

Executive Report

Charter Township of Union, MI

Water Cost of Service and Rate Design Report

July 21, 2020



**Specializing in Cost of Service,
Rate Design, and Financial Analysis**

Rate Design and Financial Analysis

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July 21, 2020

Kim Smith
Charter Township of Union
Department of Public Services
5228 South Isabella Road
Mt Pleasant, MI 48858

Dear Ms. Smith,

We are pleased to present this executive summary report for a cost of service, financial projection and rate design study completed for the Charter Township of Union water utility. This report was prepared to provide the utility with a comprehensive examination of its existing financials by an outside party.

The specific purposes of this long-term financial projection and rate study are:

- 1) Determine the water utility's revenue requirements for 2021
- 2) Project rate adjustments needed to meet targeted revenue requirements
- 3) Determine the cost to serve retail customers
- 4) Develop one-year of retail rates

This report includes results of the cost of service, financial projection, and identifies future rate adjustments for the water operation. Specific findings included in this report are:

- 1) Rate adjustments that are based on the utility's ability to work toward three factors listed below:
 - Debt Coverage Ratio
 - Minimum Cash Reserves
 - Optimal Operating Income
- 2) Rate adjustments are designed to work toward cost of service results.

This report is intended for information and use by management and the Board of Directors for purposes stated above and is not intended to be used by anyone except the specified parties.

Sincerely,

Dawn Lund

Utility Financial Solutions, LLC
Dawn Lund, Vice-President

UTILITY REVENUE REQUIREMENTS FOR 2021-2025

Revenue requirements for the Charter Township of Union were projected for 2021 based on 2019 actual expenses and Budget 2020, with adjustments made to reflect projected operating characteristics. ***The projected financial statements are for cost of service purposes only.***

Table 1 is the projected financial statement for the water operation from 2021-2025 without rate changes. In 2021, the operating loss is projected at (\$34,196) and increases to (\$301,491) by 2025. The cash generated from operations is projected to decline from \$2.7 million to \$1.5 million. The cash balance includes a \$3.0 million bond issuance in 2024 to help fund the capital improvement program. The debt coverage ratio drops below the minimum target starting in 2025.

Table 1 – Financial Projection Summary (without Rate Adjustments; with Bond Issuance)

Fiscal Year	Projected Rate Adjustments	Projected Revenues	Projected Expenses	Operating Income	Operating Cash Balance	Capital Improvements	Bond Issues	Debt Coverage Ratio
2021	0.00%	1,568,643	1,602,839	(34,196)	2,722,189	826,230	-	2.81
2022	0.00%	1,568,643	1,646,302	(77,658)	2,493,756	476,230	-	2.57
2023	0.00%	1,568,643	1,697,460	(128,817)	2,002,242	706,230	-	2.35
2024	0.00%	1,568,643	1,825,234	(256,590)	1,970,854	3,210,000	3,000,000	2.12
2025	0.00%	1,568,643	1,870,134	(301,491)	1,456,426	450,000	-	0.83
Target/Minimum 2021				\$ 497,877	\$ 1,059,528			1.45
Target/Minimum 2025				\$ 610,663	\$ 1,335,971			1.45

Projected Operating Income is below the targeted throughout the projection period.

DEVELOPMENT OF FINANCIAL TARGETS

When evaluating rates to charge customers, three factors must be considered:

1. Debt Coverage Ratio
2. Minimum Cash Reserves
3. Optimal Net Income

Each of these factors is discussed below:

Debt Coverage Ratio - Table 2 is the projected debt coverage ratios with capital additions as provided by the utility. The minimum debt coverage ratio was established at 1.45. The current bonds are revenue bonds with a 1.25 requirement ratio. However, a 1.45 coverage ratio will help achieve the following:

- Helps to ensure the ratio will be met in years when sales are low due to cold/wet summers or loss of a major customer(s).
- Obtain higher bond rating and lower interest costs if revenue bonds are sold in the future.

Table 2 – Projected Debt Coverage Ratios (without Rate Adjustments)

Debt Coverage Ratio	Projected 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025
Add Net Income	\$ (53,000)	\$ (98,215)	\$ (147,697)	\$ (276,073)	\$ (421,667)
Add Depreciation Expense	441,581	456,012	477,413	574,686	588,322
Add Interest Expense	51,453	47,778	43,818	39,505	139,885
Cash Available for Debt Service	\$ 440,033	\$ 405,575	\$ 373,534	\$ 338,118	\$ 306,540
Debt Principal and Interest	\$ 156,453	\$ 157,778	\$ 158,818	\$ 159,505	\$ 370,968
Projected Debt Coverage Ratio (Covenants)	2.81	2.57	2.35	2.12	0.83
Minimum Debt Coverage Ratio	1.45	1.45	1.45	1.45	1.45

The Debt Coverage Ratio does not meet the minimum beginning in 2025.

Minimum Cash Reserve - Table 3 is the minimum level of cash reserves required to help ensure timely replacement of assets and to provide financial stability for the water utility. The methodology used to establish this minimum is based on certain assumptions related to a percentage of Operation & Maintenance expense, historical rate base, current debt service and capital improvements to be kept in cash reserves. Minimum cash reserve attempts to quantify the minimum amount of cash the utility should keep in reserve and is considered at critical levels if cash approaches this minimum.

Actual cash reserves may vary substantially above the minimum and is dependent on the life cycle of assets that are currently in service. If a minimum cash reserve policy is established, and the utility’s cash balance falls below the established amount, it should require the Board to take action to rebuild cash. The typical action includes a rate increase or the consideration of a bond issuance. Based on these assumptions, the Charter Township of Union should maintain a minimum of \$1.3 million in cash reserves.

Table 3 – Minimum Cash Reserves

		Projected 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025
Minimum Cash Reserve Levels						
Operation & Maintenance Less Depreciation Expense		\$ 1,161,258	\$ 1,190,290	\$ 1,220,047	\$ 1,250,548	\$ 1,281,812
Historical Rate Base		15,891,535	16,367,765	17,073,995	20,283,995	20,733,995
Current Portion of Debt Service Reserve		157,778	158,818	159,505	370,968	370,968
Five Year Capital Improvements - Net of bond proceeds		3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Minimum Cash Reserve Levels						
Operation & Maintenance Less Depreciation Expense		12.3%	12.3%	12.3%	12.3%	12.3%
Historical Rate Base		1%	1%	1%	1%	1%
Current Portion of Debt Service Reserve		100%	100%	100%	100%	100%
Five Year Capital Improvements - Net of bond proceeds		20%	20%	20%	20%	20%
	Percent Allocated	Projected 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025
Operation & Maintenance Less Depreciation Expense	12.3%	\$ 142,835	\$ 146,406	\$ 150,066	\$ 153,817	\$ 157,663
Historical Rate Base	1.0%	158,915	163,678	170,740	202,840	207,340
Current Portion of Debt Service Reserve	100.0%	157,778	158,818	159,505	370,968	370,968
Five Year Capital Improvements - Net of bond proceeds	20.0%	600,000	600,000	600,000	600,000	600,000
Recommended Minimum Cash Reserve		\$ 1,059,528	\$ 1,068,901	\$ 1,080,311	\$ 1,327,626	\$ 1,335,971
Projected Cash Reserves		\$ 2,790,171	\$ 2,701,713	\$ 2,426,381	\$ 2,691,811	\$ 2,559,487

Projected Cash Balances meet the targeted minimum throughout the period only with the issuance of the bond for capital.

Operating income targets - The optimal target for setting rates is the establishment of a target operating income to help ensure the following:

- 1) Funding of Interest Expense on the outstanding principal on debt. Interest expense is below the operating income line and needs to be recouped through the operating income balance.
- 2) Funding of the inflationary increase on the assets invested in the system. The inflation on the replacement of assets invested in the utility should be recouped through the Operating Income
- 3) Adequate rate of return on investment to help ensure current customers are paying their fair share of the use of the infrastructure and not deferring the charge to future generations.

As improvements are made to the system, the optimal operating income target will increase unless annual depreciation expense is greater than yearly capital improvements. The target established for 2021 is \$497,877 and increases to \$610,663 in 2025. This equates to approximately a 5.0% rate of return. The system is currently operating at a loss.

Table 4 - Optimal Operating Income Targets Compared to Projected

	Percent Allocated	Projected 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025
Interest Expense	4.4%	\$ 51,453	\$ 47,778	\$ 43,818	\$ 39,505	\$ 139,885
Contributed Capital Estimated	2.6%	-	-	-	-	-
Inflationary Increase on Assets	5.3%	446,424	465,886	493,721	450,683	470,778
Target Operating Income		\$ 497,877	\$ 513,664	\$ 537,539	\$ 490,188	\$ 610,663
Projected Operating Income		\$ (34,196)	\$ (77,658)	\$ (128,817)	\$ (256,590)	\$ (301,491)
Rate of Return in %		5.2%	5.3%	5.4%	3.9%	4.9%

Rate of Return falls below targeted minimum throughout the projection period.

REVENUE FORECAST:

Sales were projected and adjusted for known or anticipated changes in customer usage and a growth for the projection period. Below are projections of billed units, REUs and number of customers for 2021.

TABLE 5 – PROJECTED BILLED UNITS

Meter Size	Projected 2021 Yearly Million Gallons
All Usage	353,491
Total	353,491

TABLE 6A – PROJECTED REUS

	Projected 2021
Projected Number of REUS	6,320

TABLE 6B – PROJECTED NUMBER OF CUSTOMERS

Meter Size	Projected 2021 Number of Meters
5/8"	1,559
1"	207
1.5"	11
2"	156
3"	7
4"	6
6"	2
8"	11
Total	1,959

SUMMARY OF FINANCIAL POSITION

Revenue Requirement and COS Rate Adjustment

To maintain the financial health and work toward operating income targets, a series of rate adjustments from 2021-2025 should be considered.

An operating loss of (\$34,196) is projected for 2021 and below the targeted operating income of \$497,877 without rate adjustments. Cash reserves are projected at \$2.7 million in 2021 and fall to \$1.5 million by 2025. A \$3 million bond issuance is projected in 2024. Debt coverage ratios are not sufficient in 2025. Table 7 is a financial projection summary without rate adjustments.

Table 7 – Financial Projection Summary (without Rate Adjustments)

Fiscal Year	Projected Rate Adjustments	Projected Revenues	Projected Expenses	Operating Income	Operating Cash Balance	Capital Improvements	Bond Issues	Debt Coverage Ratio
2021	0.00%	1,568,643	1,602,839	(34,196)	2,722,189	826,230	-	2.81
2022	0.00%	1,568,643	1,646,302	(77,658)	2,493,756	476,230	-	2.57
2023	0.00%	1,568,643	1,697,460	(128,817)	2,002,242	706,230	-	2.35
2024	0.00%	1,568,643	1,825,234	(256,590)	1,970,854	3,210,000	3,000,000	2.12
2025	0.00%	1,568,643	1,870,134	(301,491)	1,456,426	450,000	-	0.83
Target/Minimum 2021				\$ 497,877	\$ 1,059,528			1.45
Target/Minimum 2025				\$ 610,663	\$ 1,335,971			1.45

PROJECTED RATE TRACK

Increasing rates requires balancing the financial health of the utility with the financial impact on customers and cost of service results. Table 8 below is the financial summary with projected rate increases of 4.9% every year from 2021 through 2025. The rate track was developed to move toward the operating income and maintain cash balance, while meeting the debt coverage ratio target. The rate track should be reviewed annually to ensure it is sufficient as changes in revenues, expenses and capital can impact the rate track and bonding requirements.

Table 8 – Financial Projection Summary (with Proposed Rates and Bond Issuance)

Fiscal Year	Projected Rate Adjustments	Projected Revenues	Projected Expenses	Operating Income	Operating Cash Balance	Capital Improvements	Bond Issues	Debt Coverage Ratio
2021	4.90%	1,636,625	1,602,839	33,786	2,790,171	826,230	-	3.25
2022	4.90%	1,707,939	1,646,302	61,637	2,701,713	476,230	-	3.46
2023	4.90%	1,782,746	1,697,460	85,286	2,426,381	706,230	-	3.71
2024	4.90%	1,861,219	1,825,234	35,985	2,691,811	3,210,000	3,000,000	3.98
2025	4.90%	1,943,537	1,870,134	73,404	2,559,487	450,000	-	1.86
Target/Minimum 2021				\$ 497,877	\$ 1,059,528			1.45
Target/Minimum 2025				\$ 610,663	\$ 1,335,971			1.45

Operating Income, Projected Cash Balance, and Debt Coverage Ratio improve by the end of the projection period.

COST OF SERVICE RESULTS

The purpose of a cost of service study is to allocate costs between fixed charges like the customer charge and variable costs like commodity/flow. The cost of service study was based on recognized procedures from the American Water Works Association.

Commodity Costs are costs that tend to vary with the quantity of water used, as well as costs associated with purchasing, pumping, and distributing water to customers. Commodity costs include water purchase/treatment costs plus pumping stations and transmission lines.

Customer Costs are costs associated with serving customers regardless of their usage or demand characteristics. Customer costs include the operation and maintenance expenses related to meters and services, meter reading costs, billing and collection costs. The customer costs were allocated on the basis of the relative cost of meters and services and the number of customers.

Table 9 compares the Charter Township of Union’s current customer and commodity charges with the results of the cost of service analysis.

Table 9 – Comparison of 2020 Customer Service Charge with Cost of Service

Meter Size	Quarterly Current Charge		Service Quarterly Meter Charges
5/8"	\$ 52.00	PER REU	\$ 42.55
1"			100.60
1.5"			198.29
2"			319.76
3"			592.55
4"			981.27
6"			1,950.39
8"			3,110.55

Meter size	Current Rate per 1000 Gallons		COS Average Overall Rate
5/8"	\$ 2.10	1,000 Gallons thereafter	\$ 3.310

SIGNIFICANT ASSUMPTIONS

This section outlines the procedures used to develop the cost of service study and rate design for the Water Utility the related significant assumptions.

Forecasted Operating Expenses

Forecasted expenses were based on 2019 actual and Budget 2020 and adjusted for inflation.

Inflation

Inflation was assumed at 2.5% annually.

Depreciation Expense

Depreciation expense was projected based on historical capital additions and discussions with management on future capital additions.

Interest Income

Interest income was forecasted based on projected cash balances and an interest rate of 1.0%.

Capital Improvements

The capital improvement projections were provided by the Utility. Projections for 2021-2025 are listed below:

Fiscal Year	Projected Capital Improvement
2021	\$ 826,230
2022	476,230
2023	706,230
2024	3,210,000
2025	450,000

WATER OPERATION FINDINGS

1. For the Charter Township of Union to maintain long-term financial targets of the water utility, rate increases should be considered. Below is a summary of the financial projection with proposed rate increases of 4.9% in 2021-2025. The rate track should improve targeted operating income and maintain cash balances. The rate track should be reviewed annually to ensure it is sufficient as changes in revenues, expenses and capital can affect the rate track and bonding requirements.

Fiscal Year	Projected Rate Adjustments	Projected Revenues	Projected Expenses	Operating Income	Operating Cash Balance	Capital Improvements	Bond Issues	Debt Coverage Ratio
2021	4.90%	1,636,625	1,602,839	33,786	2,790,171	826,230	-	3.25
2022	4.90%	1,707,939	1,646,302	61,637	2,701,713	476,230	-	3.46
2023	4.90%	1,782,746	1,697,460	85,286	2,426,381	706,230	-	3.71
2024	4.90%	1,861,219	1,825,234	35,985	2,691,811	3,210,000	3,000,000	3.98
2025	4.90%	1,943,537	1,870,134	73,404	2,559,487	450,000	-	1.86
Target/Minimum 2021				\$ 497,877	\$ 1,059,528			1.45
Target/Minimum 2025				\$ 610,663	\$ 1,335,971			1.45

Proposed Rate Design and Impacts

Projected Rate Design vs Current Rates – 4.9% Rate Increase

Current Rate Design

	2019 Billing Units		2019 Rate
Quarterly 0-15,000 per REU	6,320	REU	\$ 52.00
1,000 Gallons thereafter	51,714	1000 Gallons	\$ 2.10

Year One Proposed Rate Design

The following rates would be the first-year rate design under a new proposed rate structure. It will take time to work toward the cost of service rates listed on page 10. We recommend slow movement with yearly incremental rate designs.

Meter Size	Quarterly Rate	Usage Rate	Min Usage	Max		
5/8	\$ 21.50	\$ 2.50	60,000	1,080,000		
3/4	\$ 21.50	\$ 3.00	60,000	1,080,000	irrigation only	
1	\$ 21.50					
1 1/2	\$ 71.67					
2	\$ 114.67					
3	\$ 215.00					
4	\$ 358.33					
6	\$ 716.67					
8	\$ 1,146.67					
10	\$ 1,648.33					