: Tax assessment data provided by the Town.

Note: The number of parcels differs from the number of water customer accounts. See footnote 1 on page 5.

## Estimate of Public Fire Protection Costs

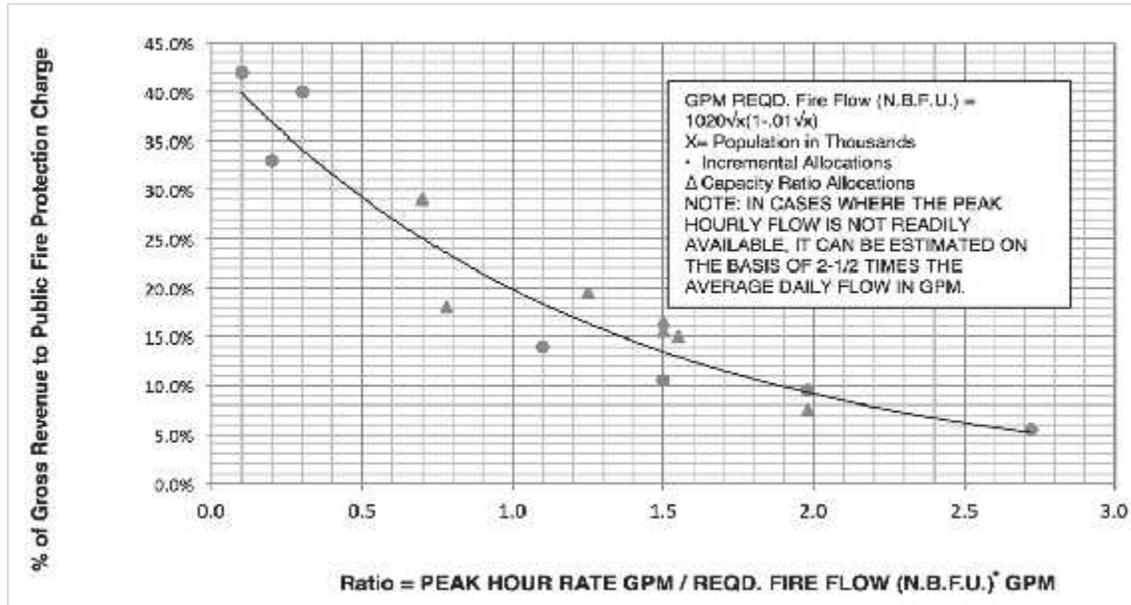
### *Approach Overview*

Fire protection costs were estimated by completing a water system cost of service analysis. As part of this analysis, a portion of the annual costs of the water system were attributed to public fire protection. Fire protection service differs from regular potable water service in that it is a stand-by service, used only when needed. While many private fire line and hydrant connections are not used during the year, the Town must still invest in and maintain the infrastructure necessary to deliver water on demand at certain flow rates and pressures to meet fire suppression needs. Therefore, costs incurred by the Town’s water system to provide public fire protection service include the operating and capital costs associated with providing system capacity, infrastructure, and appurtenances to deliver water to public hydrants for emergency fire suppression needs.

The annual cost of public fire protection for the Town was estimated using an approach that is based on the results of a study completed by the Maine Water Utilities Association Committee on Fire Protection Charges that aggregated public fire protection costs from several water utilities and developed a regression curve to relate a water system’s costs for public fire protection to the ratio of its peak hour and required fire flow demands. This regression curve is shown in Figure 2 and was used to estimate the annual cost incurred by the Town to provide public fire protection service. This approach is an industry accepted method by which to estimate a system’s annual public fire protection costs and is referenced as such in the American Water Works Association’s (“AWWA’s”) M1 Manual.<sup>4</sup>

<sup>4</sup> Principles of Water Rates, Fees, and Charges, American Water Works Association Manual of Water Supply Practices M1, 7<sup>th</sup> Edition, Chapter IV.8. In addition, it should be noted that if the actual required fire flow rate for the Town differs from the amount estimated, it could change the estimated amount of annual public fire protection costs for the Town under this method.

**Figure 2. Maine Water Utilities Association Fire Protection Curve**



Source: Maine Water Utilities Association, as included in the Principles of Water Rates, Fees, and Charges, American Water Works Association Manual of Water Supply Practices M1, 7<sup>th</sup> Edition, page 159, Table IV-8.1.

### Calculation of Estimated Costs

Based on information provided by the Town, the water system’s peak hour demand was 18 million gallons per day, or about 12,500 gallons per minute (“GPM”). The Town’s required fire flow rate was calculated using the following formula, where “x” is the population served by the Town’s water system, in thousands. This formula was developed by the Maine Water Utilities Association Committee on Fire Protection Charges, as noted in Figure 2.

$$\text{Required Fire Flow Rate (GPM)} = 1020\sqrt{x}(1 - 0.01\sqrt{x})$$

The Town’s water system serves approximately 40,500 people. Therefore, using this amount and the fire flow rate formula, the required fire flow rate was calculated to be 6,078 GPM. The system’s peak hour demand was compared to the required fire flow rate and a ratio of 2.06 (12,500 GPM ÷ 6,078 GPM) was calculated. Based on the curve shown in Figure 2, a ratio of 2.06 corresponds to an estimated percentage of public fire protection costs to total system costs of approximately 9.0 percent. In other words, where a water system’s peak hour demand is 2.06 times its required fire flow rate, it is estimated that 9.0 percent of the system’s total annual costs are attributable to providing public fire protection service.

According to the Town’s Adopted Budget for FY 2018 for its Consolidated Water District, costs attributable to the water system were budgeted to total approximately \$18.1 million. This total includes costs related to operations and maintenance, minor capital, transfers, and debt service payments on outstanding debt. Using a public fire protection cost percentage of 9.0 percent, the amount of cost estimated to be attributable to providing public fire protection service was calculated to be approximately \$1.6 million (\$18,059,410 × 9.0%). This estimate of the water

system's public fire protection costs is approximately \$971,000 (\$1,625,347 - \$654,233) more than the amount currently being recovered with the hydrant rental fees. The Town may want to consider adjusting its existing hydrant rental fee to recover approximately \$1.6 million per year, regardless of the method used to recover public fire protection costs. However, if no change is made, public fire protection costs not recovered with the hydrant rental fee or some type of surcharge will continue to be recovered from the District's user rates.

#### *Allocation of Public Fire Protection Costs to Customer Classes*

Total public fire protection costs of \$654,233 (\$709,420 minus revenues from Chauncey, Donald Park, and South Ardsley Fire Districts) were then allocated between residential and commercial customer classes based on the total fire flow demand units attributable to each class. Fire flow demand units for each class were calculated based on the estimated maximum needed fire flow to suppress a fire at a typical residential dwelling or commercial building, the duration of time for which the flow is required, and the number of customers within each class. The maximum needed fire flows for an average residential dwelling and commercial building were estimated based on fire flow requirements for various building types and sizes, as included in the 2018 International Fire Code ("IFC")<sup>5</sup>. The estimated flow durations were also obtained from the 2018 IFC. The maximum needed fire flow was multiplied by the flow duration and number of customers to calculate the equivalent fire service demand units for each class. Calculating the equivalent fire service demand units for each customer class and using them to allocate public fire protection costs to customer classes is an industry accepted method and is referenced in the AWWA's M1 Manual.

The calculation of equivalent fire service demand units is provided in Table 6. As shown in the table, the cost per demand unit was calculated to be \$0.70, which resulted in an allocation of approximately \$448,000 in public fire protection costs to residential customers and approximately \$206,000 to commercial customers.

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<sup>5</sup> 2018 International Fire Code, First Printing, Aug 2017, Table B105.1(1) and Table B105.1(2).

**Table 6. Allocation of Public Fire Protection Costs to Customer Classes**

Customer Class	Maximum Needed Fire Flow (GPM)	Duration (minutes)	Number of Customers	Equivalent Fire Service Demands Units (1,000 gal.)
Residential	1,000	60	10,639	638,340
Customer	3,500	180	467	294,210
Total				932,550
Total Fire Protection Costs				\$654,233
Total Equivalent Fire Service Demand Units				932,550
Cost per Demand Unit				\$0.70

Description	Amount
Residential Fire Protection Costs	\$447,829 (638,340 × \$0.70)
Commercial Fire Protection Costs	\$206,404 (294,210 × \$0.70)

## Hydrant Rental Fee Alternatives

### *Alternative 1: Flat Surcharge per Bill*

Under this alternative, water customers would be charged a flat surcharge per water bill. In total, the Town serves 10,639 residential and 467 commercial inside district customer accounts. Therefore, given the allocation of public fire protection costs to each class and the number of accounts within each class, the residential and commercial hydrant rental fee per month was calculated and is shown in Table 7. As shown in the table, the surcharge for a residential customer was calculated to be \$3.51 per month, which equates to a cost for public fire protection service of \$42.09 per year. The surcharge for a commercial customer was calculated to be \$36.83 per monthly bill, which equates to a total annual cost for public fire protection service of \$441.98.

**Table 7. Calculation of Flat-Rate Surcharge per Bill**

Description	Amount
Allocated Residential Public Fire Protection Costs	\$447,829
Number of Residential Accounts	10,639
Surcharge per Account (per year)	\$42.09
Surcharge per Account (per month)	\$3.51
Allocated Commercial Public Fire Protection Costs	\$206,404
Number of Commercial Accounts	467
Cost per Account (per year)	\$441.98
Cost per Account (per bill)	\$36.83

### *Alternative 2: Surcharge per Bill, Based on Service Line Size*

Under this alternative, a surcharge that varies by service line size would be added to each customer's water bill. The surcharge was calculated by first identifying the number of in-district residential and commercial customers associated with each connection size. Then, the equivalent number of connections was calculated for each connection size based on an associated scaling factor. The scaling factors were developed using the Hazen-Williams equation for flow through pressure conduits, which represents the relative flow potential for various connection sizes.<sup>6</sup> A 1-inch diameter line size was used as an equivalent connection, and other line sizes were scaled in relation to this line size. Using the Hazen-Williams equation and the resulting equivalent connections to design individual charges by water service line size is an industry accepted method to recover public fire protection costs from customers and is referenced in the AWWA's M1 Manual.

The number of connections, scaling factors, and the calculated number of equivalent connections for each water service line size for residential customers are shown in Table 8. The annual cost per equivalent connection is also shown in this table. The calculated surcharges for each residential connection size on an annual and a monthly basis are provided in Table 9. As shown in Table 9, the surcharge for a residential customer with a 5/8-inch connection was calculated to be \$1.67 per month, resulting in an annual cost for public fire protection service of \$19.98.

The number of connections, scaling factors, and the calculated number of equivalent connections for each water service line size for commercial customers are shown in Table 10. The cost per equivalent connection is also shown in this table. The calculated surcharge for each connection size on an annual and a monthly basis is provided in Table 11. As shown in Table 11, the surcharge for a commercial customer ranged from \$0.35 to \$507.66 per month, depending on water service line size, which resulted in an annual cost range of \$4.15 to \$6,092 for these customers.

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<sup>6</sup> Using the Hazen-Williams equation, scaling factors were calculated for each connection size based on the pipe diameter in inches raised to the 2.63 power.

**Table 8. Calculated Residential Surcharge per Equivalent Connection**

Water Service Line Size	Count	Scaling Factor	Equivalent Connections
5/8"	7,986	0.3	2,320
3/4"	58	0.5	27
1"	2,451	1.0	2,451
1-1/2"	66	2.9	192
2"	56	6.2	347
3"	10	18.0	180
4"	9	38.3	345
6"	2	111.3	223
8"	0	237.2	0
10"	1	426.6	427
<b>Total</b>	<b>10,639</b>		<b>6,511</b>
Allocated Residential Cost		\$447,829	
Surcharge per Equiv. Connection		\$68.79	

**Table 9. Calculated Residential Surcharge per Month by Connection Size**

Water Service Line Size	Cost (per year)	Cost (per month)
5/8"	\$19.98	\$1.67
3/4"	\$32.28	\$2.69
1"	\$68.79	\$5.73
1-1/2"	\$199.81	\$16.65
2"	\$425.80	\$35.48
3"	\$1,236.88	\$103.07
4"	\$2,635.81	\$219.65
6"	\$7,656.58	\$638.05
8"	\$16,316.38	\$1,359.70
10"	\$29,342.50	\$2,445.21

**Table 10. Calculated Commercial Surcharge per Equivalent Connection**

Water Service Line Size	Count	Scaling Factor	Equivalent Connections
5/8"	8	0.3	2
3/4"	0	0.5	0
1"	99	1.0	99
1-1/2"	15	2.9	44
2"	102	6.2	631
3"	96	18.0	1,726
4"	114	38.3	4,368
6"	20	111.3	2,226
8"	1	237.2	237
10"	12	426.6	5,119
<b>Total</b>	<b>467</b>		<b>14,453</b>
Allocated Commercial Cost		\$206,404	
Surcharge per Equiv. Connection		\$14.28	

**Table 11. Calculated Commercial Surcharge per Bill by Connection Size**

Water Service Line Size	Cost (per year)	Cost (per month)
5/8"	\$4.15	\$0.35
3/4"	\$6.70	\$0.56
1"	\$14.28	\$1.19
1-1/2"	\$41.48	\$3.46
2"	\$88.40	\$7.37
3"	\$256.79	\$21.40
4"	\$547.23	\$45.60
6"	\$1,589.60	\$132.47
8"	\$3,387.48	\$282.29
10"	\$6,091.86	\$507.66

*Alternative 3: Volumetric Rate Surcharge*

Under this option, public fire protection costs would be recovered in the volumetric rates charged to water customers. The surcharge was calculated by first estimating the average volume of billed consumption over the last five fiscal years (FY 2013 through FY 2017) for in-district residential and commercial customers. An average annual consumption amount was used to recognize that billed consumption may vary year to year due to weather or other short-term factors. The fire protection cost by customer class was then divided by the average annual billed consumption to derive the volumetric rate surcharge. The allocated residential cost, average annual residential consumption, and the calculated residential surcharge per 1,000 gallons is provided in Table 12. As shown in the table, the estimated level of billed residential consumption was approximately 1.2 billion gallons per year, which resulted in a surcharge of \$0.39 per 1,000 gallons.

**Table 12. Calculation of Residential Volumetric Water Rate Surcharge**

Description	Amount
Allocated Residential Cost	\$447,829
<u>Residential Consumption:</u>	
Tier 1	468,064
Tier 2	442,988
Tier 3	<u>243,930</u>
Total	1,154,982
Volumetric Surcharge per 1,000 gal.	\$0.39

The allocated commercial public fire protection cost, average annual commercial consumption, and the calculated commercial surcharge per 1,000 gallons is provided in Table 13. As shown in the table, the estimated volume of billed commercial consumption was approximately 860 million gallons per year, which resulted in a surcharge of \$0.24 per 1,000 gallons.

**Table 13. Calculation of Commercial Volumetric Water Rate Surcharge**

Description	Amount
Allocated Commercial Cost	\$206,404
<u>Commercial Consumption:</u>	
Tier 1	13,165
Tier 2	41,155
Tier 3	<u>805,189</u>
Total	859,509
Volumetric Surcharge per 1,000 gal.	\$0.24

*Alternative 4: Hybrid Approach*

Under this alternative, public fire protection costs would be recovered from residential customers with a volumetric surcharge, and from commercial customers with a flat surcharge per bill. Therefore, all residential customers would be assessed a volumetric surcharge of \$0.39 per 1,000 gallons, while all commercial customers would be assessed the flat-rate charge of 36.83 per bill, resulting in a cost of \$441.98 per year.

The purpose of the hybrid approach is to lower the cost of fire protection service to most residential customers, while minimizing the bill impact on the Town’s largest commercial customers. The bill comparisons shown in Figures 3 through 7 in the Customer Bill Impact Analysis section of this technical memorandum provide a more detailed analysis of the bill impacts this approach would have on residential and commercial customers.

## Customer Bill Impact Analysis

Customer bill impacts were prepared to analyze the cost differences between the existing method of assessing public fire protection costs to property owners and the four alternative assessment methods. Bill impacts were analyzed for the following customers:

### Residential Properties and Water Customers:

- ) 5/8-inch connection size
- ) Taxable assessed values ranging from \$300,000 to \$1,200,000
- ) Billable consumption ranging from 10,000 gallons to 100,000 gallons per year

### Commercial Properties and Water Customers:

- ) 1-inch connection size
- ) 2-inch connection size
- ) 3-inch connection size
- ) 4-inch connection size
- ) Taxable assessed values ranging from \$2,500,000 to \$25,000,000.
- ) Billable consumption with ranges specific to each connection size.

It should be noted that commercial customers with connection sizes of 1-, 2-, 3-, and 4-inches comprise almost 90 percent of all commercial customers. Furthermore, it should also be noted that the annual cost shown for properties under the existing hydrant rental fee method and the four alternatives was based on the recovery of \$654,233 per year. However, as noted previously, public fire protection costs attributable to the Town's water system were estimated to be of about \$1.6 million per year. This represents an increase of roughly \$971,000, or 148.4 percent, in the annual amount of cost recovered. Therefore, if the Town were to implement one of the hydrant rental fee alternatives discussed previously and they were designed to recover \$1.6 million, rather than the roughly \$654,000, the bill impacts shown in the following figures would be significantly different.

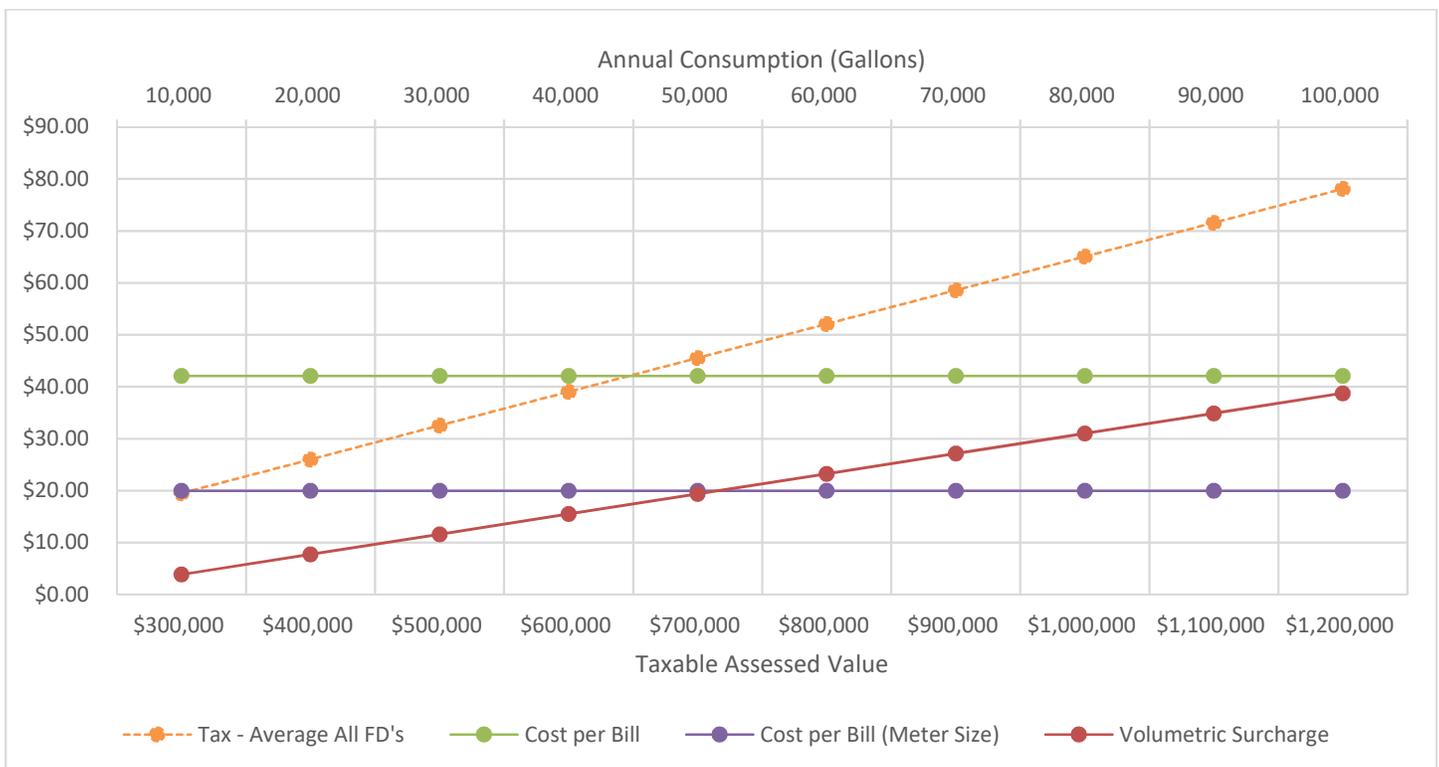
### *Residential Customer Bill Impact Analysis*

A comparison of the existing method of recovering public fire protection costs from residential properties (i.e., ad valorem tax) to the four alternative approaches (i.e., surcharge per bill, surcharge per bill by connection size, volumetric surcharge, and hybrid approach) is described below, and presented in Figure 3:

- ) Under the surcharge per bill alternative (Alternative 1), typical residential customers with a taxable assessed value of less than approximately \$650,000 would realize an annual cost increase, with these increases being as much as \$23 per year. However, typical residential customers with a taxable assessed value of more than roughly \$650,000 would realize an annual cost decrease, with these decreases being as much as \$36 per year.

- J Under the surcharge per bill by connection size alternative (Alternative 2), most typical residential customers would be paying less per year than they were under the existing assessment method. Customers with higher taxable assessed values would realize the largest decreases. Such decreases could be as much as \$58 per year.
- J With the volumetric surcharge alternative (Alternative 3), the impact is less clear. However, it can be concluded that typical residential customers with lower taxable assessed values and higher water consumption will likely see an annual cost increase, while typical residential customers with higher taxable assessed values and lower consumption will likely see an annual cost decrease. Such increases could be as much as \$19 per year, while decreases could be as much as \$74 per year.

**Figure 3. Customer Bill Impact – Residential Customer (5/8-inch connection)**



*Commercial Customers (1-Inch Connection)*

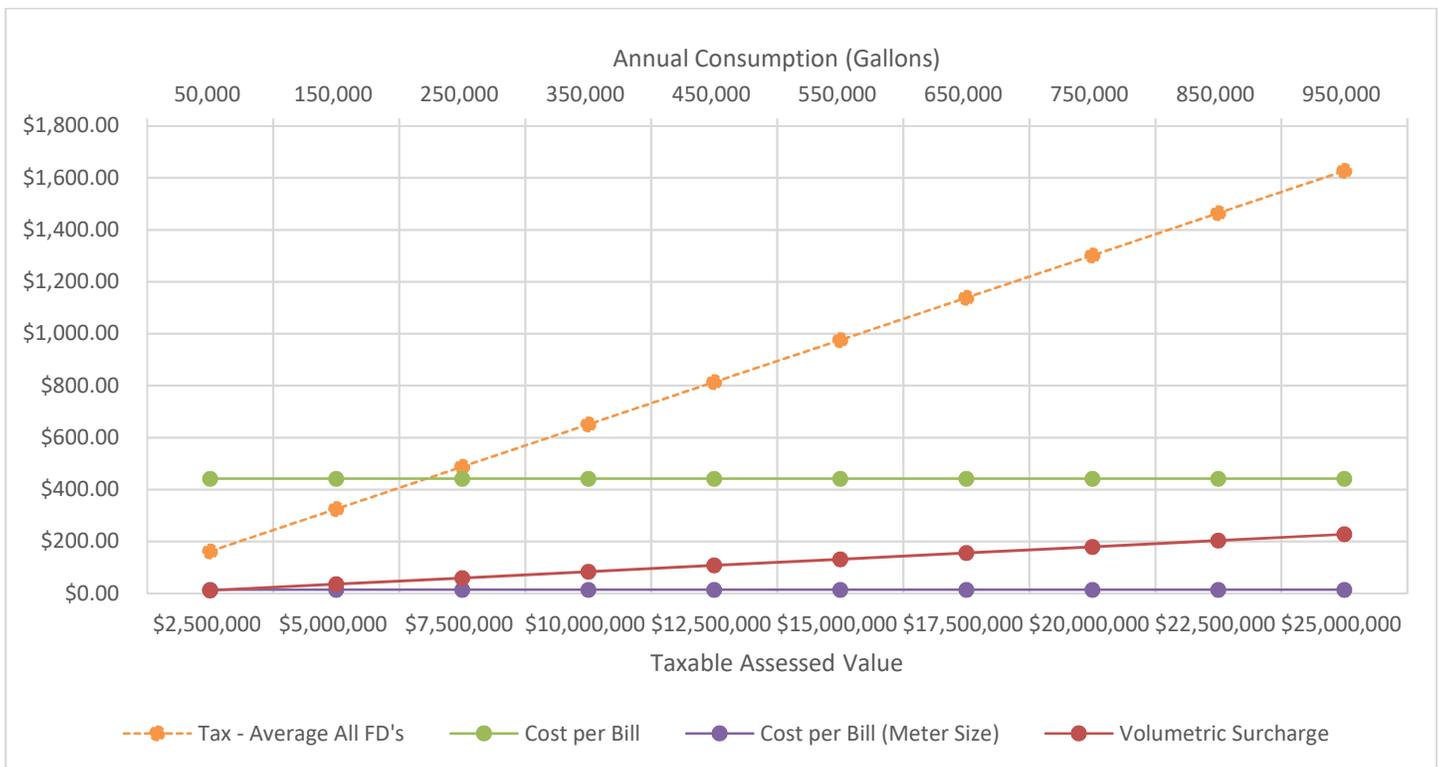
A comparison of the existing method of recovering public fire protection costs with the three alternative approaches for typical commercial customers with a 1-inch connection is described below and shown in Figure 4:

- J Under the surcharge per bill alternative (Alternative 1), typical 1-inch commercial customers with taxable assessed values of less than approximately \$7.0 million would be paying more per year than they were under the existing assessment method. Such increases could be as much as \$279 per year. Customers with a taxable assessed value of

more than roughly \$7.0 million would realize an annual cost decrease, with these decreases being as much as \$1,185 per year.

- J) Under the surcharge per bill by connection size alternative (Alternative 2), many typical 1-inch commercial customers would be paying less than under the existing assessment method. Customers with higher taxable assessed values would realize the largest decreases, which could be as much as \$1,613 per year.
- J) With the volumetric surcharge alternative (Alternative 3), many typical 1-inch commercial customers would realize an annual cost decrease, while a portion would realize an annual cost increase. The annual cost decreases could be as much as \$1,615 per year, while the annual cost increases could be as much as \$65 per year.

**Figure 4. Customer Bill Impact - Commercial Customer (1-inch connection)**



*Commercial Customers (2-Inch Connection)*

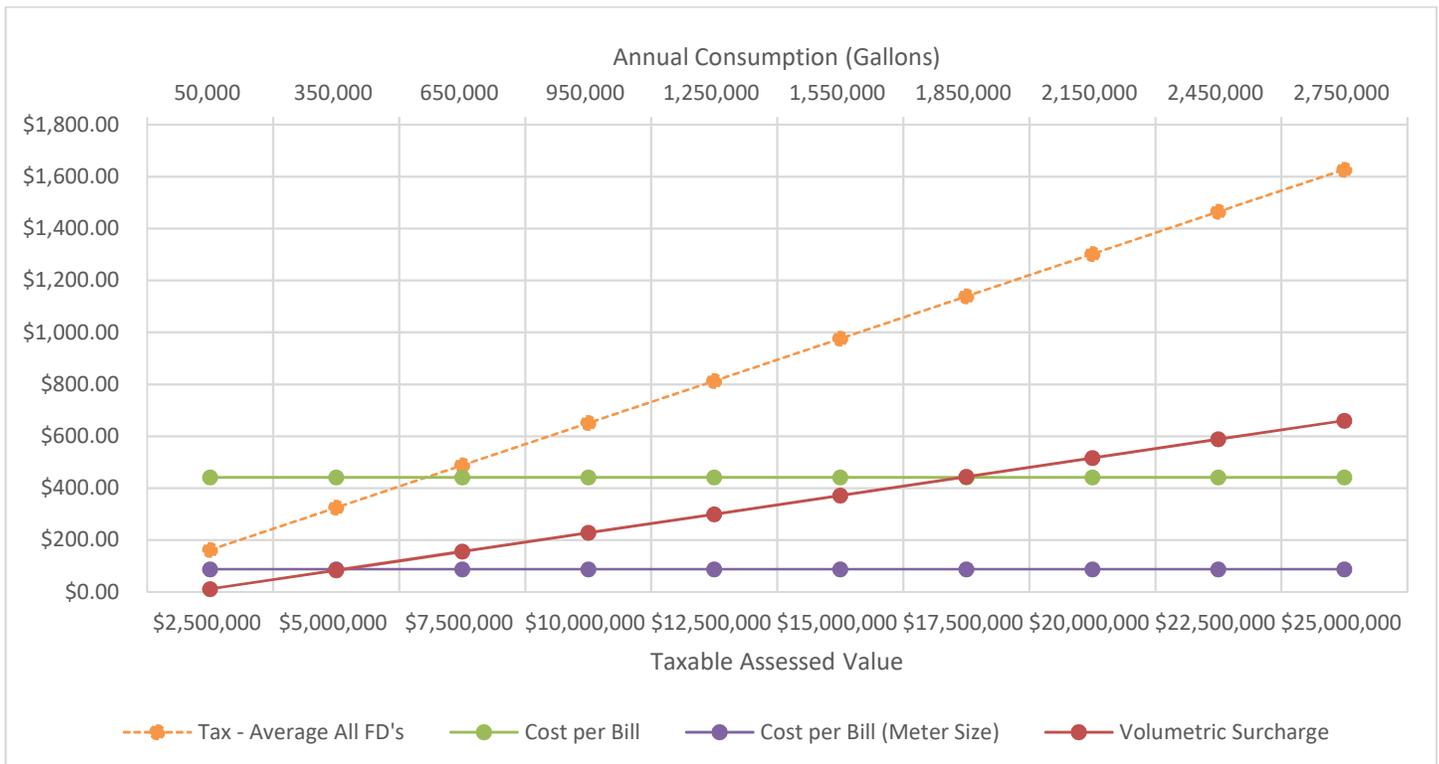
A comparison of the existing method of recovering public fire protection costs with the three alternative approaches for typical commercial customers with a 2-inch connection is described below and shown in Figure 5:

- J) Under the surcharge per bill alternative (Alternative 1), typical 2-inch commercial customers with taxable assessed values of less than approximately \$7.0 million would be paying more per year than they were under the existing assessment method. Such increases could be as much as \$279 per year. Customers with a taxable assessed value of

more than roughly \$7.0 million would realize an annual cost decrease, with these decreases being as much as \$1,185 per year.

- J Under the surcharge per bill by connection size alternative (Alternative 2), many typical 2-inch commercial customers would be paying less than under the existing assessment method. Customers with higher taxable assessed values would realize the largest decreases, which could be as much as \$1,539 per year.
- J With the volumetric surcharge alternative (Alternative 3), the impact is less clear. However, from the figure, it can be concluded that typical 2-inch commercial customers with lower taxable assessed values and higher water consumption will likely see an annual cost increase, while those with higher taxable assessed values and lower consumption will likely see an annual cost decrease. The annual cost decreases could be as much as \$1,615 per year, while the annual cost increases could be as much as \$498 per year

**Figure 5. Customer Bill Impact - Commercial Customer (2-inch connection)**



**Commercial Customers (3-Inch Connection)**

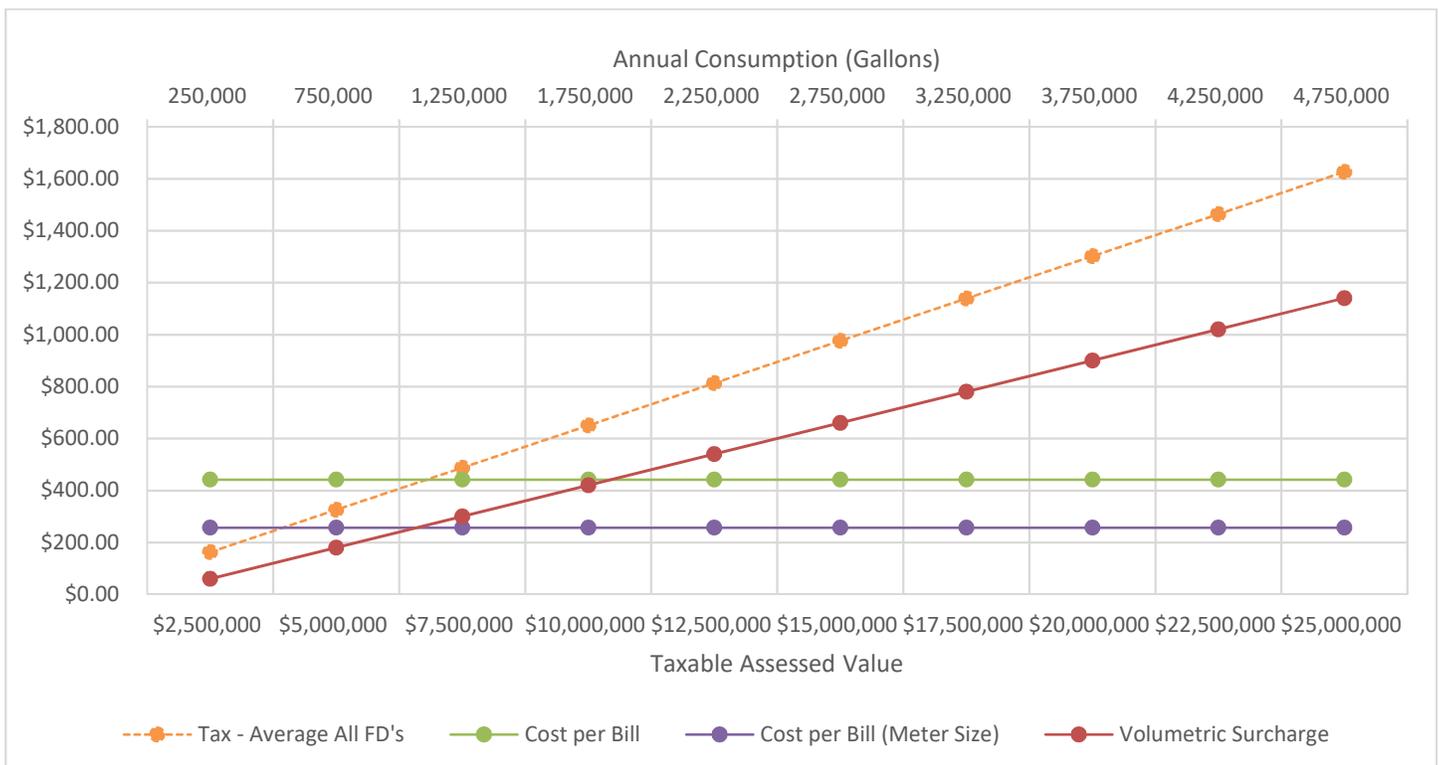
A comparison of the existing method of recovering public fire protection costs with the three alternative approaches for typical commercial customers with a 3-inch connection is described below and shown in Figure 6:

- J Under the surcharge per bill alternative (Alternative 1), typical 3-inch commercial customers with taxable assessed values of less than approximately \$7.0 million would be

paying more per year than they were under the existing assessment method. Such increases could be as much as \$279 per year. Customers with a taxable assessed value of more than roughly \$7.0 million would realize an annual cost decrease, with these decreases being as much as \$1,185 per year.

- J) Under the surcharge per bill by connection size alternative (Alternative 2), typical 3-inch commercial customers with taxable assessed values higher than approximately \$4.0 million would realize an annual cost decrease. Customers with higher taxable assessed values would realize the largest decreases. Such decreases could be as much as \$1,370 per year. All other customers would realize an annual cost increase, with these increases being as much as \$94 per year.
- J) With the volumetric surcharge alternative (Alternative 3), the impact is less clear. However, from the figure, it can be concluded that typical 3-inch commercial customers with lower taxable assessed values and higher water consumption will likely see an annual cost increase. Such increases could be as much as \$978 per year. However, customers with higher taxable assessed values and lower water consumption will likely see an annual cost decrease, with such decreases being as much as \$1,567 per year.

**Figure 6. Customer Bill Impact – Commercial Customer (3-inch connection)**

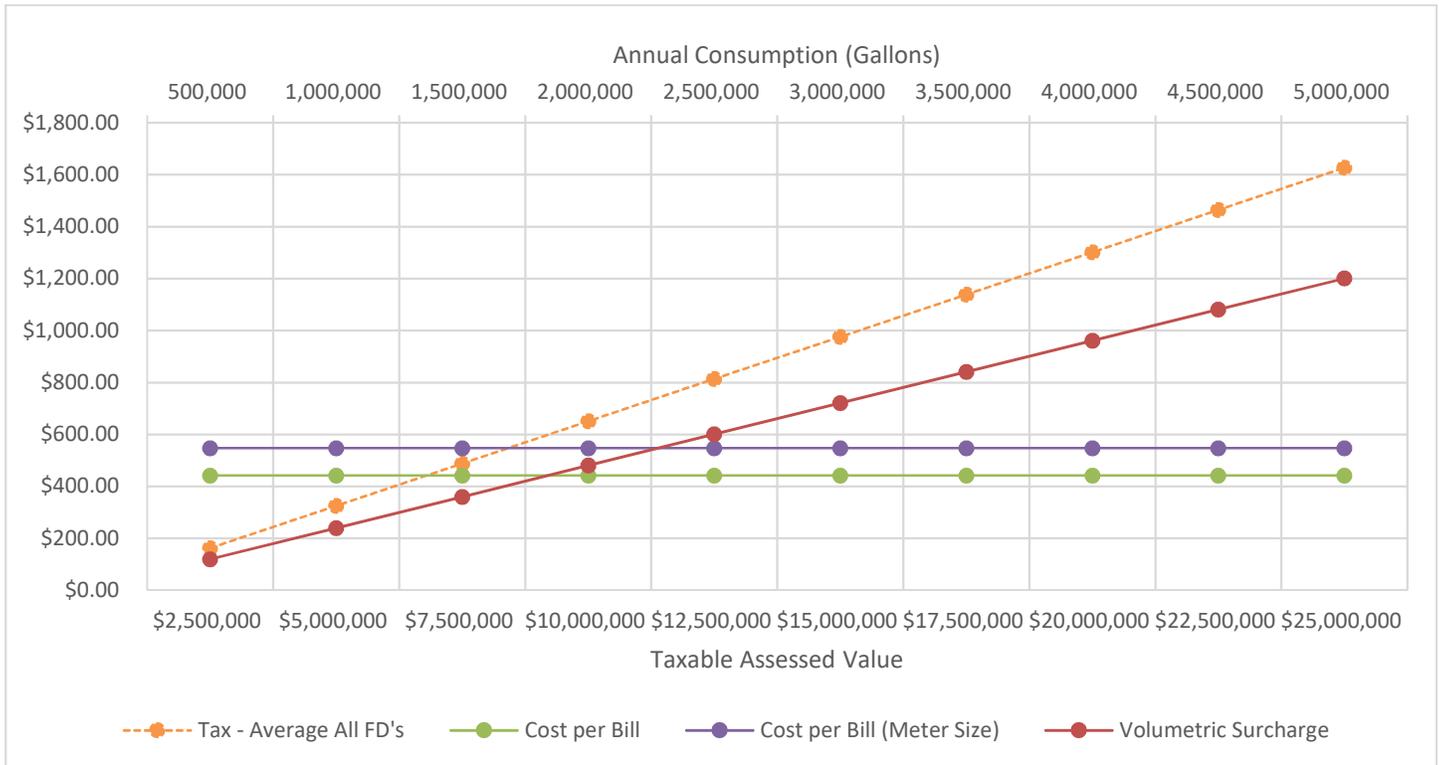


### *Commercial Customers (4-Inch Connection)*

A comparison of the existing method of recovering public fire protection costs with the three alternative approaches for typical commercial customers with a 4-inch connection is described below and shown in Figure 7:

- ) Under the surcharge per bill alternative (Alternative 1), typical 4-inch commercial customers with taxable assessed values of less than approximately \$7.0 million would be paying more per year than they were under the existing assessment method. Such increases could be as much as \$279 per year. Customers with a taxable assessed value of more than roughly \$7.0 million would realize an annual cost decrease, with these decreases being as much as \$1,185 per year.
- ) Under the surcharge per bill by connection size alternative (Alternative 2), typical 4-inch commercial customers with taxable assessed values higher than approximately \$8.0 million would realize an annual cost decrease. Such decreases could be as high as \$1,080 per year, and customers with higher taxable assessed values would realize the largest decreases. Other typical customers would realize an annual cost increase, with these increases being as much as \$385 per year.
- ) With the volumetric surcharge alternative (Alternative 3), the impact is less clear. However, from the figure, it can be concluded that typical 4-inch commercial customers with lower taxable assessed values and higher water consumption will likely see an annual cost increase. Such increases could be as much as \$1,038 per year. However, typical customers with higher taxable assessed values and lower water consumption will likely see an annual cost decrease, with those decreases being as much as \$1,507 per year.

**Figure 7. Customer Bill Impact – Commercial Customer (4-inch connection)**



## Conclusions and Recommendations

The following are our principal conclusions and recommendations resulting from the hydrant surcharge evaluation.

1. Annual hydrant rental fee revenues have been relatively unchanged in recent years (FY 2009 through FY 2018) and have ranged from about \$706,000 to \$709,000 per year.
2. The existing hydrant rental fees under recover the system's estimated annual cost of public fire protection by approximately \$971,000 (\$1,625,347 - \$654,233). In future years, the Town may want to consider adjusting its existing hydrant rental fees or utilize an alternative assessment method based on the updated estimated cost of providing public fire protection service of approximately \$1.6 million to ensure full recovery of these costs within the hydrant rental fee or surcharge. However, if no change is made, public fire protection costs not recovered with the hydrant rental fee or some type of surcharge will continue to be recovered from the District's user rates.
3. Under the flat-rate surcharge per bill alternative, the cost per month for a residential customer was calculated to be \$3.51, which equates to a total annual cost for public fire protection service of \$42.09. The cost per bill for a commercial customer was calculated to be \$36.83, which equates to a total annual cost for public fire protection service of approximately \$441.98.

4. Under the flat-rate surcharge per bill by connection size alternative, the cost per month for a residential customer with a 5/8-inch connection was calculated to be \$1.67, resulting in an annual cost for public fire protection service of \$19.98. The cost per bill for a commercial customer ranged from \$0.35 to about \$508, depending on connection size, which resulted in an annual cost ranging from \$4.15 to roughly \$6,092 for these customers.
5. Under the volumetric water rate surcharge alternative, the surcharge for residential customers was calculated to be \$0.39 per 1,000 gallons, while the surcharge for commercial customers was calculated to be \$0.24 per 1,000 gallons.
6. If the Town desires to change from a method of recovery of public fire protection costs with ad valorem taxes to a water bill method of recovery, then it is recommended that the Town implement the hybrid approach. This recommendation is in consideration of the following factors:
  - a. Administering a surcharge to residential customers as part of the existing water volumetric rates, and to commercial customers on a per bill basis, would require little additional administrative effort on the part of the Town. Alternatively, implementing a surcharge by connection size would require the Town to identify the individual connection sizes for all in-district customers and to import this information into the billing system, which could represent a significant administrative burden. This would also have to be done in future years when new customers are added to the system.
  - b. Most residential customers will pay less, or at least a comparable amount, for public fire protection service under this approach. For example, a customer with a taxable assessed value of \$500,000 would pay approximately \$32.54 per year under the existing assessment method. Assuming 5,000 gallons per month of water use (60,000 gallons per year), the annual cost for public fire protection service would decrease to about \$23.26 per year, which is a decrease of \$9.28, or 28.5 percent (customers that have higher taxable assessed values or use less water would realize more of a cost decrease). However, assessing public fire protection charges to this customer with a flat surcharge per bill would result in a cost of \$42.09 per year, which is an increase of \$9.55, or 29.3 percent.

High-volume residential customers with low taxable assessed values will likely pay more under this approach. However, a large portion of a high-volume residential customer's water use is likely attributable to outdoor or some other type of discretionary use. Therefore, the cost increase may send a price signal to these customers, causing them to curtail their usage. This supports ongoing water conservation efforts by the Town and helps to decrease the cost of purchased water, on a per unit basis, from the New York City Water Board.

- c. While many commercial customers would realize a cost increase under the hybrid approach, the increase would likely be moderate, at no more than several hundred dollars per year. In addition, recovering public fire protection costs with a flat

charge per bill, rather than a volumetric surcharge, serves to minimize bill impacts on the Town's largest commercial water users.

Thank you for the opportunity to work with the Town to evaluate its current hydrant rental fee assessment method, as well as other alternatives for assessing public fire protection costs to customers of its water system. If you have any questions regarding the information discussed in this technical memorandum, please contact me at 518-982-4223.

Very truly yours,

RAFTELIS FINANCIAL CONSULTANTS, INC.

Philip Sapone  
Senior Consultant

CC:

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