Augusta Charter Township Presentation of Water and Sewer Rate Options

September 11, 2019

Augusta Township

Water/Sewer Rate Review

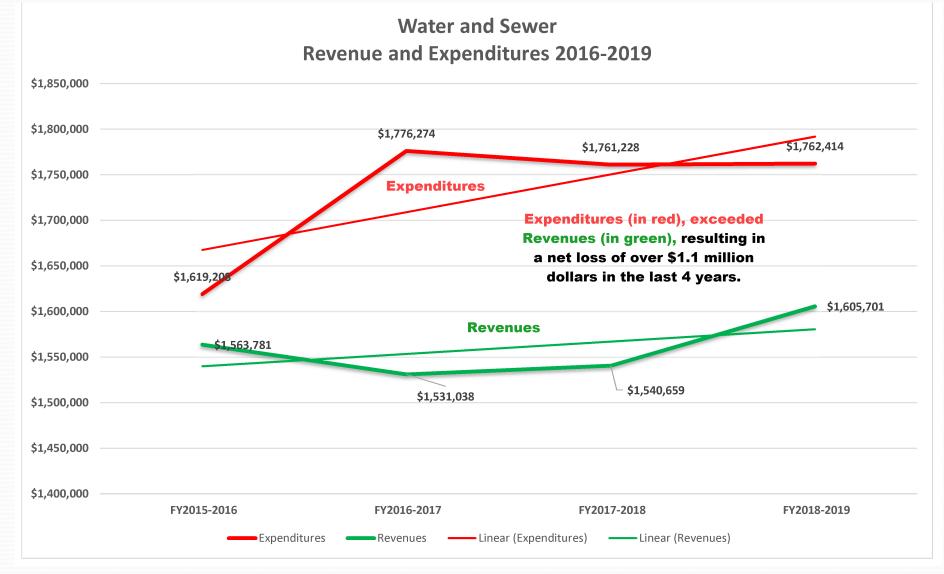
Challenges

- The water and sewer utility has been consistently operating on a net loss basis for years. Total losses
 over the past 10+ years exceed \$3,000,000.
- Current rate structure, rates, and revenues do not fund operations, and are insufficient to consistently fund critical capital improvement programs.
- Failure to address aging infrastructure causing severe sewer inflow and infiltration (I&I), resulting in extremely high sanitary sewer flows and additional charges.
- Capital improvements and repairs are overdue, resulting in expensive emergency repairs.
- A capital improvement program has been proposed that will require significant investments in both the water and sewer systems over the next few years.

Augusta Charter Township Water and Sewer Utility Rate Study

FINANCIAL OVERVIEW and Assumptions

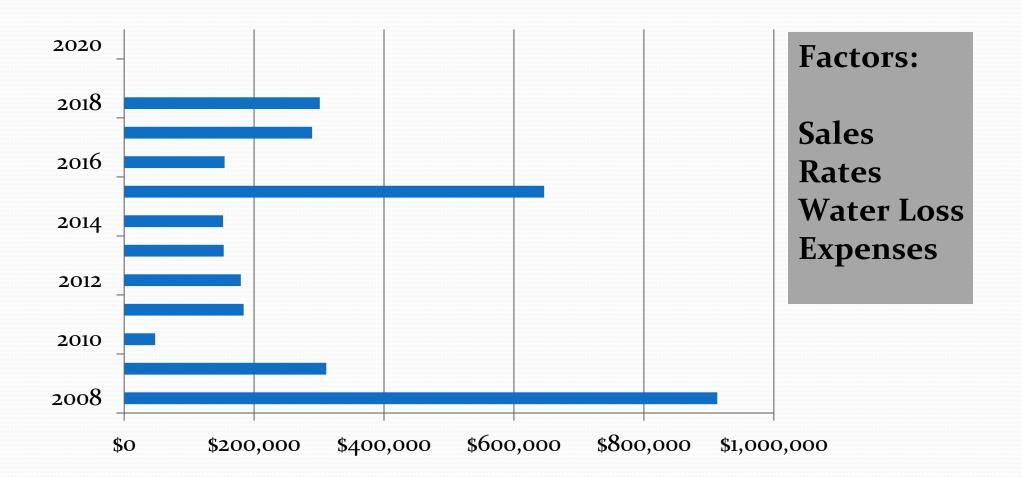
Water and Sewer Net loss



Augusta Township Water and Sewer Rate Review

W&S Operating Loss

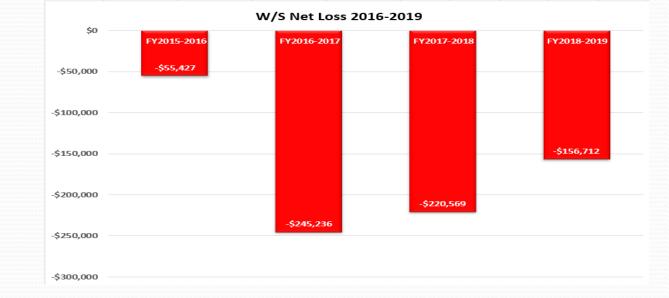
\$3 Million 10 Year Loss



Water and Sewer Net loss 2016-2019

In Fiscal Year 2018-19 just completed, the water and sewer system recorded a **loss** of **\$156,712**.

Below is a comparison of 2018-19 rates, and the rates that would have been required to break even last year.



Commodity	Rate Charged	Required Rate	% Difference	2018-19 Loss
Water	\$6.35	\$7.12	12.2%	(106,675)
Sewer	\$6.71	\$7.50	11.8%	(50,300)

Potential State of Michigan Concerns

The township is required to operate the water and sewer utility as an enterprise fund, covering costs to operate the system and service customers through user fees and usage charges.

The system is currently operating in a deficit. This requires a corrective action to bring finances into compliance with state law and to properly fund the water and sewer system.

Michigan Department of Treasury

 Water and Sewer fund – Possible deficit reduction plan requirement

EGLE/Michigan Department of Environmental Quality

 The township has a capital improvement and asset management plan that includes a minimum of \$2,030,000 in water and sewer capital improvements

Augusta Charter Township

Water and Sewer Loss

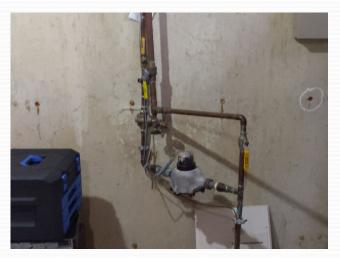
A significant, yet often overlooked cost of operating a water and sewer utility system.

Water and Sewer Loss represented a \$285,000 cost to Augusta Township in Fiscal Year 2018-20.

This can and must be fixed in order to operate the system in a fiscally responsible manner at the lowest long-term cost possible.







Water Loss

Water loss is the unsold portion of the water purchased from YCUA.

Water loss happens with every water utility. Water main breaks, hydrant usage, leaks in the system, and even water theft occur everywhere. This results in less water being sold than is purchased.

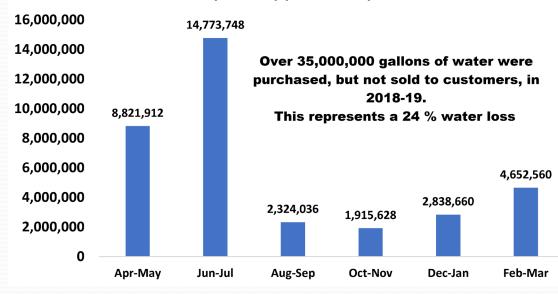
- The township experiences a high water loss rate of about 24%.
- This means that for every 1000 gallons of water purchased, only 750 are sold.
- Most of the water loss occurs in the spring and summer months, suggesting there are customers that are not being metered and billed for their lawn irrigation.
- Water loss added an additional \$145,000 (nearly 9% of total costs) in 2018-19.

Solutions

- Replace aging water mains and infrastructure
- Conduct a meter inspection program to ensure that customers are properly connected to the system (This program is underway)

Water Loss Analysis

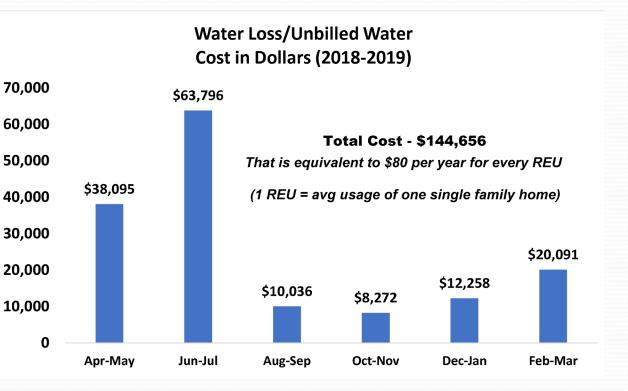
Water Loss/Unbilled Water (Gallons) (2018-2019)



In 2018-19, over 35,000,000 gallons of water, representing nearly 25% of all water purchased, was not billed to a customer.

This unbilled water cost the township (and ultimately all customers, \$144,000 in additional usage charges.)

Water Loss represents nearly 9% of the total cost of the Augusta Township Water and Sewer budget



Meter Inspection Program - Update





Meter Inspection Program Reducing Water Loss by reducing water theft

Due to spikes in unmetered/unsold water ("water loss") during summer months, it was theorized that some customers are bypassing township meters and watering their lawns and gardens with unmetered water.

From May through September 2018, the township spent nearly \$100,000 on water *it did not sell*. In July 2018, the township spent over \$32,000 for water that *it did not sell*. This is a loss rate of 31%, compared to a 17% loss rate the rest of the year. With 1,593 active customers, each customer share of that unmetered water represented

To address this problem the township has undertaken a meter inspection program to ensure that all customers of the township's water system are being properly metered for their usage, correct andy problems, and add them to the township's customer rolls.

Reasons for unmetered water:

- Connection to water system before meter.
- Temporary disconnection of meter (replace with template)
- Connection to irrigation system before primary meter bypass
- Original template installed, meter paid for, never returned for meter installation bypass Augusta Charter Township Utility Review Complete bypass no template installed (see photo on left)

Meter Inspection Program - Update



Meter Inspection Program Update - Reducing Water Loss by reducing water theft

Inspections

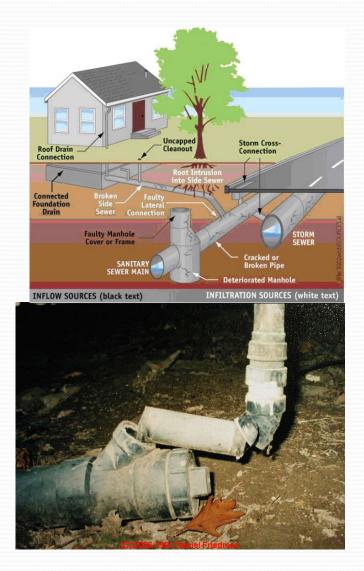
- 33 customers notified and inspected
- 6 customers non-compliant (bypass, no meter)
- 18% of inspected homes non-compliant
- Remedial action taken to install meter, add account as necessary

Using an estimate of 30 units per month for an automatic outdoor irrigation system each home with a bypassed meter represents a cost to <u>all</u> water customers of \$500 (150 units = 5 months X 30 units) X \$3.31 YCUA rate per unit.

This is a critical process that is delivering dividends immediately. Target is to complete the program before the 2020 watering season.

Each problem corrected represents a possible \$500 annual savings to the township.

Excess Sewer Flow – "Sewer Loss"



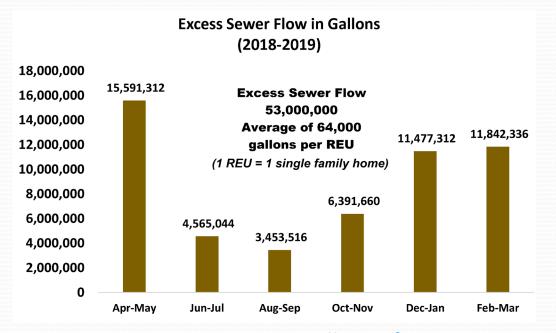
Excess Sanitary Sewer Flows – The goal of the sanitary sewer system is to keep as much stormwater and runoff out of the system as possible. Infiltration and Inflow (I&I), of groundwater into the system significantly adds to the township's costs.

- Sewer Loss The township pays for sewage treatment on a metered basis. Stormwater runoff, improper drains into the sanitary sewer system are a hidden costs that are paid for by all rate payers.
- For every 1 gallon of water purchased from YCUA, 2 ½ gallons are returned to the YCUA Water Treatment facility for processing. <u>60% of the cost of sewer treatment is for water</u> <u>that should not be in the system.</u>

Solutions

- Implement proposed capital improvement plan to reduce groundwater inflow into the sanitary sewer system.
- Find and eliminate improper hookups and sources of excess inflows.

SEWER Excess Flow/Loss Analysis

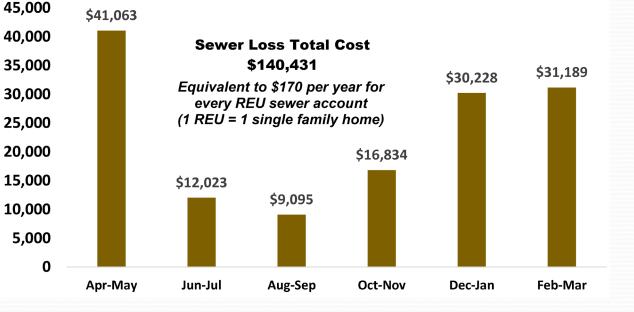


In 2018-19, over 53,000,000 gallons of sanitary sewer flow, representing nearly 60% of all sewer processed, was not billed to a particular customer.

This unbilled sewer cost the township's sewer cutomers \$140,000 in additional sewer charges that were paid for by 520 sewer customers (about \$250 per residential customer)

Sewer Loss represents over 11% of the total cost of the Augusta Township Water and Sewer budget

Sewer Loss/Unbilled Sewer Cost in Dollars (2018-2019)



SUMMARY Water and Sewer Loss

Reducing Water and Sewer Loss is a critical and long-term goal for the township.

Total Unbilled Water and Sewer Costs - \$145,656 + 140,431 = \$285,087

- Cutting Water and Sewer Loss by 25% would reduce costs by \$71,000 Annually
- Cutting Water and Sewer Loss by 50% would reduce costs by \$142,000 Annually

Solving these losses requires inspection and capital improvements of the system.

Water and Sewer Billing Rate Options

The Proposed Rate Structure

Three Cost Components are used for this rate structure:

- **Capacity** The fixed costs to operate the system
 - Operations and Maintenance, administration, contractors, fixed YCUA Charges
 - Costs that are relatively certain when the budget year begins
 - Costs are allocated across all users based on their proportion of the total system
- **Commodity** Variable charge based on individual usage (water or sewer) X a usage rate
- **Debt Service** TBD at later date when capital improvement plan/bond finalized

For 2019-2020, the forecast costs for these components is shown below (use of reserves optional based on proposed rate model)

	Water	Sewer	Total
Capacity Cost (Fixed Internal)	405,418	188,790	594,207
Use of reserve	(50,000)	(35,000)	(85 <i>,</i> 000)
Commodity Cost (YCUA Based on Est Usage)	600,000	320,000	920,000
Costs to Recover	955,418	473,790	1,429,207

Rate Structure Basic Requirements

The proposed rate structure assumes the following criteria and assumptions:

- Water and Sewer Rates must be set at levels that will allow the system to operate in a financially stable condition and protect the health, safety, and welfare of the utility's customers.
- Fixed costs to operate and maintain the system must be covered on an equitable basis across all customers <u>based on a standard formula.</u>
- Costs for repairs and capital improvements to the system are shared on an equitable basis across all customers <u>based on a standard formula</u>.
- A usage charge for actual water or sewerage services consumed. The customer has the ability to reduce their costs through reduced usage, avoiding the commodity charge(s). All customers pay the same rate for water and sewer usage.

What is a "Residential Equivalent Unit"?

Your Home is 1 REU



An REU is a unit of measure used to represent the average usage of a single-family residential dwelling.

It is based on meter size and type of use.

Larger water services will have a multiple of the REUs assigned based on their capacity and meter size. A "Residential Equivalent Unit" (REU) of 1 is assumed for all residential users with a meter size up to 1".

Commercial, educational, or residential properties with meters larger than 1" are charged <u>proportionally</u> to the size of the meter installed based on the American Water Works Association national standard. Larger meters bear a larger proportion of the system's capacity costs.



Under the AWWA standards, a retail facility with a 2" meter is the equivalent of eight (8) residential homes.

What are "Capacity Costs"

CAPACITY COSTS are the costs to maintain, operate, and administrate the water and sewer system.

The township incurs a "fixed cost" of operating the water and sewer system, regardless of the amount of water and sewer used.

These costs include:

- The cost of hiring a utility operating company/vendor to do the day to day maintenance of the system
- Engineering costs
- Repairs to the existing system that are routine (water main breaks, etc)
- Administration and billing the costs of reading meters, preparing bills, managing customer accounts, etc
- Wages for the staff that manages the system
- For 2019-20, the forecast costs for rate setting purposes for the <u>CAPACITY</u> component is:
 - Water Capacity Costs = \$405, 418
 - Sewer Capacity Costs = \$188,790

What are "Commodity Costs"

COMMODITY COSTS are the costs directly related to the purchase of water and sewer from YCUA.

The township does not produce water or process sewerage. Those functions are performed by YCUA, and billed to the township on a per unit basis. These "commodity" costs are passed on to customers based on A)individual usage and B)a factor to recover costs related to water and sewer system loss

YCUA charges the township on a "per unit" basis. A unit is equal to 748 gallons of water or sewerage.

- YCUA Water COST per unit = \$3.31
- YCUA Sewer COST per unit = \$1.97

After factoring in water and sewer loss factors, the per unit rate necessary to pay for YCUA charges

Commodity	2018-2019 rate	2019-2020 Proposed rate	Change	
Water	\$6.35 per unit (Water)	\$4.34 per unit (Water)	- \$2.01 per unit	
Sewer	\$6.71 per unit (Sewer)	\$5.04 per unit (Sewer)	- \$1.67 per unit	

(1 unit = 748 gallons)

What is "Debt Service"

DEBT SERVICE is the principal and interest paid on money that the township borrows to perform major repairs and upgrades to the water and sewer system.

Municipal utility systems fund capital improvements in a couple of primary ways:

- Borrow money in order to complete large projects
- Save money through recapture of depreciation as the system ages, and spend this money when available

Projected capital improvements for water and sewer are forecast at about \$2,000,000 (\$1,000,000 each for water and sewer), and this will be financed through a bond issued by the township.

Because of the township's limited cash reserves (fund balance) available for capital improvements, the township intends to borrow funds sufficient to complete about two million dollars in capital improvements, subject to board approval.

Estimated annual cost of borrowing is about \$130,000 per year, depending on final interest rate. Debt service allocation will follow the same "REU" methodology as capacity costs, allocating a proportional amount of the debt to each customer based on meter size and type of service (residential/commercial).

Augusta Township Customer Statistics

As of September 2019, there are:

- 1,477 active water meters in the township*
- 520 are water and sewer customers (35%)
- 957 are water only customers (65%)
- 22 customers are flat-rate sewer only customers

Based on meter size, type of service, and excluding irrigation accounts, an REU factor of 1,828 was calculated. In layman's terms, the township has the "residential equivalent" of 1,828 single-family homes connected to the system.

* Excludes 119 irrigation meters

Rate Model Assumptions

The proposed rate structure includes the following criteria and assumptions:

- Available reserves of \$85,000 are used to reduce capacity cost charges for the first year to ease the transition to the new rate structure.
- Depreciation charges are eliminated in years 1, then added on an increasing scale in years 2-5, resulting in the full recapture of depreciation in year 5.
- Debt service is not included in this model. Bond and debt service requirements to be determined

BREAKEVEN VIEW

(All Operating Costs, all Depreciation)

In order to cover all operating costs including depreciation, rates would need to increase in Year 1:

- Water 48.3% •
- Sewer 22.4%

This represents a *blended* year 1 rate increase of 35% for a water and sewer customer using and average amount of month of water and sewer service.

This view does not include capital improvements or debt service.

REU Average Usage	76			CAPACIT	CAPACITY AND COMMODITY COSTS O		
				ſ	MONTHLY CO	sт	
Summary	Current Annual Cost	Recommended	% Change		Recommended	Current	
Water Only	\$482.60	\$715.84	48.3%	-	\$59.65	\$40.22	
Sewer Only	\$509.96	\$624.09	22.4%	_	\$52.01	\$42.50	
Water and Sewer (Both)	\$992.56	\$1,339.92	35.0%		\$111.66	\$82.71	

WATER - Example Residential customer - average usage of 76 units annually, about 6 per month

Example Water Charge	Charge		Annual Cl	narge	Monthly Charge (billed bimonthly)				
(Residential up to 1")	Charge/Units		Model	Current	Model	Current			
Estimated Volume (Units)	76								
Residential Equivalent User (REU)		1							
Capacity Cost	\$385.90	annual charge	\$385.90		\$32.16				
Debt Service	\$0.00	annual charge	\$0.00		\$0.00				
Use of Reserves	\$0.00	annual charge	\$0.00		\$0.00				
Commodity (Usage)	\$4.34	per unit	\$329.94		\$27.49				
-		Total	\$715.84	\$482.60	\$59.65	\$40.2			
		Change	from current rates	48.3%					

SEWER - Example Residential customer - average usage of 76 units annually, about 6 per month

•		0 0	-			
Example Sewer Charge			Annual Cl	narge	Monthly Charge (oilled bimonthly)
(Residential up to 1")	Charge/Units		Model	Current	Model	Current
Estimated Volume (Units)	76					
Residential Equivalent User (REU)		1		[
Capacity Cost	\$240.89	annual charge	\$240.89	[\$20.07	
Debt Service	\$0.00	annual charge	\$0.00	[\$0.00	
Use of Reserves	\$0.00	annual charge	\$0.00	[\$0.00	
Commodity (Usage)	\$5.04	per unit	\$383.20		\$31.93	
Total			\$624.09	\$509.96	\$52.01	\$42.
		Change	from current rates	22.4%		

Change from current rates

25

Capacity and Commodity Costs – Smoothed Approach

(All Operating Costs, some Depreciation, use reserves)

Using a combination of available cash reserves (fund balance), and phasing in depreciation over time, a "smoothed" model can be built. This model would require the following rate increases in Year 1 to fund the system in a fiscally stable manner without losses. **Example Residential Customer REU Average Usage** 76 CAPACITY AND COMMODITY COSTS ONLY MONTHLY COST **Current Annual Cost** Recommended % Change Recommended Current Summarv Water Only \$482.60 \$524.37 8.7% \$43.70 \$40.22 Sewer Only \$509.96 \$564.99 10.8% \$47.08 \$42.50 Water and Sewer (Both) \$992.56 \$1,089.36 9.8% \$90.78 \$82.71

WATER - Example Residential customer - average usage of 76 units annually, about 6 per month

•					•		
Example Water Charge			Annual Cl	narge	Monthly Charge (oilled bimonthly)	
(Residential up to 1")	Charge/Units		Recommended	Current	Recommended	Current	
Estimated Volume (Units)	76						
esidential Equivalent User (REU)		1					
Capacity Cost	\$221.78	annual charge	\$221.78		\$18.48		
Debt Service	\$0.00	annual charge	\$0.00		\$0.00		
Use of Reserves	-\$27.35	annual charge	-\$27.35		-\$2.28		
Commodity (Usage)	\$4.34	per unit	\$329.94		\$27.49		
_		Total	\$524.37	\$482.60	\$43.70	\$40.2	
		Change	from current rates	8.7%			

- Water 8.7%
- Sewer 10.8%

This represents a <u>blended year</u> <u>1 rate increase of 9.8%</u>

SEWER - Example Residential customer - average usage of 76 units annually, about 6 per month

Example Sewer Charge			Annual Cl	narge	Monthly Charge (I	oilled bimonthly)
(Residential up to 1")	Charge/Units		Recommended	Current	Proposed	Current
Estimated Volume (Units)	76					
Residential Equivalent User (REU)		1				
Capacity Cost	\$223.16	annual charge	\$223.16		\$18.60	
Debt Service	\$0.00	annual charge	\$0.00		\$0.00	
Use of Reserves	-\$41.37	annual charge	-\$41.37		-\$3.45	
Commodity (Usage)	\$5.04	per unit	\$383.20		\$31.93	
Total			\$564.99	\$509.96	\$47.08	\$42.5
		Change	from current rates	10.8%		

Smoothed Model- Projected costs 2019-2024

Operational Costs – Capacity and Commodity only

Projected

CAPACITY AND COMMODITY COSTS ONLY

Both Water and Sewer service									
Based on Smoothed Rate - Capacity, Debt Service and Commodity Rate Method									
Est Ave Annual Water & Sewer Bill based on Residential Average Usage (1 REU)	Current	2019-20	2020-21	2021-22	2022-23	2023-24			
Annual Water	483	524	596	639	710	782			
Annual Sewer	510	565	635	665	696	726			
Total	<i>993</i>	1,089	1,231	1,305	1,407	1,508			
Yr to Yr Change		9.8%	13.0%	6.0%	7.8%	7.2%			

(1) Based on average usage for meter size.

Water Only Service									
Based on Smoothed Rate - Capacity, Debt Service and Commodity Rate Method									
Est Ave Annual Water Bill based on Residential									
Average Usage (1 REU)	Current	2019-20	2020-21	2021-22	2022-23	2023-24			
Annual Water	483	524	596	639	710	782			
Yr to Yr Change		8.7%	13.7%	7.3%	11.1%	10.0%			

(1) Based on average usage for meter size.

Sewer Only Service								
Based on Smoothed Rate - Capacity, Debt Service and Commodity Rate Method								
Est Ave Annual Water Bill based on Residential	Est Ave Annual Water Bill based on Residential							
Average Usage (1 REU)	Current	2019-20	2020-21	2021-22	2022-23	2023-24		
Annual Sewer	510	565	635	665	696	726		
Yr to Yr Change		10 .8 %	12.3%	4.8%	4.7%	4.3%		

(1) Based on average usage for meter size.

Conclusion

The recommended rate structure addresses the following issues

- Distribution of fixed costs for operation and maintenance on a consistent basis using a standard formula.
- Commodity (water and sewer usage) rates only cover the cost of purchasing water and sewer services from YCUA