

## MEMORANDUM



TO: Ed Bean, Director of Finance  
FROM: Toby Fedder, P.E. and Jessica Richard  
DATE: September 12, 2016  
RE: Water and Wastewater Cost of Service/Rate Study  
FY2017 to FY2021 Water and Sewer Rate and Charge Recommendations

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This memorandum documents the process used in developing our water and sewer rate recommendations for the City of Somerville (City) for the Fiscal Years 2017 through 2021. It was completed taking into account the City's 2012 through 2016 appropriated budgets, FY2012 through 2016 MUNIS reports documenting past rate performance, FY2012 through FY2014 Department of Revenue (DOR) Free Cash Certification Letters for the Enterprise Funds, the 2012 Water Distribution and Capital Improvement Plan, 2010 – 2030 Somerville Vision Comprehensive Plan, and other water/sewer related items within the City's Capital Improvement Master Plan.

### **Utility Background**

According to the 2010 U.S. Census, the City has a population of 75,754 and occupies a land area of approximately four (4) square miles. The City's Water and Sewer Divisions are enterprise account funded divisions under the Somerville Department of Public Works. The Water and Sewer Division serves approximately 15,000 residential, commercial, industrial and institutional accounts, serving the entire City with water and sewer service.

The total costs for each utility include normal operating costs (i.e., salaries, electricity, etc.), debt service (repayment of debt incurred in past large projects), and capital renewal expenditures (annual spending to replace mains and equipment).

#### Water Utility

The City's water is supplied to the City from the Massachusetts Water Resources Authority (MWRA), a public authority that provides wholesale water and wastewater service to 61 communities in Massachusetts. The water is then distributed to Somerville water customers through 125 miles of water distribution mains.

#### Sewer Utility

The City's Sewer Division owns and operates approximately 128 miles of sewer interceptors, which transport wastewater to the MWRA interceptor sewers. While there are some small areas where drains and sewers are separated, the majority of the City's sewers collect and transport both sewage and stormwater. The interceptor sewers range in size from 8 inches to 11 feet in diameter and carry the wastewater to the Deer Island Wastewater Treatment Plant. While gravity sewer transports the majority of the wastewater, several low-lying areas require pumping.

### **Current Billing Practices**

The City charges its utility customers for water and sewer use based upon a combination of fixed monthly minimum charges and volumetric charges that are applied on all water and sewer usage above the volume allotted under the fixed minimum charge. The current system has a four-tier, inclining rate block



structure in which customers pay higher volumetric rates as individual account consumption increases. Accounts classified as residential are billed every four months (tri-annually) and accounts classified as commercial are billed bi-monthly.

The service charge and the volumetric fee structure have been in place for years and were most recently increased for the current fiscal cycle (FY16). The increase is expected to help cover persistent revenue shortfalls seen in prior years but current rates will be insufficient to allow the City to make needed future capital investments in both the water and sewer systems. Since the existing rate structure has been producing a predictable revenue stream for many years, the City has elected to continue with the same basic structure for the completion of this rate study.

### **Rate Study Description**

Woodard & Curran has conducted a cost of service/rate study of the water and sewer use charges as a means of effectively collecting revenue for Water and Sewer Divisions. There are five primary objectives for the completion of this cost of service/rate study:

1. Examine the recent historical performance of the existing water and sewer rate structures;
2. Provide a projection of future operating budgets, including the budgetary impacts of expected capital upgrades;
3. Rationally allocate costs for fire suppression services provided to customers;
4. Evaluate the rate impacts debt financing and cash financing of the proposed capital upgrades; and
5. Use both historical consumption and non-consumption revenue data to calculate water and sewer usage charges that generate revenues sufficient to fully fund the City's water and sewer operations, make needed capital investments, and maintain adequate reserve fund balances.

The Water and Sewer rate studies were completed as two concurrent but distinct assessments.

The first phase of each rate study revolves around developing a full understanding of each Division's budgeting and expenditures and making informed, defensible estimates of the true cost of providing water and sewer service to the City of Somerville. For both Divisions, these estimates include the Division's operating budgets, the cost of existing debt repayment, and the cost of all capital investments to be made over the projection period. The period for these estimates is from FY2017 through FY2021, providing a five-year projection.

The second phase of the rate study is to review the Division's historical billing records and make projections of the volume of water and sewer sales that are expected from the Divisions' customer bases. Using these projections, the monthly minimum charges and volumetric charges can be set in a manner that is expected to generate the funds needed to operate the Division, make payments on outstanding debt, and make needed investments to ensure the long-term adequacy of the infrastructure.

In any utility that is operating on a stand-alone (non-subsidized) basis, the actual cost of service must be less than or equal to the amount of revenues which are generated through the utility's billing practices. On a long-term basis, any shortfall from this level produces deficits and any revenue over-run produces surpluses. Shortfalls can be covered through budgetary under-runs, but this leads to reduced levels of service and/or delayed maintenance, which can impair the long-term performance of the utility.



**Water Rate Study**

As indicated, the four primary steps in appropriately setting rates are:

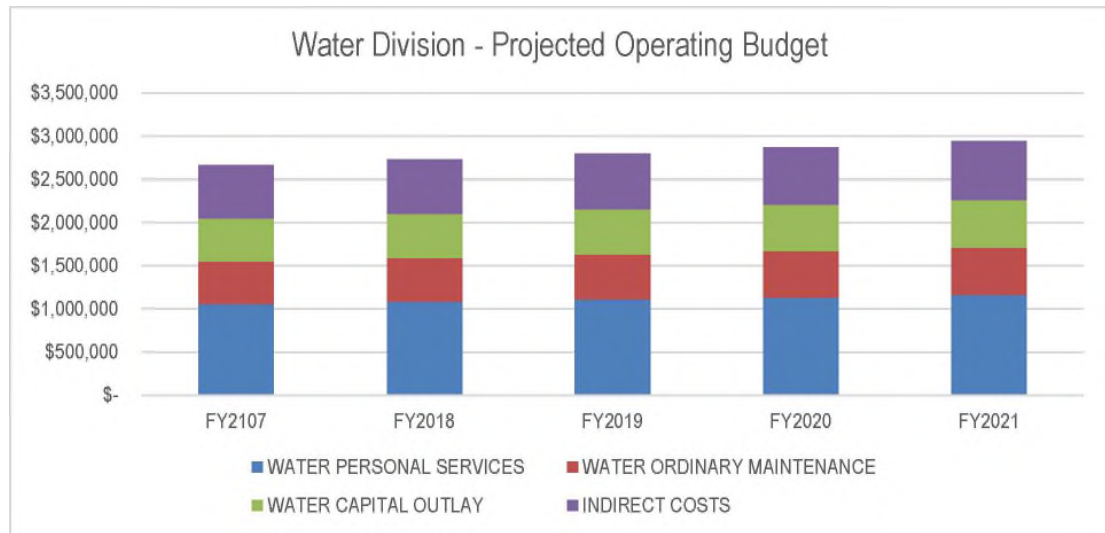
1. Developing defensible projections of the full costs associated with operating the Water Division;
2. Allocating costs to areas where specific identifiable services (fire suppression services) are being provided to a sub-set of all customers;
3. Reviewing multiple years of water billed consumption records; and
4. Calculating the monthly, fire suppression, and volumetric charges necessary to provide for the utility’s long-term financial sustainability.

The results of these steps are detailed below.

**Water Division Operating Budgets**

Woodard & Curran examined the past four years of the Water Division’s budgets. Based on these budgets, a projection of the expected costs of running the Division were developed. As there have been no major changes to the level of service that is expected from the Division, the projection included in the rate model (and graphically represented below) is based on FY2016, escalated in line with industry standards.

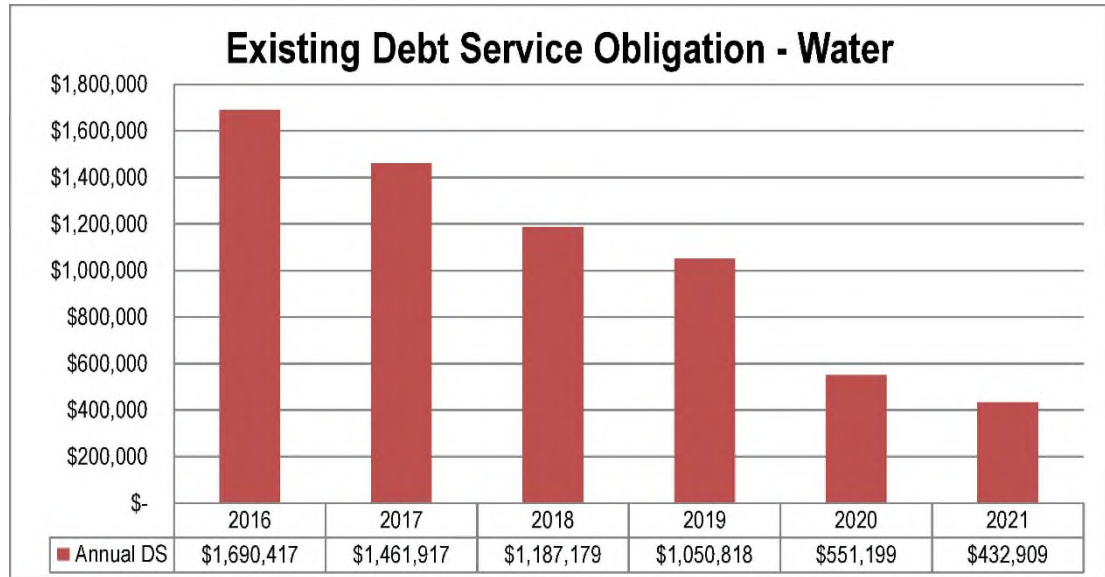
As depicted on the chart below, we project that the water operating budget will increase from approximately \$2.7M (million) in FY2017 to \$3.0M in FY2021.





**Water Utility Debt Service**

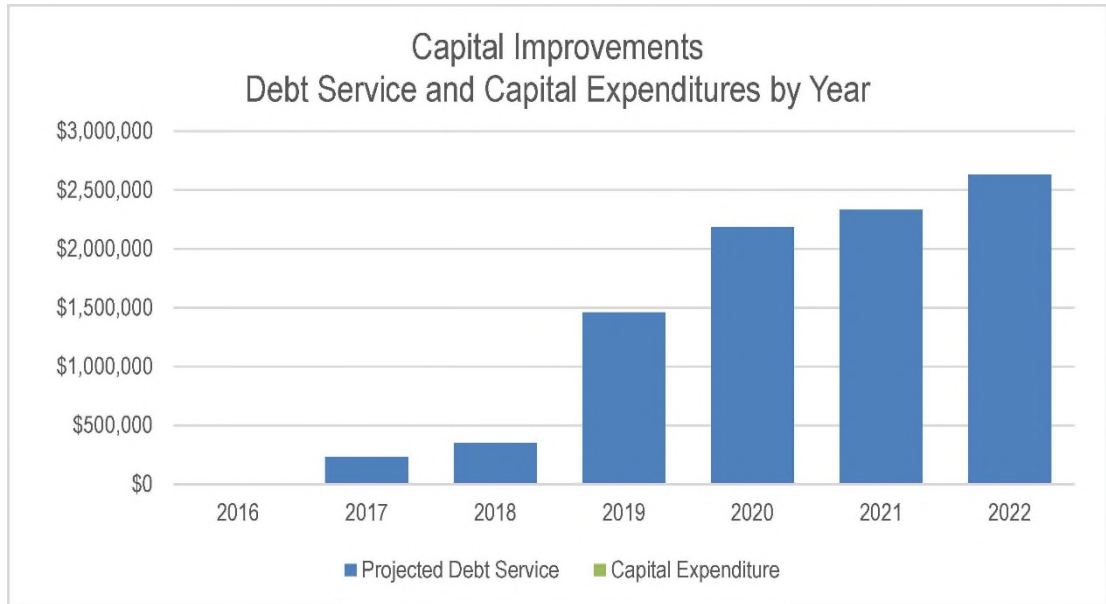
Similar to most enterprise funded water utilities, the Somerville Water Division has a series of bond issuances that it is responsible to repay to bondholders. A summary of these obligations was developed and is presented on the following chart. As is apparent, the debt service obligations for the Water Division are scheduled to decline significantly over the projections period covered by this rate study.



**Water Division Capital Improvement Program**

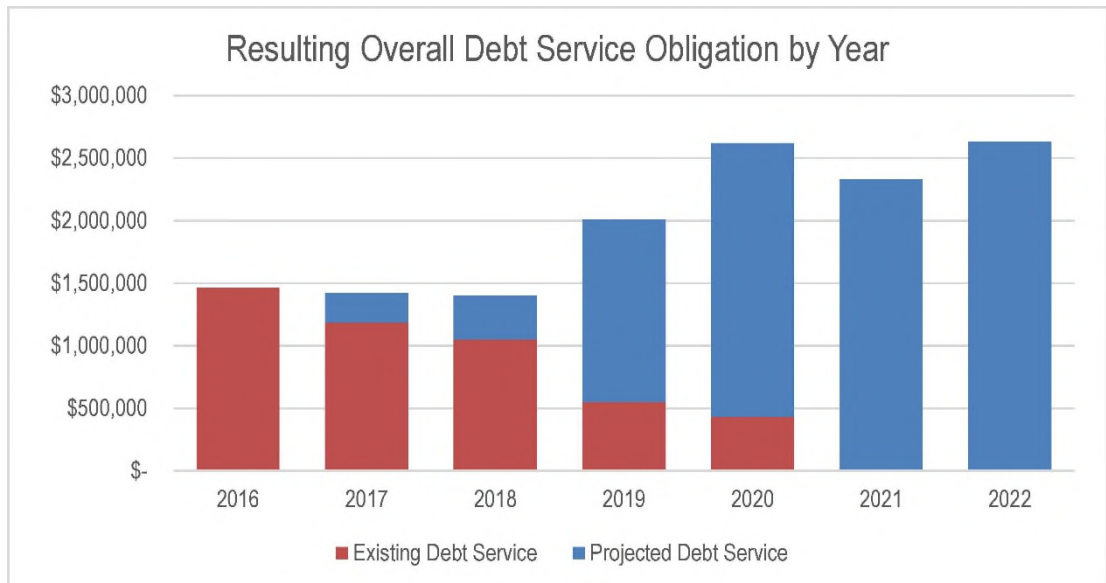
The Water Division is currently in the process of updating its Water Master Plan, which will guide investments over the coming five to ten years. Using the preliminary results from the Master Plan, combined with the current investments that the City is aware of, we compiled a full list of projects that have been incorporated into the model. Between FY2017 and FY2021, the list includes 35 projects with FY2016 construction cost estimates totaling just under \$40.5M. The full list, including the capital projects being completed this fiscal year, is attached to the back of this Memo as Attachment 1, with the projects listed chronologically.

From the financial perspective, having a comprehensive capital projects list is critical since the value, completion schedule and manner of financing all have important impacts on the way that the utility will experience the fiscal impacts of the capital projects. As is apparent on Attachment 1, each of the projects has an associated value, a year of construction, and a manner of financing identified. Based upon this list and completion schedule, a projection of the annualized costs of completing the Capital Improvement Program was developed and is shown on the chart below.



The construction of capital projects is recommended to shift to being funded through a combination of capital outlay and the issuance of new debt as older debt matures. This method of financing will allow the Water Division to accomplish more significant upgrades in the near-term while minimizing the rate impact associated with those capital projects, where they were to be constructed using appropriation. As with the Water Division’s current debt service obligations, it is anticipated that the new debt would be issued as Special Obligation Bonds.

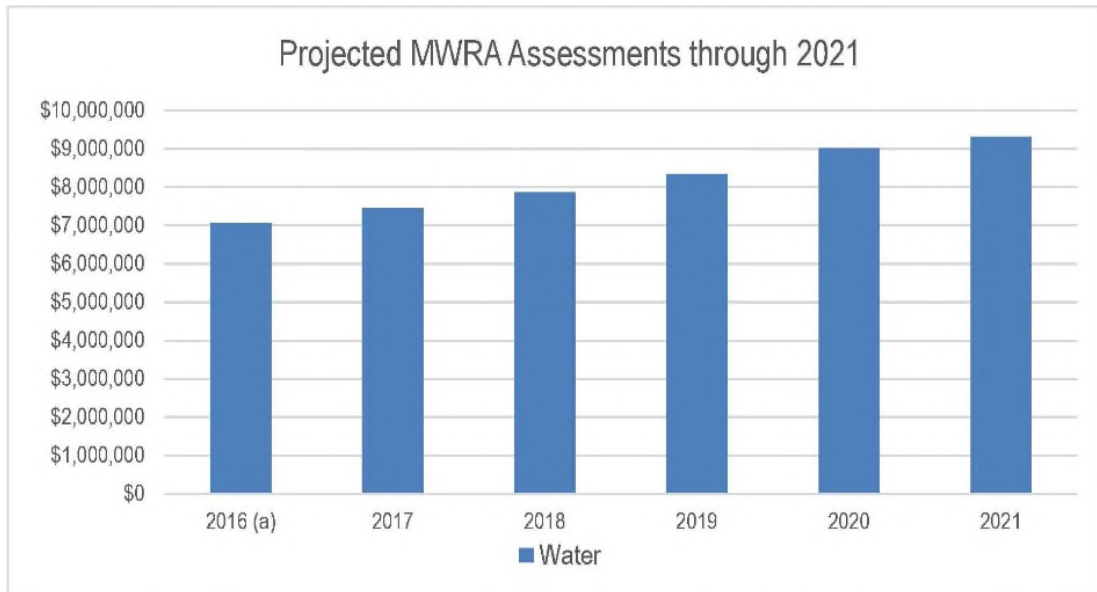
As maintaining a reasonable level of overall debt service is key to maintaining the fiscal health of the Water Division, an attempt to maintain the Water Division’s debt service level was considered during the evaluation of the Capital Improvement Plan. The chart below projects the resulting total debt service for the Water Division over the period covered by this rate study, with the cost of new debt replacing the existing debt service that will be maturing and coming off the Division’s budget.





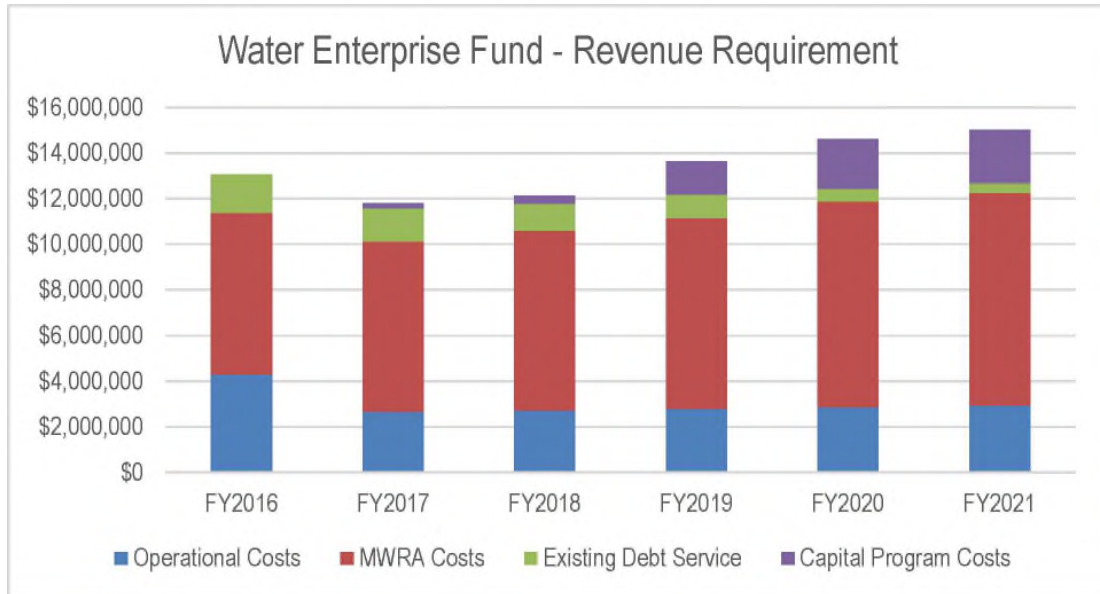
### Projection of MWRA Water Assessments

In addition to the escalation of City-based costs and capital improvements, a projection was prepared of the expected growth of the MWRA’s annual assessment over the five-year period from FY2017 through FY2021. This projection was prepared using the MWRA’s published guidance on its expectations for assessment changes as well as accounting for the anticipated growth of the City’s population due to development currently underway. Our projection of what we expect the City’s water assessment to be over the next five years is shown below, growing from the current level of approximately \$7M per year to almost \$9.5M in FY2021.



### Overall Water Cost of Service

Using the four costs outlined in the sections above (operational budgets, MWRA costs, existing debt service payments, and capital plan costs), an overall cost of service was projected through FY2021. This is depicted on the chart below and shows how, by restructuring the way the City finances its capital plan, the Water Division will complete the large amount of needed investment minimizing the rate shocks which would have been needed had the City elected to continue financing capital investments on a cash basis.



**Considerations for Rate Setting**

Monthly base charges

The City currently has a base minimum charge for its bills which includes a small amount of water usage (approximately 25 gallons per day [gpd]). The practical effect from a revenue standpoint, since virtually all of the City’s customers use more water than the included minimum, is that the City has no base charge. Since base charges offer utilities an extremely durable and reliable revenue stream, their use allows utilities to offer lower volumetric charges, increase the overall revenue stream predictability and reduce the risks of wet summers to a utility’s bottom line.

As part of our rate evaluation, the City of Somerville elected to apply a new monthly base charge to the water bills.

AWWA Standard Meter Size Factors

As a standard rate setting practice, the American Water Works Association (AWWA) has adopted standard factors or multipliers for connection-size based charges based upon their relative capacities. The City’s current rate structure does not comply with this standard and we recommend that the industry standard be adopted.

The table to the right shows the factors which we recommend be used when applying the new monthly and fire suppression charges. For water service (not fire suppression) charges, the factors would increase charges (to varying degrees) for a number of customers.

**Recommended Meter Factors**

Size	Equiv. Factor	Customer Counts		
		Commercial	Ind'l/Inst'l	Residential
5/8	1	959.0	16.0	12,422.0
3/4	1	65.0	2.0	187.0
1	1	207.0	16.0	92.0
1-1/2	2	127.0	5.0	15.0
2	3.2	127.0	8.0	17.0
3	6	38.0	0.0	7.0
4	10	29.0	1.0	3.0
6+	20	4.0	0.0	0.0



It is worth pointing out that only a very small minority (~40 customers) of the City's 12,500+ residential customers will see a factored bill. While this change in billing practice will generate a modest amount of additional revenue stream, it will bring the Water Division into alignment with wider industry recommended practices. The recommended rates and financial projections later in this memo assume that this change (adoption of factored charges) occurs.

Fire Suppression charges

In comparison to the needs of normal residential customer usage, all components of a water distribution system (pipe, valves, etc.) are over-sized to allow the community to fight fires. In addition, many of the activities of the Water Division staff (flushing mains, exercising valves, etc.) are done expressly to ensure that the distribution system remains ready to provide maximum water in the event of a fire.

Both the larger main sizes and the additional responsibilities of system maintenance increase the overall cost of service while most directly benefitting the sub-class of customers who have hard-piped fire suppression systems in their buildings. While the small sub-set of customers who have fire suppression connections receive the benefit of the City fire fighting capacity (through reduced fire insurance costs), the City currently doesn't recover these costs from fire suppression customers and the costs are ultimately recovered through volumetric charges. The institution of fire suppression charges is an increasingly popular way municipalities use to ensure that the customers receiving these additional benefits contribute financially to pay for the cost the City incurs in providing those benefits.

Recommended Fire Suppression Factors					
Fire Suppression Line Size (in)	AWWA 1" Capacity Equivalent Factors	Fire Service Counts by Size			
		Commercial	Industrial	Institutional	Residential
0.75	1	4	0	1	0
1	1	3	0	0	2
1.25	1.4	3	0	0	0
1.5	2	11	0	0	8
2	3.2	87	0	13	83
2.5	4.5	15	0	7	11
3	6	8	0	0	1
4	10	96	1	12	30
6	20	81	12	11	30
8	32	20	0	1	4
10	50	2	0	0	0

Similar to the equivalent factors for water accounts, the table above shows the AWWA fire suppression account equivalent factors for fire line connections up to 10-inches in diameter.

As part of our rate evaluation, it is recommended that the City of Somerville institute a new fire suppression charge to be applied to the water bills of customers with hard-piped fire suppression lines connected to the City water main based upon the size of the fire suppression connection (directly related to the fire flow available). These charges will ensure that those customers receiving additional benefits from the water utility are contributing to cover the costs of providing those services.

Historical and Projected Future Sales Volumes

The City water system serves a mix of residential, commercial and industrial users. The multi-year average annual water sales is roughly 1.05 billion gallons. Of this, roughly 7% is the water included in the monthly minimum charge and the remainder is water for which the City bills based upon the volumetric rates. While there is typically some year-to-year variation in water consumption due to natural precipitation or lack thereof, rates are set upon a utility's mid-to long-term average sales. The water rates recommended later in this memo are based upon the assumption that average water sales over the projection period will remain similar to those seen over the last three fiscal years.





Additional Fees and Charges

In addition to the monthly minimum and volumetric charges, the Water Division also gains revenue from tapping/connection charges, meter charges, penalties and lease payment, and rate premiums for non-City residents. Where most of these practices are consistent with the costs for similar services in area communities, we propose no changes to the value or application of these charges.

Adoption of 41C provisions of MGL

Where the recommended rates shown above have the potential to increase bills over the coming five years, it is important to consider the changes impact upon Somerville residents of limited means and on fixed incomes. Fortunately, the State of Massachusetts has already provided communities the ability to offer significant discounts to these customers using a provision modeled after the state’s property tax exemption status. In effect, these provisions allow communities to discount means-tested customers’ bills by up to 20%. Based upon discussion around this issue with the City Finance staff, adoption of this practice is not expected to have a material impact on the Water Division’s fiscal outcome due to the limited number of residents who meet the means testing limits. An informational sheet offering more details on the application of these provisions is included in Attachment 4 to this memo.

**Recommended Water Rates**

The table below present our recommendations for both minimum monthly and volumetric water rates for each year through 2021. These recommendations were developed with the intention of helping the City meet the following three goals:

1. Fully fund the Water Division’s annual operating and foreseeable capital investment programs;
2. Better align billing practices to ensure that the recipients of fire suppression services contribute to the cost of providing those services; and
3. Ensure that the Water Division maintains adequate reserves to cover unanticipated emergency costs.

The rates shown are assumed to go into effect on the first day of each fiscal year (July 1).

Tri-annual Base Charges

We recommend the City institute a base monthly water connection charge of \$5. This amount will be factored based upon meter size as shown in the table to the right. This charge will remain level over the full five years covered by this rate recommendation and should be revisited as part of the City’s next rate study.

The rates shown have been calculated to help end the anticipated revenue shortfalls that have occurred over the past several fiscal cycles. Additionally, they incorporate the AWWA Standard factors to better align City practices with industry guidelines and set up an annual adjustment schedule for all customers rather than only for the small meter customers.

**Tri-Annual Base Water Charge**

Meter Size	Charge
5/8"	\$20
3/4"	\$20
1"	\$20
1-1/2"	\$40
2"	\$64
3"	\$120
4"	\$200
6+"	\$400



**Volumetric Charges**

The recommended volumetric charges through FY2021 are shown in the table below (\$/HCF) and should be applied against all water use. The rates are recommended to remain at the current levels and apply to all customers of the utility equally based upon each customer’s individual water use.

These rates will help achieve the Water Division’s goals of covering the actual costs of service, ensuring the Division’s long-term fiscal stability, and maintaining reserve funds balances adequate for a utility of this nature.

Recommended Volumetric Rates - Water (\$/unit)						
Tier	Current	2017	2018	2019	2020	2021
1	\$4.14	\$4.14	\$4.14	\$4.14	\$4.14	\$4.14
2	\$5.97	\$5.97	\$5.97	\$5.97	\$5.97	\$5.97
3	\$6.26	\$6.26	\$6.26	\$6.26	\$6.26	\$6.26
4	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50	\$6.50

**Fire Suppression Charges**

The fire suppression charges were developed by the completion of a cost allocation to identify the annual operating costs and the portion of the annual capital costs that were directly related to ensuring that the City maintains adequate fire suppression capacity for its customers. Over the coming five years, the average value of these services is conservatively estimated to be \$750,000 per year.

To cover these costs, which are directly attributable to the provision of fire suppression services, we recommend adopting the table of annual fire suppression charges (based upon fire connection size) to the right. The charges are designed to recover the average cost of providing these services and will remain level for the next five years. It is recommended that a similar evaluation be completed as part of the City’s next rate study.

**Recommended Annual Fire Suppression Charges**

Fire Suppression Line Size (in)	AWWA 1" Capacity Equivalent Factors	Recommended Annual Charge
0.75	1	\$124
1	1	\$124
1.25	1.4	\$174
1.5	2	\$248
2	3.2	\$397
2.5	4.5	\$558
3	6	\$744
4	10	\$1,240
6	20	\$2,480
8	32	\$3,968
10	50	\$6,200

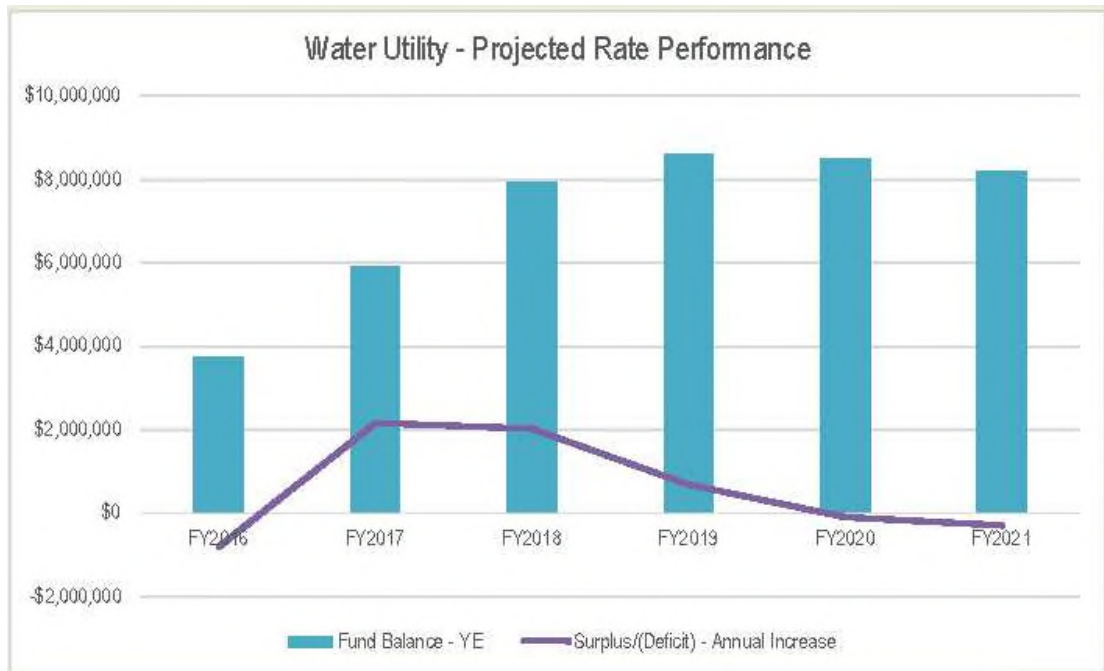
If the City does not elect to institute these fire suppression charges, the volumetric water rates recommended later in this memo will need to be increase by approximately 7% from the recommendation in order to achieve the same revenues and financial results.

**Impact on Reserve Fund Balances**

In Enterprise-funded utilities, the maintenance of an adequate reserve fund balance is critical to ensure the utility’s ability to absorb unanticipated equipment replacement and other contingencies. The Somerville Water Division owns and operates a substantial but aging set of distribution infrastructure. In spite of the Water Division’s annual asset replacement and renewal investments, it is likely that there will be occasional need for immediate, unanticipated pipe repairs and replacements. While there are no set-in-stone industry standards, our experience with other similar utilities suggests that a goal for reserves should be somewhere between 15% and 30% of annual operating revenues. This level of reserves is appropriate to ensure that the enterprise-funded utility will not need to fall back onto the City as a source of funding in the event of substantial unforeseen expenses or decline in water demand.



Based upon input of the City's Finance Office staff, the rates recommended in the section above were designed to help the current reserves grow to the preferred level over the five years covered by this rate recommendation. The projected annual financial results of the water utility and the accrual of reserve balances are depicted on the chart below.



As shown on the chart, the recommended rates will allow the water utility to gradually increase its water reserve balances to a level more in line with the value of the utility's installed asset base, the significant capital spending needed and will likely help insulate the utility from rate increase as the water utility's OPEB (Other Post Employment Benefits) obligations are transferred onto the utility, as recommended by GASB (Government Accounting Standards Board).



**Sewer Rate Study**

Similar to the water rate study, the three primary steps in appropriately setting sewer rates are:

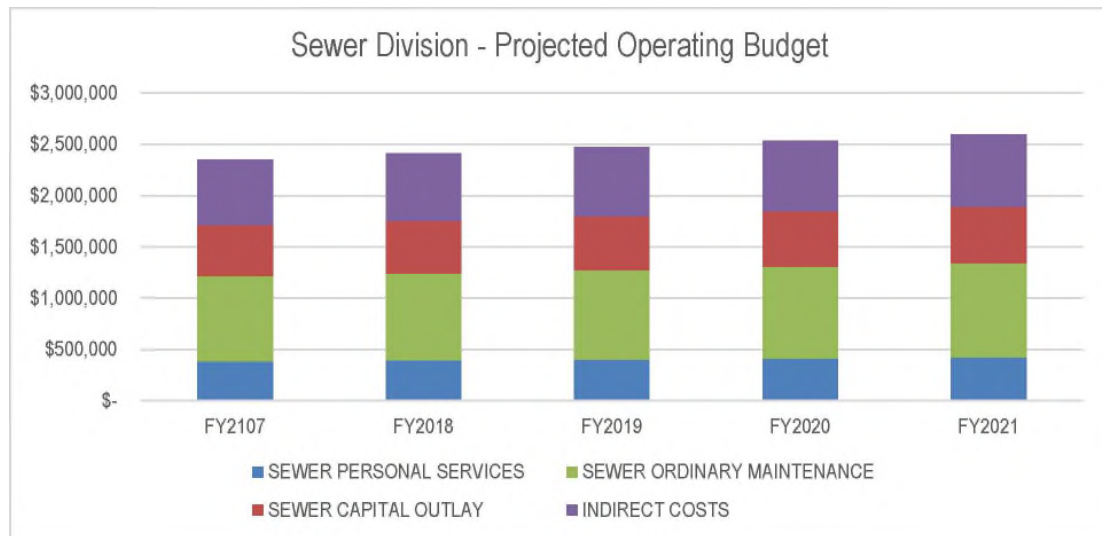
1. Developing defensible projections of the full costs associated with operating the Sewer Division;
2. Reviewing multiple years of sewer billed consumption records; and
3. Calculating the minimum and volumetric charges necessary to provide for the Sewer Divisions long-term financial sustainability.

The results of these steps are detailed below.

**Sewer Division Operating Budgets**

Woodard & Curran examined the past four years of the Sewer Division’s budgets. Based on these budgets and using industry standard escalation factors, a projection of the likely operating costs for the Sewer Division was developed.

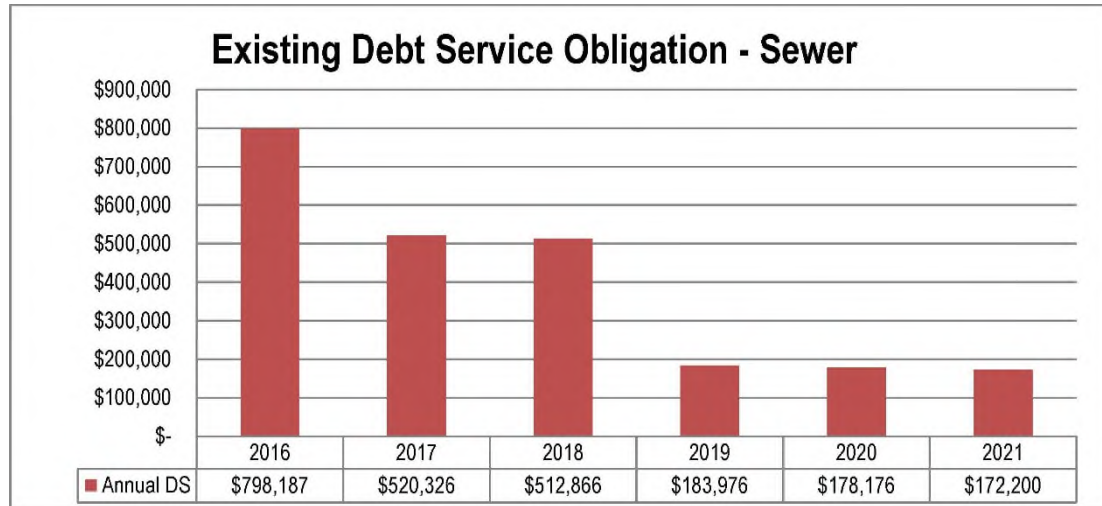
The projection included in the rate model (and represented in the table below) is based on FY2016, escalated in line with industry standards. As depicted on the chart below, we project that the sewer operating budget will increase from approximately \$2.35 in FY2016 to \$2.6 in FY2021. Both of these numbers include all costs associated with the new staffing to increase inspection and maintenance capabilities.





**Sewer Division Debt Service**

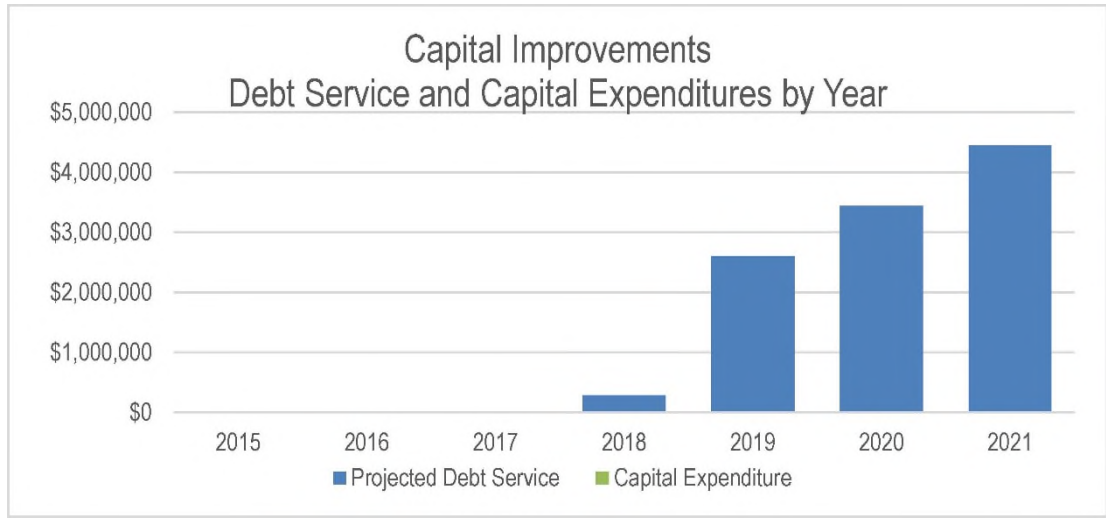
Similar to most sewer utilities, the Somerville Sewer Division has a series of bond issuances that it is responsible to repay bondholders. A summary of these obligations was developed and is presented in the chart below. The debt service obligations for the Sewer Division are scheduled to decline significantly over the period covered by this rate study.



**Sewer Division Capital Program**

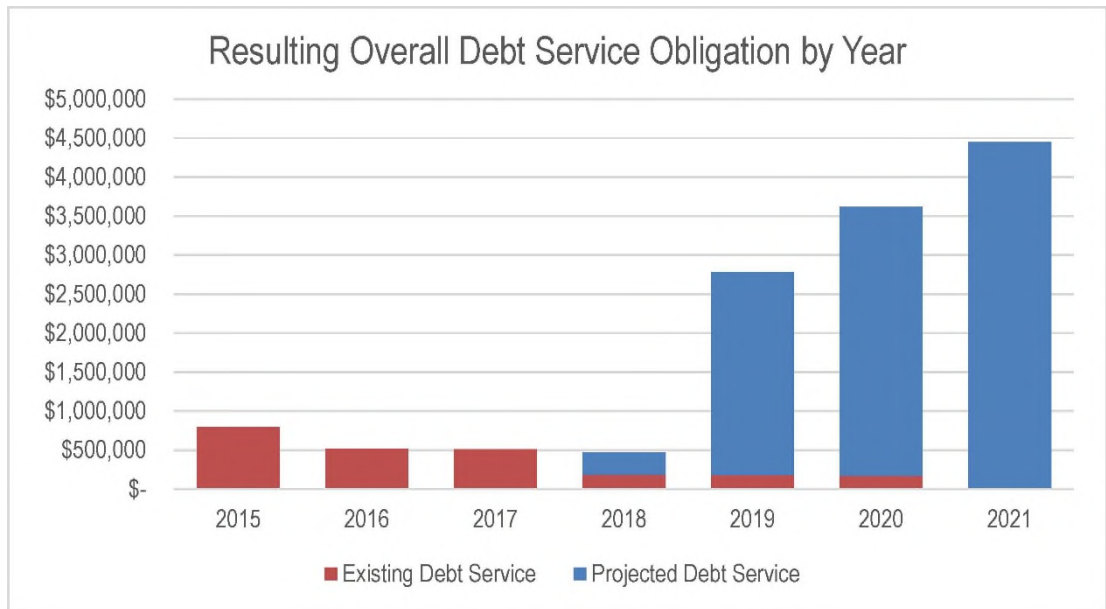
The Sewer Division Capital Improvement Plan incorporated into the rate model is based upon inter Sewer Division planning documents and prior Master Plans. The Capital Improvement Plan outlines anticipated investments over the period through FY2021. Using the results from the Sewer Master Plan, combined with the current investments that the City is aware of, we compiled a full list of projects that have been incorporated into the model. Between FY2017 and FY2021, the list includes 11 projects with FY2016 construction cost estimates totaling just under \$72.5M. The full list, including the capital projects being completed this fiscal year, is attached to the back of this memo as Attachment 1, with the projects listed chronologically.

As stated in the section above, from a financial perspective, having a comprehensive capital project list is critical since the value, completion schedule and manner of financing all have important impacts on the way that the utility will experience the fiscal impacts of the capital projects. As displayed on Attachment 1, each of the projects has an associated value, a year of construction, and a manner of financing identified. Based upon the list and completion schedule, a project of the annualized costs of completing the Capital Improvement Program was developed and is shown on the chart below.



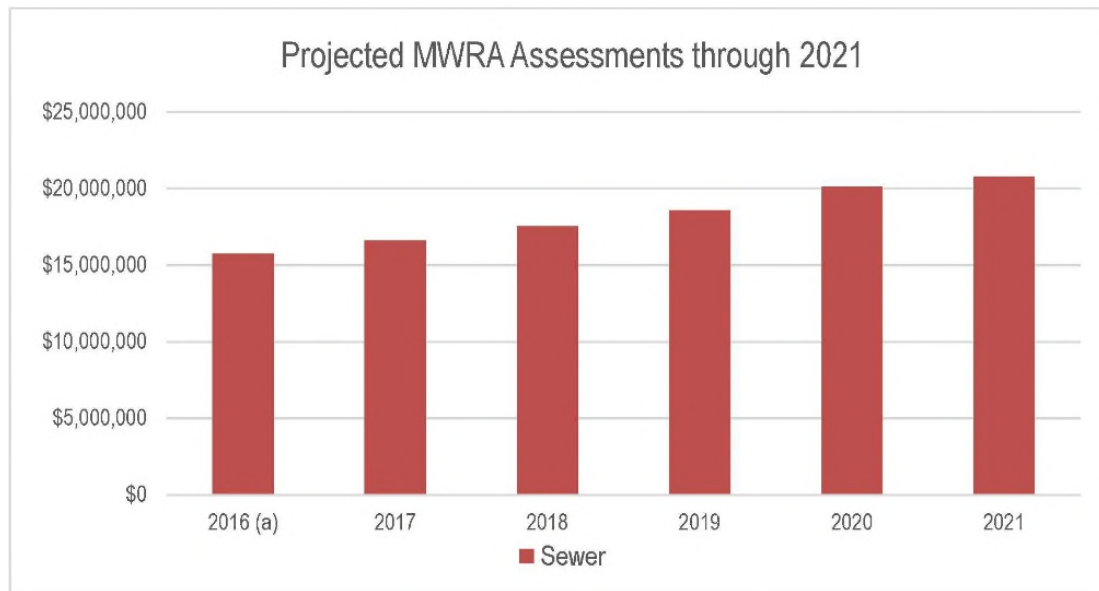
The construction of capital projects is recommended to shift to being funded almost exclusively through the issuance of debt to minimize the fiscal impacts of the sizeable capital program that is expected to be completed over the next five years. As with the Sewer Division's current debt service obligations, it is anticipated that this would occur through the issuance of Special Obligation Bonds.

While there was an initial attempt to maintain the Division's overall debt service obligation at a level comparable to the current level of debt service, the value of the capital projects being completed results in a significant increase in the Division's debt service obligations over the projection period. The chart below illustrates the resulting total debt service for the Sewer Division through FY2021.



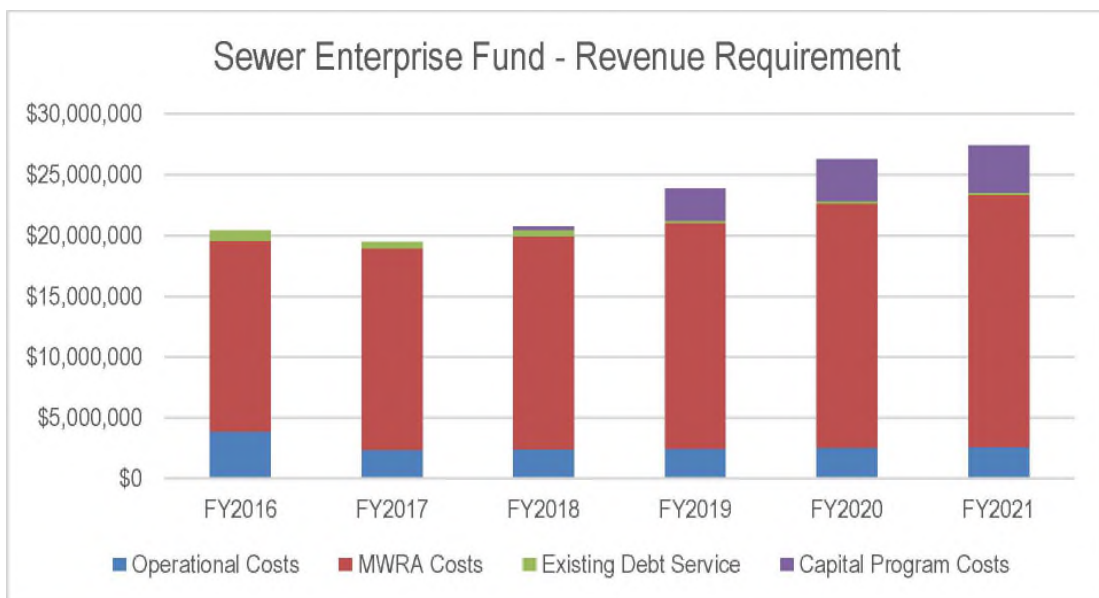
#### Projection of MWRA Sewer Assessments

Similar to the projection we made for the MWRA Water assessment, a projection was prepared of the expected growth of the MWRA's annual assessment over the five-year period from FY2017 through FY2021. Our projection of the City's sewer assessments for the next five years is shown below, growing from the current level of approximately \$15.7M per year to almost \$20.8M in FY2021.



#### Overall Cost of Service

Using the four classes of projected Sewer Division costs outlined in the sections above (operational budgets, MWRA costs, existing debt service payments, and capital plan costs), an overall cost of service was projected through FY2021. This is depicted on the chart below and shows how, while restructuring the way Somerville finances its capital plan, the Sewer Division revenue needs are going to be increasing substantially from FY2017 levels over the coming five years. This increase is driven almost entirely by the expectations for increasing MWRA bills and the cost of completing the City's sewer-related Capital program.





## Considerations for Rate Setting

### Monthly base charges

Similar to the way the City handles its water bills, Somerville currently has a base minimum charge for its sewer bills that includes a small amount of sewer usage (approximately 25 gpd). Again, the practical effect of such a small usage is that the City effectively has no base charge. Due to the manner of bill calculation in the MWRA's sewer assessment, where the City's population (not the amount of sewage the City sends to the MWRA) accounts for almost half of FY2016's \$17M bill, fixed charges are even more appropriate for sewer than for water. Put another way, if the City of Somerville did not send the MWRA a single gallon of sewer for the next three years, it would still receive a multi-million dollar annual assessment due to the "sewered population" in the City.

Since base charges offer utilities an extremely durable and reliable revenue stream, their use allows utilities to offer lower volumetric charges, increase the overall revenue stream predictability and reduce the risks of wet summers to a utility's fiscal performance. As part of our rate evaluation, the City of Somerville elected to include a new monthly charge to be applied to the water bills.

### Additional Fees and Charges

In addition to the monthly minimum and volumetric charges, the Sewer Division also gains revenue from tapping/connection charges, meter charges, penalties and lease payment, and rate premiums for non-City residents. Where most of these practices are consistent with the costs for similar services in area communities, we propose no changes to the value or application of these charges.

Additionally, the Sewer Division gains a significant amount of revenue calculated under a series of inter-municipal agreements. For the purposes of this rate study, the revenues that are expected from each of these customers was projected using the terms of each customer's respective contract.

## Recommend Sewer Rates

The table below presents our recommendations for both minimum monthly and volumetric sewer rates for each year through 2021. Customers who receive sewer service under the clauses of an inter-municipal agreement will continue to have their bill calculated in accordance with their agreement.

### Tri-annual Base Charges

It is recommended that the City adopt a \$10 monthly base charge, adjusted to reflect the same meter equivalent adjustments discussed in the water rate setting section of this letter. The table to the right presents our recommended minimum tri-annual charges by meter size. The values shown are recommended to be used for the FY2017 through FY2021 period.

The rates shown have been calculated to fully fund the Sewer Division's ongoing operations and needed investments, while maintaining the Division's reserve account balances. Additionally, they incorporate the AWWA Standard factors to better align City practices with industry guidelines.

<b>Meter Size</b>	<b>Charge</b>
5/8"	\$40
3/4"	\$40
1"	\$40
1-1/2"	\$80
2"	\$128
3"	\$240
4"	\$400
6+"	\$800





**Volumetric Charges**

The recommended volumetric sewer charges through FY2021 are shown in the table to the right (\$/HCF) and should be applied against all sewer use in each billing cycle.

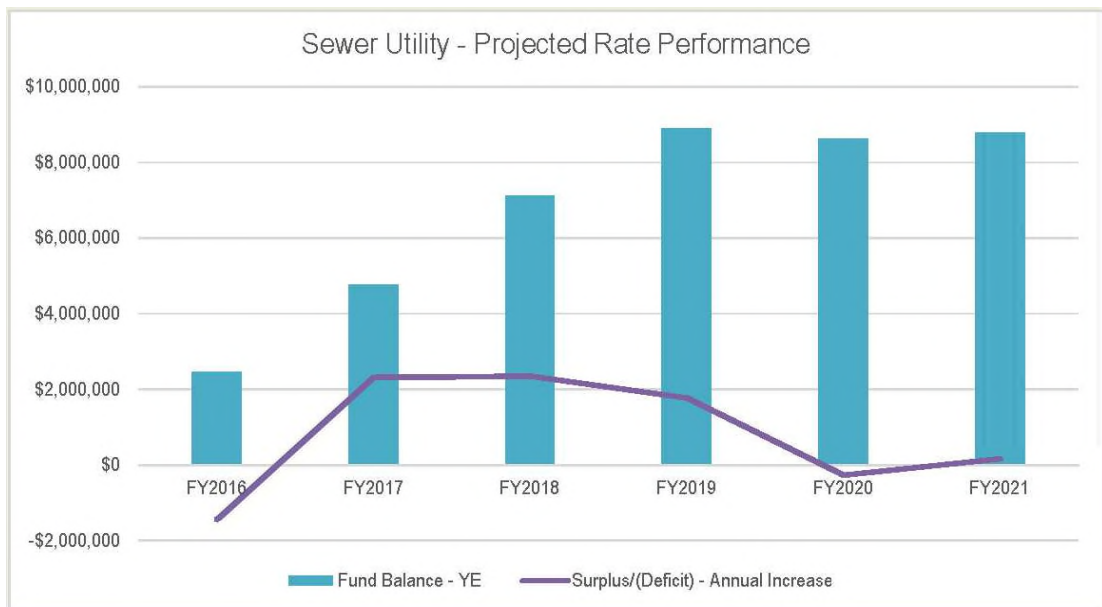
Level Increase Rates - Sewer (\$/unit)						
Tier	Current	2017	2018	2019	2020	2021
1	\$7.08	\$7.43	\$7.81	\$8.20	\$8.61	\$9.04
2	\$9.04	\$9.49	\$9.97	\$10.46	\$10.99	\$11.54
3	\$9.48	\$9.95	\$10.45	\$10.97	\$11.52	\$12.10
4	\$9.81	\$10.30	\$10.82	\$11.36	\$11.92	\$12.52

The recommended volumetric charges have an annual 5% increase from current levels, beginning in FY2017 and continuing through the end of the projection period. These increases are necessary due to the expected increases in MWRA assessments and the large capital investment projects that will be funded primarily through sewer charges.

Similar to the Base Charges recommended above, these rates will help achieve the Sewer Division's goals of covering the actual costs of service, ensuring the Divisions long-term fiscal stability, and maintaining reserve fund balances adequate for a utility of this nature.

**Impact on Reserve Fund Balances**

In Enterprise-funded utilities, the maintenance of an adequate reserve fund balance is critical to ensure the utility's ability to absorb unanticipated equipment replacement and other contingencies. The Somerville Sewer Division owns and operates a substantial set of sewage and stormwater collection infrastructure. While there are no set-in-stone industry standards, our experience with other similar utilities suggests that a goal for operating reserves should be somewhere between 15% and 30% of annual operating revenues.



The chart above projects the expected financial performance of the rates recommended in the preceding section. The new base charges, and the steady increases on volumetric charges should allow the sewer utility to accrue reserves equal to approximately 30% of its FY2021 operating budget over the next five years. Similar to water, this should adequately position the utility to not only be financially stable for customers, but also to have some ability to fund the sewer utility's OPEB obligations as they are assigned to the utility.

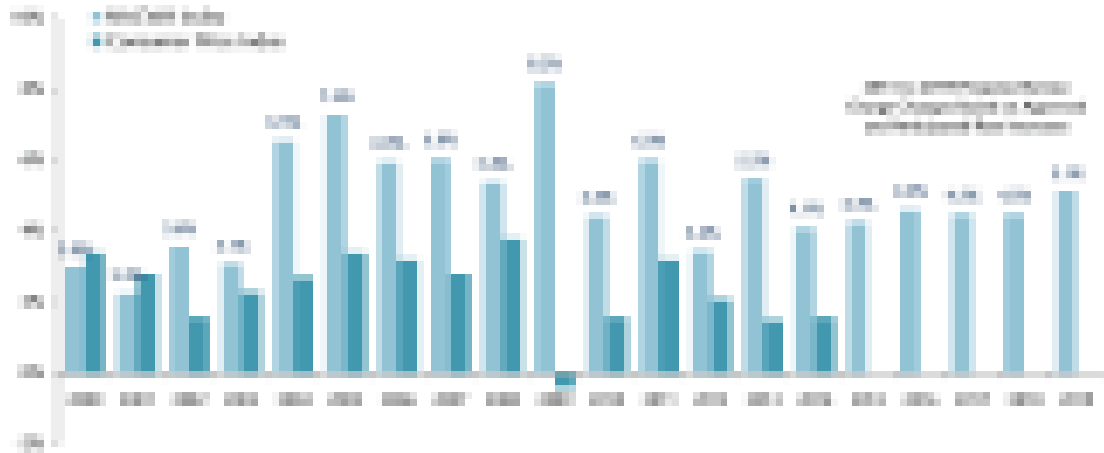


### Combined Water and Sewer Rate against National Cost Trends

This study recommends a \$5/monthly charge and a stable volumetric rate for water customers and a \$10/monthly charge and an annual 5% volumetric rate increase for sewer customers. These rate increases, in combination with the fire suppression charges, are needed to keep pace with increasing operational costs, MWRA assessment fees, as well as funding the Divisions' needed capital investments.

Overall, these increases will amount to an increase in combined water and sewer bills of approximately 3% annually after the first year, when the new monthly charges come into effect.

According to National Association of Clean Water Agencies (NACWA), the average wastewater utility raised its rates over 4.1% from 2013 – 2014 to cover the increased cost associated with wastewater collection and treatment. Their projected increase for utility cost to 2019 is for an annual rate increase of between 4.5 and 5.1%. It is expected that water rates would follow a similar pattern and needed rate of increase due to the high similarity in the activities and capital investments needed for the two types of utilities.



**Attachment 1 – Water Capital Improvement Plan**  
(Funding \$40.5 Million in Projects)



Year Constr.	Improvements	CCE	Funding Source	Grant %	Year Financed	Project Value	Bonding Duration
2016	Webster Street C&L	\$0	MWRA	0%	2016	\$0	10
2016	Beacon Street C&L	\$0	MWRA	0%	2016	\$0	10
2016	Washington Street C&L	\$0	MWRA	0%	2016	\$0	10
2016	Pearl Street C&L	\$100,000	MWRA	0%	2016	\$102,500	10
2016	Cross Street C&L	\$200,000	MWRA	0%	2016	\$205,000	10
2016	Tufts Street C&L	\$92,000	MWRA	0%	2016	\$94,300	10
2017	Prospect Street Replace	\$50,000	MWRA	0%	2017	\$52,531	10
2017	Allen Street Replace	\$120,000	MWRA	0%	2017	\$126,075	10
2017	Linden Street Replace	\$50,000	MWRA	0%	2017	\$52,531	10
2017	Merriam Street Replace	\$50,000	MWRA	0%	2017	\$52,531	10
2017	Charleston Street Replace	\$7,000	MWRA	0%	2017	\$7,354	10
2017	Somerville Street Replace	\$10,000	MWRA	0%	2017	\$10,506	10
2017	Hanson Street Replace	\$35,000	MWRA	0%	2017	\$36,772	10
2017	Properzi Way Replace	\$5,000	MWRA	0%	2017	\$5,253	10
2017	Dimick Street Replace	\$19,719	MWRA	0%	2017	\$20,717	10
2016	Washington Street C&L	\$15,000	MWRA	0%	2016	\$15,375	10
2016	Broadway C&L	\$17,000	MWRA	0%	2016	\$17,425	10
2016	Mt. Vernon Street C&L	\$26,270	MWRA	0%	2016	\$26,927	10
2016	Clarendon Avenue Replace	\$16,390	MWRA	0%	2016	\$16,800	10
2016	Newbury Street Replace	\$50,000	MWRA	0%	2016	\$51,250	10
2016	Cameron Avenue Replace	\$150,000	MWRA	0%	2016	\$153,750	10
2016	Broadway C&L + Replace	\$350,000	MWRA	0%	2016	\$358,750	10
2016	Powder House Blvd C&L	\$75,000	MWRA	0%	2016	\$76,875	10
2016	Alewife Brook Pkwy Replace	\$25,000	MWRA	0%	2016	\$25,625	10
2016	Curtis Street C&L + Replace	\$50,000	MWRA	0%	2016	\$51,250	10
2016	Professors Row Replace	\$600,000	MWRA	0%	2016	\$615,000	10
2016	Packard Avenue Replace	\$200,000	MWRA	0%	2016	\$205,000	10
2016	College Ave (Hi Zone) Replace	\$100,000	MWRA	0%	2016	\$102,500	10
2016	Dearborn Road Replace	\$200,000	MWRA	0%	2016	\$205,000	10
2017	Cedar Street Drainage (30% of \$7.5M)	\$1,125,000	GO Bond	0%	2017	\$1,181,953	20
2018	Cedar Street Drainage (30% of \$7.5M)	\$1,125,000	GO Bond	0%	2018	\$1,211,502	20
2019	Davis Square Infrastructure (65% of \$12M)	\$7,800,000	GO Bond	0%	2019	\$8,609,741	20
2018	Union Square Infrastructure	\$15,000,000	GO Bond	0%	2018	\$16,153,359	30
2016	Brickbottom Infrastructure	\$0	Cash	0%	2016	\$0	10
2018	Water annual capital	\$1,900,000	GO Bond	0%	2018	\$2,046,092	20
2019	Water annual capital	\$1,900,000	GO Bond	0%	2019	\$2,097,244	20
2020	Water annual capital	\$1,900,000	GO Bond	0%	2020	\$2,149,676	20
2021	Water annual capital	\$1,900,000	GO Bond	0%	2021	\$2,203,417	20
2021	Water annual capital	\$1,900,000	GO Bond	0%	2021	\$2,203,417	20

**Attachment 2 – Sewer Capital Improvement Plan**  
(Funding \$72.5 Million in Projects)



Year Constr.	Improvements	CCE	Funding Source	Grant %	Year Financed	Project Value	Bonding Duration
2016	Cedar Street Drainage (70% of \$7.5M)	\$2,625,000	GO Bond	0%	2017	\$2,690,625	20
2017	Cedar Street Drainage (70% of \$7.5M)	\$2,625,000	GO Bond	0%	2018	\$2,757,891	20
2018	Nunziato Field Flood Mitigation	\$10,000,000	GO Bond	0%	2019	\$10,768,906	20
2019	Davis Square Infrastructure (35% of \$12M)	\$4,200,000	GO Bond	0%	2020	\$4,636,014	20
2020	Central Broadway Infrastructure	\$6,000,000	GO Bond	0%	2021	\$6,788,449	20
2017	Union Square Infrastructure	\$35,000,000	GO Bond	0%	2018	\$36,771,875	30
2015	Brickbottom Infrastructure	\$0	GO Bond	0%	2016	\$0	10
2015	MWRA I/I Work???	\$0	MWRA	45%	2016	\$0	5
2015	MWRA I/I Work???	\$0	MWRA	75%	2016	\$0	5
2016	Sewer annual capital	\$1,500,000	GO Bond	0%	2017	\$1,537,500	20
2017	Sewer annual capital	\$1,500,000	GO Bond	0%	2018	\$1,575,938	20
2018	Sewer annual capital	\$1,500,000	GO Bond	0%	2019	\$1,615,336	20
2019	Sewer annual capital	\$1,500,000	GO Bond	0%	2020	\$1,655,719	20
2020	Sewer annual capital	\$1,500,000	GO Bond	0%	2021	\$1,697,112	20

**Attachment 3 – Budgetary Schedule for Capital Programs**  
 Appropriations and Debt Issuance by Year



Fiscal Year	CIP Construction Value by Year - Escalated Bonded Capital Expense	
	Water	Sewer
2016	\$2,323,327	\$4,228,125
2017	\$1,546,225	\$41,105,703
2018	\$19,381,404	\$12,384,242
2019	\$10,706,985	\$6,291,733
2020	\$2,149,676	\$8,485,562
2021	\$4,406,835	\$0

## Attachment 4 – 41C Provisions for Bill Adjustment



### Water/Sewer Exemption for Eligible Seniors

Water/Sewer customers 65 or older may be eligible for rate relief. Please contact the appropriate City Office at 617-XXX-XXXX for information.

1. Modeled after the Clause 17D and 41C Property Tax Exemptions
2. Eligible ratepayers will receive a 20% reduction in their Water and Sewer bills
3. Eligible applicants must be the named payer on the Water & Sewer Bill for the unit eligible for the tax exemption

#### 17D Eligibility Requirements

- Must be 70 years old
- Must own and occupy the property for 5 years
- Whole estate (value of assets), excluding domicile, cannot exceed \$54,836<sup>1</sup>
- No annual income limitation
- Surviving spouses and surviving minors are eligible

#### 41C Eligibility Requirements

- Must be 65 years old
- Must own and occupy the property for 5 years
- Must have resided in Massachusetts for at least 10 years
- If Single:
  - i. Gross income cannot exceed \$21,165 <sup>2</sup>, excluding SSI allowance
  - ii. Whole estate (value of assets), excluding domicile, cannot exceed \$42,330
- If Married:
  - i. Gross income cannot exceed \$31,748 <sup>3</sup>, excluding SSI allowance
  - ii. Whole estate (value of assets), excluding domicile, cannot exceed \$58,204<sup>4</sup>

#### Notations:

1. This amount is increased annually by a Cost of Living Adjustment (COLA) established by the State Department of Revenue. The new amount takes effect on July of each year.
2. Same as #1
3. Same as #1
4. Same as #1