

TR-15-39



City of Methuen, Massachusetts

City Auditor's Office

The Searles Building 41 Pleasant Street Room 303

Methuen, Massachusetts 01844

Telephone (978) 983.8536 Fax (978) 983.8972

E-mail: TJKelly@ci.methuen.ma.us

Thomas J. Kelly
City Auditor

ORDER# 5260

Resolution Accepting and Establishing the Water and Sewer Rates Analysis

WHEREAS: Pursuant to the provisions of Chapter 15, Section 15-5 of the Methuen Municipal code, the City of Methuen through its City Council is authorized to establish such fees, charges and costs for the operation of the Water and Sewer Enterprise Fund throughout the municipality and for the increase of said charges are deemed necessary; and

WHEREAS: The City of Methuen, through its City Council, has determined that those existing charges be increased for the purposes of accommodating the increase in costs and expenses for the operation and maintenance of the Water and Sewer Enterprise Fund for the City of Methuen.

NOW THEREFORE, BE IT ORDERED: That the charge as established pursuant to the attached water and sewer rate analysis beginning in FY 2016 is hereby adopted by the City Council for the City of Methuen.

First Read: September 9, 2015
Adopted: November 9, 2015
Effective: December 9, 2015

I do hereby certify that at a meeting of which a quorum was present, the foregoing resolution was adopted by the Methuen City Council by an 8 to 1 vote on November 9, 2015.


Council Clerk


Ronald Marsan, Council Chair

Approved under MHRC Sec. 3-6
Date: 11-17-15

Approved: 
Stephen N. Zanni, Mayor

City of Methuen
Water and Sewer Rate Study
Final Report

The Abrahams Group

November 5, 2015

THE ABRAHAMS GROUP

FOR BETTER GOVERNMENTS

November 5, 2015

Mr. Patrick L. Bower, P.E.
Director
Department of Public Works
Searles Building
41 Pleasant Street
Methuen, MA 01844

Dear Mr. Bower:

We have completed our work to assist the City of Methuen with a water and sewer rate study. The attached is our final report.

We are pleased to provide assistance to the City of Methuen on this important and challenging project. I will be pleased to discuss this report with you at your earliest convenience.

Sincerely yours,



Mark D. Abrahams, CPA

President

Attachment

RATE STUDY OVERVIEW

The City of Methuen has not changed its water and sewer rates and tiers since 2008. Facing large yearly deficits in its Water and Sewer Enterprise Fund and large yearly draws on Retained Earnings to balance the fund's budget, the City of Methuen sought to review its current water and sewer rates and tiers and the enterprise fund in general, and to update water and sewer rates and tiers to generate enough revenue to fund yearly expenditures. The City of Methuen retained The Abrahams Group to conduct a financial analysis, with a focus on the impact changes to water and sewer rates and tiers would have on water and sewer revenues over a five-year period.

CURRENT RATES AND TIERS

The City of Methuen's current water and sewer rate and tier structure is found below. A five-tier structure is used for water residential customers only. All other customers are charged a flat rate for usage.

Tier Structure with Rates for Water Residential Users

Usage amounts shown are in cubic feet. Rates are per 100 cubic feet.

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Usage Start	1	1,001	2,001	3,001	5,001
Usage End	1,000	2,000	3,000	5,000	+
Rate (per 100 cubic feet)	\$1.62	\$2.15	\$2.70	\$3.00	\$3.25

Other Rates and Charges

The following rates and charges are for all water and sewer usage, except for water residential usage:

- **Water Commercial:** Flat rate of \$3.55
- **Sewer Residential:** Flat rate of \$2.15
- **Sewer Commercial:** Flat rate of \$2.25
- **Out-of-town customers:** Additional \$0.20 for administrative fee
- **Water Customers:** \$15.00 service charge per bill
- **Senior Discount:** \$15.00 per quarter

As part of the analysis to be conducted during the rate study, the number of tiers for water residential users and implementing a similar tiered structure for other users were to be reviewed. Additionally, the water service charge was to be reviewed as part of the analysis.

WATER AND SEWER CAPITAL PLAN

Planned capital purchases and projects that are part of the City of Methuen's Department of Public Works' five-year water and sewer capital plan must be accounted for in the rate study to ensure that all expected costs over the next five fiscal years are included. The five-year plan was reviewed to determine which of the items should be considered capital outlay to be paid by Retained Earnings, which was generally any item with an expected cost of \$100,000 or less, and which should be paid with funds that would be borrowed. Only two items in the plan were deemed capital outlay – Roof Replacement - Intake & Sludge House, a water expense, and adding a pump and a grinder at Burnham Road, a sewer expense. The remaining capital items would be funded via borrowings.

COMPARATIVE STUDY OF CURRENT BILLS

Comparing the City of Methuen's current water and sewer bills to those of similar communities is an exercise used to add some perspective on how the City's rates compare to rates in similar communities.

Residential

The table below shows how the City's residential yearly bill amounts compare to similar communities'. The amounts reflect usage of 12,000 cubic feet per year, which is 3,000 cubic feet per bill in Methuen. The usage amount is used in the survey since it is an industry-standard amount of usage for the average residential user. The source of the bill amounts found in the table below is Tighe and Bond's 2014 Water and Sewer Rate Survey, with adjustments in place for certain communities if rates changed since the survey's publishing.

Community	Water	Sewer	Total
Methuen	\$319	\$258	\$577
Lawrence	\$372	\$402	\$774
Haverhill	\$325	\$468	\$793
Andover	\$372	\$483	\$855
North Andover	\$526	\$846	\$1,372
Malden	\$665	\$771	\$1,436
Medford	\$727	\$908	\$1,635

Commercial

The table below shows how the City's commercial yearly bill amounts compare to similar communities'. The amounts reflect usage of 56,000 cubic feet per year, which is 14,000 cubic feet per bill in Methuen. The usage amount is used in the survey since it is an industry-standard amount of usage for the average commercial user. The source of the bill amounts found in the table below is Tighe and Bond's 2014

Water and Sewer Rate Survey, with adjustments in place for certain communities if rates changed since the survey's publishing.

Community	Water	Sewer	Total
Methuen	\$2,048	\$1,260	\$3,308
Lawrence	\$1,736	\$1,876	\$3,612
Haverhill	\$1,518	\$2,184	\$3,702
Andover	\$1,736	\$2,010	\$3,746
North Andover	\$2,968	\$4,911	\$7,879
Malden	\$3,605	\$4,503	\$8,108
Medford	\$4,969	\$5,374	\$10,343

WATER SERVICE CHARGE

Currently, the City of Methuen charges water customers a water service charge of \$15 per bill. Seniors receive a discount on the water service charge, in the amount of the water service charge, and therefore do not pay it. The water service charge was originally implemented as a means to recover administrative costs, but is not based on actual costs.

As part of the overall rate study analysis, the water service charge was analyzed and changes to it were proposed. The first step toward implementing an updated water service charge was to analyze current water and sewer yearly costs and split them into two categories – administrative and flow- or treatment-based. The water service charge would be designed to recover the total amount of administrative costs determined.

The second step toward implementing an updated water service charge was compiling the meter sizes in use by all water customers. Once that list was compiled, the third step was to assign an equivalent meter ratio to each of the meter sizes in use, with the smallest meter, a 5/8-inch meter, set to one equivalent meter. For the other meter sizes in use, an equivalent meter ratio reflective of its size when compared to the 5/8-inch meter was assigned. The smallest meter size, a 3/4-inch meter, was assigned 1.1 equivalent meters. The largest meter size, a 10-inch meter, was assigned 36 equivalent meters. The fourth step toward implementing an updated water service charge was to total all of the equivalent meters and divide the total administrative costs by the total equivalent meters to determine the amount of administrative costs per equivalent meter. This amount represents the yearly water service charge for the meter size equal to one equivalent meter, which is the 5/8-inch meter. The yearly water service charge for larger meter sizes would be larger since the equivalent meter ratio for them is larger.

The following table shows the equivalent meters for each meter size:

Meter Size	# of Meters	Equivalent Meter Ratio	Equivalent Meters	EM%
5/8	12,430	1	12,430	78.7%
3/4	1,390	1.1	1,529	9.7%
1	294	1.4	412	2.6%
1.5	157	1.8	283	1.8%
2	134	2.9	389	2.5%
3	30	11	330	2.1%
4	16	14	224	1.4%
6	2	21	42	0.3%
8	3	29	87	0.6%
10	2	36	72	0.5%
Totals	14,458		15,797	100.0%

The following table shows the calculation of the administrative costs per equivalent meter:

Total Administrative Costs	\$ 1,084,576
Total Equivalent Meters	15,797
Costs per Equivalent Meter	\$ 68.66

The following table shows the administrative costs per meter size. The table as a whole represents the proposed updated water service charge:

Meter Size	Costs per Meter Size	Service Fee Per Bill
5/8	\$ 68.66	\$ 17.16
3/4	\$ 75.52	\$ 18.88
1	\$ 96.12	\$ 24.03
1.5	\$ 123.58	\$ 30.90
2	\$ 199.11	\$ 49.78
3	\$ 755.24	\$ 188.81
4	\$ 961.21	\$ 240.30
6	\$ 1,441.82	\$ 360.45
8	\$ 1,991.08	\$ 497.77
10	\$ 2,471.69	\$ 617.92

The equivalent meter method was used to update the water service charge to recognize the fact that larger meters require larger administrative costs than smaller meters since the larger meters are more expensive to install, maintain, and replace than smaller meters. The current water service charge is \$15 per bill for all water customers, including the ones with the largest meters. With the updated water service charge's correlation to equivalent meters, customers with larger meters pay a service charge more in line with the administrative costs required to maintain their accounts than they do now with the current service charge.

With an updated water service charge in place, the City of Methuen should realize additional water service charge revenue of approximately \$200,000 per year.

RATE STUDY PROCESS

Overview

The Abrahams Group worked closely with City staff to create the baseline, or no action, scenario. The baseline scenario serves two important purposes: (1) to show projections for the next five fiscal years, including the current one, if there are no rate and tier changes, and (2) to have a validated scenario from which other scenarios that include rate and/or tier changes can be created. Once the baseline scenario was created and validated by City staff, rate increase and tier change scenarios were created for the City's review. The rate and tier change scenario that most accurately captures the City's goals for revenue generation and the desired Retained Earnings balance was the one selected by the City for implementation, pending affirmative votes by City Council.

Baseline Scenario

The baseline scenario includes breakdowns of water revenues and expenditures separate from sewer revenues and expenditures, but also combines the two on one Summary tab. The Summary tab that combines the two also contains a Retained Earnings balance tracker that, based on the most recent Retained Earnings certification, projects the Retained Earnings balance at the end of each of the fiscal years included in the analysis. Much of the content found in the baseline scenario came from actual and budgeted revenue and expenditure information provided by City staff.

Five-year averages of actual receipts from recently completed fiscal years were used to project non-user charges revenues. Actual receipts from FY 2014 were used to project water service charges, senior discounts, and fire protection charges over the five-year period, but at a 90% collection rate. A billing analysis was conducted to produce user charges revenue. The billing analysis file created for the rate study determines each customer's actual bills based on the customer's actual consumption in the four billing periods of FY 2014. Billings calculated by the billing analysis, also subject to the 90% collection rate, were used as user charges revenue projections over the five-year period.

The 90% collection rate used is based on an analysis of five recently completed fiscal years, which produced a collection rate of over 91% for water and over 90% for sewer. Based on the results of the collection rate analysis, using 90% for a collection rate is a conservative approach.

For projecting expenditures, different approaches were used, including:

- Using FY 2016 budgeted numbers for salaries and wages, other expenses, and indirect costs for the FY 2016 projections, with a yearly increase of 2% in subsequent years.

- Using FY 2016 actual charges from the Greater Lawrence Sanitary District, with a yearly increase of 2.167%, which is the increase in the charges from the Greater Lawrence Sanitary District from FY 2015 to FY 2016, in subsequent years.
- Using a level \$75,000 for equipment outlay for both water and sewer in each of the five fiscal years.
- Using existing debt schedules to include debt payments already scheduled for each of the five fiscal years.
- Using newly created debt schedules for planned capital expenditures over the next five fiscal years to show anticipated new debt and short-term borrowing costs for each of the five fiscal years.
- Planning to use Retained Earnings to fund any planned capital expenditure that costs less than \$100,000, of which there are two.

With the revenue and expenditure projections for the five-year period in place, the projected revenue totals, expenditure totals, and deficits can be found in the table below:

	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Total Revenues *	\$ 10,042,877	\$ 10,092,877	\$ 10,092,877	\$ 10,042,877	\$ 10,042,877
Total Expenditures	\$ 11,889,255	\$ 12,150,891	\$ 13,190,772	\$ 13,509,239	\$ 13,727,647
Projected Deficit	\$ (1,846,379)	\$ (2,058,014)	\$ (3,097,895)	\$ (3,466,363)	\$ (3,684,770)
Cumulative Deficit		\$ (3,904,393)	\$ (7,002,288)	\$ (10,468,650)	\$ (14,153,421)

* Total Revenues include \$50,000 in Retained Earnings as a revenue source for capital outlay expenditures in FY 2017 and FY 2018.

The projected impact on the Retained Earnings balance is shown in the table below:

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Retained Earnings at start of the FY *	\$ 2,602,841	\$ 756,462	\$ (1,351,552)	\$ (4,499,447)	\$ (7,965,809)
Retained Earnings Planned	\$ -	\$ (50,000)	\$ (50,000)	\$ -	\$ -
Projected Deficit for FY	\$ (1,846,379)	\$ (2,058,014)	\$ (3,097,895)	\$ (3,466,363)	\$ (3,684,770)
Retained Earnings at end of the FY	\$ 756,462	\$ (1,351,552)	\$ (4,499,447)	\$ (7,965,809)	\$ (11,650,580)
Retained Earnings as a % of Budget	6.36%	-11.12%	-34.11%	-58.97%	-84.87%

* The Retained Earnings balance at the start of FY 2016 is a projection, based on the certified FY 2014 amount and the projected FY 2015 deficit.

The table above shows that, with no action on rates, Retained Earnings would be drained in FY 2017. Currently, the City uses approximately \$800,000 in Retained Earnings yearly to balance the water and sewer enterprise fund budget. Sometimes the City uses more in a particular year, depending on budget demands that year.

Rate and Tier Change Scenarios

Once the baseline scenario was complete, other scenarios could be created, using the baseline scenario as the starting point and updating certain items to reflect potential changes. The goals with any scenario created were to attempt to eliminate the projected deficits in each of the five fiscal years and to ensure the projected Retained Earnings balance at the end of FY 2020 is at a desired level. Any scenario had to account for the fact that rate and/or changes, if implemented, would only apply to half of the bills in FY 2016.

One of the updates was to the water service charge as already outlined in this report. Any scenario created would include the projected revenue from the updated water service charge. The next focus would be on user charges themselves.

Multiple scenarios were created and reviewed with City staff. The scenarios included a rate increase-only scenario with a rate increase occurring in FY 2016 only, a rate increase-only scenario with rate increases in each of the next five fiscal years including FY 2016, a tier change-only scenario with tier changes occurring in FY 2016 only, and a rate increase and tier change scenario with rate and tier changes in FY 2016 and rate increases in each of the subsequent four fiscal years.

The City of Methuen decided to focus on two scenarios or options: (1) the rate increase-only scenario with a rate increase occurring in FY 2016 only, and (2) a rate increase and tier change scenario with rate and tier changes in FY 2016 and rate increases in each of the subsequent four fiscal years.

Option 1

With a large projected deficit in the water and sewer enterprise fund in FY 2016 and, by the time any rate changes would take effect, only a half year's worth of revenue at the new rates collected in FY 2016, the rate increase for both water and sewer would have to be about 48% to eliminate the projected FY 2016 deficit. Since the City believes implementing this option is not a possibility, the City focused on Option 2.

Option 2

This option is appealing since, by changing tiers and increasing rates to eliminate projected deficits in four of the next five fiscal years and replenish the Retained Earnings balance to a desired level, the changes are less impactful to the low-end users and average residential user and more impactful to the high-end residential and moderate and high-end commercial users. Additionally, with the rate increases that the City is planning, users can get used to consistent rate increases each year and plan accordingly.

The following table shows the planned rate and tier changes for each of the next five fiscal years. The next section of this document contains the specific proposed rates and tiers for FY 2016.

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Water	Tier Change	10.00%	10.00%	10.00%	10.00%
Sewer	Tier Change	10.00%	10.00%	10.00%	10.00%

With the planned rate and tier changes determined, the projected revenue totals, expenditure totals, and surplus/deficit amounts can be found in the table below:

	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Total Revenues *	\$ 10,759,353	\$ 12,632,154	\$ 13,696,118	\$ 14,816,502	\$ 16,103,961
Total Expenditures	\$ 11,889,255	\$ 12,150,891	\$ 13,190,772	\$ 13,509,239	\$ 13,727,647
Projected Surplus/(Deficit)	\$ (1,129,902)	\$ 481,263	\$ 505,346	\$ 1,307,263	\$ 2,376,314
Cumulative Surplus/(Deficit)		\$ (648,639)	\$ (143,292)	\$ 1,163,970	\$ 3,540,284

* Total Revenues include \$50,000 in Retained Earnings as a revenue source for capital outlay expenditures in FY 2017 and FY 2018.

The projected impact on the Retained Earnings balance is shown in the table below:

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Retained Earnings at start of the FY *	\$ 2,602,841	\$ 1,472,939	\$ 1,904,202	\$ 2,359,549	\$ 3,666,811
Retained Earnings Planned	\$ -	\$ (50,000)	\$ (50,000)	\$ -	\$ -
Projected Deficit for FY	\$ (1,129,902)	\$ 481,263	\$ 505,346	\$ 1,307,263	\$ 2,376,314
Retained Earnings at end of the FY	\$ 1,472,939	\$ 1,904,202	\$ 2,359,549	\$ 3,666,811	\$ 6,043,125
Retained Earnings as a % of Budget	12.39%	15.67%	17.89%	27.14%	44.02%

* The Retained Earnings balance at the start of FY 2016 is a projection, based on the certified FY 2014 amount and the projected FY 2015 deficit.

The following tables show the impact of the planned rate and tier changes on certain user types by showing the increase in yearly bills. The water bills include the updated service charge, with the assumption that each user listed uses a 5/8-inch meter. Usage is per bill.

Water User Impact	Usage	Current Bill	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Tier 1 Residential User	1,000	\$124.80	\$8.64	\$6.48	\$7.12	\$7.84	\$8.64
Tier 2 Residential User	2,000	\$210.80	\$17.44	\$15.96	\$17.56	\$19.28	\$21.28
Average Residential User	2,867	\$304.44	\$6.00	\$24.16	\$26.60	\$29.24	\$32.20
Tier 4 Commercial User	5,000	\$770.00	\$116.64	\$81.80	\$90.00	\$98.96	\$108.88
Average Commercial User	13,423	\$1,966.04	\$553.44	\$245.12	\$269.64	\$296.48	\$326.28

Sewer User Impact	Usage	Current Bill	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Tier 1 Residential User	1,000	\$86.00	\$ -	\$8.60	\$9.48	\$10.40	\$11.44
Tier 2 Residential User	2,000	\$172.00	\$12.00	\$18.40	\$20.24	\$22.28	\$24.48
Average Residential User	2,574	\$221.36	\$18.88	\$24.04	\$26.44	\$29.08	\$31.96
Tier 4 Commercial User	5,000	\$450.00	\$72.00	\$52.20	\$57.44	\$63.16	\$69.48
Average Commercial User	28,762	\$2,588.56	\$915.44	\$350.40	\$385.44	\$424.00	\$466.36

PROPOSED RATES AND TIERS FOR FY 2016

The City of Methuen's proposed water and sewer rate and tier structure for FY 2016 is found below. It includes a four-tier structure for all water and sewer rates. If adopted, the changes would take effect on or after November 10, 2015.

Tier Structure with Rates for All Users

Usage amounts shown are in cubic feet. Rates are per 100 cubic feet.

	Tier 1	Tier 2	Tier 3	Tier 4
Usage Start	1	1,001	3,001	6,001
Usage End	1,000	3,000	6,000	+
Residential Water	\$1.62	\$2.37	\$3.12	\$3.87
Commercial Water	\$3.55	\$4.00	\$4.45	\$4.90
Residential Sewer	\$2.15	\$2.45	\$2.75	\$3.05
Commercial Sewer	\$2.25	\$2.55	\$2.85	\$3.15

Out-of-town customers: Additional \$0.25 added to the rate for administrative fee

COMPARATIVE STUDY OF PROJECTED BILLS

Like what was done with current bills, a comparison of the City of Methuen's projected water and sewer bills, after the proposed FY 2016 rate and tier changes, to those of similar communities still shows that Methuen's projected customers' bills compare favorably to current bills in other communities.

Residential

The table below shows how the City's residential yearly bill amounts compare to similar communities'. The amounts reflect usage of 12,000 cubic feet per year, which is 3,000 cubic feet per bill in Methuen. The usage amount is used in the survey since it is an industry-standard amount of usage for the average residential user. The source of the bill amounts found in the table below is Tighe and Bond's 2014 Water and Sewer Rate Survey, with adjustments in place for certain communities if rates changed since the survey's publishing.

Community	Water	Sewer	Total
Methuen	\$323	\$282	\$605
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Commercial

The table below shows how the City's commercial yearly bill amounts compare to similar communities'. The amounts reflect usage of 56,000 cubic feet per year, which is 14,000 cubic feet per bill in Methuen. The usage amount is used in the survey since it is an industry-standard amount of usage for the average commercial user. The source of the bill amounts found in the table below is Tighe and Bond's 2014 Water and Sewer Rate Survey, with adjustments in place for certain communities if rates changed since the survey's publishing.

Community	Water	Sewer	Total
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Methuen	\$2,633	\$1,644	\$4,277
North Andover	\$2,968	\$4,911	\$7,879
Malden	\$3,605	\$4,503	\$8,108
Medford	\$4,969	\$5,374	\$10,343

AGRICULTURAL USER RATES

Part of the analysis that was conducted during the water and sewer rate study was on the rates that the current agricultural accounts pay and whether any changes to aid agricultural accounts could be made.

Accounts linked to six different properties were analyzed. Of the accounts linked to those six properties, seven accounts are considered agricultural accounts, as they are for farms or greenhouses. Of the seven agricultural accounts, five accounts are seasonal accounts, with service typically in one or two quarters of the year, and two accounts are year-round accounts. Of the seven agricultural accounts, six are billed as water residential accounts currently and one is billed as a water commercial account currently.

After multiple discussions about this topic, the City of Methuen ultimately decided not to make any changes to the way agricultural accounts are billed, since agricultural accounts pay the residential rate, the lowest available rate, and could be charged the commercial rate instead, considering their properties are commercial properties.

CONCLUSION

The City of Methuen has successfully managed its Water and Sewer Enterprise Fund for years without implementing changes to its water and sewer rates and/or tiers since 2008. Facing yearly deficits in the enterprise fund close to \$1 million, a consistently dwindling Retained Earnings balance due to the use of Retained Earnings to balance yearly budgets, and an extensive five-year capital plan, the City is ready to make changes to its water and sewer rates and tiers and to its water service charge. The changes would

bring in additional user charges and water service charges revenue to help eliminate projected deficits over the next five fiscal years and to replenish the Retained Earnings balance back to a desired level.

The proposed water and sewer rate and tier changes, if implemented, would have a minor impact on the low-end user, including the average residential user, but would have a larger impact on large residential users and on moderate and large commercial users. Implementing a tiered rate structure for all users, including commercial users, would mean that a conservation-based structure would be in place for all water and sewer users. Currently a tiered rate structure is in place for water residential users only. For all other users, water and sewer usage would no longer have the same cost for all units of usage and users can control their costs if they conserve to avoid usage in higher and more costly tiers.