

Water Rate Study Brandon, SD

PREPARED FOR:

City Brandon,
South Dakota



AE2S Project No. P05588-2019-001

February 2020

Final Report



Table of Contents

- 1. EXECUTIVE SUMMARY 4
 - 1.1 Objectives of the Study 4
 - 1.2 Existing Rates 4
 - 1.3 Rate Setting Objectives..... 4
 - 1.4 Recommended Rate Changes..... 5
 - 1.5 Bill Impacts 6
 - 1.6 Recommendations 6
- 2. INTRODUCTION 8
 - 2.1 Background of the Study 8
 - 2.2 Objectives of the Study 8
 - 2.3 Study Overview 8
 - 2.4 Existing Rate Structure 9
 - 2.5 Existing Rate Revenues 9
- 3. REVENUE REQUIREMENTS 10
 - 3.1 Forecasted O&M Expenses..... 10
 - 3.2 Capital Improvement Planning 10
 - 3.2.1 Debt Service Payments 12
- 4. RATE SETTING 13
 - 4.1 Rate Setting Objectives..... 13
 - 4.2 Rate Design 13
 - 4.2.1 Debt Surcharge 14
 - 4.2.2 Fixed Monthly Service Charge 15
 - 4.2.3 Volumetric Rate..... 16
- 5. FINANCIAL PLAN 19
 - 5.1 Revenue Adequacy Assumptions..... 19
 - 5.1.1 Contribution to Reserves 19
 - 5.1.2 Account and Flow Projections..... 20
 - 5.2 Revenue Requirement Projections..... 21
 - 5.3 Rate Increase Projections 21

5.4	Water Bill Impacts	24
5.5	2020 Water Rate Benchmarking.....	24
6.	WATER CONNECTION FEE	26
6.1	Updated Estimate for Existing Water Connection Fee.....	26
6.2	Discussion of Future Connection Fee Approach.....	27
6.3	Benchmarking	27
7.	RECOMMENDATIONS	28

List of Tables

Table 1:	Existing Rate Structure	4
Table 2:	2020 Recommended Rates.....	5
Table 3:	Projected Monthly Bill Impacts	6
Table 4:	Monthly Fixed Service Charge Structure	9
Table 5:	Volumetric Rate Structure.....	9
Table 6:	Summary of Test Year Rate Revenues.....	9
Table 7:	Summary of Test Year 2020 O&M Revenue Requirements.....	10
Table 8:	Capital Improvement Plan by Funding Source (2020 – 2024)	11
Table 9:	Summary of Capital Improvement Plan Funding Sources (2020 – 2024)	12
Table 10:	Existing and Proposed Debt Service	12
Table 11:	Recommended User Classes and Associated Peaking Factors.....	14
Table 12:	Calculated Fixed Charge (2020)	15
Table 13:	Recommended Fixed Monthly Service Charges (2020)	15
Table 14:	Summary of Volumetric Rate Design Scenarios	17
Table 15:	Recommended Volumetric Rates (2020)	18
Table 16:	Recommended Contribution to Capital Reserves Based on Forecasted Depreciation	19
Table 17:	Assumed Reserve Funding Accounts and Targets.....	20
Table 18:	Projected Water Meters (2020-2024)	20
Table 19:	Projected Flow Growth in Thousand Gallons (2020-2024)	21

Table 20: Projected Revenue Requirements (2020 - 2024)	21
Table 21: Rate Structure Projections (2020 - 2024)	22
Table 22: Rate Adjustment Scenario Revenue Adequacy Results	23
Table 23: Projected Monthly Bill Impacts	24
Table 24: Existing and Calculated Connection Fees	26
Table 25: Existing and Calculated Connection Fees	27

List of Figures

Figure 1: Illustration of Total Revenue Requirements	10
Figure 2: Monthly Single Family through Four-Plex Water Sales – 2018	13
Figure 3: Monthly Water Sales – Residential Five-Plex and Greater and Non-Residential – 2018.....	14
Figure 4: Illustration of Seasonal Peak Water Use – All User Classes	16
Figure 5: Projected Water Fund Balances	23
Figure 6: Typical Monthly Residential Water Utility Bill (2019)	25

1. EXECUTIVE SUMMARY

1.1 Objectives of the Study

The goal of the study is to provide a comprehensive financial plan for the water system, covering rates, capital and debt financing, and asset renewal and replacement reserve funding. The focus of the study was to develop an approach that would fully fund system expenses, evaluate the timing of capital improvements and impacts of capital and operation and maintenance (O&M)-related costs, and enhance the existing rate structure to signal conservation and responsible water use. Further, the intent of the study was to evaluate an appropriate connection fee as part of the financial plan.

1.2 Existing Rates

The City of Brandon provides water service to approximately 3,800 accounts, including Residential, Multi-Family Residential, and Commercial/Industrial users. In addition, some users have an irrigation meter that measures only outdoor water use. The City also provides service to individual users in Corson, an unincorporated area located immediately north of the City of Brandon. The existing rates (2019) are shown in Table 1.

Table 1: Existing Rate Structure

Monthly Fixed Service Charge	\$ / Month
5/8", 3/4" and 1"	\$7.85
1.5"	\$15.70
2"	\$31.40
3"	\$70.65
4"	\$125.60
6"	\$282.60
Volumetric Rate	\$ / Thousand Gallons
All Usage	\$4.59

1.3 Rate Setting Objectives

The City of Brandon has been actively encouraging conservation through non-pricing mechanisms for several years. A key objective of this study was to develop potential modifications to the existing rate structure that would further support the existing conservation initiatives and develop a rate schedule adequate to meet full cost recovery. Staff and City Council members were engaged through the study and in particular throughout the rate-setting portion of the study. Discussions with City Staff and the Council led to the development of two primary rate design goals:

- Target reduction in excessive water use; and
- Avoid unduly penalizing large families.

Water use patterns by account were used to develop alternative rate designs capable of addressing future revenue requirements. Revenue requirements included the 2020 budget, future capital improvements and associated debt service, future budget additions associated with bringing new capital online, and planned contributions to reserve funds. To further enhance existing water conservation efforts underway, an inclining block tier structure was recommended.

1.4 Recommended Rate Changes

Table 2 shows the rate structure changes recommended to achieve the stated rate design goals of the City. Each user class was given a different tier structure to reflect the estimated essential, responsible, and excessive water use associated with each class.

Table 2: 2020 Recommended Rates

Monthly Fixed Service Charge	\$ / Month
5/8", 3/4", and 1"	\$9.25
1.5"	\$18.55
2"	\$37.10
3"	\$83.45
4"	\$148.30
6"	\$333.70
Volumetric Rate by Tier	\$ / Thousand Gallons
Residential (< or = Four Units)	
First 12 thousand gallons	\$4.59
12 – 24 thousand gallons	\$5.74
24 – 36 thousand gallons	\$7.17
+ 36 thousand gallons	\$10.04
Residential (> Four Units)	
First 20 thousand gallons	\$4.59
20 – 60 thousand gallons	\$5.74
60 – 80 thousand gallons	\$7.17
+ 80 thousand gallons	\$10.04
Sprinkler	
First 24 thousand gallons	\$5.74
24 – 36 thousand gallons	\$7.17
+ 36 thousand gallons	\$10.04
Non-Residential	
First 20 thousand gallons	\$4.59
20 – 60 thousand gallons	\$5.30
60 – 80 thousand gallons	\$6.15
+ 80 thousand gallons	\$7.57
Non-Residential with Winter Average >= 80 thousand gallons	
All Usage	\$5.31

1.5 Bill Impacts

To provide perspective on the magnitude of the rate projections in Table 2, bill impacts based on 2020 rate recommendations have been estimated for average water use values of residential and commercial users. Table 3 presents the projected 2020 monthly bills for the amount of water listed compared to the monthly charge at existing rates. The dollar and percentage value of the monthly increase is also presented.

Table 3: Projected Monthly Bill Impacts

	Monthly Bill at 2019 Rates	2020 Monthly Bill at Recommended Rates	Monthly \$ Change	% Change
Residential – ¾” Meter				
3 thousand gallons	\$21.62	23.02	\$1.40	6.5%
6 thousand gallons	\$35.39	\$36.79	\$1.40	4.0%
8 thousand gallons	\$44.57	\$45.97	\$1.40	3.1%
Commercial – 1” Meter				
12 thousand gallons	\$62.93	\$64.33	\$1.40	2.2%
24 thousand gallons	\$118.01	\$119.41	\$1.40	1.2%
40 thousand gallons	\$191.45	\$192.85	\$1.40	0.7%

1.6 Recommendations

The following recommendations were developed in conjunction with completion of the Water Rate Study:

- Adopt the 2020 fixed and volumetric charges presented in Table 21, which includes a volumetric debt surcharge component.
- Adopt a debt surcharge component to the fixed rate in 2021.
- Define User Classes: Update the rate schedule to define the following user classes:
 - Residential (<= Four Units);
 - Residential (> Four Units);
 - Non-Residential – Commercial/Industrial;
 - Non-Residential – winter average 80,000 gallons or greater; and
 - Sprinkler – irrigation meters measuring outdoor water use only.
- Set target levels and fund reserves.
 - Operating Reserves: Target = 180 days of operating expenses (approximately \$536,463 in 2020).
 - Capital Renewal/Replacement Reserve: Annual contribution is equal to the system’s annual depreciation less reinvestment through cash-funded CIP and debt service principal.
 - Rate Stabilization Fund: Target = Floating Target Based on projected water system investment fees and programmed Rate-Funded Capital payments.
- Consider asset management-based capital reserve funding goals.
- Hold debt surcharge revenue in a separate account.
- Update the Water Connection Fee calculation.

- Hold Water Connection Fee revenues in a separate account.
- Monitor near-term revenue stability.
- Review water revenue adequacy annually.
- Continue to educate customers and promote conservation.

2. INTRODUCTION

2.1 Background of the Study

The City of Brandon (the City) recently completed a Water Supply Evaluation to address long-term water quality and supply concerns. Due to rapid growth in Brandon and the surrounding communities, Brandon has implemented conservation measures to manage water consumption. The Water Supply Evaluation identified options for meeting existing and future water demands by implementing a series of source water and treatment capital improvements. To support successful implementation of the City's chosen approach, AE2S Nexus was retained to complete a Water Rate Study to develop potential modifications to the existing water rate structure and promote long-term financial health of the Water Utility.

2.2 Objectives of the Study

The goal of the study was to provide a comprehensive financial plan for the water system that accounts for future capital needs and changes in operation and maintenance (O&M) expenses associated with future capital additions. The focus of the study was to develop an approach that would fully fund system expenses, including O&M, equipment repair and replacement, and capital. Specifically, the City's objectives for completion of the study included the following:

- To generate adequate rate revenue to meet near- and long-term O&M, capital investment and capital renewal/reinvestment needs; and
- To encourage responsible water use by revising the water rate structure to generate additional revenue from customers who use significantly more water during the outdoor lawn watering season than during winter months.

2.3 Study Overview

To meet the City's objectives, the study consisted of the following components:

- Develop Revenue Requirements;
- Evaluate Rate Design Alternatives;
- Cost and Fee Benchmarking;
- Evaluate a Water Connection Fee; and
- Project Five-Year Revenue Adequacy based on Recommended Rate Design.

These components are based on American Water Works Association (AWWA) Principles of Water Rates, Fees and Charges Manual of Water Supply Practices (M1) and tailored to meet the unique needs of the City.

2.4 Existing Rate Structure

The City of Brandon provides water service to approximately 3,800 accounts, including Residential, Multi-Family Residential, and Commercial/Industrial users. In addition, some users have an irrigation meter that measures only outdoor water use. The City also provides service to individual users in Corson, an unincorporated area located immediately north of the City of Brandon. The City’s existing water rate structure consists of:

- A fixed monthly service charge applied by meter size; and
- A constant block volumetric rate applied per thousand gallons (kgal) of water use.

The existing fixed charges and volumetric rates are shown in Table 4 and Table 5, respectively.

Table 4: 2019 Monthly Fixed Service Charge Structure

Monthly Fixed Service Charge	\$ / Month
5/8”, 3/4” and 1”	\$7.85
1.5”	\$15.70
2”	\$31.40
3”	\$70.65
4”	\$125.60
6”	\$282.60

Table 5: 2019 Volumetric Rate Structure

Volumetric Rate	\$ / thousand gallons
All Usage	\$4.59

2.5 Existing Rate Revenues

Table 6 summarizes the total user rate revenues based on actual 2019 accounts, rates, and water sales and the existing rate structure. In addition, the City generates approximately \$50,000 annually through water connection fees, hookup fees, water tower antenna rentals, and other miscellaneous charges.

Table 6: Summary of 2019 Rate Revenues

User Class	Test Year Revenue
Residential (< or = 4 Units)	\$1,187,853
Residential (> 4 Units)	\$96,099
Sprinkler	\$13,787
Non-Residential	\$264,663
Corson (Residential)	\$7,789
Total	\$1,570,191

3. REVENUE REQUIREMENTS

The analyses completed as part of the Water Rate Study were based on total projected revenue requirements. Revenue requirements are the total annual expenses required for a utility to provide water services. Two types of revenue requirements must be considered to achieve full cost pricing – O&M-related and Capital-related (Figure 1). In this study, revenue requirements were developed by establishing O&M expenses, debt service principal and interest expenses, capital funded through rates, and contributions to capital reserves.

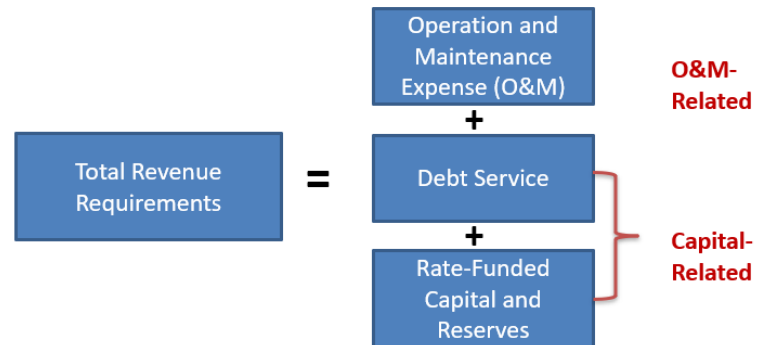


Figure 1: Illustration of Total Revenue Requirements

3.1 Forecasted O&M Expenses

For the purpose of developing water rates for 2020 and making projections through 2024, the O&M component of revenue requirements was based on the 2020 Water Budget. Table 7 summarizes the 2020 O&M revenue requirements. O&M revenue requirements for 2020 through 2024 were projected based on the assumptions below:

- 3.0 percent annual inflation rate for General Inflation, Labor, and Power costs;
- 4.0 percent annual inflation for Flow Growth costs; and
- 5.0 percent annual inflation for Chemicals.

Table 7: Summary of 2020 O&M Revenue Requirements

Budget Subdivisions	2020 \$
433.1 Source of Supply	\$72,500
433.2 Power & Pumping	\$48,000
433.3 Purification	\$85,000
433.4 Distribution	\$185,000
433.5 Administration	\$697,327
Total O&M Revenue Requirements	\$1,087,827

3.2 Capital Improvement Planning

The City’s recently completed Water Supply Evaluation analyzed the sustainability of water sources, estimated water demands for 25 and 50 years, and presented possible implementation options. The existing City of Brandon water system was reviewed to summarize existing water treatment processes and associated capacities and finished water quality. Current treatment

residual disposal practices were reviewed, and requirements for future residual disposal options were also investigated. The City’s Water Development Committee recommended moving forward with an alternative, known as Alternative 2B. The recommended alternative includes additional development of the Split Rock Creek Aquifer as a long-term water source, expansion of the existing water treatment plant utilizing the existing treatment approach, and the addition of Water Remediation Technology (WRT) radium removal at Well 7. The planning-level costs associated with implementation of Alternative 2B are estimated at approximately \$15.44 million in 2019 dollars. These projects are accounted for in the forecasted capital-related revenue requirements and have been indexed to the year of anticipated construction to better project future rate impacts.

As the City moves forward with more in-depth engineering analysis for the water treatment plant expansion, along with other improvements, it is likely that the costs estimates will change. Table 8 and Table 9, respectively, summarize the current capital improvement plan (CIP) and assumed funding sources for the capital projects currently planned for the period of 2020 through 2024. For the purpose of this analysis, assumed funding sources included rate revenues, cash reserves and loans from the South Dakota Department of Environmental & Natural Resources’ Drinking Water State Revolving Fund (SRF) program.

Table 8: Capital Improvement Plan by Funding Source (2020 – 2024)

	Funding Source	2020	2021	2022	2023	2024
Well #8	SRF Loan	\$1,300,000				
Connect Well 7 to WRT	SRF Loan				\$2,980,295	
WTP Preliminary Design	Cash Reserves	\$1,360,000				
WTP Construction	SRF Loan				\$12,749,039	
Water Tower	SRF Loan	\$5,000,000				
Meter Changeout	Utility Revenues	\$260,000	\$260,000	\$260,000	\$260,000	\$260,000
TOTAL		\$7,920,000	\$260,000	\$260,000	\$15,989,334	\$260,000

Table 9: Summary of Capital Improvement Plan Funding Sources (2020 – 2024)

	2020	2021	2022	2023	2024
Rate Revenue	\$260,000	\$260,000	\$260,000	\$260,000	\$260,000
SRF Loan	\$6,300,000	\$ -	\$ -	\$15,729,334	\$ -
Revenue Bonds	\$ -	\$ -	\$ -	\$ -	\$ -
Reserves	\$1,360,000	\$ -	\$ -	\$ -	\$ -
Grant Funds	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL	\$7,920,000	\$260,000	\$260,000	\$15,989,334	\$260,000

3.2.1 Debt Service Payments

Debt service payments for the 2020 debt is currently projected utilizing SRF funding at 2.5 percent interest over a twenty-year repayment term. For the WTP debt currently planned for 2023, an interest rate of 2.5 percent was assumed for a repayment period of 30 years. In addition to the Water CIP in Table 8, the water system is also funding its share of debt associated with ongoing reconstruction projects within the City. Projected debt service payments through 2024 are shown in Table 10.

Table 10: Existing and Proposed Debt Service

Existing Debt Service	2020	2021	2022	2023	2024
Reconstruction – 2020	\$72,050	\$85,000	\$85,000	\$85,000	\$85,000
Reconstruction – 2021		\$85,000	\$85,000	\$85,000	\$85,000
Reconstruction – 2022			\$85,000	\$85,000	\$85,000
Reconstruction – 2023				\$85,000	\$85,000
Reconstruction – 2024					\$85,000
Proposed Debt Service					
FY 2020 Series – SRF	\$404,127	\$404,127	\$404,127	\$404,127	\$404,127
FY 2023 Series – SRF	-	-	-	\$751,510	\$751,510
Total Debt Service	\$476,177	\$574,127	\$659,127	\$1,495,637	\$1,580,637

4. RATE SETTING

4.1 Rate Setting Objectives

The City of Brandon has been actively encouraging conservation through non-pricing mechanisms for several years. A key objective of this study was to develop potential modifications to the existing rate structure that would further support the existing conservation initiatives and develop a rate schedule adequate to meet full cost recovery. Staff and City Council members were engaged through the study and in particular throughout the rate-setting portion of the study. Discussions with City Staff and the Council led to the development of two primary rate design goals:

- Target reduction in excessive water use; and
- Avoid unduly penalizing large families.

4.2 Rate Design

A review of detailed usage patterns found that the residential accounts showed much greater seasonal variability than multi-family properties containing five units or more and non-residential properties. Figure 2 illustrates the 2018 monthly water use for residential properties with four or fewer units and Figure 3 shows the same information for residential properties with five units or more and non-residential properties. A review of data from January 2017 through July 2019 led to the identification of four distinct user types based on per account water usage patterns. Class-specific rate design was completed for each of these classes, which are summarized in Table 11.

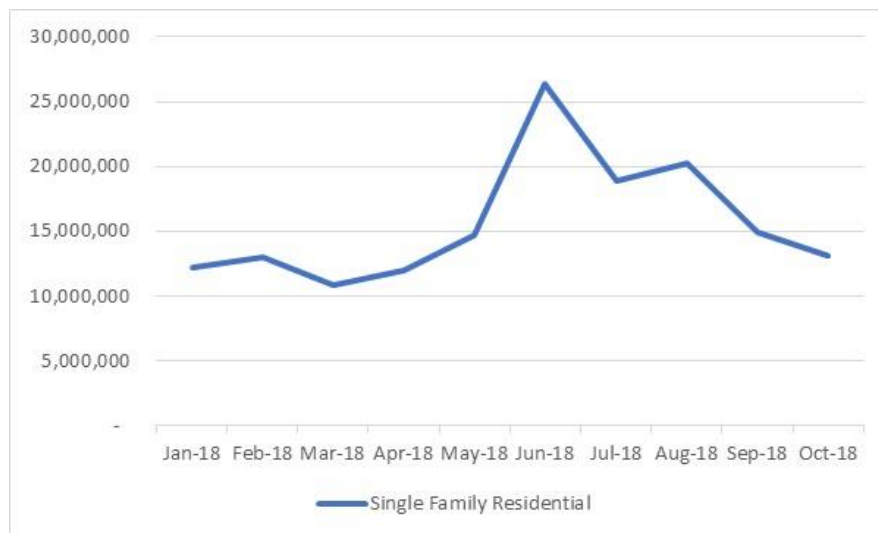


Figure 2: Monthly Single Family through Four-Plex Water Sales – 2018

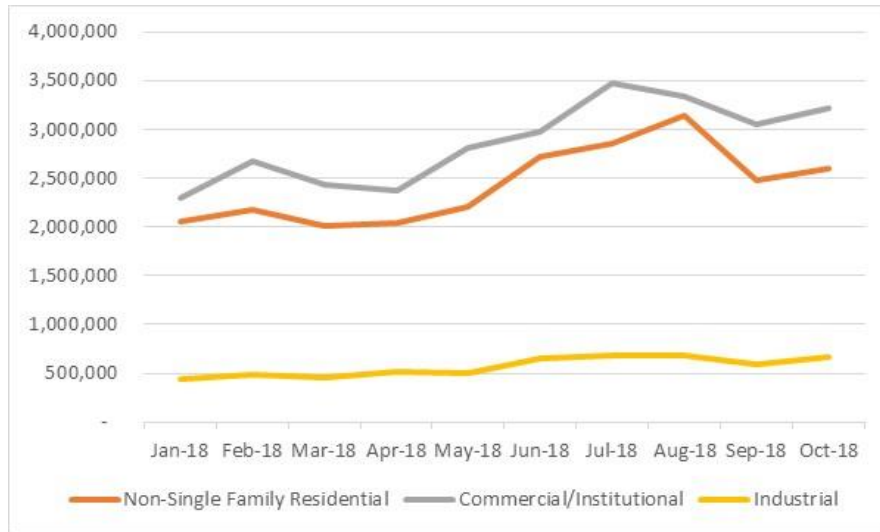


Figure 3: Monthly Water Sales – Residential Five-Plex and Greater and Non-Residential – 2018

Table 11: Recommended User Classes and Associated Peaking Factors

User Class	Description	Peaking Factors
Residential (< or = 4 Units)	Single Family through Four-Plex	3.20
Residential (> Units)	Five-Plex and greater, includes apartments	2.02
Non-Residential	Commercial and Industrial	1.66
Sprinkler	Irrigation	Varies

4.2.1 Debt Surcharge

South Dakota law specifies that revenues for debt repayment should be set aside in an account separate from funds for operation and maintenance of the facility. A debt surcharge component of the rate structure has been identified to allow the City to make annual rate adjustments as needed to specifically address changing debt service requirements. Debt surcharges have been incorporated into both the fixed and volumetric charges for the following projects:

- Well #8 (2020);
- Water Tower (2020);
- Water Treatment Plant (2023); and
- Well 7 Connection to WRT (2023).

The 2020 rate recommendations developed as part of this project include implementation of a volumetric debt surcharge in 2020 and a fixed debt surcharge in 2021. Based on estimated

annual debt service, projected meter counts by size, and user flows, 2020 surcharge revenue collections are projected at \$511,165.

4.2.2 Fixed Monthly Service Charge

Fixed monthly charges are generally associated with the billing and administrative-related revenue requirements and debt service or other capacity-related charges. Fixed charges provide a more stable revenue stream than volumetric charges but have a disproportionate impact on low-volume users and thus need to be sized carefully.

In the absence of a cost of service analysis to specifically identify costs appropriately included in the fixed charge, a review of the 2020 budget resulted in the estimated per-customer and per-capacity costs shown in Table 12. Industry standards generally indicate that up to 30 percent of the revenue necessary to meet revenue requirements can be generated through the fixed charge. The current fixed rate structure generates approximately 21 percent. To increase the performance of the fixed rate structure, 55 percent of the capacity-related administrative charges were used in the fixed charge calculation. This increases the fixed revenue as a percentage of total projected revenue to 25 percent. When the equivalent meter count was applied to the customer- and capacity-related administrative costs, a base charge of \$9.25 for the smallest meter size was calculated. The resulting recommended fixed monthly service charges, based on the City’s ratios to the smallest size meter, are presented in Table 13.

Table 12: Calculated Fixed Charge (2020)

Revenue Requirements	2020 \$	Percent of Charge Allocated	Equivalent Meters	\$/Equivalent Meter (rounded)
Administrative	\$697,327			
Customer-related	\$131,986	100%	3,953	\$6.50
Capacity-related	\$565,341	55%	3,953	\$2.75
Total Monthly Charge per equivalent meter				

Table 13: Recommended Fixed Monthly Service Charges (2020)

Meter Size	O&M Rate	Debt Surcharge	\$ / Month
5/8”, 3/4”, and 1”	\$9.25	\$0	\$9.25
1.5”	\$18.55	\$0	\$18.55
2”	\$37.10	\$0	\$37.10
3”	\$83.45	\$0	\$83.45
4”	\$148.30	\$0	\$148.30
6”	\$333.70	\$0	\$333.70

4.2.3 Volumetric Rate

Volumetric rates are used to recoup expenses that vary directly with water use. The City has identified water conservation as an important component in managing its future water supply. Figure 4 illustrates the portion of water sold during the peak months of outdoor water use. The increase in demand in June through August is primarily attributable to residential users. As a result, the City has identified outdoor water use by residential customers to be the primary target for water use reduction. A key component to any successful water conservation program is the adoption of a conservation-based rate structure to send appropriate pricing signals for inefficient use of water and to ultimately increase water use efficiency over time.

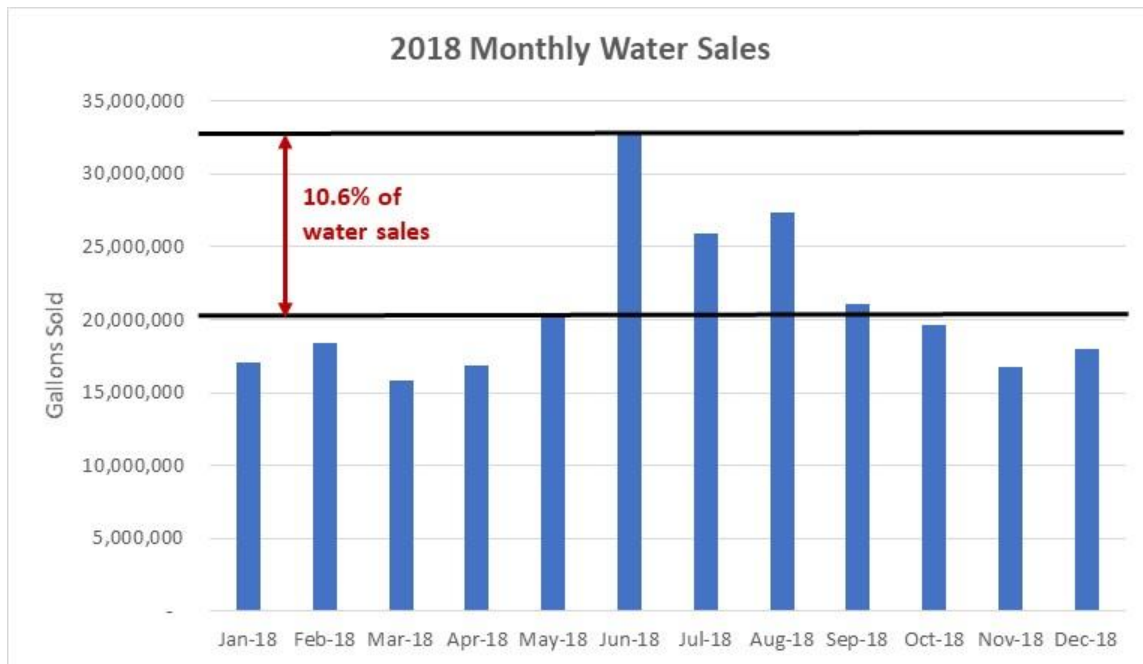


Figure 4: Illustration of Seasonal Peak Water Use – All User Classes

To address conservation goals of the City, rate design efforts were specifically focused on tiered water use. The initial rate design considered involved a two-tier structure based on individual winter water use. It was determined this approach could not be accommodated by the billing system. The final rate design involved the consideration of four-tier inclining block scenarios, with the tiers defined follows:

- Tier 1 – Essential Use;
- Tier 2 – Responsible Outdoor Use;
- Tier 3 – Inefficient Outdoor Use; and
- Tier 4 – Excessive Use – Targeted for reduction.

The AWWA M1 Manual defines **essential use** as “The quantity of water needed to meet basic human needs, including drinking water for survival, basic hygiene and sanitation purposes, and household needs such as preparing food.” Based on that definition, this study estimated essential

water use through the review of winter consumption data when outdoor use is negligible. Analysis of winter consumption data indicates that a typical single-family residential user consumes approximately 4,030 gallons per month for essential use.

The South Dakota State University Extension Office watering guidelines for turfgrass during July and August call for 1 to 1-1/2 inches of irrigation per week. Based on a representative property size of 10,900 square feet, average impervious area of 40 percent, monthly rainfall of two inches, and a lawn watering value of one inch per week, a prudent monthly lawn watering quantity was estimated. Based on this calculation, 24,000 gallons per month was identified as an appropriate value for **responsible outdoor use**.

For the purposes of this study, **inefficient outdoor use** was defined as outdoor water use in excess of 2.0 times the typical single-family outdoor water use required for turfgrass during the peak irrigation month of July, when conditions are exceptionally hot and dry.

Four scenarios for volumetric rate options were evaluated. The difference between the scenarios was the approach to the residential class consisting of single family through four-plex properties. This also affected the sprinkler rate tiers. Table 14 summarizes the differences between the scenarios. Ultimately, Scenario 2 was selected. The recommended 2020 volumetric rates are presented in Table 15.

Table 14: Summary of Volumetric Rate Design Scenarios

User Class	Scenario 1 (Tiers in Thousand Gallons)	Scenario 2 (Tiers in Thousand Gallons)	Scenario 3 (Tiers in Thousand Gallons)	Scenario 4 (Tiers in Thousand Gallons)
Residential (<=4 Units)	Tier 1: 0-6 Tier 2: 6-18 Tier 3: 18-38 Tier 4: 38+	Tier 1: 0-12 Tier 2: 12-24 Tier 3: 24-36 Tier 4: 36+	Tier 1: 0-16 Tier 2: 16-28 Tier 3: 28-40 Tier 4: 40+	Tier 1: 0-20 Tier 2: 20-35 Tier 3: 35-50 Tier 4: 50+
Residential (>4 Units)	Tier 1: 0-20 Tier 2: 20-50 Tier 3: 50-80 Tier 4: 80+			
Non-Residential	Tier 1: 0-20 Tier 2: 20-60 Tier 3: 60-80 Tier 4: 80+			
Non-Residential with winter average > 80,000 per month	Constant Block			
Sprinkler	Tier 1: 0-18 Tier 2: 18-38 Tier 3: 38+	Tier 1: 0-24 Tier 2: 24-36 Tier 3: 36+	Tier 1: 0-28 Tier 2: 28-40 Tier 3: 40+	Tier 1: 0-35 Tier 2: 35-50 Tier 3: 50+

Table 15: Recommended Volumetric Rates (2020)

Volumetric Rate by Tier	O&M Rate	Debt Surcharge	Total Rate
	\$/thousand gallons		
Residential (< or = Four Units)			
First 12 thousand gallons	\$2.85	\$1.74	\$4.59
12 – 24 thousand gallons	\$3.56	\$2.18	\$5.74
24 – 36 thousand gallons	\$4.45	\$2.72	\$7.17
+ 36 thousand gallons	\$6.23	\$3.81	\$10.04
Residential (> Four Units)			
First 20 thousand gallons	\$2.85	\$1.74	\$4.59
20 – 60 thousand gallons	\$3.56	\$2.18	\$5.74
60 – 80 thousand gallons	\$4.45	\$2.72	\$7.17
+ 80 thousand gallons	\$6.23	\$3.81	\$10.04
Sprinkler			
First 24 thousand gallons	\$3.56	\$2.18	\$5.74
24 – 36 thousand gallons	\$4.45	\$2.72	\$7.17
+ 36 thousand gallons	\$6.23	\$3.81	\$10.04
Non-Residential			
First 20 thousand gallons	\$2.85	\$1.74	\$4.59
20 – 60 thousand gallons	\$3.14	\$2.18	\$5.30
60 – 80 thousand gallons	\$3.45	\$2.72	\$6.15
+ 80 thousand gallons	\$3.79	\$3.81	\$7.57
Non-Residential with Winter Average >= 80 thousand gallons			
All Usage	\$3.14	\$2.18	\$5.31

In designing the inclining block rates, consideration was given to the step between charges for each tier. Industry standards recommend a minimum step of 25 percent between tiers for residential rates to properly signal the need to reduce water use. For the recommended option, a 25 percent step was used for pricing tiers 1 through 3. To send a stronger signal, the step between the rates for tiers 3 and 4 was 40 percent.

For Non-Residential users, water use patterns per account indicated that for the most part, water use does not vary greatly year-round. As a result, the step between tier rates for the Non-Residential users was 10 percent due to a lesser need for water use reduction. For those Non-Residential users whose winter use exceeds 80,000 gallons, water use appeared to be consistent year-round. In recognition of the consistent nature of these customers, a constant block structure was recommended. It was further recommended that the City require such customers to install an irrigation/sprinkling meter to ensure that outdoor water use is charged at the irrigation rate.

5. FINANCIAL PLAN

The backbone of the financial plan is a revenue adequacy evaluation. Revenue adequacy is evaluated to determine the short-term and long-term adequacy of the existing rates, and to propose potential rate adjustments to ensure that the existing rates and any proposed changes do not negatively impact the City’s financial position in the future. This section summarizes background pertaining to projected revenue requirements, the assumptions used to evaluate revenue adequacy, specific recommendations for 2020 rates, and projected rates for 2021 through 2024 for the City’s Water Utility.

5.1 Revenue Adequacy Assumptions

Revenue requirements associated with O&M, debt, and capital improvements have been modeled through 2024 based on the City’s current operations, funding policies and financial information provided by the staff, and assumptions discussed in Section 3. The model was used to project the net revenue requirements (total revenue requirements less miscellaneous operating and non-operating revenue), revenue generated from proposed rates, and the corresponding revenue surplus or deficiency. Due to uncertainty associated with projecting into the future, it is recommended that the rate assumptions be re-evaluated and updated on an annual basis in conjunction with budget and capital planning. In addition to the revenue requirements listed above, contributions to capital reserves were also projected for the planning period. The approach to capital reserve funding is described in the next subsection.

5.1.1 Contribution to Reserves

To promote full cost recovery and prudent planning for future capital renewal/replacement, an analysis of planned capital investment and reserve needs was completed. In the absence of an existing capital reserve funding policy, it was recommended that the City adopt an entry-level approach to funding reserves that is based on funding annual depreciation. Over time, it is recommended that the City adopt an asset management-based approach that projects annual contributions to reserves based on future replacement needs. For the purpose of this analysis, capital reserve funding was evaluated as shown in the Table 16.

Table 16: Recommended Contribution to Capital Reserves Based on Forecasted Depreciation

	2020	2021	2022	2023	2024
Annual Depreciation (Estimated)	\$586,105	\$616,390	\$646,676	\$1,129,031	\$1,159,317
Less Rate-Funded Capital	(\$1,620,000)	(\$260,000)	(\$260,000)	(\$260,000)	(\$260,000)
Less Debt Principal	(\$289,849)	(\$366,710)	(\$432,392)	(\$858,171)	(\$936,500)
Net Contribution to Reserves (Recommended)	\$-	\$-	\$-	\$10,860	\$-

In addition to capital reserves, the revenue adequacy analysis was also based on the assumed reserves and targets shown in Table 17.

Table 17: Assumed Reserve Funding Accounts and Targets

Account	Target Balance	2020 Target Balance
O&M Reserve	180 Days (City may desire a greater target; this is recommended minimum)	\$536,463
Debt Service Reserve	Not Required	--
Capital Renewal/Replacement Reserve	Contribute Amount equal to Annual Depreciation less Reinvestment through cash-funded CIP and Debt Service Principal (Alternately, set annual target based on future replacement needs)	\$383,200
Rate Stabilization Reserve	Floating Target Based on Capital Needs	Unspecified

5.1.2 Account and Flow Projections

The determination of future rate adjustments necessary to meet revenue requirements is directly related to how water use changes over time. As a result, growth and changing water use habits are very important. The meter and flow growth assumptions are summarized below in Table 18 and Table 19, respectively. To account for anticipated water use reduction as a result of pricing incentives, it was assumed that fourth tier residential water use, as well as irrigation use, would see a reduction in demand of three percent for every 10 percent increase in price. This is a standard value for price elasticity based on values in the literature.

Table 18: Projected Water Meters (2020-2024)

	2020	2021	2022	2023	2024
Residential (< or = 4 Units)	3,283	3,348	3,415	3,483	3,534
Residential (> 4 Units)	133	136	139	142	144
Sprinkler	27	27	27	27	27
<i>Residential Growth Rate</i>	<i>2.0%</i>	<i>2.0%</i>	<i>2.0%</i>	<i>2.0%</i>	<i>1.5%</i>
Non-Residential	376	380	384	388	390
<i>Non-Residential Growth Rate</i>	<i>1.0%</i>	<i>1.0%</i>	<i>1.0%</i>	<i>1.0%</i>	<i>0.8%</i>
TOTAL	3,819	3,891	3,965	4,040	4,095

Table 19: Projected Flow Growth in Thousand Gallons (2020-2024)

User Class	2020	2021	2022	2023	2024
	Thousand Gallons				
Residential (< or = 4 Units)	196,654	200,527	204,519	208,578	211,610
Residential (> 4 Units)	17,577	17,967	18,356	18,746	19,004
Sprinkler	2,709	2,695	2,680	2,668	2,656
Non-Residential	31,625	31,900	32,174	32,456	32,572
Non-Residential (Winter Avg >80 thousand gallons)	16,171	16,171	16,171	16,171	16,171
Corson	1,163	1,163	1,163	1,163	1,163
TOTAL	265,902	270,425	275,065	279,783	283,179

5.2 Revenue Requirement Projections

Debt service coverage ratios and reserve targets were incorporated to project the full revenue requirements necessary to meet future O&M expenses and capital improvement needs of the utility. Future O&M expense escalation factors outlined in Section 3.1 were incorporated into the model to recognize the future cost of items such as labor, chemicals, electricity, etc. In addition, an increase in O&M associated with operation of the newly constructed water treatment plant was included in 2024. The projected revenue requirements from 2020 to 2024 are shown in Table 20.

Table 20: Projected Revenue Requirements (2020 - 2024)

	2020	2021	2022	2023	2024
Operating Expense	\$1,087,827	\$1,105,267	\$1,140,516	\$1,176,970	\$1,531,790
Rate-Funded Capital	\$1,620,000	\$260,000	\$260,000	\$260,000	\$260,000
Debt Service P&I	\$476,177	\$574,127	\$977,853	\$1,495,637	\$1,580,637
Total Projected Revenue Requirements	\$3,184,004	\$1,939,394	\$2,378,369	\$2,932,608	\$3,372,428

5.3 Rate Increase Projections

To address the objectives of meeting revenue requirements, building target reserve levels, and promoting responsible water use, the rate projections shown in Table 21 were developed. Table 22 summarizes the overall projected revenue adequacy, including the coverage requirement to be achieved.

Table 21: Rate Structure Projections (2020 - 2024)

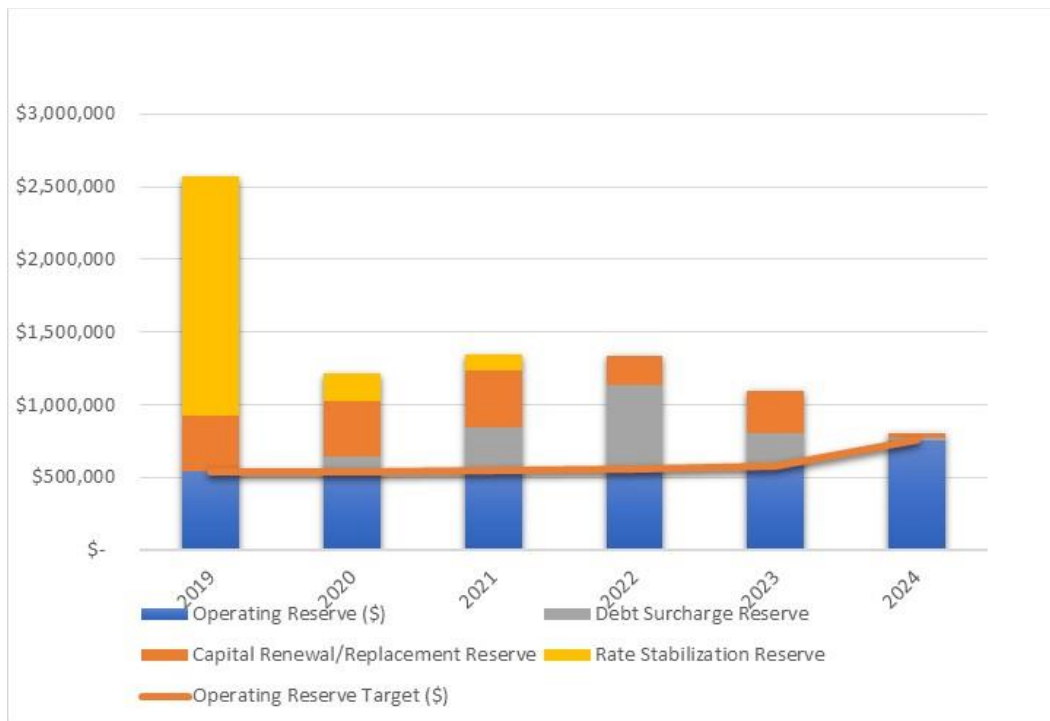
	2020	2021	2022	2023	2024
Monthly Fixed Service Charge (\$ / Month)					
5/8", 3/4", and 1"	\$9.25	\$10.25	\$11.25	\$12.25	\$13.75
1.5"	\$18.55	\$20.55	\$22.55	\$24.55	\$27.55
2"	\$37.10	\$41.10	\$45.10	\$49.10	\$55.10
3"	\$83.45	\$92.45	\$101.45	\$110.45	\$123.95
4"	\$148.30	\$164.30	\$180.30	\$196.30	\$220.30
6"	\$333.70	\$369.70	\$405.70	\$441.70	\$495.70
Volumetric Rate by Tier (\$ / thousand gallons)					
Residential (< or = Four Units)					
First 12 thousand gallons	\$4.59	\$5.19	\$5.88	\$6.68	\$7.56
12 – 24 thousand gallons	\$5.74	\$6.48	\$7.34	\$8.34	\$9.44
24 – 36 thousand gallons	\$7.17	\$8.10	\$9.18	\$10.43	\$11.81
+ 36 thousand gallons	\$10.04	\$11.34	\$12.85	\$14.59	\$16.51
Residential (> Four Units)					
First 20 thousand gallons	\$4.59	\$5.19	\$5.88	\$6.68	\$7.56
20 – 60 thousand gallons	\$5.74	\$6.48	\$7.34	\$8.34	\$9.44
60 – 80 thousand gallons	\$7.17	\$8.10	\$9.18	\$10.43	\$11.81
+ 80 thousand gallons	\$10.04	\$11.34	\$12.85	\$14.59	\$16.51
Sprinkler					
First 24 thousand gallons	\$5.74	\$6.48	\$7.34	\$8.34	\$9.44
24 – 36 thousand gallons	\$7.17	\$8.10	\$9.18	\$10.43	\$11.81
+ 36 thousand gallons	\$10.04	\$11.34	\$12.85	\$14.59	\$16.51
Non-Residential					
First 20 thousand gallons	\$4.59	\$5.19	\$5.88	\$6.68	\$7.56
20 – 60 thousand gallons	\$5.31	\$5.97	\$6.74	\$7.65	\$8.64
60 – 80 thousand gallons	\$6.17	\$6.91	\$7.77	\$8.80	\$9.94
+ 80 thousand gallons	\$7.60	\$8.47	\$9.47	\$10.70	\$12.05
Non-Residential with Winter Average >= 80 thousand gallons					
All Usage	\$5.31	\$5.97	\$6.74	\$7.65	\$8.64

Table 22: Rate Adjustment Scenario Revenue Adequacy Results

	2020	2021	2022	2023	2024
Operating Expense	\$1,087,827	\$1,105,267	\$1,140,516	\$1,176,970	\$1,531,790
Rate-Funded Capital	\$1,620,000	\$260,000	\$260,000	\$260,000	\$260,000
Debt Service Principal & Interest	\$476,177	\$574,127	\$659,127	\$1,495,637	\$1,580,637
Interest During Construction	\$ -	\$ -	\$318,726	\$ -	\$ -
Total Revenue Requirements	\$3,184,004	\$1,939,394	\$2,378,369	\$2,932,608	\$3,372,428
Rate Revenue	\$1,256,724	\$1,425,982	\$1,627,526	\$1,838,210	\$2,063,641
Debt Surcharge Revenue	\$511,165	\$594,732	\$681,496	\$802,219	\$954,039
Misc. Income	\$52,700	\$54,281	\$55,909	\$57,587	\$59,314
Total Revenue	\$1,820,588	\$2,074,994	\$2,364,931	\$2,698,015	\$3,076,995
Operating Surplus/(Deficiency)	\$(1,363,415)	\$135,601	\$(13,437)	\$(234,593)	\$(295,433)
Debt Service Coverage	181%	240%	303%	132%	134%
Operating Reserve Balance	\$536,463	\$545,063	\$562,446	\$580,424	\$755,403
Capital Renewal/Replacement Reserve Balance	\$383,200	\$394,696	\$196,291	\$297,139	\$28,324
Rate Stabilization Reserve	\$184,885	\$109,784	\$ -	\$ -	\$ -

Figure 5 outlines the projected water fund balances based on those estimated growth components, the reserve targets established in this study and the estimated revenues following implementation of the recommended rate design.

Figure 5: Projected Water Fund Balances



5.4 Water Bill Impacts

To provide perspective on the magnitude of the rate projections in Table 21, bill impacts based on 2020 rate recommendations have been estimated for average water use values to the average Residential and Commercial bill.

Table 23 presents the projected 2020 monthly bills for the amount of water listed compared to the monthly charge at existing rates. The dollar and percentage values of the monthly increases are also presented.

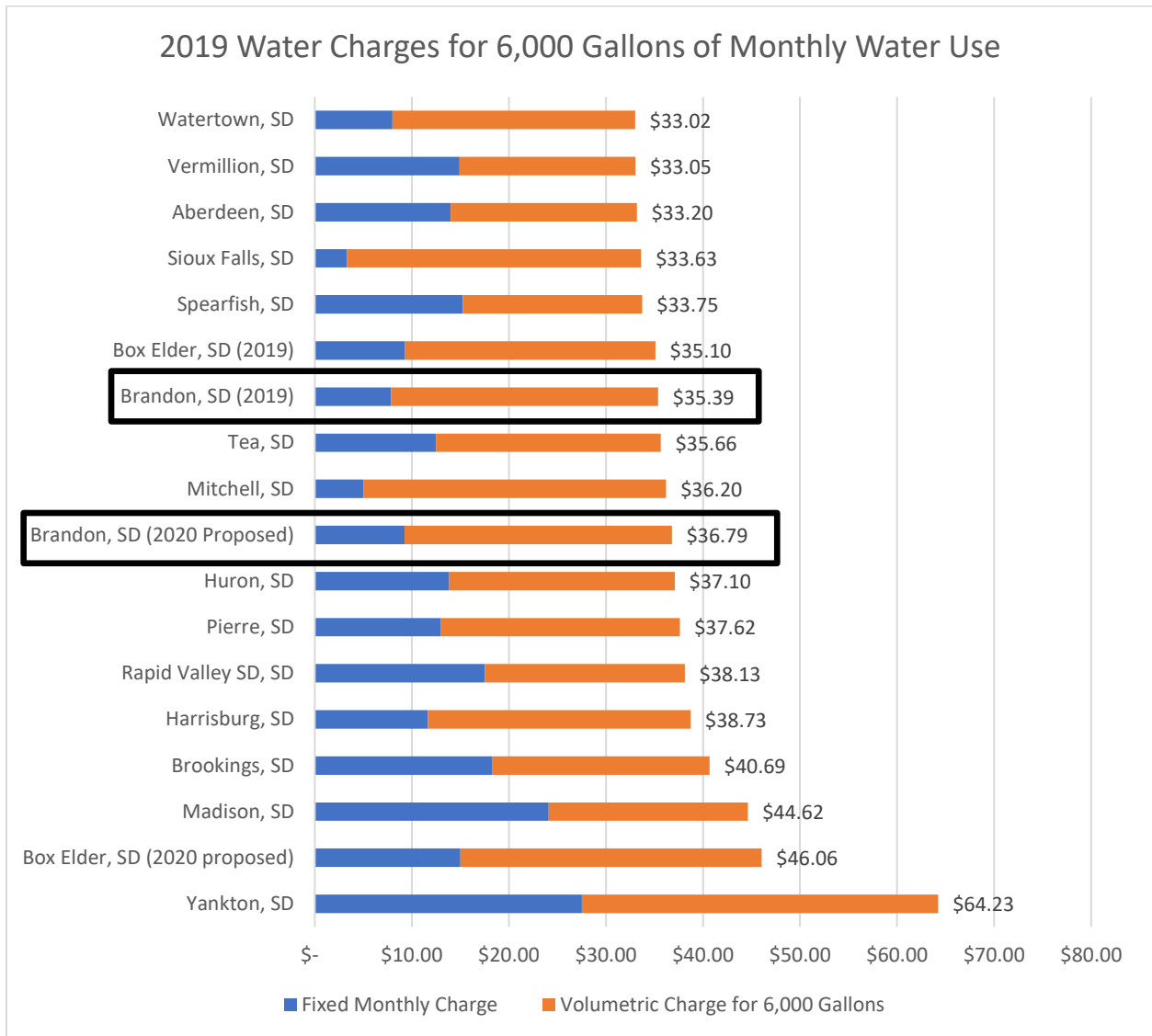
Table 23: Projected Monthly Bill Impacts

	Monthly Bill at 2019 Rates	2020 Monthly Bill at Recommended Rates	\$ Change/ Month	% Change
Residential – ¾” Meter				
3 thousand gallons	\$21.62	23.02	\$1.40	6.5%
6 thousand gallons	\$35.39	\$36.79	\$1.40	4.0%
8 thousand gallons	\$44.57	\$45.97	\$1.40	3.1%
Commercial – 1” Meter				
12 thousand gallons	\$62.93	\$64.33	\$1.40	2.2%
24 thousand gallons	\$118.01	\$119.41	\$1.40	1.2%
40 thousand gallons	\$191.45	\$192.85	\$1.40	0.7%

5.5 2020 Water Rate Benchmarking

Every year, AE2S completes a rate survey for communities in the Upper Midwest. Figure 6 compares the water utility billing from all South Dakota participants in 2019. The typical bills shown on the following page correlate to 6,000 gallons per month of metered flow. Figure 6 illustrates the potential shift in the comparison chart in 2020 if no other communities make rate adjustments.

Figure 6: Typical Monthly Residential Water Utility Bill (2019)



6. WATER CONNECTION FEE

6.1 Updated Estimate for Existing Water Connection Fee

Cities generally build and hold excess capacity within their treatment system so they have the ability to serve new residents and businesses as they look to build and grow within their community. Building and maintaining this excess capacity comes with a cost that is borne by existing customers of the system. To recoup a portion of these costs, the City has a schedule of Water Connection Fees in place.

With an existing water treatment capacity of 2.88 million gallons per day (MGD) and current user demands meeting or exceeding that value, there is currently no existing capacity available for future development. As a result, the Water Connection Fees calculated in this analysis are based on the anticipated costs of future capital to expand and improve the City’s water system. The fees calculated are based on the proportionate share of the capital costs tied to the demand placed by new development.

Water demands vary by type of customer (residential, commercial, irrigation, etc). As a result, it is standard practice to calculate class-specific charges. City staff have noted plans to reconsider the existing Water Connection Fee structure in the future. As part of this study, the Water Connection Fees were updated to account for future improvements associated with Water Supply Alternative 2B. Consistent with the current Water Connection Fee approach, one set of fees was calculated for all users. The calculated Connection Fees in Table 24 are based on the anticipated capital cost for Alternative 2B and average annual usage per account of 277 gallons per day. If average annual account growth is approximately 80 accounts per year, the calculated base Water Connection Fee of \$1,282 would generate \$102,560 annually as opposed to \$32,000 under the existing \$400 base charge. Funds generated from the Water Connection Fees should be kept in an account separate from general utility revenues and used only for capacity expansion-related debt repayment or cash-funded improvements.

Table 24: Existing and Calculated Future Connection Fees

Meter Size	Existing Charge	Calculated Future Charge
0.75”	\$400	\$1,282
1”	\$400	\$1,282
1.5”	\$1,000	\$3,205
2”	\$1,600	\$5,128
3”	\$3,600	\$11,539
4”	\$6,400	\$20,513

6.2 Discussion of Future Connection Fee Approach

The terminology associated with charges such as Water Connection Fees can be confusing. Other terms that are used to describe the fee include impact, capacity, expansion, facility, capital connection, or system development fees. Brandon Municipal Ordinance section 14-4-13 requires payment of a non-refundable water connection fee before a building permit can be issued. Section 14-4-12 requires payment of a non-refundable hook-up fee where the City provides the necessary main connections and curb stops. It is recommended that section 14-4-13 be revised to describe the Water Connection Fee in more detail to avoid confusion. An example of clarifying language is “A Water Connection Fee is a one-time charge to recover costs associated with upfront capital investment in utility infrastructure required to serve new development. In addition to facility construction costs, examples of other costs included in the Water Connection Fee are land acquisition, surveying, engineering, right of way access, and other related construction costs.” Lastly, the City may want to consider adopting a different name for the Water Connection Fee to further eliminate the potential for confusion with hookup fees.

6.3 Benchmarking

Due to inconsistent naming of and basis for fees similar to the City’s Water Connection Fee, it can be difficult to make direct comparisons between such charges for different cities. Nonetheless, a handful of local communities were found to have comparable charges in their fee schedules. These are shown in Table 25.

Table 25: Comparison of Other Water Connection Fees in the Region

City	Population	Water Connection Fee - Residential 1” Meter	Notes
Anoka, MN	18,573	\$2,000	Water Availability Charge
Blaine, MN	62,892	\$1,696	Water Availability Charge
Aberdeen, SD	28,415	\$880	System Development Charge
Sioux Falls, SD	183,200	\$2,121	Water Distribution Platting Fee
Tea, SD	5,032	\$750	Connection Fee

7. RECOMMENDATIONS

The following recommendations were developed in conjunction with completion of the Water Rate Study:

- **Adopt the 2020 fixed and volumetric charges presented in Table 21, which includes a volumetric debt surcharge component.** Evaluate projected revenue requirements annually and adjust rate projections for 2021 and beyond as appropriate to meet the needs of the system.
- **Adopt a debt surcharge component to the fixed rate in 2021.** Assuming debt service principal payments associated with the 2020 water tower project initiate in 2021, implement a debt surcharge component to the fixed charge. This is in addition to the volumetric debt surcharge component recommended for 2020.
- **Define user classes:** Update the rate schedule to define the following user classes:
 - Residential (<= Four Units);
 - Residential (> Four Units);
 - Non-Residential – Commercial/Industrial;
 - Non-Residential – Winter Average 80,000 gallons or greater; and
 - Sprinkler – Irrigation Meters measuring outdoor water use only.
- **Set target levels and fund reserves.** It is recommended that the City establish and maintain the reserves noted below. Target levels are recommended as the minimum balance, but for the purpose of this analysis, Operating and Capital Renewal/Replacement Reserve funds were capped at the recommended level to push excess reserves into the Rate Stabilization fund. Once all funds are fully funded at the target level, additional funds could be added at the City’s discretion.
 - **Operating Reserves:** Target = 180 days of operating expenses (approximately \$536,463 in 2020).
 - **Capital Renewal/Replacement Reserve:** Annual contribution is equal to the system’s annual depreciation less reinvestment through cash-funded CIP and debt service principal.
 - **Rate Stabilization Fund:** Target = Floating Target Based on projected water system investment fees and programmed Rate-Funded Capital payments.
- **Consider asset management-based capital reserve funding goals.** Once the rates schedule is capable of supporting the future debt identified in the CIP, consider implementing an approach to capital renewal/replacement reserve funding based on a condition assessment of existing assets and future replacement estimates. This approach will enhance financial sustainability.
- **Hold debt surcharge revenue in a separate account.** Create a separate account in which to hold funds collected specifically for debt repayment. Excess funds from this account can be used to prepay debt or can be transferred to a capital renewal/replacement reserve fund, if desired.
- **Update the Water Connection Fee calculation.** Once updated cost estimates for future capital projects are available (based on final design), revisit the Water Connection Fees. It may be desirable consider renaming this fee to avoid confusion with the hookup fee.

- **Hold Water Connection Fee revenues in a separate account.** To support the concept that “growth pays for growth”, maintain a separate account for Water Connection Fee revenues, which should only be applied to existing or future debt or cash payments associated with growth-related infrastructure.
- **Monitor near-term revenue stability.** The recommended increases to water rates may result in changes to water usage. Conservative water usage growth has been incorporated into the analysis, but it will be important to make adjustments to the assumptions as actual usage information becomes available. Therefore, the City should monitor revenue stability on an on-going basis.
- **Review water revenue adequacy annually.** The City has undertaken this project to obtain a financial tool to assist in management financial health of the water utility. Although the projections herein contain proposed rate adjustments through 2024, a change in actual revenues or expenses from those projected could significantly impact the utility. As a result, it is strongly recommended that the City closely monitor revenues and expenses as compared to those projected in the rate model, adjusting as necessary, and update the projected rate adjustments based on the desired objective of achieving consistent revenue adequacy and meeting cash reserve target balances.
- **Continue to educate customers and promote conservation.** Part of any successful conservation effort is the education of your water users. It is recommended that the City continue its Water Smarter program and other conservation efforts. In addition, expand education efforts on the basis for rate-setting and development of a capital investment and renewal strategy.