City of Spruce Grove:
Water Utility Rate Review

Version 1.0 (FINAL)
July 15th, 2022

Prepared by:

CORVUS Business Advisors
9670 – 95 Avenue
Edmonton, AB T6C 2A4
(780) 428-4110
gweiss@corvusbusinessadvisors.com

Document Information

Revision History

Version Number	Revision Date	Summary of Changes and Author
1	July 15th, 2022	Final

Table of Contents

1 Introduction

The City of Spruce Grove ("the City") provides water services to residents including: water storage, distribution of water through transmission and distribution lines, and fire protection offered through the local water distribution system. Treated water is purchased from the City of Edmonton through the Capital Region Parkland Water Services Commission (CRPWSC). Customers are billed monthly for water services based upon metered water consumed.

The City initiated this review to ensure water rates are current and reflect the full cost of service provision.

2 Scope of Review

This rate review is focused on metered water variable charges. This review did not assess other water charges such as bulk water charges, sustainability charges, meter rentals, service connection fees, penalties, water shutoffs, irrigation, etc.

3 Methodology

There are two generally accepted methods for determining the revenue requirements (and rates) for water utility systems. These methods are:

1) The Utility (Full Cost) Approach, and
2) The Cash Needs Approach.

Though each method provides for short and long-term water system program costs, the *utility (full cost) approach* generally results in greater rate stability. Under the *cash needs approach*, revenue requirements can fluctuate dramatically with cash demands that result from large capital expenditures. The *utility approach*, however, develops revenue requirements not based on what is being spent today but rather on the assets that are consumed in service delivery (i.e., depreciation) and through financial returns on system assets that will sustain the service in the future (i.e., return on the asset base). Depreciation and return represent non-cash provisions that, when placed in reserve, may be used to defray the impact of large capital expenditures or, alternatively, may be drawn upon to cover cash needs when decision makers wish to smooth the impact of rate increases over a number of years.

This study uses the *utility approach* to establish water revenue requirements and rates.

4 Assumptions

Assumptions that are utilized throughout this analysis include:

Assumption	Description
Review Period	Though rates are usually approved on an annual basis, this study examines rate requirements over a 10-year review period from 2023 to 2032, thereby providing the City with insight into potential future rate changes.
Inflation	Inflation of 3.0% per annum was applied to current costs to establish future costs.
Depreciation	Depreciation and amortization are calculated on a straight-line base over the economic life of each asset class. Depreciation and amortization are calculated starting in the year of construction completion using the half-year rule.
Return on Acquired Assets that are Debt Supported	All assets are classified as either “acquired assets” or “contributed assets”, depending on the asset’s nature of origin and financing. Acquired assets that are debt supported are provided a rate of return equivalent to the average interest requirements in a given year.
Return on Acquired Assets that are Equity Supported	All assets are classified as either “acquired assets” or “contributed assets”, depending on the asset’s nature of origin and financing. Acquired assets that are equity supported are provided a rate of return of 8.50% which approximates the cost of equity capital for utilities as determined by the Alberta Utility Commission (i.e., the AUC “Generic Rate of Return” or “Generic Cost of Capital”).
Return on Working Capital	Determination of average working capital requirements is based on 1½ months of operation and maintenance costs in a given year (i.e., the “one-eighth” rule). Return on working capital is 8.50% (i.e., the AUC “Generic Rate of Return” or “Generic Cost of Capital”).

5 Analysis of Revenue Requirement

Revenue requirements are the total costs of the water system that water rates must recover for the utility to be self-sustaining. Each element used to determine the City's water revenue requirements is described in the sections below.

5.1 Existing Water Infrastructure

The cost of existing water assets used in the provision of services (i.e., tangible capital assets) is included in the determination of revenue requirements. The City's water assets are categorized into several categories based on their expected life (i.e., 75-year assets, 50-year assets, 45-year assets, 40-year assets, 30-year assets, 20-year assets, and 10-year assets).[1]

Water assets are also classified as either "acquired" assets or "contributed" assets depending on origin and nature of financing. Contributed assets are those that have been provided to the City through grants, local improvements (i.e., developer constructed and financed), third party contributions, and development levies. Acquired and contributed assets earn different rates of return, which is described more fully later in this section. This rate of return is used to make debt payments associated with creation of the infrastructure and to rehabilitate and replace assets when they reach the end of their economic life.

Table 1 summarizes the original and residual book value of assets currently in service. The City's water assets are, on average, at 38% of their economic life with 62% of life remaining. It is important that reserves be accumulated for future asset rehabilitation and reconstruction.

[1] A municipality's assets are usually categorized based on their type, such as: water distribution system, water transmission system, water reservoirs, pumping stations, water treatment, equipment, computers, and land. However, in some cases City assets within a given category have been assigned different asset life's, and so data synthesis and analysis using a different approach was required. Moving forward, it is recommended the City establish a singular asset life for each asset type.

Table 1: Net Book Value of Existing Water Assets [2]

Description	Gross Cost	Accumulated Depreciation	Net Book Value	Remaining % of Asset
System Acquired Assets				
75 Year Assets	$ -	$ -	$ -	0%
50 Year Assets	$ 34,331,961	$ 12,738,790	$ 21,593,171	63%
45 Year Assets	$ 9,558,306	$ 8,090,581	$ 1,467,726	15%
40 Year Assets	$ 11,802,166	$ 6,294,536	$ 5,507,631	47%
30 Year Assets	$ 18,050,960	$ 3,286,656	$ 14,764,303	82%
20 Year Assets	$ 5,955,836	$ 2,740,488	$ 3,215,347	54%
10 Year Assets	$ 64,046	$ 22,707	$ 41,339	65%
Total Acquired	**$ 79,763,275**	**$ 33,173,759**	**$ 46,589,517**	**58%**
Contributed Assets				
50 Year Assets	$ 12,326,477	$ 4,688,679	$ 7,637,799	62%
45 Year Assets	$ 14,238,112	$ 3,922,788	$ 10,315,324	72%
40 Year Assets	$ 9,744,045	$ 3,248,499	$ 6,495,545	67%
30 Year Assets	$ 4,231,654	$ 949,630	$ 3,282,024	78%
20 Year Assets	$ -	$ -	$ -	0%
10 Year Assets	$ -	$ -	$ -	0%
Total Contributed	**$ 40,540,288**	**$ 12,809,596**	**$ 27,730,692**	**68%**
Total All Assets	**$ 120,303,564**	**$ 45,983,355**	**$ 74,320,209**	**62%**

5.2 New Water Infrastructure (Capital Plan)

Tables 2 and *3* provide details of the capital expenditures that are planned for the City's water system over 10 years.[3] The City's capital plan totals $93.94 million in future dollars, of which $81.03 million is anticipated to be acquired and $12.91 million is anticipated to be contributed.

These assets are placed into service in the year of construction completion. Similar to existing assets, when capital assets (that are acquired) are placed into service they earn a rate of return to repay any debt obligations that have arisen during their creation, and for the assets eventual rehabilitation and replacement.

[2] Land values (if any) are shown for information only. Land is not a depreciable asset.
[3] The first 10 years of the capital plan are included, consistent with the 10-year outlook of this study.

Table 2: Capital Plan & Financing [4]

		Inflation	3.00%	Allocation of Cost		System Acquired Financing		Contributed Financing		
Description	Current Cost	Year	Future Cost	System Acquired	Contributed	Debentures	Reserves	Grants	Developers	Other
Water Main 400mm - Ball Diamond & South of Hwy 16A	$ 3,960,000	2025	$ 4,327,199	$ -	$ 4,327,199	$ -	$ -	$ -	$ 4,327,199	$ -
Water Main 400mm - Diamond Ave in South Industrial	$ 5,280,000	2025	$ 5,769,599	$ -	$ 5,769,599	$ -	$ -	$ -	$ 5,769,599	$ -
Pressure Reducing Valves - 13	$ 300,000	2025	$ 327,818	$ -	$ 327,818	$ -	$ -	$ -	$ 327,818	$ -
Pressure Reducing Valves - 14	$ 300,000	2025	$ 327,818	$ -	$ 327,818	$ -	$ -	$ -	$ 327,818	$ -
Pressure Reducing Valves - 15	$ 180,000	2025	$ 196,691	$ -	$ 196,691	$ -	$ -	$ -	$ 196,691	$ -
Pressure Reducing Valves - 10	$ 300,000	2025	$ 327,818	$ -	$ 327,818	$ -	$ -	$ -	$ 327,818	$ -
Pressure Reducing Valves - 6, 7, 8, 9	$ 1,200,000	2023	$ 1,236,000	$ -	$ 1,236,000	$ -	$ -	$ -	$ 1,236,000	$ -
Pressure Reducing Valves - 11, 12	$ 360,000	2025	$ 393,382	$ -	$ 393,382	$ -	$ -	$ -	$ 393,382	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Industrial WM and Surface Rehab- Diamond Avenue and Century Road	$ 2,782,900	2023	$ 2,866,387	$ 2,866,387	$ -	$ -	$ 2,866,387	$ -	$ -	$ -
Industrial WM and Surface Rehab - Diamond Avenue to Water Reservoir	$ 1,657,100	2023	$ 1,706,813	$ 1,706,813	$ -	$ -	$ 1,706,813	$ -	$ -	$ -
Industrial WM and Surface Rehab - Madison Crescent	$ 3,840,000	2024	$ 4,073,856	$ 4,073,856	$ -	$ 4,073,856	$ -	$ -	$ -	$ -
Industrial WM and Surface Rehab - Alberta Avenue and Yellowhead Road	$ 2,520,000	2026	$ 2,836,282	$ 2,836,282	$ -	$ 200,000	$ 2,636,282	$ -	$ -	$ -
Industrial WM and Surface Rehab - Shep Street and South Avenue (Golden Spike Rd to 2021 limit)	$ 3,180,000	2027	$ 3,686,492	$ 3,686,492	$ -	$ 925,000	$ 2,761,492	$ -	$ -	$ -
Industrial WM and Surface Rehab - Diamond Avenue and Oswald Drive	$ 4,440,000	2028	$ 5,301,592	$ 5,301,592	$ -	$ 3,300,000	$ 2,001,592	$ -	$ -	$ -
Industrial WM and Surface Rehab - Oswald Drive	$ 1,920,000	2029	$ 2,361,358	$ 2,361,358	$ -	$ 700,000	$ 1,661,358	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Support to City Center ARP - McLeod Avenue and Main Street	$ 893,754	2022	$ 893,754	$ 893,754	$ -	$ -	$ 893,754	$ -	$ -	$ -
Support to City Center ARP - Jespersen (King to Queen and 16A)	$ 1,250,000	2022	$ 1,250,000	$ 1,250,000	$ -	$ 1,113,866	$ 136,134	$ -	$ -	$ -
Support to City Center ARP - Calahoo (South Ave to First Ave)	$ 750,000	2023	$ 772,500	$ 772,500	$ -	$ -	$ 772,500	$ -	$ -	$ -
Support to City Center ARP - Lanes (South McLeod Ave to north of McLeod Ave)	$ 530,000	2023	$ 545,900	$ 545,900	$ -	$ -	$ 545,900	$ -	$ -	$ -
Support to City Center ARP - Lanes (north McLeod Ave from Queen Street for 200m)	$ 300,000	2023	$ 309,000	$ 309,000	$ -	$ -	$ 309,000	$ -	$ -	$ -
Support to City Center ARP - McLeod Avenue and Main Street	$ 209,159	2023	$ 215,433	$ 215,433	$ -	$ -	$ 215,433	$ -	$ -	$ -
Support to City Center ARP - Main Street (1st Avenue)	$ 209,159	2023	$ 215,433	$ 215,433	$ -	$ -	$ 215,433	$ -	$ -	$ -
Support to City Center ARP - Calahoo (First Ave to Mohr)	$ 1,500,000	2023	$ 1,545,000	$ 1,545,000	$ -	$ -	$ 1,545,000	$ -	$ -	$ -
Support to City Center ARP - Mohr Ave (from Queen to Calahoo)	$ 873,840	2024	$ 927,057	$ 927,057	$ -	$ 500,000	$ 427,057	$ -	$ -	$ -
Support to City Center ARP - Church Road (Queen to Calahoo via lane north of Andrews Crescent)	$ 688,480	2024	$ 730,408	$ 730,408	$ -	$ -	$ 730,408	$ -	$ -	$ -
Support to City Center ARP - Church Road (King to Queen)	$ 635,520	2024	$ 674,223	$ 674,223	$ -	$ -	$ 674,223	$ -	$ -	$ -
Support to City Center ARP - McPherson (Queen to Main)	$ 635,520	2024	$ 674,223	$ 674,223	$ -	$ -	$ 674,223	$ -	$ -	$ -
Support to City Center ARP - Main Street	$ 476,640	2024	$ 505,667	$ 505,667	$ -	$ -	$ 505,667	$ -	$ -	$ -
Support to City Center ARP - 1st Ave, Mohr and Lanes	$ 2,279,000	2025	$ 2,490,325	$ 2,490,325	$ -	$ -	$ 2,490,325	$ -	$ -	$ -
Support to City Center ARP - King Street	$ 4,163,000	2026	$ 4,685,493	$ 4,685,493	$ -	$ 4,685,493	$ -	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Water Meter Replacement Program	$ 232,000	2022	$ 232,000	$ 232,000	$ -	$ -	$ 232,000	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,900	2023	$ 319,197	$ 319,197	$ -	$ -	$ 319,197	$ -	$ -	$ -
Water Meter Replacement Program	$ 310,000	2024	$ 328,879	$ 328,879	$ -	$ -	$ 328,879	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,900	2025	$ 338,636	$ 338,636	$ -	$ -	$ 338,636	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,900	2026	$ 348,795	$ 348,795	$ -	$ -	$ 348,795	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,900	2027	$ 359,259	$ 359,259	$ -	$ -	$ 359,259	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,900	2028	$ 370,037	$ 370,037	$ -	$ -	$ 370,037	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,600	2029	$ 380,769	$ 380,769	$ -	$ -	$ 380,769	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,700	2030	$ 392,319	$ 392,319	$ -	$ -	$ 392,319	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,600	2031	$ 403,958	$ 403,958	$ -	$ -	$ 403,958	$ -	$ -	$ -
Water Meter Replacement Program	$ 309,500	2032	$ 415,942	$ 415,942	$ -	$ -	$ 415,942	$ -	$ -	$ -

[4] The analysis undertaken herein indicates that the water utility reserve will not be sufficient to fund capital projects to the extent identified in the City's current capital plan. As such, debenture funding has been used to finance additional projects. Note: the City is not bound to the financing plan shown here…its purpose is solely to determine rates. The City may change or move financing methods as desired to reflect changing circumstances. If/when financing methods change, they will be reflected in future rate updates.

Water Rehabilitation Program - Grove Meadows Neighbourhood	$ 3,643,000	2027	$ 4,223,235	$ 4,223,235	$ -	$ -	$ 4,223,235	$ -	$ -	$ -
Water Rehabilitation Program - Millgrove (Morel & Mathias areas) and Millgrove Dr.	$ 4,099,443	2028	$ 4,894,949	$ 4,894,949	$ -	$ -	$ 4,894,949	$ -	$ -	$ -
Water Rehabilitation Program - Millgrove (Morel & Mathias areas) and Millgrove Dr.	$ 4,432,399	2029	$ 5,451,292	$ 5,451,292	$ -	$ -	$ 5,451,292	$ -	$ -	$ -
Water Rehabilitation Program - Millgrove (Morel & Mathias areas) and Millgrove Dr.	$ 4,818,991	2030	$ 6,104,554	$ 6,104,554	$ -	$ -	$ 6,104,554	$ -	$ -	$ -
Water Rehabilitation Program - Millgrove (Morel & Mathias areas) and Millgrove Dr.	$ 5,236,511	2031	$ 6,832,459	$ 6,832,459	$ -	$ -	$ 6,832,459	$ -	$ -	$ -
Water Rehabilitation Program - Millgrove (Morel & Mathias areas) and Millgrove Dr.	$ 5,236,511	2032	$ 7,037,433	$ 7,037,433	$ -	$ -	$ 7,037,433	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2022	$ 188,400	$ 188,400	$ -	$ -	$ 188,400	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2023	$ 194,052	$ 194,052	$ -	$ -	$ 194,052	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2024	$ 199,874	$ 199,874	$ -	$ -	$ 199,874	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2025	$ 205,870	$ 205,870	$ -	$ -	$ 205,870	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2026	$ 212,046	$ 212,046	$ -	$ -	$ 212,046	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2027	$ 218,407	$ 218,407	$ -	$ -	$ 218,407	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2028	$ 224,959	$ 224,959	$ -	$ -	$ 224,959	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2029	$ 231,708	$ 231,708	$ -	$ -	$ 231,708	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2030	$ 238,659	$ 238,659	$ -	$ -	$ 238,659	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2031	$ 245,819	$ 245,819	$ -	$ -	$ 245,819	$ -	$ -	$ -
Water Meters Growth Plan	$ 188,400	2032	$ 253,194	$ 253,194	$ -	$ -	$ 253,194	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Vac Drying Pad Facility (Water 20%/Sewer 15%/Drainage 65%)	$ 75,000	2022	$ 75,000	$ 75,000	$ -	$ -	$ 75,000	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - Chev Equinox Meter Reader (Finance)	$ 38,000	2027	$ 44,052	$ 44,052	$ -	$ -	$ 44,052	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 2012 Ford 1 ton chassis with attached body- Water 50%/Sewer 50%)	$ 39,665	2022	$ 39,665	$ 39,665	$ -	$ -	$ 39,665	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 2015 Ford 3/4 Ton 4x4 with tool boxes (Water 50%/Sewer 50%)	$ 21,000	2025	$ 22,947	$ 22,947	$ -	$ -	$ 22,947	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 2016 Ford 3/4 Ton 4x4 with tool boxes (Water 50%/Sewer 50%)	$ 21,750	2026	$ 24,480	$ 24,480	$ -	$ -	$ 24,480	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - F150 with Tool Box (Water 50%/Sewer 50%)	$ 19,500	2027	$ 22,606	$ 22,606	$ -	$ -	$ 22,606	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 1 Ton Truck with Hydraulic Dump Box (Water 50%/Sewer 50%)	$ 30,500	2027	$ 35,358	$ 35,358	$ -	$ -	$ 35,358	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 2015 F350 (Water 50%/Sewer 50%)	$ 31,750	2025	$ 34,694	$ 34,694	$ -	$ -	$ 34,694	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 2020 Ford F150 (Water 50%/Sewer 50%)	$ 21,250	2030	$ 26,919	$ 26,919	$ -	$ -	$ 26,919	$ -	$ -	$ -
Vehicle Lifecycle Replacement Plan - 2020 F450 4x2 Chassis CA (Water 50%/Sewer 50%)	$ 31,500	2030	$ 39,903	$ 39,903	$ -	$ -	$ 39,903	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Equipment Lifecycle Replacement Plan - 2014 5T Tandem Flusher (Water 10%/Sewer 60%/Drainage 30%)	$ 60,500	2024	$ 64,184	$ 64,184	$ -	$ -	$ 64,184	$ -	$ -	$ -
Equipment Lifecycle Replacement Plan - Unit357Caterpillar450F Backhoe (Water 20%/Sewer 20%/Drainage 60%)	$ 47,200	2024	$ 50,074	$ 50,074	$ -	$ -	$ 50,074	$ -	$ -	$ -
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hypercon Pipe Diver Line Inspection	$ 410,000	2024	$ 434,969	$ 434,969	$ -	$ -	$ 434,969	$ -	$ -	$ -
	$ 81,330,841		**$ 93,935,073**	**$ 81,028,748**	**$ 12,906,325**	**$ 15,498,215**	**$ 65,530,533**	**$ -**	**$ 12,906,325**	**$ -**

Table 3: Summary of Capital Plan by Asset Class [5]

Year	75 Year Assets	50 Year Assets	45 Year Assets	40 Year Assets	30 Year Assets	20 Year Assets	10 Year Assets	Grand Total
2023	$ -	$ 8,495,663	$ -	$ -	$ 1,430,052	$ -	$ -	$ 9,925,715
2024	$ -	$ 7,914,313	$ -	$ -	$ 199,874	$ -	$ 549,227	$ 8,663,414
2025	$ -	$ 12,925,759	$ -	$ -	$ 1,779,397	$ -	$ 57,641	$ 14,762,797
2026	$ -	$ 7,870,570	$ -	$ -	$ 212,046	$ -	$ 24,480	$ 8,107,096
2027	$ -	$ 8,268,986	$ -	$ -	$ 218,407	$ -	$ 102,016	$ 8,589,409
2028	$ -	$ 10,566,578	$ -	$ -	$ 224,959	$ -	$ -	$ 10,791,537
2029	$ -	$ 8,193,419	$ -	$ -	$ 231,708	$ -	$ -	$ 8,425,127
2030	$ -	$ 6,496,873	$ -	$ -	$ 238,659	$ -	$ 66,822	$ 6,802,354
2031	$ -	$ 7,236,417	$ -	$ -	$ 245,819	$ -	$ -	$ 7,482,236
2032	$ -	$ 7,453,375	$ -	$ -	$ 253,194	$ -	$ -	$ 7,706,569
Total	$ -	$ 85,421,953	$ -	$ -	$ 5,034,115	$ -	$ 800,186	$ 91,256,254
System Acquired Assets	$ -	$ 75,325,155	$ -	$ -	$ 2,224,588	$ -	$ 800,186	$ 78,349,929
Contributed Assets	$ -	$ 10,096,798	$ -	$ -	$ 2,809,527	$ -	$ -	$ 12,906,325
Total	$ -	$ 85,421,953	$ -	$ -	$ 5,034,115	$ -	$ 800,186	$ 91,256,254

[5] The capital plan shown in *Table 3* totals $91.26 million, which is less than the total reflected in *Table 2*. This is because *Table 2* includes 2022 capital items that are not included in the City's TCA balance.

5.3 Existing and Future Debt Payments

Revenue requirements (and rates) must provide for payments on existing and future debts as summarized in *Table 4*.

Table 4: Existing and Future Debts [6]

Year	Existing Debt			Future Debt			Total Debt		
	Principal	Interest	Total	Principal	Interest	Total	Principal	Interest	Total
2023	$ 93,299	$ 36,800	$ 130,099	$ 23,834	$ 53,072	$ 76,906	$ 117,133	$ 89,872	$ 207,005
2024	$ 95,064	$ 35,035	$ 130,099	$ 24,989	$ 51,917	$ 76,906	$ 120,053	$ 86,952	$ 207,005
2025	$ 96,861	$ 33,238	$ 130,099	$ 124,068	$ 268,635	$ 392,704	$ 220,930	$ 301,873	$ 522,803
2026	$ 98,693	$ 31,406	$ 130,099	$ 130,082	$ 262,621	$ 392,704	$ 228,775	$ 294,028	$ 522,803
2027	$ 100,559	$ 29,540	$ 130,099	$ 240,924	$ 489,094	$ 730,018	$ 341,483	$ 518,634	$ 860,117
2028	$ 102,460	$ 27,639	$ 130,099	$ 272,395	$ 521,488	$ 793,884	$ 374,856	$ 549,127	$ 923,983
2029	$ 104,398	$ 25,702	$ 130,099	$ 356,210	$ 665,519	$ 1,021,729	$ 460,608	$ 691,220	$ 1,151,828
2030	$ 106,372	$ 23,728	$ 130,099	$ 388,455	$ 681,605	$ 1,070,060	$ 494,827	$ 705,332	$ 1,200,159
2031	$ 108,383	$ 21,716	$ 130,099	$ 407,285	$ 662,775	$ 1,070,060	$ 515,668	$ 684,491	$ 1,200,159
2032	$ 110,432	$ 19,667	$ 130,099	$ 427,028	$ 643,032	$ 1,070,060	$ 537,460	$ 662,699	$ 1,200,159
Total	**$ 1,016,520**	**$ 284,471**	**$ 1,300,991**	**$ 2,395,272**	**$ 4,299,759**	**$ 6,695,030**	**$ 3,411,792**	**$ 4,584,229**	**$ 7,996,022**

5.4 Operating and Maintenance Costs

Table 5 summarizes the operating and maintenance budget for 2023 (i.e., Year 1 of the review period). Total non-utility revenues are forecast at $438,200, total operating and maintenance expenditures are forecast at $11.30 million, and net expenditures (expenditures less non-utility revenues) are forecast at $10.86 million.

[6] The analysis undertaken herein indicates that the water utility reserve will not be sufficient to fund capital projects to the extent identified in the City's current capital plan. As such, debenture funding has been used to finance additional projects and whose payments are reflected in Future Debt. Note: the City is not bound to the financing plan shown here…its purpose is solely to determine rates. The City may change or move financing methods as desired to reflect changing circumstances. If/when financing methods change, they will be reflected in future rate updates.

Table 5: Operating and Maintenance Revenues and Costs [7]

Description	2023
Non Utility Billing Revenues and Recoveries	
4231 - Permits and Inspections	$ 48,450
4911 - Sale of Watermeters	$ 183,396
4911 - Sale of Watermeters	$ 204,354
4241 - Returned Cheque Charges and NSF	$ 2,000
	$ 438,200
O&M Expenditures	
1102 - Full Time Salaries	$ 455,281
1102 - Full Time Salaries	$ 64,074
1102 - Full Time Salaries	$ 40,403
1102 - Full Time Salaries	$ 65,423
1102 - Full Time Salaries	$ 54,386
1102 - Full Time Salaries	$ 112,513
1112 - Full Time Overtime	$ 4,825
1112 - Full Time Overtime	$ 15,409
1112 - Full Time Overtime	$ 3,936
1112 - Full Time Overtime	$ 4,932
1112 - Full Time Overtime	$ 3,117
1122 - Shift Premiums	$ 103
1122 - Shift Premiums	$ 9,270
1122 - Shift Premiums	$ 401
1122 - Shift Premiums	$ 104
1122 - Shift Premiums	$ 104
1122 - Shift Premiums	$ 9,270
1192 - Full Time Benefits	$ 16,019
1192 - Full Time Benefits	$ 28,128
1192 - Full Time Benefits	$ 16,356
1192 - Full Time Benefits	$ 10,101
1192 - Full Time Benefits	$ 13,597
1192 - Full Time Benefits	$ 113,820
1202 - Part Time- Temporary/Casual Wages	$ 95,133
1212 - Part Time Temporary/Casual Overtim	$ 4,060
1212 - Part Time Temporary/Casual Overtim	$ 1,500
1212 - Part Time Temporary/Casual Overtim	$ 100
1212 - Part Time Temporary/Casual Overtim	$ 384
1292 - Part Time- Temporary/Casual Benefits	$ 6,659
1602 - External Training	$ 2,596
1602 - External Training	$ 12,398
1602 - External Training	$ 2,130
1602 - External Training	$ 2,400
1702 - DO NOT USE - Travel & Subsistence -	$ 1,298
1702 - DO NOT USE - Travel & Subsistence -	$ 9,100
1702 - DO NOT USE - Travel & Subsistence -	$ 1,300
1702 - DO NOT USE - Travel & Subsistence -	$ 648
3212 - Contracted and General Services	$ 1,015
3212 - Contracted and General Services	$ 1,218
3212 - Contracted and General Services	$ 3,100
3262 - DO NOT USE - Contracted Services	$ 10,500
3272 - DO NOT USE - Contracted Services- \	$ 50,000
3272 - DO NOT USE - Contracted Services- \	$ 4,400
3272 - DO NOT USE - Contracted Services- \	$ 7,000
3272 - DO NOT USE - Contracted Services- \	$ 1,600
3272 - DO NOT USE - Contracted Services- \	$ 82,000
3302 - Purchase of Water	$ 6,544,957
5312 - Advertising	$ 4,000
5422 - DO NOT USE - Contracted Services a	$ 35,000
5442 - DO NOT USE - Contracted Services a	$ 750
5602 - Professional Fees	$ 16,700
5722 - Cellular Phones	$ 7,385
5722 - Cellular Phones	$ 660
5752 - Power	$ 160,100
5762 - Natural Gas	$ 15,800
5892 - DO NOT USE - Other Transactions	$ 21,000
8022 - Vehicle/Equipment Rental	$ 21,250
8122 - Materials Supplies	$ 2,040
8122 - Materials Supplies	$ 2,000
8122 - Materials Supplies	$ 30,000
8122 - Materials Supplies	$ 2,150
8122 - Materials Supplies	$ 9,000
8122 - Materials Supplies	$ 2,130
8122 - Materials Supplies	$ 19,520
8122 - Materials Supplies	$ 5,075
8122 - Materials Supplies	$ 1,700
8122 - Materials Supplies	$ 5,000
8132 - Tools	$ 3,624
8132 - Tools	$ 3,706
8132 - Tools	$ 456
8132 - Tools	$ 1,108
8132 - Tools	$ 700
8142 - Uniforms and PPE	$ 9,564
8142 - Uniforms and PPE	$ 2,500
8212 - Memberships & Association Fees	$ 515
8212 - Memberships & Association Fees	$ 320
8222 - Office Supplies	$ 1,500
8242 - Custom Business Products	$ 17,700
8252 - Postage & Courier	$ 113,500
8312 - R&M Community Facilities	$ 2,790
8312 - R&M Community Facilities	$ 5,000
8312 - R&M Community Facilities	$ 5,000
8332 - R&M Equipment	$ 36,900
8352 - R&M Infrastructure	$ 1,000
8362 - RMR Community Facilities (Lifecycle)	$ 5,170
9812 - Utility Administration Fee Expense	$ 2,837,400
Total Expenditures	**$ 11,296,780**
Net Expenditures	**$ 10,858,580**

[7] Amortization and interest on debt are not included in the budget, as they are summarized in other sections of the report. Likewise, any items pertaining to other rates (e.g., truck fill operations) have been removed.

Table 6 summarizes the projected net operating expenditures that must be recovered from water utility rates over the review period. Projected expenditures over the rate planning period are based on 2023 baseline costs (adjusted for step increases/decreases, if any) plus inflation of 3.0% inflation per year. Net expenditures are forecast to increase from $10.86 million in 2023 to $14.17 million in 2032.

Table 6: Forecast Net Operating and Maintenance Costs

Year	Miscellaneous Recoveries	Expenditures	Net Expenditures
2023	$ 438,200	$ 11,296,780	$ 10,858,580
2024	$ 451,345	$ 11,635,683	$ 11,184,338
2025	$ 464,886	$ 11,984,754	$ 11,519,868
2026	$ 478,832	$ 12,344,296	$ 11,865,464
2027	$ 493,197	$ 12,714,625	$ 12,221,428
2028	$ 507,993	$ 13,096,064	$ 12,588,071
2029	$ 523,233	$ 13,488,946	$ 12,965,713
2030	$ 538,930	$ 13,893,614	$ 13,354,684
2031	$ 555,098	$ 14,310,423	$ 13,755,325
2032	$ 571,751	$ 14,739,735	$ 14,167,984

5.5 Depreciation Expense on Acquired Assets

Depreciation represents the value of assets consumed while in service to ratepayers. A depreciation expense establishes part of the provision used for the rehabilitation and replacement of assets. Under the *utility approach* a depreciation expense is calculated only on acquired assets (contributed assets have not been purchased and therefore no expense can emanate from these assets). The depreciation expense established within the water revenue requirement is calculated on a straight-line basis over the economic life of assets in each asset class (50-year assets, 30-year assets, etc). *Table 7* summarizes the depreciation expenses in each year of the rate-planning period.

Table 7: Depreciation Expense [8]

Description	2023	2024	2025	2026	2027
75 Year Assets	$ -	$ -	$ -	$ -	$ -
50 Year Assets	$ 771,596	$ 935,696	$ 1,043,128	$ 1,150,124	$ 1,311,519
45 Year Assets	$ 181,963	$ 181,963	$ 181,963	$ 135,473	$ 88,982
40 Year Assets	$ 172,602	$ 172,602	$ 172,602	$ 172,602	$ 172,602
30 Year Assets	$ 550,859	$ 557,424	$ 564,187	$ 570,871	$ 577,763
20 Year Assets	$ 297,792	$ 297,792	$ 296,763	$ 292,278	$ 285,041
10 Year Assets	$ 6,405	$ 32,647	$ 61,771	$ 65,877	$ 72,202
Total Depreciation	$ 1,981,216	$ 2,178,124	$ 2,320,414	$ 2,387,225	$ 2,508,110

Description	2028	2029	2030	2031	2032
75 Year Assets	$ -	$ -	$ -	$ -	$ -
50 Year Assets	$ 1,499,875	$ 1,687,336	$ 1,834,099	$ 1,971,432	$ 2,118,330
45 Year Assets	$ 88,982	$ 58,693	$ 28,404	$ 28,404	$ 28,404
40 Year Assets	$ 172,602	$ 172,602	$ 172,602	$ 172,602	$ 172,602
30 Year Assets	$ 585,153	$ 592,764	$ 600,603	$ 608,642	$ 616,923
20 Year Assets	$ 265,554	$ 242,088	$ 226,678	$ 197,613	$ 170,492
10 Year Assets	$ 77,303	$ 77,303	$ 80,644	$ 83,985	$ 82,002
Total Depreciation	$ 2,689,469	$ 2,830,786	$ 2,943,031	$ 3,062,679	$ 3,188,753

5.6 Return on Assets in Service

Under the *utility approach*, revenue requirements include returns on water assets that are employed in the provision of service. Determination of returns are based on the capital structure of the utility and are used to meet any borrowing obligations that are incurred in the creation of assets and to rehabilitate and replace the assets when they reach the end of their economic life.

A deemed capital structure of 40% debt and 60% equity is used to calculate returns. The deemed capital structure helps to generate a smooth revenue requirement during periods of abnormally low or high capital construction. Private utilities often utilize a deemed structure comprised of 60% debt; however, the deemed structure used here includes a 40% debt assumption, in alignment with the increased debt constraints placed on municipalities.

There are 4 types of assets in service which earn a rate of return:

1. **Acquired assets that are debt supported**: Acquired assets that are debt supported earn a rate of return that meets average debt interest obligations each year. For example, in year 1 of the review period the return of 4.79% is based on the average interest of all outstanding debentures.

[8] Depreciation is calculated starting in the year of construction/completion, with the half year rule applied in the first year.

2. **Acquired assets that are equity supported**: Acquired assets that are equity supported earn a rate of return of 8.50% (the Alberta Utility Commission's ("AUC") Generic Rate of Return) which approximates the cost of equity capital for water utilities as determined by the AUC.

3. **Working capital**: Determination of average working capital requirements is based on 1½ months of operations and maintenance costs (the "one-eighth" rule). Return on working capital is 8.50% (the AUC Generic Rate of Return).

4. **Contributed assets**: Contributed assets do not earn a rate of return.

To illustrate, *Table 8* summarizes returns for each asset in service in year 1 of the rate planning period. The average return on all assets in service is 4.66%. Forecast returns for each year of the rate planning period are summarized in *Appendix B*.

Table 8: Forecast Returns for Year 1

2023							
Description	**Actual Capital In Service**	**% Actual Capital Structure**	**% Actual System Acquired Asset Structure**	**Deemed % System Acquired Asset Structure**	**Deemed Rate Base**	**Rate of Return**	**Return on Rate Base**
System Acquired Assets							
Debt Portion	$ 3,092,429	3.80%	5.80%	40.00%	$ 21,319,206	4.79%	$ 1,021,190
Equity Portion	$ 50,205,586	61.71%	94.20%	60.00%	$ 31,978,809	8.50%	$ 2,718,199
Total System Acquired	$ 53,298,015	65.51%	100.00%	100.00%	$ 53,298,015		$ 3,739,389
Contributed Assets	$ 28,065,018	34.49%			$ 28,065,018	0.00%	$ -
Total Assets	$ 81,363,034	100.00%			$ 81,363,034		$ 3,739,389
Working Capital	$ 10,858,580				$ 1,357,323	8.50%	$ 115,372
						Total Return	$ 3,854,761
							4.66%

5.7 Revenue Requirements

Table 9 summarizes the forecast revenue requirements under the *utility approach*. These revenue requirements are based on each of the elements described previously in this section. Water revenue requirements are forecast to increase from $16.70 million in 2023 to $24.44 million in 2032.

Table 9: Water Revenue Requirements [9]

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
O&M costs (Net)	$10,858,580	$11,184,338	$11,519,868	$11,865,464	$12,221,428	$12,588,071	$12,965,713	$13,354,684	$13,755,325	$14,167,984
Depreciation	$ 1,981,216	$ 2,178,124	$ 2,320,414	$ 2,387,225	$ 2,508,110	$ 2,689,469	$ 2,830,786	$ 2,943,031	$ 3,062,679	$ 3,188,753
Return										
System Assets - Debt	$ 1,021,190	$ 1,145,448	$ 1,160,241	$ 1,269,834	$ 1,386,351	$ 1,541,587	$ 1,648,774	$ 1,722,719	$ 1,807,398	$ 1,893,959
System Assets - Equity	$ 2,718,199	$ 3,048,949	$ 3,088,324	$ 3,380,037	$ 3,690,183	$ 4,103,389	$ 4,388,700	$ 4,585,526	$ 4,810,923	$ 5,041,332
Contributed Assets	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Working Capital	$ 115,372	$ 118,834	$ 122,399	$ 126,071	$ 129,853	$ 133,748	$ 137,761	$ 141,894	$ 146,150	$ 150,535
Principal Shortfall	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$16,694,558	$17,675,692	$18,211,245	$19,028,629	$19,935,925	$21,056,264	$21,971,734	$22,747,853	$23,582,474	$24,442,563

[9] A principal shortfall is the difference between depreciation and principal debt payment in a given year. If the number is negative, there is a shortfall, and this amount is added to the revenue requirement in that year.

5.8 Comparison of Revenue Requirement: Utility (Full Cost) Approach Versus Cash Needs Approach

As described in *Section 4*, the *utility approach* provides revenue targets for rates that ensure the utility is self-sustaining. Full cost rates not only ensure current costs are covered, but they allow the utility to generate reserves that will be necessary to rehabilitate and replace assets in the future.

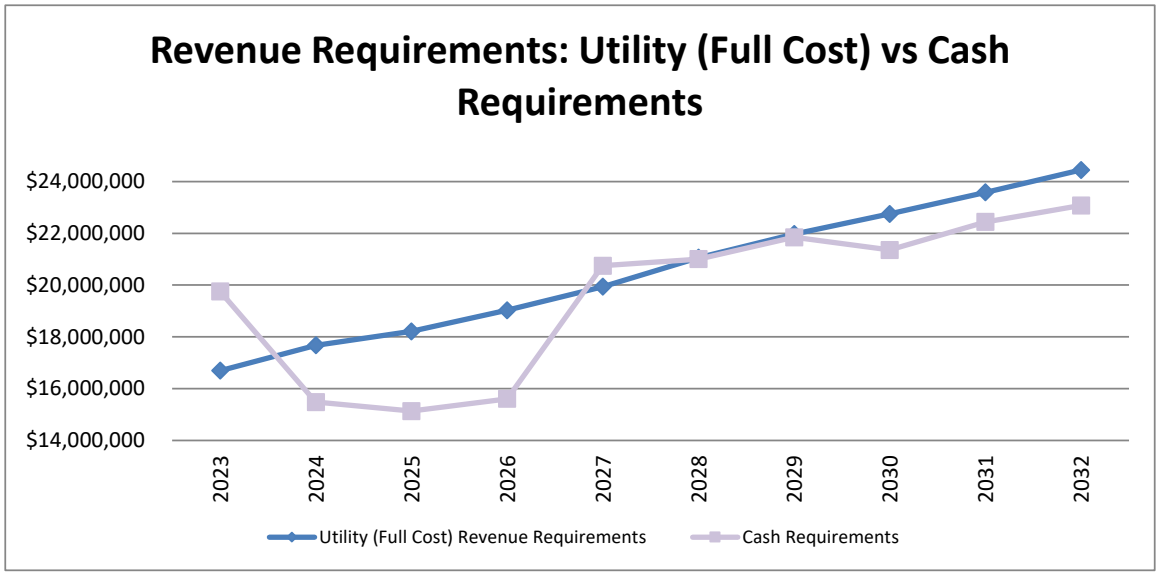
A *cash approach*, on the other hand, only describes the minimum amount of cash the utility must generate to satisfy current costs. Rates which generate revenue less than this minimum will create a utility loss which must be subsidized via other sources such as taxes.

Based on all revenue requirements described in this section, *Table 10* and the accompanying graph compare the City's revenue requirements under both the u*tility approach* (i.e., the ideal/maximum) and the c*ash approach*.[10]

Table 10: Comparison of Full Cost and Cash Revenue Requirements

	Revenue Requirement - Utility (Full Cost)					Revenue Requirement - Cash				
Year	Net Operating Expenditures	Depreciation	Return	Principal Short Fall	Total Revenue Requirement	Net Operating Expenditures	Debt Charges	Revenue Requirement Before Capital Drawn From Reserve	Capital Drawn From Reserves	Total Revenue Requirement
2023	$ 10,858,580	$ 1,981,216	$ 3,854,761	$ -	$ 16,694,558	$ 10,858,580	$ 207,005	$ 11,065,585	$ 8,689,715	$ 19,755,300
2024	$ 11,184,338	$ 2,178,124	$ 4,313,230	$ -	$ 17,675,692	$ 11,184,338	$ 207,005	$ 11,391,343	$ 4,089,558	$ 15,480,901
2025	$ 11,519,868	$ 2,320,414	$ 4,370,963	$ -	$ 18,211,245	$ 11,519,868	$ 522,803	$ 12,042,671	$ 3,092,472	$ 15,135,143
2026	$ 11,865,464	$ 2,387,225	$ 4,775,941	$ -	$ 19,028,629	$ 11,865,464	$ 522,803	$ 12,388,267	$ 3,221,603	$ 15,609,870
2027	$ 12,221,428	$ 2,508,110	$ 5,206,387	$ -	$ 19,935,925	$ 12,221,428	$ 860,117	$ 13,081,545	$ 7,664,409	$ 20,745,954
2028	$ 12,588,071	$ 2,689,469	$ 5,778,724	$ -	$ 21,056,264	$ 12,588,071	$ 923,983	$ 13,512,054	$ 7,491,537	$ 21,003,591
2029	$ 12,965,713	$ 2,830,786	$ 6,175,235	$ -	$ 21,971,734	$ 12,965,713	$ 1,151,828	$ 14,117,541	$ 7,725,127	$ 21,842,668
2030	$ 13,354,684	$ 2,943,031	$ 6,450,138	$ -	$ 22,747,853	$ 13,354,684	$ 1,200,159	$ 14,554,843	$ 6,802,354	$ 21,357,197
2031	$ 13,755,325	$ 3,062,679	$ 6,764,471	$ -	$ 23,582,474	$ 13,755,325	$ 1,200,159	$ 14,955,484	$ 7,482,236	$ 22,437,720
2032	$ 14,167,984	$ 3,188,753	$ 7,085,826	$ -	$ 24,442,563	$ 14,167,984	$ 1,200,159	$ 15,368,144	$ 7,706,569	$ 23,074,713

[10] There may be years when significant capital costs result in cash requirements exceeding utility (full cost) requirements.



5.9 Customers/Water Demand

The City currently has approximately 12,960 water customers, the vast majority (98%) of which have a 5/8" water meter, as summarized in *Table 11*. Customers currently utilize approximately 2,840,500 m3 of water. The City estimates that water customers/demand will increase an average of approximately 2.29% per year over the review period.

Table 11: Water Customers

	5/8" (15mm)	3/4" (19mm)	3/4" (20mm)	1" (25mm)	1.5" (37mm)	1.5" (38mm)	2" (50mm)	3" (75mm)	4" (100mm)	6" (150mm)	Total
Jan	12,777	166	-	64	-	35	40	13	3	1	13,099
Feb	12,784	166	-	64	-	35	40	13	3	1	13,106
Mar	12,807	166	-	64	-	35	40	13	3	1	13,129
Apr	12,488	165	-	64	-	35	39	13	3	1	12,808
May	12,522	165	-	63	-	35	39	13	3	1	12,841
Jun	12,511	165	-	64	-	35	39	13	3	1	12,831
Jul	12,552	165	-	64	-	35	39	13	3	1	12,872
Aug	12,564	165	-	64	-	35	39	13	3	1	12,884
Sep	12,616	166	-	64	-	35	39	13	3	1	12,937
Oct	12,666	166	-	64	-	35	39	13	3	1	12,987
Nov	12,671	166	-	64	-	35	39	13	3	1	12,992
Dec	12,708	163	-	64	-	35	40	13	3	1	13,027
Average	12,639	165	-	64	-	35	39	13	3	1	12,959
%	97.53%	1.28%	0.00%	0.49%	0.00%	0.27%	0.30%	0.10%	0.02%	0.01%	100.00%

6 Recommended Rates & Forecast Recoveries

6.1 Recommended Water Rates

The City's current charge is $4.31 per cubic meter for water services.[11] To achieve full cost revenue requirements would require an increase in the water rate to $5.58 per cubic meter. This is a significant increase. While this is certainly option, it is recommended the City move gradually toward full cost commencing with a rate of $4.60 per cubic meter in 2023 gradually increasing to $6.70 per cubic meter in 2032, as summarized in *Table 12*.

Table 12 Recommended Water Rates

Year	Water Charge Per m3
2023	$ 4.60
2024	$ 4.90
2025	$ 5.20
2026	$ 5.50
2027	$ 5.80
2028	$ 6.10
2029	$ 6.40
2030	$ 6.50
2031	$ 6.60
2032	$ 6.70

The impact of the recommended rate strategy on customers is summarized in *Appendix A*.

6.2 Forecast Water Recoveries

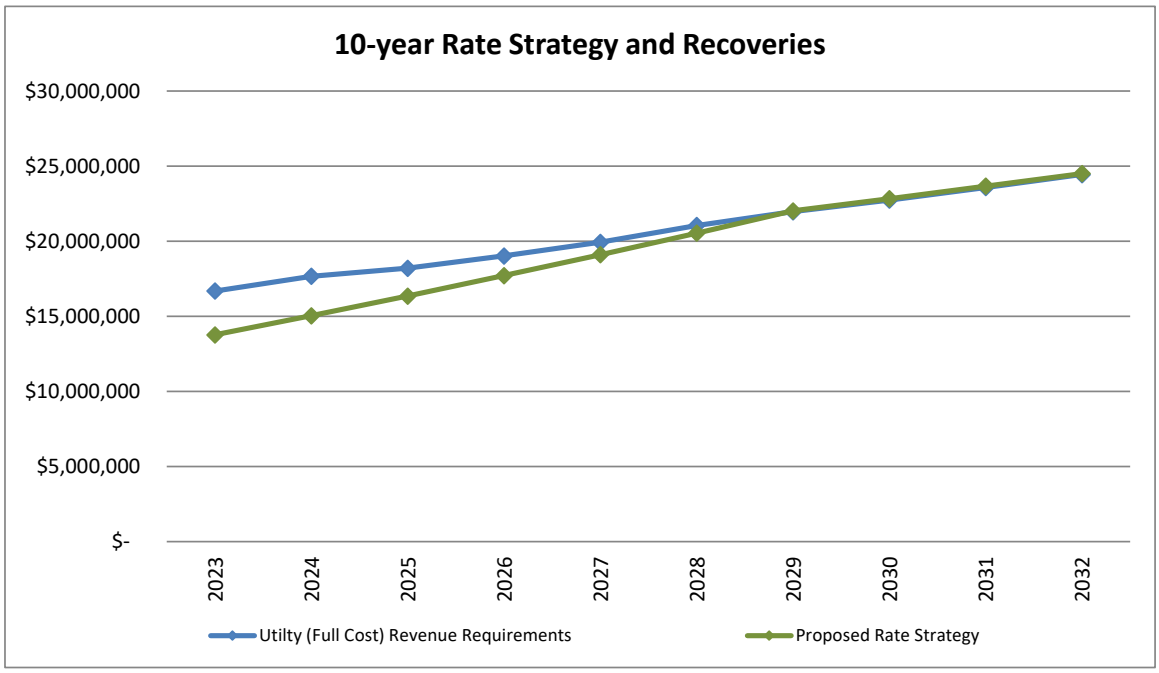
The water rates recommended and summarized in the previous section will ensure the City achieves full cost revenue requirements by 2029 thereby ensuring the sustainability of the water utility and reducing the risk of future tax subsidization.

The forecast revenue generated from the recommended rate structure is summarized in *Table 13* and the accompanying graph ('green' line).

[11] The City's current charge is approximately $6.33 per cubic meter for both water and sewer services. Of this charge, the City estimates that $4.31 is dedicated to the water utility.

Table 13: Forecast Water Recoveries

Year	Full Cost Revenue Requirement	Actual Revenue Under the Proposed Rate Strategy
2023	$ 16,694,558	$ 13,771,211
2024	$ 17,675,692	$ 15,042,216
2025	$ 18,211,245	$ 16,358,519
2026	$ 19,028,629	$ 17,714,476
2027	$ 19,935,925	$ 19,111,334
2028	$ 21,056,264	$ 20,547,549
2029	$ 21,971,734	$ 22,025,860
2030	$ 22,747,853	$ 22,840,756
2031	$ 23,582,474	$ 23,669,173
2032	$ 24,442,563	$ 24,507,764
Total	$ 188,652,379	$ 181,817,647



The impact of the recommended rate strategy on the forecast water reserve balance over the 10-year planning period is shown in *Table 14*. In addition to financing several capital projects over the review period, the water reserve is forecast to amass approximately $5.81 million by 2032.

Table 14: Forecast Water Reserve

Year	Reserve Receipts	Reserves Applied	Reserve Balance
2022	$ -	$ -	$ 6,659,586
2023	$ 2,705,626	$ 8,689,715	$ 675,496
2024	$ 3,650,873	$ 4,089,558	$ 236,812
2025	$ 4,315,849	$ 3,092,472	$ 1,460,188
2026	$ 5,326,209	$ 3,221,603	$ 3,564,795
2027	$ 6,029,789	$ 7,664,409	$ 1,930,175
2028	$ 7,035,495	$ 7,491,537	$ 1,474,133
2029	$ 7,908,319	$ 7,725,127	$ 1,657,325
2030	$ 8,285,913	$ 6,802,354	$ 3,140,883
2031	$ 8,713,689	$ 7,482,236	$ 4,372,336
2032	$ 9,139,620	$ 7,706,569	$ 5,805,388

7 Acknowledgements

CORVUS Business Advisors would like to thank all the City of Spruce Grove staff from Engineering, Planning, and Finance who supported the work of this review.

8 Disclaimer

CORVUS Business Advisor has relied upon City of Spruce Grove to provide all the data and information used to construct the utility rate model and create the rates, such as TCA's, capital plans and costs estimates, debenture details, and operating budgets etc. As such, CORVUS Business Advisors makes no guarantee as to the accuracy of the input data and information provided by these groups or the results that stem from this data and information.

Appendix A – Customer Impacts

Average Residential Consumption		
Consumption Level m3	20	20
Service Type - 15mm/5/8"	Existing	2023
Consumption Charge	$ 4.31	$ 4.60
Total Monthly Billing	$ 86.22	$ 92.00
Change from Existing Billing	$ -	$ 5.78

Low Residential Consumption (e.g., Senior Citizen)		
Consumption Level m3	10	10
Service Type - 15mm/5/8"	Existing	2023
Consumption Charge	$ 4.31	$ 4.60
Total Monthly Billing	$ 43.11	$ 46.00
Change from Existing Billing	$ -	$ 2.89

High Residential / Small Business Consumption		
Consumption Level m3	35	35
Service Type - 15mm/5/8"	Existing	2023
Consumption Charge	$ 4.31	$ 4.60
Total Monthly Billing	$ 150.89	$ 161.00
Change from Existing Billing	$ -	$ 10.12

Small Business (1 1/2" Service)		
Consumption Level m3	50	50
Service Type - 38mm/1 1/2"	Existing	2023
Consumption Charge	$ 4.31	$ 4.60
Total Monthly Billing	$ 215.55	$ 230.00
Change from Existing Billing	$ -	$ 14.45

Medium Business (2" Service)		
Consumption Level m3	200	200
Service Type - 50mm/2"	Existing	2023
Consumption Charge	$ 4.31	$ 4.60
Total Monthly Billing	$ 862.20	$ 920.00
Change from Existing Billing	$ -	$ 57.80

Large Business (4" Service)		
Consumption Level m3	2500	2500
Service Type - 100mm/4"	Existing	2023
Consumption Charge	$ 4.31	$ 4.60
Total Monthly Billing	$ 10,777.50	$ 11,500.00
Change from Existing Billing	$ -	$ 722.50

Appendix B – Return on Assets

2023

Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Rate Base
System Acquired Assets							
Debt Portion	$ 3,092,429	3.80%	5.80%	40.00%	$ 21,319,206	4.79%	$ 1,021,190
Equity Portion	$ 50,205,586	61.71%	94.20%	60.00%	$ 31,978,809	8.50%	$ 2,718,199
Total System Acquired	$ 53,298,015	65.51%	100.00%	100.00%	$ 53,298,015		$ 3,739,389
Contributed Assets	$ 28,065,018	34.49%			$ 28,065,018	0.00%	$ -
Total Assets	$ 81,363,034	100.00%			$ 81,363,034		$ 3,739,389
Working Capital	$ 10,858,580				$ 1,357,323	8.50%	$ 115,372
						Total Return	$ 3,854,761
							4.66%

2024

Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Rate Base
System Acquired Assets							
Debt Portion	$ 2,975,296	3.42%	4.98%	40.00%	$ 23,913,322	4.79%	$ 1,145,448
Equity Portion	$ 56,808,010	65.35%	95.02%	60.00%	$ 35,869,983	8.50%	$ 3,048,949
Total System Acquired	$ 59,783,306	68.77%	100.00%	100.00%	$ 59,783,306		$ 4,194,397
Contributed Assets	$ 27,142,744	31.23%			$ 27,142,744	0.00%	$ -
Total Assets	$ 86,926,050	100.00%			$ 86,926,050		$ 4,194,397
Working Capital	$ 11,184,338				$ 1,398,042	8.50%	$ 118,834
						Total Return	$ 4,313,230
							4.88%

2025

Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Rate Base
System Acquired Assets							
Debt Portion	$ 7,429,099	7.56%	12.27%	40.00%	$ 24,222,145	4.79%	$ 1,160,241
Equity Portion	$ 53,126,264	54.03%	87.73%	60.00%	$ 36,333,218	8.50%	$ 3,088,324
Total System Acquired	$ 60,555,363	61.59%	100.00%	100.00%	$ 60,555,363		$ 4,248,564
Contributed Assets	$ 37,763,602	38.41%			$ 37,763,602	0.00%	$ -
Total Assets	$ 98,318,966	100.00%			$ 98,318,966		$ 4,248,564
Working Capital	$ 11,519,868				$ 1,439,983	8.50%	$ 122,399
						Total Return	$ 4,370,963
							4.38%

2026

Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Rate Base
System Acquired Assets							
Debt Portion	$ 7,208,170	7.01%	10.88%	40.00%	$ 26,510,094	4.79%	$ 1,269,834
Equity Portion	$ 59,067,065	57.42%	89.12%	60.00%	$ 39,765,141	8.50%	$ 3,380,037
Total System Acquired	$ 66,275,235	64.42%	100.00%	100.00%	$ 66,275,235		$ 4,649,870
Contributed Assets	$ 36,601,973	35.58%			$ 36,601,973	0.00%	$ -
Total Assets	$ 102,877,207	100.00%			$ 102,877,207		$ 4,649,870
Working Capital	$ 11,865,464				$ 1,483,183	8.50%	$ 126,071
						Total Return	$ 4,775,941
							4.58%

2027

Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Rate Base
System Acquired Assets							
Debt Portion	$ 11,864,888	11.01%	16.40%	40.00%	$ 28,942,614	4.79%	$ 1,386,351
Equity Portion	$ 60,491,646	56.11%	83.60%	60.00%	$ 43,413,920	8.50%	$ 3,690,183
Total System Acquired	$ 72,356,534	67.11%	100.00%	100.00%	$ 72,356,534		$ 5,076,534
Contributed Assets	$ 35,455,374	32.89%			$ 35,455,374	0.00%	$ -
Total Assets	$ 107,811,908	100.00%			$ 107,811,908		$ 5,076,534
Working Capital	$ 12,221,428				$ 1,527,678	8.50%	$ 129,853
						Total Return	$ 5,206,387
							4.76%

2028

Description	Actual Capital In Service	% Actual Capital Structure	% Actual System Acquired Asset Structure	Deemed % System Acquired Asset Structure	Deemed Rate Base	Rate of Return	Return on Rate Base
System Acquired Assets							
Debt Portion	$ 12,448,404	10.85%	15.47%	40.00%	$ 32,183,441	4.79%	$ 1,541,587
Equity Portion	$ 68,010,197	59.26%	84.53%	60.00%	$ 48,275,161	8.50%	$ 4,103,389
Total System Acquired	$ 80,458,602	70.11%	100.00%	100.00%	$ 80,458,602		$ 5,644,975
Contributed Assets	$ 34,308,776	29.89%			$ 34,308,776	0.00%	$ -
Total Assets	$ 114,767,378	100.00%			$ 114,767,378		$ 5,644,975
Working Capital	$ 12,588,071				$ 1,573,509	8.50%	$ 133,748
						Total Return	$ 5,778,724
							4.97%

2029							
Description	**Actual Capital In Service**	**% Actual Capital Structure**	**% Actual System Acquired Asset Structure**	**Deemed % System Acquired Asset Structure**	**Deemed Rate Base**	**Rate of Return**	**Return on Rate Base**
System Acquired Assets							
Debt Portion	$ 15,373,549	12.89%	17.87%	40.00%	$ 34,421,177	4.79%	$ 1,648,774
Equity Portion	$ 70,679,394	59.28%	82.13%	60.00%	$ 51,631,766	8.50%	$ 4,388,700
Total System Acquired	$ 86,052,943	72.18%	100.00%	100.00%	$ 86,052,943		$ 6,037,474
Contributed Assets	$ 33,171,956	27.82%			$ 33,171,956	0.00%	$ -
Total Assets	$ 119,224,899	100.00%			$ 119,224,899		$ 6,037,474
Working Capital	$ 12,965,713				$ 1,620,714	8.50%	$ 137,761
						Total Return	$ 6,175,235
							5.11%

2030							
Description	**Actual Capital In Service**	**% Actual Capital Structure**	**% Actual System Acquired Asset Structure**	**Deemed % System Acquired Asset Structure**	**Deemed Rate Base**	**Rate of Return**	**Return on Rate Base**
System Acquired Assets							
Debt Portion	$ 15,612,941	12.80%	17.36%	40.00%	$ 35,964,906	4.79%	$ 1,722,719
Equity Portion	$ 74,299,325	60.92%	82.64%	60.00%	$ 53,947,359	8.50%	$ 4,585,526
Total System Acquired	$ 89,912,266	73.72%	100.00%	100.00%	$ 89,912,266		$ 6,308,245
Contributed Assets	$ 32,044,916	26.28%			$ 32,044,916	0.00%	$ -
Total Assets	$ 121,957,181	100.00%			$ 121,957,181		$ 6,308,245
Working Capital	$ 13,354,684				$ 1,669,336	8.50%	$ 141,894
						Total Return	$ 6,450,138
							5.22%

2031							
Description	**Actual Capital In Service**	**% Actual Capital Structure**	**% Actual System Acquired Asset Structure**	**Deemed % System Acquired Asset Structure**	**Deemed Rate Base**	**Rate of Return**	**Return on Rate Base**
System Acquired Assets							
Debt Portion	$ 15,118,114	12.07%	16.03%	40.00%	$ 37,732,729	4.79%	$ 1,807,398
Equity Portion	$ 79,213,709	63.24%	83.97%	60.00%	$ 56,599,094	8.50%	$ 4,810,923
Total System Acquired	$ 94,331,823	75.32%	100.00%	100.00%	$ 94,331,823		$ 6,618,321
Contributed Assets	$ 30,917,886	24.68%			$ 30,917,886	0.00%	$ -
Total Assets	$ 125,249,709	100.00%			$ 125,249,709		$ 6,618,321
Working Capital	$ 13,755,325				$ 1,719,416	8.50%	$ 146,150
						Total Return	$ 6,764,471
							5.33%

2032							
Description	**Actual Capital In Service**	**% Actual Capital Structure**	**% Actual System Acquired Asset Structure**	**Deemed % System Acquired Asset Structure**	**Deemed Rate Base**	**Rate of Return**	**Return on Rate Base**
System Acquired Assets							
Debt Portion	$ 14,602,446	11.35%	14.77%	40.00%	$ 39,539,856	4.79%	$ 1,893,959
Equity Portion	$ 84,247,193	65.49%	85.23%	60.00%	$ 59,309,783	8.50%	$ 5,041,332
Total System Acquired	$ 98,849,639	76.84%	100.00%	100.00%	$ 98,849,639		$ 6,935,291
Contributed Assets	$ 29,790,869	23.16%			$ 29,790,869	0.00%	$ -
Total Assets	$ 128,640,508	100.00%			$ 128,640,508		$ 6,935,291
Working Capital	$ 14,167,984				$ 1,770,998	8.50%	$ 150,535
						Total Return	$ 7,085,826
							5.43%