City of Grand Island

Tuesday, December 10, 2019
Study Session Agenda

City Council:

Jason Conley
Chuck Haase
Julie Hehnke
Jeremy Jones
Vaughn Minton
Mitchell Nickerson
Mike Paulick
Clay Schutz
Justin Scott
Mark Stelk

Mayor:

Roger G. Steele

City Administrator:

Jerry Janulewicz

City Clerk:

RaNae Edwards

7:00 PM
Council Chambers - City Hall
100 East 1st Street, Grand Island, NE 68801

Call to Order

This is an open meeting of the Grand Island City Council. The City of Grand Island abides by the Open Meetings Act in conducting business. A copy of the Open Meetings Act is displayed in the back of this room as required by state law.

The City Council may vote to go into Closed Session on any agenda item as allowed by state law.

Invocation

Pledge of Allegiance

Roll Call

A - SUBMITTAL OF REQUESTS FOR FUTURE ITEMS

Individuals who have appropriate items for City Council consideration should complete the Request for Future Agenda Items form located at the Information Booth. If the issue can be handled administratively without Council action, notification will be provided. If the item is scheduled for a meeting or study session, notification of the date will be given.

B - RESERVE TIME TO SPEAK ON AGENDA ITEMS

This is an opportunity for individuals wishing to provide input on any of tonight's agenda items to reserve time to speak. Please come forward, state your name and address, and the Agenda topic on which you will be speaking.

City of Grand Island

Tuesday, December 10, 2019

Study Session

Item C1

Wastewater Rate Study and Construction Update

Staff Contact: John Collins, P.E. - Public Works Director

Council Agenda Memo

From: Jon Menough PE, Wastewater Treatment Plant Engineer

Meeting: December 10, 2019

Subject: Wastewater Rate Study and Construction Update

Presenter(s): John Collins PE, Public Works Director
Patrick Brown, Finance Director
Jon Menough PE, Wastewater Treatment Plant Engineer

Background

The Wastewater Division of the Public Works Department is an enterprise fund with no property tax dollars used to support the division. The entire budget comes from wastewater customers through sanitary sewer bills. The sewer bill for a residential customer is based on usage and standard strength for residential sewage. The sewer bill for commercial and industrial customers is based on usage plus an extra strength component. A cost of service based rate study looks at all costs for the operation and allocates those costs of service to the customer classes according to the costs of providing service. Rates are then designed to equitably cover those costs.

The current sanitary sewer rates are based on Resolution No. 2019-209, which was approved by City Council on July 9, 2019.

An updated rate study was undertaken to ensure sufficient funding for planned projects, which also indicated increased rates are needed now to meet our bond covenant.

Discussion

The revised Wastewater Rate Study reflects anticipated cost of the planned construction program and operations, which are detailed in tonight's presentation.

With regards to rates, the Public Works Department's primary goal is to minimize the monthly rate paid by each entity. Staffing levels, training, scheduling of projects and various other activities are done with this goal in mind.

At the end of 2018 a capacity issue with the South Interceptor was identified. At the February 16, 2019 Council Retreat we estimated costs to be between $60 million and $120 million, and an urgency of a few years (3 to 5). Recognizing the impact such a high cost would have on the community we delayed all projects and maintenance activities to save money for the project and for any emergency repairs required during this time. The major delays included:

- North Collection System Rehabilitation (Airport) $7.3 million. Conceptual design was complete; final design was put on hold.
- Building 2 Renovation (Lab) $4.5 million. Final design was complete; construction was put on hold.
- Second WWTP Entrance $1.5 million. This was tied to a maintenance project to address dewatering, drainage and paving internal to the WWTP. When restarted the paving and drainage will be combined as they must work together and are dependent on each other.
- WWTP Entrance Relocation $1 million. When resumed this will be performed in 2 parts: 1) moving the fence and security station; and 2) converting Museum Drive into a driveway.

The preceding projects contributed to the higher than usual Cash in Bank that was discussed at the November 12th Council meeting. The "restricted" cash was in fact funds but aside for future projects (South Interceptor and other projects). The accounting term of "restricted" was improperly used in this case.

The Wastewater Rehabilitation Project had a rate study task remaining which was amended to include a flow study to optimize the timeline for the South Interceptor. The resulting project schedule was used in the rate study. At the Council Retreat it was presented that the South Interceptor could be handled in 3 phases, but had not established the timeline. Since the following has been laid out:

- Phase 1A (the portion connecting to the WWTP) was urgent and with a cost of $10.5 million construction should start in FY 2023.
- Phase 1B (From Fonner Park Road at Stuhr Road where Phase 1A ends to Stolley Park Road at Bellwood Drive) would be constructed next with an estimated cost of $12 million.
- Phase 2 (the remaining portion out to Lift Station 28 (Highway 281 and Husker Highway) with an estimated cost of $50-$60 million could be delayed until approximately 2030, removing its impact from the rate study.

Note that the flow analysis is continuing and may impact this schedule.

Prior to the end of 2018 it was anticipated the South Interceptor capacity project would be 2030 or later. To minimize rate increases a restricted account was implemented to pay for this and for the collection system issues discovered during system inspections.

Conclusion

This item is presented to the City Council in a Study Session to allow for any questions to be answered and to create a greater understanding of the issue at hand.

Wastewater CIP

Capital Projects		TOTAL
Physical Facilities		
	WWTP Entrance Relocation/Museum Drive Paving	$1,000,000
	Second WWTP Entrance/Internal Improvements	$1,000,000
	Concrete Pad Upgrade	$50,000
	Facility Security	$100,000
	Fill in Building 5 (Old Headworks)	$180,000
	Building 2 Renovation (Lab)	$4,575,000
	Collection System Office and Equipment Warm Storage	$1,000,000
Plant Operations		
	Process modification from MLE to A2O (BNR)	
	Micro C Pumping Modifications	$237,500
	Internal Recycle Pumps & Piping	$2,250,000
	Aeration Basin Influent flow improvements	$3,750,000
	Tank Baffle in Aeration Basin	$600,000
	Online Monitoring	$550,000
	Blower Modifications	$1,070,000
	RAS Fermenter	$4,412,500
	Anaerobic Digestion	
	Anaerobic Digestion Study	$300,000
	Anaerobic Digestion Pilot Project	$300,000
	Silo Anaerobic Digester & Digester Building	$14,500,000
	Biomethane Facility	$13,500,000
	Sludge Drying Building (Solar)	$9,500,000
	Chloride Reduction	$8,000,000
Administration and Planning		
	Revise Flow & Rate Study	$810,000
Collection System Rehabilitation		
	Downtown System Rehabilitation (2019-S-1)	$750,000
	South Interceptor West Dewatering Project	$4,000,000
	South Interceptor East Dewatering Project	$2,000,000
	Riverside Area Rehabilitation	$1,450,000
	Senior High School Area	$1,000,000
	Pier Park Area	$1,680,000
	North Collection System Rehabilitation (Airport)	$7,300,000
Lift Stations and System Upgrades		
	Lift Station 6 Abandonment/6th & Market Inverted Siphon	$4,800,000
	Lift Station 11 Upgrade	$1,400,000
	South Interceptor - Phase 1A (Bismark/Fonner Park)	$10,500,000
	South Interceptor - Phase 1B (Bismark/Fonner Park)	

	South Interceptor - Phase 2 (To Lift Station 20)	$50,000,000
	Upgrade LS 17 - Rehab	$3,600,000
Storm Sewer Upgrades		
	Riverside Area - Sump Pump Pilot Program	$600,000
Assessment or Tap Districts		
	Sanitary Sewer District (Willow Street)	$218,000
	Sanitary Sewer District (Hanover Subd)	$1,350,000
	Sanitary Sewer District (E 15th St)	$500,000
	Sanitary Sewer District (E Seedling Mile Road)	$1,000,000
	Sanitary Sewer District (Claude Road)	$450,000
	Sanitary Sewer District (Adams & Phoenix)	$150,000
	Sanitary Sewer District (E. Stolley Park Road)	$255,000
	Sanitary Sewer District (800 Lincoln, 1218 & 1204)	$150,000
	Sanitary Sewer District (Schroeder Sub/Husker Hwy Tap)	$1,200,000
	Sanitary Sewer District (Pioneer Blvd)	$30,000
	Sanitary Sewer District (Scheel Road)	$80,000
	Sanitary Sewer District (3630 S. Locust)	$225,000
	Sanitary Sewer District (Wetzel)	$180,000
	Sanitary Sewer District (Villa Mar Dee - S. Side)	$50,000
	Sanitary Sewer District (Doniphan)	$4,000,000
	Sanitary Sewer District (East Lakes)	$2,000,000
	Sanitary Sewer District (North Rd Capital - Hwy 2)	$1,000,000
Totals		**$169,603,000**

Highlight indicates project completion within 5 years

FINAL

REPORT ON REVENUE REQUIREMENTS, COST OF SERVICE AND RATES FOR WASTEWATER SERVICE

BLACK & VEATCH PROJECT NO. 199568

PREPARED FOR

City of Grand Island, NE

28 OCTOBER 2019

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Table of Contents

List of Tables

Introduction

The City of Grand Island, through the Wastewater Division, provides retail wastewater collection and treatment services to approximately 16,700 accounts. The Division's responsibilities include planning, constructing, operating, and maintaining facilities for collection, transportation, treatment, and disposal of the sanitary and industrial wastewater generated within its service area.

The Division, in recognition of the importance of financial planning for the increasing costs to replace, renew, expand, improve, and operate the wastewater utility, authorized this comprehensive study of revenue requirements, costs of service, and rates for wastewater service.

PURPOSE

The purpose of this report is: (1) to examine the future revenues of the wastewater utility under existing levels of charge, as well as the Division's total operating expense and capital financing requirements, and to examine the adequacy of projected revenue to meet the total requirements through the fiscal year (FY) ending September 30, 2024; (2) to allocate the total revenue requirements, or costs of service, for a representative test year to the various customer classes in accordance with the respective service requirements that each class places on the system; and (3) to develop a suitable schedule of wastewater rates that will produce revenues adequate to meet the financial needs of the utility on a basis that recognizes customer costs of service and local policy considerations. This report reflects updated projections since the September 2016 Report on Revenue Requirements, Cost of Service and Rates for Wastewater Service (2016 Report) was prepared.

SCOPE

This report presents the results of a comprehensive study of projected revenue requirements, cost of service allocations, and proposed rates for wastewater service. Revenues and revenue requirements are projected for six fiscal years through 2024, recognizing anticipated growth in number of customers and projected surcharge loadings for the City's industrial customers. The study of revenue requirements recognizes projected operation and maintenance expense, principal and interest payments on existing and proposed revenue bond issues, expenditures for routine capital additions and major capital improvements met from annual revenues, and recommended reserve fund requirements. Requirements on existing revenue bond indentures are also recognized.

Allocated costs of wastewater service are developed for each class of customer and type of service based on considerations of utility revenue needs and projected customer service requirements. Wastewater rate adjustments are designed for customers in accordance with allocated costs of service and local policy and practical considerations.

There are two manuals that provide water and wastewater industry accepted approaches for developing cost allocations that provide the basis for fair and equitable utility rates. For the water industry, the manual is the American Water Works Association (AWWA) '*Manual M-1: Principles of Water Rates, Fees, and Charges*' and for the wastewater industry it is the Water Environment Federation (WEF) '*Financing and Charges for Wastewater Systems*'. The analyses summarized in this report reflect Black & Veatch's application of these principles.

In conducting our analyses and in forming an opinion of the projection of future operations summarized in this report, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized by Black & Veatch in performing the analysis follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this report and are reasonable and appropriate for the purpose for which they are used. While Black & Veatch believes the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that may actually occur.

Summary of Findings and Recommendations

REVENUE UNDER EXISTING RATES

1. The Wastewater Division currently provides wastewater collection and treatment services to approximately 16,700 accounts. The number of bills issued is projected to increase from about 200,819 in FY 2019 to about 208,340 by FY 2024. This reflects an average growth rate of about 0.74 percent per year from FY 2019 through FY 2024.

2. Billable sewer volumes are projected to decrease from about 3,576,700 hundred cubic feet (Ccf) in FY 2019 to 3,516,500 Ccf by FY 2024. This is due to a projected decrease in industrial Direct Discharge flow beginning in the fall of 2019.

3. The Division's current wastewater rates became effective September 1, 2016. These retail rates include a monthly service charge, a uniform volume charge, and extra strength surcharges for biochemical oxygen demand (BOD) in excess of 250 milligrams per liter (mg/l), suspended solids (SS) in excess of 250 mg/l, oil and grease in excess of 100 mg/l, total kjeldahl nitrogen (TKN) in excess of 30 mg/l, and nitrates in excess of 25 mg/l. Industrial customers who certify that their sewage contributions are less than normal strength wastewater pay the Industrial Four-Part Charge which consists of a reduced volume charge and extra strength surcharges for all wastewater strength discharged. All industrial customers are also charged applicable sampling and monitoring fees.

4. Revenue is derived principally from charges for wastewater service, with some revenue also obtained from sewer assessments, sewer tap fees, miscellaneous sampling and permit revenue, and other miscellaneous revenues. Revenue from wastewater service, under existing rates, is projected to increase from about $11,993,500 in FY 2019 to about $12,046,500 in FY 2024. Miscellaneous revenue is estimated to average approximately $540,000 per year.

REVENUE REQUIREMENTS

5. Costs of service to be recovered from wastewater service charges include system operation and maintenance expense, debt service on existing and proposed bonds, expenditures for routine capital, and major capital improvements met from annual revenues.

6. Operation and maintenance expense includes the annual salaries and wages of personnel, costs for materials and supplies, fuel and electrical power costs, chemicals, and other costs such as employee benefits, insurance, and contract services. Future wastewater utility operation and maintenance expenses are projected to increase from about $5,984,196 in FY 2019 to about $8,361,600 in FY 2024.

7. Major capital improvement expenditures are estimated to total $24,591,100. Proposed revenue bonds totaling $8,000,000, together with existing cash reserves on hand will provide for financing a major portion of this major capital improvement program, with the balance to be funded from loan proceeds from the Clean Water State Revolving Fund (CWSRF).

8. Principal and interest costs on outstanding and proposed revenue bonds are projected to increase from $4,428,700 in FY 2019 to $5,293,800 in FY 2024.

9. The City's fiscal policy requires a cash reserve to provide for unforeseen fluctuations in both revenue and expenses. While a specific benchmark is not currently identified in the policy, the internal benchmark is between 90 and 120 days of operation and maintenance expense. At September 30, 2018, the wastewater utility had a balance in the operating fund of $12,934,800, or approximately 829 days. The wastewater utility must generate annual revenue to meet the existing bond covenant requirements. The revenue bond ordinance requires that net revenue shall be equal to or greater than 110 percent of the current year's debt service requirements on all outstanding bonds. While the utility has a strong cash balance, it is projected that revenue under existing rates will not exceed 110 percent of the annual debt service requirements starting in FY 2021 and therefore, revenue increases are required.

   In an effort to propose the minimum revenue increases necessary, it is recommended that the City use portions of the funds on hand to finance both capital program requirements and estimated future expenses during the study period, while keeping the balance in the operating fund to at least 120 days of projected operations and maintenance expense. Based on the cash flow presented in Table 10 of this report, it is anticipated that the projected capital program requirements and estimates of future operating expenses of the wastewater utility during the FY 2019 – FY 2024 study period examined can be financed with annual revenue increases of 3.5 percent effective January 1, 2020, 3.5 percent effective October 1, 2020, 3.0 percent effective October 1, 2021 and 2022, and 2.5 percent effective October 1, 2023. These proposed revenue increases will also allow the utility to meet the annual rate covenant and additional bonds test in each year of the study period.

COST OF SERVICE ALLOCATIONS

10. The annual cost of service for the wastewater system to be met from wastewater service revenue during the projected test year FY 2020 test year is as follows:

TOTAL REVENUE REQUIREMENTS:	
Operation and Maintenance Expense	$7,409,600
Debt Service Requirements	4,632,300
Capital Outlay	537,200
Cash Financing of Capital Projects	960,000
Total	**$13,539,100**
REVENUE REQUIREMENTS MET FROM OTHER SOURCES:	
Other Revenue	$541,500
Interest Income	182,300
Funds Available	734,700
Full Year Rate Adjustment	(172,700)
Total	**$1,285,800**
Net Costs to be Met from Charges	**$12,253,300**

11. As a basis for design of a schedule of wastewater rates, costs of service are allocated to classes of customers in accordance with respective service requirements. The resulting costs of service allocated to customer classes are summarized in Table 18 of this report.

PROPOSED RATE ADJUSTMENTS

12. A schedule of proposed rates for wastewater service recognizing both cost of service and local policy considerations described in the report is shown in Table A. These rates are designed to provide for the recovery of total revenue requirements previously projected herein for FY 2020 through FY 2024. The proposed rate structure is similar to the existing structure, with the exception of the elimination of the rates for TKN and Nitrates and the addition of a rate for Total Nitrogen (TN). A rate for TN was selected to simplify the proposed rate structure while still accounting for the costs of treatment previously associated with TKN and Nitrates.

13. Projected test year revenues under existing rates and proposed rates are compared with allocated costs of service in Table 20 of the report.

14. Typical wastewater bills for wastewater service under existing rates and rates proposed are shown in Table 21of the report.

15. It is recommended that the City of Grand Island give consideration to adopting the schedule of proposed wastewater rates shown in Table A of this report as a means of meeting the projected wastewater system revenue requirements in fiscal years FY 2020 through FY 2024.

Table A - Proposed Rates (Effective January 1, 2020 – October 1, 2023)

Rate Component	Proposed Rates (a)				
	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Sewer Service Charge - $/Month					
All Customers	8.24	8.24	8.24	8.24	8.24
Volume Charge - $/Ccf					
Customers Using City's Collection System - Inside City	3.69	3.88	4.03	4.19	4.33
Customers Using City's Collection System - Outside City	4.43	4.66	4.84	5.03	5.20
Discharge Directly into City's Treatment Plant	1.19	1.20	1.21	1.22	1.23
Bulk Volume Rate	46.38	46.38	46.38	46.38	46.38
Excess Strength Surcharge - $/lb					
BOD over 250 mg/l	0.3248	0.3248	0.3248	0.3248	0.3248
Suspended Solids over 250 mg/l	0.2177	0.2177	0.2177	0.2177	0.2177
Oil & Grease over 100 mg/l	0.1908	0.1975	0.2034	0.2095	0.2147
Total Nitrogen over 25 mg/l	0.8900	0.8953	0.9222	0.9499	0.9736
Industrial Four-Part Charge					
Low Strength Customers Volume Charge - $/Ccf	2.72	2.91	3.06	3.21	3.35
BOD - $/lb	0.3248	0.3248	0.3248	0.3248	0.3248
Suspended Solids - $/lb	0.2177	0.2177	0.2177	0.2177	0.2177
Oil & Grease - $/lb	0.1908	0.1975	0.2034	0.2095	0.2147

(a) Effective October 1 of each fiscal year, expect for FY 2020 in which the rates are proposed to be effective January 1, 2020.

Ccf - Hundred Cubic Feet
lb - Pound
BOD - Biochemical Oxygen Demand
mg/l = Milligrams per Liter

Revenue

The principal source of revenue for the wastewater system to meet annual costs of service is from charges for service to wastewater customers. Additional revenue is derived from sewer assessments, sewer tap fees, health insurance co-pays, miscellaneous surcharge revenue, and other miscellaneous sources.

CUSTOMER GROWTH

Table 1 presents a summary of the historical and projected number of bills issued by the utility for the period FY 2016 through FY 2018. The projected number of bills are also shown on the same basis for the period FY 2019 through FY 2024. Data are shown individually for each of the customer classes.

Table 1 - Historical and Projected Number of Bills

Line No.	Description	Historical			Projected					
		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Residential	168,252	170,484	171,696	172,917	174,146	175,384	176,631	177,886	179,151
2	Government	468	504	504	504	504	504	504	504	504
3	Commercial	25,332	25,788	26,040	26,294	26,551	26,811	27,073	27,337	27,605
4	Industrial	960	1,092	960	960	960	960	960	960	960
	Manually Billed Industrial									
5	Direct Discharge	0	12	12	12	12	12	12	12	12
6	All Other (a)	0	120	132	132	120	108	108	108	108
7	Total	195,012	198,000	199,344	200,819	202,293	203,779	205,288	206,808	208,340
	% Change	**2.54%**	**1.53%**	**0.68%**	**0.74%**	**0.73%**	**0.73%**	**0.74%**	**0.74%**	**0.74%**

(a) Reflects anticipated loss of two industrial customers in FY 2020 and FY 2021.

As indicated by Table 1, the wastewater utility has experienced an increase in the number of bills since 2016 of approximately 1.6 percent per year. The number of bills is projected to increase approximately 0.7 percent per year, increasing from 200,819 in FY 2019 to 208,340 in FY 2024.

SEWER VOLUMES

A summary of historical and projected wastewater billable flow is presented in Table 2. Projected quantities are based on recognition of historical usage quantities and trends. Also considered are projections of the number of customers and estimated sewer flow per customer, the latter based on analyses of historical and current rates of use per customer class. Sales volumes for this period are projected to increase at an average rate of about 0.4 percent annually beginning in FY 2019, primarily as a result of projected growth in the number of customers served. The indicated decreases in sales volume in FY 2020 and FY 2021 are related to anticipated decreases in industrial Direct Discharge flow beginning in FY 2020 and the anticipated loss of two industrial customers in FY 2020 and FY 2021.

Table 2 - Historical and Projected Billable Sewer Flow

Line No.	Description	Historical			Projected					
		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
		Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf
1	Residential	1,107,687	1,109,071	1,107,763	1,115,600	1,123,600	1,131,600	1,139,600	1,147,700	1,155,900
2	Government	7,703	7,914	6,222	6,200	6,200	6,200	6,200	6,200	6,200
3	Commercial	669,289	690,172	697,469	704,300	711,200	718,100	725,100	732,200	739,400
4	Industrial	192,300	205,079	181,385	181,400	181,400	181,400	181,400	181,400	181,400
	Manually Billed Industrial									
5	Direct Discharge (b)	0	1,337,561	1,309,475	1,309,500	1,211,300	1,178,500	1,178,500	1,178,500	1,178,500
6	All Other (c)	0	210,555	259,692	259,700	257,800	255,100	255,100	255,100	255,100
7	Total	1,976,979	3,560,352	3,562,006	3,576,700	3,491,500	3,470,900	3,485,900	3,501,100	3,516,500
	% Change		**80.09%**	**0.05%**	**0.41%**	**-2.38%**	**-0.59%**	**0.43%**	**0.44%**	**0.44%**

(a) Excludes sewer flow included in the minimum charge.
(b) Reflects anticipated decrease in flow starting in FY 2020.
(c) Reflects anticipated loss of two industrial customers in FY 2020 and FY 2021.
Ccf - Hundred Cubic Feet

WATER REVENUE UNDER EXISTING RATES

The existing schedule for charges for wastewater service is presented in Table 3. The rates, which have been in effect since September 1, 2016, consist of a monthly service charge, uniform volume charges, and extra strength surcharges for biochemical oxygen demand (BOD) in excess of 250 milligrams per liter (mg/l), suspended solids (SS) in excess of 250 mg/l, oil and grease in excess of 100 mg/l, TKN (Total Kjeldahl Nitrogen) in excess of 30 mg/l, and nitrates in excess of 25 mg/l. Industrial customers who certify that their sewage contributions are less than normal strength wastewater pay the Industrial Four-Part Charge which consists of a reduced volume charge and extra strength surcharges for all wastewater strength discharged. All industrial customers are also charged applicable sampling and monitoring fees.

Table 3 - Existing Sewer Rates Effective September 1, 2016

Rate Component	Existing Rates
Sewer Service Charge - $/Month	
All Customers	8.24
Volume Charge - $/Ccf	
Customers Using City's Collection System - Inside City	3.52
Customers Using City's Collection System - Outside City	4.22
Discharge Directly into City's Treatment Plant	1.18
Bulk Volume Rate	46.38
Excess Strength Surcharge - $/lb	
BOD over 250 mg/l	0.3248
Suspended Solids over 250 mg/l	0.2177
Oil & Grease over 100 mg/l	0.1519
TKN over 30 mg/l	0.0395
Nitrates over 25 mg/l	1.0299
Industrial Four-Part Charge	
Low Strength Customers Volume Charge - $/Ccf	2.47
BOD - $/lb	0.3248
Suspended Solids - $/lb	0.2177
Oil & Grease - $/lb	0.1519

Ccf - Hundred Cubic Feet
lb - Pound
mg/l = Milligrams per Liter
BOD - Biochemical Oxygen Demand
TKN - Total Kjeldahl Nitrogen

A summary of historical and projected billed wastewater revenues is presented in Table 4 for the period FY 2016 through FY 2024. The historical sewer billings shown in this table are summarized from detailed data provided by the City. Estimates of future sewer service billings are based on projected sewer customers and wastewater quantities shown in Table 1 and Table 2, respectively, and unit rates of charge under existing rates.

Table 4 - Historical and Projected Billings Under Existing Rates

Line No.	Description	Historical			Projected					
		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
		$	$	$	$	$	$	$	$	$
1	Residential	4,996,400	5,291,000	5,379,900	5,351,900	5,389,900	5,428,200	5,466,800	5,505,700	5,544,800
2	Government	28,800	31,600	26,000	26,100	26,100	26,100	26,100	26,100	26,100
3	Commercial	2,397,700	2,634,400	2,680,700	2,695,700	2,722,100	2,748,700	2,775,600	2,802,700	2,830,100
4	Industrial	633,100	725,000	646,800	646,400	646,400	646,400	646,400	646,400	646,400
	Manually Billed Industrial									
5	Direct Discharge (a)	1,663,800	1,590,900	1,545,200	1,545,200	1,429,300	1,390,700	1,390,700	1,390,700	1,390,700
6	All Other (b)	729,900	847,300	981,900	982,100	894,900	885,100	885,100	885,100	885,100
7	Surcharge (b)	741,000	701,600	875,100	746,100	730,200	723,300	723,300	723,300	723,300
8	Total	11,190,700	11,821,800	12,135,600	11,993,500	11,838,900	11,848,500	11,914,000	11,980,000	12,046,500
	% Change		**5.64%**	**2.65%**	**-1.17%**	**-1.29%**	**0.08%**	**0.55%**	**0.55%**	**0.56%**

(b) Reflects anticipated decrease in flow starting in FY 2020.
(a) Reflects anticipated loss of two industrial customers in FY 2020 and FY 2021.

OTHER REVENUE

Historical and projected other wastewater utility income is presented in Table 5. Projected miscellaneous revenue is based on the FY 2020 budgeted amounts and is projected to remain stable at approximately $540,000 per year.

Table 5 - Historical and Projected Miscellaneous Revenue

Line No.	Description	Historical			Forecast	Budget	Projected			
		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
		$	$	$	$	$	$	$	$	$
1	Sewer Assessments (a)	94,789	153,626	152,781	44,500	45,000	45,000	45,000	45,000	45,000
2	Sewer Tap Fees	37,520	121,840	140,604	380,000	10,000	10,000	10,000	10,000	10,000
3	Other Intergovernment - SID #2	0	0	175,493	173,000	169,500	166,500	166,500	160,500	157,500
4	Sample Analysis	70,001	76,945	132,653	75,000	0	0	0	0	0
5	Excess Discharge Fee	43,000	128,000	374,000	300,000	200,000	200,000	200,000	200,000	200,000
6	Other Revenue (b)	2,700,664	241,251	241,414	150,700	117,000	117,000	117,000	117,000	117,000
7	Total	2,945,974	721,663	1,216,945	1,123,200	541,500	538,500	538,500	532,500	529,500
	% Change		**-75.50%**	**68.63%**	**-7.70%**	**-51.79%**	**-0.55%**	**0.00%**	**-1.11%**	**-0.56%**

(a) Includes Interest Income on Sewer Assessments.
(b) Includes TV Revenue, Donation & Contributions, Co-Pay Health Insurance, Other Revenue, Trade-in-Allowance, Sale of Fixed Assets, and Credit Card Rebate revenues.

Revenue Requirements

The revenue required to provide adequately for the continued operation of the wastewater utility must be sufficient to meet the cash requirements for system operation and satisfy existing debt service coverage requirements. Revenue requirements include: (1) system operation and maintenance expenses; (2) debt service on existing and proposed bonds; (3) expenditures for routine capital and major capital improvements met from annual revenues; and (4) recommended reserve fund requirements. Projections of the cash requirements to meet these system expenditures for the period through FY 2024 are developed in this section.

OPERATION AND MAINTENANCE EXPENSE

The elements of operation and maintenance expense for the wastewater utility include the annual expense associated with wastewater collection, pumping, treatment, solids handling, solids disposal, and administration.

Operation and maintenance expense includes the total annual salaries and wages of personnel, cost for materials and supplies, fuel and electrical power costs, and other costs such as employee benefits, insurance, and contract services. Annual operation and maintenance expense is met principally from annual operating revenue. A summary of historical and projected operation and maintenance expense for the period FY 2016 through FY 2024 is presented in Table 6.

Table 6 - Historical and Projected Operation and Maintenance Expense

Line No.	Description	Historical			Forecast	Budget	Projected			
		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
			$	$	$	$	$	$	$	$
	Wastewater Utility									
1	Personnel Services	547,689	516,527	409,732	463,529	470,255	482,000	494,100	506,500	519,200
2	Operating Expense	1,333,660	911,592	1,010,814	1,049,613	1,416,455	1,451,900	1,488,200	1,525,400	1,563,600
3	Natural Gas	41,625	708	0	0	0	0	0	0	0
4	Diesel Fuel	0	0	0	0	0	0	0	0	0
5	Subtotal	1,922,973	1,428,827	1,420,546	1,513,142	1,886,710	1,933,900	1,982,300	2,031,900	2,082,800
	Sanitary Sewer Collection System									
6	Personnel Services	626,433	656,408	638,584	731,919	730,957	749,200	767,900	787,100	806,800
7	Operating Expense	1,157,177	342,652	434,914	327,524	463,254	474,800	486,700	663,700	670,300
8	Utility Services	0	0	0	0	206	200	200	200	200
9	Diesel Fuel	13,651	14,407	13,758	14,500	23,690	24,300	24,900	25,500	26,100
10	Subtotal	1,797,261	1,013,467	1,087,256	1,073,943	1,218,107	1,248,500	1,279,700	1,476,500	1,503,400
	Wastewater Treatment Operations									
11	Personnel Services	817,353	694,756	603,951	691,074	894,243	916,700	939,600	963,100	987,200
12	Operating Expense	1,020,582	435,574	446,997	393,044	500,635	513,100	526,000	539,200	552,600
13	Utility Services	505,448	539,040	588,699	577,667	627,335	643,000	659,100	675,600	594,100
14	Diesel Fuel	12	14,383	16,519	21,020	30,900	31,700	32,500	33,300	34,100
15	Chemicals (Micro-C)	34,150	28,720	89,915	80,000	123,600	126,700	129,900	133,100	136,400
16	Subtotal	2,377,545	1,712,473	1,746,081	1,762,805	2,176,713	2,231,200	2,287,100	2,344,300	2,304,400
	Wastewater Treatment Maintenance									
17	Personnel Services	121,391	499,356	621,500	536,318	571,075	585,300	599,900	614,900	630,300
18	Operating Expense	289,793	427,622	517,170	363,323	970,665	916,500	528,200	541,400	555,000
19	Diesel Fuel	13,612	1,405	1,668	1,808	2,575	2,600	2,700	2,800	2,900
20	Chemicals	49,879	2,326	4,643	1,500	2,575	2,600	2,700	2,800	2,900
21	Subtotal	474,674	930,709	1,144,981	902,949	1,546,890	1,507,000	1,133,500	1,161,900	1,191,100
	Wastewater Environmental Resources									
22	Personnel Services	0	167,269	277,715	280,723	247,245	437,100	448,100	459,300	470,800
23	Operating Expense	0	101,777	132,638	164,700	333,935	340,100	346,300	352,600	359,100
24	Subtotal	0	269,046	410,353	445,423	581,180	777,200	794,400	811,900	829,900
	Sanitary Sewer Construction									
25	Operating Expense	74,415	206,685	535,275	0	0	0	0	0	0
26	Subtotal	74,415	206,685	535,275	0	0	0	0	0	0
27	Capital Outlay	16,145	536,887	73,208	285,934	537,210	221,500	39,000	40,000	450,000
28	Total O&M	6,663,014	6,098,094	6,417,700	5,984,196	7,946,810	7,919,300	7,516,000	7,866,500	8,361,600
	% Change		**-8.48%**	**5.24%**	**-6.75%**	**32.80%**	**-0.35%**	**-5.09%**	**4.66%**	**6.29%**

Operation and maintenance expense projections for FY 2019 and FY 2020 reflect the FY 2019 forecast and the adopted FY 2020 budget. Projections for the years FY 2021 through FY 2024 are based on budgeted FY 2020 expense amounts adjusted to recognize allowances for known cost increases, the estimated effects of inflation, and anticipated system growth. Future wastewater utility operation and maintenance expense is projected to increase from about $5,984,196 in FY 2019 to about $8,361,600 in FY 2024.

ROUTINE CAPITAL OUTLAY

Expenditures for routine capital outlay includes those costs that tend to be routinely incurred each year for normal replacements such as vehicles and equipment, and minor improvements or repairs. Since the costs of these improvements are a continuing expense to be met each year, the utility appropriately finances these expenditures from current wastewater revenues. Routine capital outlay is projected to average approximately $262,300 during the study period and is shown on Line 27 of Table 6.

MAJOR CAPITAL IMPROVEMENTS

A summary of the projected major capital improvement program for the period FY 2019 through FY 2024 is presented in Table 7 which is based on estimated improvement program scheduling and cost data supplied by utility staff. The six-year improvement program costs are estimated to total $30,005,500 in today's costs or $32,464,900 when adjusted to include an allowance for inflation.

Table 7 - Projected Capital Improvement Program

Line No.	Description	Projected						
		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
		$	$	$	$	$	$	$
1	Sewer Mains	987,400	1,404,500	6,181,500	5,385,100	6,072,400	6,193,900	26,224,800
2	Lift Stations	1,428,000	0	0	0	0	0	1,428,000
	Wastewater Treatment							
3	Raw Water Pumping	0	0	0	0	0	0	0
4	Preliminary Treatment	0	0	0	2,164,900	0	0	2,164,900
5	Primary Sedimentation/Clarifiers	0	0	0	0	0	0	0
6	Aeration Basins	0	0	0	0	0	0	0
7	Aeration Equipment	0	0	0	0	0	0	0
8	Corrosion/Odor Control Facilities	0	0	0	0	0	0	0
9	Final Clarifiers	306,000	0	955,100	0	0	267,500	1,528,600
10	Disinfection	0	0	0	0	165,600	0	165,600
11	Sludge Handling	0	0	0	0	0	0	0
12	General Plant	326,400	322,500	0	0	0	304,100	953,000
13	Lab	0	0	0	0	0	0	0
14	Vehicles	0	0	0	0	0	0	0
15	Administration & General	0	0	0	0	0	0	0
16	Total	3,047,800	1,727,000	7,136,600	7,550,000	6,238,000	6,765,500	32,464,900

Major capital improvements related to Sewer Mains, shown on Line 1, make up almost 81 percent of the proposed CIP and include rehabilitation and replacement projects within the existing collection system to maintain reliable conveyance of wastewater to the treatment plant. The two largest projects are the North Collection System Rehabilitation project with an estimated cost of $7,300,000 and the South Interceptor Phase 1A with an estimated cost of $10,500,000 Projects included in FY 2019 include rehabilitation on mains in the downtown area. Future projects include rehabilitation on mains in the Riverside area and phase 1A of the South Interceptor project.

Lift Station projects shown on Line 2 reflects improvements to Lift Station 11 in FY 2019.

The costs shown for Preliminary Treatment on Line 4 of Table 7 reflect the Anerobic Digestion Pilot Study in FY 2022. Improvements associated with Final Clarifiers on Line 9 consist of the costs associated with the plant operations process modification from MLE to A20. Disinfection costs shown on Line 10 reflect improvements to the UV system. General Plant costs associated with miscellaneous repairs, equipment replacement, and studies are shown on Line 12.

Major capital improvements are typically financed through long term debt obligations and available reserves as such improvements are normally nonrecurring on an annual basis and debt financing permits the cost burden to be shared by both present and future users of the facilities. However, due the amount of existing cash reserves on hand, it is anticipated that the majority of this this major capital improvement program will be cash financed.

DEBT SERVICE REQUIREMENTS

Existing debt service requirements, shown in Table 8, consist of principal and interest on the Series 2013 Revenue Bonds. In addition, the City issued loans through the CWSRF program in 2014, 2015 and 2017. The City issued a new loan through the CWSRF program in FY 2019 to finance the upgrade to Lift Station 11. The FY 2019 CWSRF loan has a 20-year term and an annual interest rate of 2.50 percent which includes a 1 percent administrative fee.

As previously indicated, the issuance of future revenue bonds is anticipated to help finance major capital improvement projects. The proposed revenue bond financing schedule, described more fully in a subsequent section, provides for the issuance of $8,000,000 in FY 2021 to fund the North Collection System Rehabilitation project. The total annual debt service requirement is projected to increase from $4,428,700 in FY 2019 to $5,293,800 in FY 2024.

Table 8 - Existing and Proposed Debt Service

Line No.	Description	Original Loan Amount	Annual Debt Service Requirements					
			FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
		$	$	$	$	$	$	$
	Revenue Bonds							
1	Series 2013 Revenue Bonds	32,605,000	2,517,000	2,513,000	2,513,500	2,412,100	2,518,300	2,518,100
2	Description		0	0	0	0	0	0
3	Description		0	0	0	0	0	0
4	Description		0	0	0	0	0	0
5	Total Existing Debt	32,605,000	2,517,000	2,513,000	2,513,500	2,412,100	2,518,300	2,518,100
	Proposed Revenue Bonds							
6	FY 2019	0	0	0	0	0	0	0
7	FY 2020	0		0	0	0	0	0
8	FY 2021	8,000,000			179,800	539,500	539,500	539,500
9	FY 2022	0				0	0	0
10	FY 2023	0					0	0
11	FY 2024	0						0
12	Total Proposed Debt	8,000,000	0	0	179,800	539,500	539,500	539,500
	CWSRF Subordinate Debt							
13	Series 2014 Project No. C317867	6,200,000	423,600	420,800	417,900	414,900	411,900	408,900
14	Series 2014 Project No. C317981	22,526,500	1,324,900	1,428,200	1,420,500	1,412,800	1,404,900	1,396,900
15	Series 2015 Project No. C317984	2,138,800	144,100	143,600	142,600	141,600	140,700	139,700
16	Series 2017 Project No. C317990	3,100,000	11,600	104,300	207,500	206,200	204,800	203,400
17	Description		0	0	0	0	0	0
18	Total Existing Debt	33,965,300	1,904,200	2,096,900	2,188,500	2,175,500	2,162,300	2,148,900
	Proposed Subordinate Debt							
19	FY 2019	1,500,000	7,500	22,500	22,500	43,650	87,300	87,300
20	FY 2020	0		0	0	0	0	0
21	FY 2021	0			0	0	0	0
22	FY 2022	0				0	0	0
23	FY 2023	0					0	0
24	FY 2024	0						0
25	Total Proposed Debt	1,500,000	7,500	22,500	22,500	43,650	87,300	87,300
26	Total Debt Service		4,428,700	4,632,400	4,904,300	5,170,750	5,307,400	5,293,800

Summary of Revenue and Revenue Requirements

Total revenue requirements for the wastewater utility recognized for purposes of this report include operation and maintenance expense, debt service costs on existing and proposed bonds, expenditures for routine capital and major capital improvements met from annual revenues, and recommended reserve fund requirements.

Table 9 examines the financing of the major capital improvement program from bond and loan proceeds, interest earnings, the transfer of operating revenues, and other sources. Table 10 shows the application of estimated future revenues under existing rates and estimated additional revenue from proposed rate increases to meet projected obligations for the period FY 2019 through FY 2024. Subsequently, Table 11 examines the ability of projected net earnings from the wastewater utility to satisfy existing debt service coverage requirements.

MAJOR CAPITAL IMPROVEMENT FINANCING

Table 9 presents the capital improvement financing plan which summarizes the projected source and application of funds over the six-year study period. This plan anticipates that proposed capital improvements will be financed from a combination of available funds on hand, bond sale proceeds, CWSRF loan proceeds, annual operating revenues, and interest earnings.

Table 9 - Capital Improvement Program Financing

Line No.	Description	Fiscal Year Ending September 30, 2019	2020	2021	2022	2023	2024	Total
		$	$	$	$	$	$	$
	Sources of Funds							
1	Funds Available at Beginning of Year (a)	6,436,400	4,944,000	4,222,800	8,490,300	5,007,800	2,808,900	6,436,400
2	Revenue Bond Proceeds	0	0	8,000,000	0	0	0	8,000,000
3	Subordinate Debt Proceeds	1,500,000	0	0	0	0	0	1,500,000
4	Cash Financing of Capital Projects	0	960,000	4,000,000	4,000,000	4,000,000	4,000,000	16,960,000
5	Interest Income	56,900	45,800	63,600	67,500	39,100	14,300	287,200
6	Total Funds Available	7,993,300	5,949,800	16,286,400	12,557,800	9,046,900	6,823,200	33,183,600
	Application of Funds							
7	Major Capital Improvements	3,047,800	1,727,000	7,136,600	7,550,000	6,238,000	6,765,500	32,464,900
8	Issuance Expense	1,500	0	120,000	0	0	0	121,500
9	Reserve Fund Requirement	0	0	539,500	0	0	0	539,500
10	Total Application of Funds	3,049,300	1,727,000	7,796,100	7,550,000	6,238,000	6,765,500	33,125,900
11	End of Year Balance	4,944,000	4,222,800	8,490,300	5,007,800	2,808,900	57,700	57,700

(a) Beginning balance includes Restricted Investments and remaining loan proceeds.

A FY 2019 beginning of year balance of $6,436,400 in unencumbered cash and investments is projected to be available to assist in the financial plan as shown on Line 1. This balance includes approximately $2,236,400 in unspent loan proceeds from the 2017 CWSRF loan proceeds. The remaining balance is restricted investments to be used for construction costs.

It is anticipated that the capital costs associated with the North Collection System Rehabilitation project will be funded from a revenue bond in the amount of $8,000,000 as shown on Line 2. It is anticipated that the capital costs associated with the upgrade to Lift Station #11 will be funded by a $1,500,000 loan from the Clean Water State Revolving Fund (CWSRF). The anticipated drawdown from this loan for 2019 is shown on Line 3 of Table 9.

Cash financing of capital improvements from annual revenues is expected to total $16,560,000 for the study period as indicated on Line 4 of Table 9. Other potential sources of funds available to meet capital improvement expenditures includes interest income on the capital fund and capital reserve. Interest earnings recognize an assumed 1.0 percent average annual interest rate on short term investments such as funds held for improvements and long-term investments such as the capital reserve. Line 5 indicates the estimated annual funds from this source and Line 6 shows the total of all funds available to finance the capital improvement program.

The application of funds shows that $32,464,900 in total major capital improvements expenditures (inflated) are projected over the planning period, as previously summarized in Table 7. Line 8 of Table 9 shows the debt issuance costs associated with any projected bond or loan issues. These costs are estimated to be 1.5 percent of the total principal amounts for revenue bonds and 0.1 percent for CWSRF loans. Line 9 indicates the amount of revenue bond reserve payments required by current bond covenants. These amounts are assumed to be funded from proceeds and are set to maintain a reserve fund equal to the maximum principal and interest payment on all outstanding bonds. Line 10 shows the total of all fund applications and the resulting end of year balance is shown on Line 11.

SYSTEM OPERATIONS

Table 10 shows the application of estimated future revenues under existing rates and estimated additional revenue from proposed rate increases to meet projected obligations for the period FY 2019 through FY 2024. This table summarizes the financing of operation and maintenance expense, debt service costs on existing and proposed debt, routine capital outlay, and the transfer of operating funds for major improvement financing.

Line 1 of Table 10 shows projected revenue under existing rates as previously presented in Table 4. Lines 2 through 6 show indicated increases in revenues associated with rate increases assumed to be in effect the number of months shown. The date and magnitude of increase shown for each year were selected based on consideration of three principal criteria, which include: (1) total revenue necessary to meet cash requirements, (2) total revenue required to provide minimum bond coverage requirements, and (3) maintain a 120-day balance in the operating reserve fund, and (4) establishment of rate increases on a generally levelized basis intended to “phase in” or otherwise minimize the impact of burdensome rate adjustments required in any single year. Projected revenue from the indicated revenue increases assume a one-month lag before the rates become fully effective.

Other revenue available for system operations, shown on Lines 8 through 10, consists of Other Revenue and interest income. Other revenue reflects projected revenue previously shown in Table 5.

Interest income includes earnings on the operating fund and bond reserve fund and recognizes an assumed 1.0 percent annual interest rate. Projected total revenue from system operations is shown on Line 11.

Operation and maintenance expense previously projected in Table 6 is shown on Line 12.

Debt service requirements on currently outstanding revenue bonds are presented on Line 13 and reflect the Series 2013 bonds. Estimated debt service requirements on the proposed FY 2021 $8,000,000 revenue bonds projected to be issued to help finance major capital program expenditures are shown on Line 14 and are assumed to be 25-year, 4.5 percent fixed interest rate bonds with equal annual

payments of principal and interest. Debt service on currently outstanding CWSRF loans are shown on Line 16 and estimated debt service on the proposed FY 2019 $1,500,000 CWSRF loan is shown on Line 17.

Capital outlay for routine capital additions to be financed from revenue is shown on Line 20 of Table 10. Line 21 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing.

Table 10 - Comparison of Projected Revenue Under Existing Rates with Projected Revenue Requirements

Line No.	Description	Fiscal Year Ending September 30, 2019	2020	2021	2022	2023	2024
		$	$	$	$	$	$
1	Revenue Under Existing Rates	11,993,500	11,838,900	11,848,500	11,914,000	11,980,000	12,046,500
	Increased Revenue						
2	3.50% Effective January 1, 2020		241,700	414,700	417,000	419,300	421,600
3	3.50% Effective October 1, 2020			393,400	431,600	434,000	436,400
4	3.00% Effective October 1, 2021				351,000	385,000	387,100
5	3.00% Effective October 1, 2022					363,500	398,700
6	2.50% Effective October 1, 2023						313,700
7	Total Revenue from Rates	11,993,500	12,080,600	12,656,600	13,113,600	13,581,800	14,004,000
8	Other Revenue	1,123,200	541,500	538,500	538,500	532,500	529,500
9	Interest Income - Operations	145,000	157,100	134,500	101,800	72,500	44,500
10	Interest Income - Reserve Funds (a)	25,200	25,200	27,900	30,600	30,600	30,600
11	Total Revenue	13,286,900	12,804,400	13,357,500	13,784,500	14,217,400	14,608,600
12	Operation & Maintenance Expense	5,698,300	7,409,600	7,697,800	7,477,000	7,826,500	7,911,600
	Debt Service Requirements						
13	Existing Revenue Bonds	2,517,000	2,513,000	2,513,500	2,412,100	2,518,300	2,518,100
14	Proposed Revenue Bonds	0	0	179,800	539,500	539,500	539,500
15	Total Revenue Bond Debt Service	2,517,000	2,513,000	2,693,300	2,951,600	3,057,800	3,057,600
16	Existing Subordinate Debt	1,904,200	2,096,800	2,188,500	2,175,500	2,162,300	2,148,800
17	Proposed Subordinate Debt	7,500	22,500	22,500	43,700	87,300	87,300
18	Total Subordinate Debt Service	1,911,700	2,119,300	2,211,000	2,219,200	2,249,600	2,236,100
19	Total Debt Service	4,428,700	4,632,300	4,904,300	5,170,800	5,307,400	5,293,700
20	Routine Capital Outlay (b)	285,900	537,200	221,500	39,000	40,000	450,000
21	Cash Financing of Capital Projects	0	960,000	4,000,000	4,000,000	4,000,000	4,000,000
22	Total Revenue Requirements	10,412,900	13,539,100	16,823,600	16,686,800	17,173,900	17,655,300
23	Net Balance	2,874,000	(734,700)	(3,466,100)	(2,902,300)	(2,956,500)	(3,046,700)
24	Beginning Fund Balance (c)	12,934,800	15,808,800	15,074,100	11,608,000	8,705,700	5,749,200
25	End of Year Balance	15,808,800	15,074,100	11,608,000	8,705,700	5,749,200	2,702,500
26	Number of Days - Actual	779	715	567	406	265	122
27	Number of Days - Target	120	120	120	120	120	120

(a) Includes interest earnings on the Principal and Interest Account, Bond Reserve Fund, and Operating Reserve.
(b) Cash financing of Machinery & Equipment and Vehicles.
(c) Reflects Operating Cash on hand at beginning of year.

Line 23 indicates the estimated net annual balance from operations remaining at the end of each year. A FY 2019 beginning of year balance of $12,934,800 in unencumbered cash and investments is projected to be available to assist in the financial plan as shown on Line 24. The cumulative end of year balance is shown on Line 25.

The wastewater utility maintains a cash reserve to provide for unforeseen fluctuations in revenues and expenses. The minimum required balance in the cash reserve has been set at 120 days of operation and maintenance expense. At September 30, 2018, the utility had a balance equal to approximately 829 days. The projected number of days of cash on hand is shown on Line 26 of Table 10 and is based on the end of year balance shown on Line 25 and projected operation and maintenance expense shown on Line 12. In an effort to propose the minimum revenue increases necessary, it is recommended that the City use portions of the funds on hand to finance both capital program requirements and estimated future operation expenses during the study period while keeping the number of days of cash on hand to at least 120 days of projected operations and maintenance expense.

BOND COVERAGE REQUIREMENTS

An additional consideration in measuring the adequacy of revenues is the provision of sufficient debt service coverage to meet the bond covenant requirements for the issuance of parity revenue bonds.

The revenue bond ordinance provides that rates shall be maintained such that net revenue available for debt service each year shall be equal to or greater than 110 percent of the current year's debt service requirements on all outstanding revenue bonds.

Furthermore, additional parity bonds may be issued provided that one of the following conditions is met: (1) the net revenue available for debt service for the fiscal year next preceding the issuance of additional bonds is equal to or greater than 125 percent of the average annual debt service requirements on all outstanding revenue bonds and the proposed additional bonds; or (2) the net revenue available for debt service in each of the three full fiscal years after the issuance of the proposed additional bonds will be equal to or greater than 125 percent of the average annual debt service requirements on all outstanding revenue bonds and the proposed additional bonds. The City is required to have an independent consulting engineer prepare a projection to verify that the second test is met.

The ability of the wastewater utility revenues to meet the rate covenant and additional bonds test is shown in Table 11. The utility meets the rate covenant and the additional bonds tests in each year of the study period.

Table 11 - Coverage Requirements

Line No.	Description	Fiscal Year Ending September 30, 2019	2020	2021	2022	2023	2024
		$	$	$	$	$	$
	Rate Covenant Coverage						
1	Projected Net Revenues	7,588,600	5,394,800	5,659,700	6,307,500	6,390,900	6,697,000
2	Annual Debt Service (a)	4,428,700	4,632,300	4,904,300	5,170,800	5,307,400	5,293,700
3	Projected Actual Net Revenue as a Percent of Debt Service (b)	171.4%	116.5%	115.4%	122.0%	120.4%	126.5%
	Additional Bond Coverage (c)						
4	Preceding Year Projected Net Revenues	4,500,000	7,588,600	5,394,800	5,659,700	6,307,500	6,390,900
5	Average Annual Debt Service	3,968,483	3,947,564	3,813,676	3,768,233	3,707,257	3,634,525
6	Projected Actual Net Revenue as a Percent of Debt Service (d)	113.4%	192.2%	141.5%	150.2%	170.1%	175.8%
7	Projected Net Revenues	7,588,600	5,394,800	5,659,700	6,307,500	6,390,900	6,697,000
8	Average Annual Debt Service	3,968,483	3,947,564	3,813,676	3,768,233	3,707,257	3,634,525
9	Projected Actual Net Revenue as a Percent of Debt Service (e)	191.2%	136.7%	148.4%	167.4%	172.4%	184.3%

(a) Includes Revenue Bonds and CWSRF Loans.
(b) The Bond Ordinance requires net revenue to equal or exceed 1.10x actual debt service.
(c) The City shall comply with one or the other of the two additional bonds tests.
(d) The Bond Ordinance requires net revenue to equal or exceed 1.25x average annual debt service.
(e) The Bond Ordinance requires net revenue to equal or exceed 1.25x average annual debt service in each of the three full fiscal years after the issuance of the proposed Additional Bonds.

Cost Allocations

Cost of service allocations provide a means of determining the proportionate responsibility of each customer class for the service provided. Cost responsibilities are based upon allocations of various elements of costs of service according to the relative service requirements of respective customer classes. Factors considered in determining service requirements include the volume of wastewater contributed, strength of wastewater, and the number of customers.

COST OF SERVICE TO ALLOCATED

The cost of service to be allocated to the various customer classes consists of the total revenue requirements less income received from other sources. For allocation purposes, this cost of service is expressed as an annual requirement for a specific test year. For purposes of this study, the fiscal year ending September 30, 2020 has been selected as generally typical of conditions anticipated during the study period. This cost, totaling $12,253,300, consists of $6,706,900 of net operation and maintenance expense and $5,546,400 of net capital costs. These costs are derived from Table 10 and summarized on Line 12 of Table 12.

Table 12 - Total Cost of Service to be Recovered from Rates

Line No.	Description	O&M Expense	Capital Costs	Total
		$	$	$
	Revenue Requirements			
1	Operation & Maintenance	7,409,600		7,409,600
	Debt Service Requirements			
2	Existing Debt Service		4,609,800	4,609,800
3	Proposed Debt Service		22,500	22,500
4	Capital Outlay		537,200	537,200
5	Cash Financing of Capital Projects		960,000	960,000
6	Total	7,409,600	6,129,500	13,539,100
	Revenue Requirements Met from Other Sources			
7	Other Revenue	161,500	380,000	541,500
8	Interest Income	139,800	43,700	183,500
9	Funds Available	401,400	332,100	733,500
10	Full Year Rate Adjustment		(172,700)	(172,700)
11	Total	702,700	583,100	1,285,800
12	Net Costs to be Met from Charges	6,706,900	5,546,400	12,253,300

FUNCTIONAL COST COMPONENTS

The various cost elements of wastewater service are assigned to functional cost components as the first step in the subsequent distribution of the costs of service to customer classes. The principal functional cost components consist of volume related costs, strength related costs, and customer related costs.

Volume costs are those which vary directly with the quantity of wastewater contributed. They consist of capital costs related to investment in system facilities which are sized on the basis of, or required because of, wastewater volume. This also includes operation and maintenance expense related to those facilities and the expense of volume related treatment chemicals and purchased power.

Wastewater strength costs consist of the operation and maintenance expense and capital costs related to system facilities which are designed principally based on the projected strength concentrations of the wastewater. The strengths recognized in this study include biochemical oxygen demand (BOD), suspended solids (SS), oil and grease (O&G), and total nitrogen (TN). Costs associated with each of these strengths are those costs of wastewater treatment which tend to vary according to the quantity of each strength in the raw wastewater. Customer costs are defined as costs which tend to vary in proportion to the number of customers connected to the system. These include billing, collection and accounting costs.

The separation of costs of service into these principal categories provides the means of further allocating such costs to the various customer classes based on the respective total wastewater volume, strength, and customer service requirements of each customer class.

ALLOCATION TO COST COMPONENTS

In establishing the costs associated with each functional cost component, the net capital portion of the test year cost of service is distributed to cost functions based on an allocation of the estimated test year value of wastewater system facilities. The test year net operating expense is similarly allocated to cost functions based on the projected test year expense estimated for each wastewater system component.

ALLOCATION OF NET PLANT INVESTMENT

The estimated test year net plant investment in wastewater facilities consists of net plant in service as of September 30, 2018 and proposed capital improvements up to the fiscal year 2020. Table 13 shows the allocation of the wastewater utility's total estimated plant value less contributions on an original cost less depreciation value basis. Total plant investment is estimated to be $102,422,600 as indicated by Line 19 of the table.

Each item of plant investment is allocated to a functional cost component, or components, primarily in accordance with the function which determines the amount of investment. One of the City's industrial customers discharges wastewater volume from two discharge points. One point is used for sanitary waste and discharges into the City's sanitary sewer system. The second discharge point is from the customer's lagoon which flows directly to the treatment plant via a dedicated main. All industrial waste is pre-treated and discharged to the treatment plant through the discharge from the lagoon. In recognition of the fact that a portion of the contributed flow that enters the plant does not enter the City's sanitary sewer system, a functional cost component for only contributed flow that does enter the sanitary sewer system has been designated as City Collection System Users volume.

Collection system facilities and lift stations are designed to meet anticipated flow and are therefore allocated to the City Collection System Users volume component. Liquid oxygen, methanol system, raw water pumping, preliminary treatment, corrosion/odor control facilities, and disinfection facilities are designed based on anticipated flow and are applicable to all flow entering the treatment plant therefore, costs are assigned to the Common to All volume component.

Table 13 - Allocation of Net Plant Investment to Functional Cost Components

Line No.	Description	Total Expense	Common to All					City Collection System
			Volume Related	Extra Strength				
				BOD	Suspended Solids	Oil & Grease	Total Nitrogen	
		$	$	$	$	$	$	$
1	Sewer Mains	58,532,700	0	0	0	0	0	58,532,700
2	Liquid Oxygen	2,800	2,800	0	0	0	0	0
3	Methanol System	8,600	8,600	0	0	0	0	0
4	Lift Stations	6,615,300	0	0	0	0	0	6,615,300
	Wastewater Treatment							
5	Raw Water Pumping	11,600	11,600	0	0	0	0	0
6	Preliminary Treatment	21,306,500	21,306,500	0	0	0	0	0
7	Primary Sedimentation/Clarifiers	565,900	84,800	169,800	226,400	84,900	0	0
8	Aeration Basins	5,090,800	0	1,527,200	1,018,200	0	2,545,400	0
9	Aeration Equipment	141,800	0	42,500	28,400	0	70,900	0
10	Corrosion/Odor Control Facilities	0	0	0	0	0	0	0
11	Final Clarifiers	371,600	0	148,600	185,800	0	37,200	0
12	Disinfection	127,200	127,200	0	0	0	0	0
13	Sludge Handling	6,828,200	100	3,414,000	3,072,700	341,400	0	0
14	General Plant	1,972,400	1,232,900	303,600	259,500	24,400	152,000	0
15	Lab	6,100	3,500	600	600	400	1,000	0
16	Vehicles	94,200	21,200	5,200	4,400	400	2,600	60,400
17	Administration & General	106,300	23,800	5,900	5,000	500	2,900	68,200
18	Land	640,600	640,600	0	0	0	0	0
19	Total Net Plant	102,422,600	23,463,600	5,617,400	4,801,000	452,000	2,812,000	65,276,600
20	Net Capital Costs	5,564,400	1,274,700	305,200	260,800	24,600	152,800	3,546,300

Primary sedimentation/clarifiers are designed to remove BOD, SS, and oil and grease from influent flow, therefore, the costs associated with this equipment is allocated to those strength components.

Aeration basins and equipment, as well as final clarifiers are sized based on the BOD, SS, and TN loadings therefore, costs are assigned to each of these strength cost components as shown on Lines 8, 9 and 11 of Table 13.

The costs associated with Sludge Handling are allocated 50 percent to the BOD strength component, 45 percent to the SS component, and 5 percent to the oil and grease component. General Plant costs are allocated to the cost components on the basis of the subtotal of all other treatment plant functions.

Costs associated with the Lab are allocated to the wastewater strength cost components based on the estimated number of hours spent performing lab tests for each strength component.

Vehicles and Administration & General facilities are allocated to all cost components on the basis of all other net plant investment.

Land shown on Line 18 of Table 13 is allocated to the Common to All volume component.

Test year net capital costs, shown on Line 12 of Table 12, are assigned to the functional cost components on the basis of net plant investment and are shown on Line 20 of Table 13.

ALLOCATION OF OPERATING EXPENSES

Table 14 presents the allocation of operation and maintenance expense to the functional cost components. Total test year operation and maintenance expense amounts to $6,688,900 as shown on Line 22. The allocation of each element of operating expense to cost components shown in Lines 1 through 16 is performed in a similar manner to the allocation of net plant investment previously described.

Table 14 - Allocation of Operation & Maintenance to Functional Cost Components

Line No.	Description	Total Expense	Common to All					Billing	City Collection System Users Volume
			Volume Related	Extra Strength					
				BOD	Suspended Solids	Oil & Grease	Total Nitrogen		
		$	$	$	$	$	$	$	$
1	Sewer Mains	1,310,800	0	0	0	0	0	0	1,310,800
2	Micro C	123,600	0	0	0	0	123,600	0	0
3	Lift Stations	463,300	0	0	0	0	0	0	463,300
4	Subtotal	1,897,700	0	0	0	0	123,600	0	1,774,100
	Wastewater Treatment								
5	Raw Water Pumping	287,100	287,100	0	0	0	0	0	0
6	Preliminary Treatment	289,000	289,000	0	0	0	0	0	0
7	Primary Sedimentation/Clarifiers	302,500	45,300	90,800	121,000	45,400	0	0	0
8	Aeration Basins	218,600	0	65,600	43,700	0	109,300	0	0
9	Aeration Equipment	507,600	0	152,300	101,500	0	253,800	0	0
10	Corrosion/Odor Control Facilities	236,200	236,200	0	0	0	0	0	0
11	Final Clarifiers	237,800	0	95,100	118,900	0	23,800	0	0
12	Disinfection	282,700	282,700	0	0	0	0	0	0
13	Sludge Handling	518,500	0	259,300	233,300	25,900	0	0	0
14	General Plant	256,700	160,400	39,500	33,800	3,200	19,800	0	0
9	Subtotal	3,136,700	1,300,700	702,600	652,200	74,500	406,700	0	0
15	Lab	488,500	278,500	46,800	47,700	35,700	79,800	0	0
16	Administration & General	1,886,700	509,500	212,600	206,900	37,100	129,100	291,600	499,900
17	Total O&M Expense	7,409,600	2,088,700	962,000	906,800	147,300	739,200	291,600	2,274,000
	Less Offsetting Revenues:								
18	Other Operating Revenue	161,500	59,300	6,000	10,500	5,200	23,200	0	57,300
19	Interest Income	157,100	44,300	20,400	19,200	3,100	15,700	6,200	48,200
20	Change in Funds Available	402,100	113,400	52,200	49,200	8,000	40,100	15,800	123,400
21	Total Offsetting Revenues	720,700	217,000	78,600	78,900	16,300	79,000	22,000	228,900
22	Net Operating Expenses to be Recovered	6,688,900	1,871,700	883,400	827,900	131,000	660,200	269,600	2,045,100

Other operating revenue and interest income available to meet a portion of these expenditures reduces the level of operation and maintenance to be recovered by wastewater service charges to $6,688,900. Other Operating Revenue associated with sewer assessments is allocated to the City Collection System Users volume component. Other Revenue associated with lab samples and discharge fees are allocated to the wastewater strength components in the same manner as the allocation of capital costs associated with the Lab. All other miscellaneous revenue is allocated to the Common to All volume component. Revenue from Interest Income and Change in Funds Available is allocated to the cost components on the basis of total operation and maintenance expense and shown on Lines 19 and 20.

DISTRIBUTION OF COSTS TO CUSTOMER CLASSES

As a basis for determining the cost of wastewater service to each customer class, the elements of cost of service previously allocated to functional cost components are distributed among the classes in proportion to their respective service requirements. Estimates of these requirements, or units of service, reflect the average number of accounts, annual wastewater volume, and wastewater strength.

Analysis of resulting costs of service to each class and comparison of allocated costs with revenues under existing rates provide a basis for future wastewater rate adjustments.

Customer Classification

The customers of the wastewater utility are separated into groups having similar service requirements and ownership status. The new utility billing system classifies accounts into the following customer classes: Residential, Government, Commercial, and Industrial.

Units of Service

Derivation of the responsibility of customer classes for costs of service require that each class be allocated a portion of the volume, strength, and customer costs of service according to their respective service requirements.

The cost of service responsibility for volume costs, which vary with the volume of wastewater contributed to the wastewater system, is distributed to customer classes on that basis. Strength costs are principally related to the function of removing wastewater BOD, suspended solids, oil and grease, and total nitrogen. Customer costs, which consist of billing and collection costs, are allocated on the basis of the number of customer bills.

The estimated test year service requirements or units of service for the various customer classes are shown in Table 15. Wastewater collected and treated consists of two elements: (1) sanitary wastewater flow and (2) infiltration/inflow (I/I) of ground and surface water into the sewers. Contributed wastewater flow is the billable annual water use of each customer class estimated to enter the sanitary wastewater sewer system. Estimates of the contributed volume of each class are based upon wastewater utility billing records. The balance of the wastewater flow processed by the treatment plant is assumed to comprise I/I. Based on historical data, it is estimated that the test year amount of flow entering the sewers as I/I will average approximately 40 percent of the total volume transported by the sanitary sewer system which does not include the contributed flow discharged from industrial Direct Discharge. Each customer class should bear its proportionate share of the costs associated with I/I, as the wastewater system must be adequate to convey and process the total wastewater flow. Recognizing that the major cost responsibility for I/I is allocable on an individual connection basis, two-thirds of the projected I/I volume associated with the sewer collection system is allocated to customer classes based on the number of customers with the remaining one-third allocated on the basis of contributed volume entering the treatment plant through the sanitary sewer system. The I/I attributable to interceptors is allocated to all customer classes based on the total flow contributed to the wastewater system.

Estimated total strength quantities shown for each customer class are based on an average BOD concentration of 240 milligrams per liter (mg/l), average suspended solids concentration of 180 mg/l, average oil and grease concentration of 25 mg/l and average total nitrogen concentration of 25 mg/l. Estimated BOD, suspended solids, oil and grease, and total nitrogen responsibilities of each customer class shown in Table 15 are based on the respective indicated average strength concentrations and contributed wastewater and I/I volumes for each class. Customer billing and collection costs are distributed to classes on the basis of the number of bills for each customer class.

Table 15 - Estimated Units of Service

Line No.	Description	Wastewater Volume			Wastewater Strength				Bills
		Contributed Volume	Infiltration / Inflow	Total	BOD	Suspended Solids	Oil & Grease	Total Nitrogen	
		Ccf	Ccf	Ccf	Pounds	Pounds	Pounds	Pounds	Bills
1	Residential	1,123,600	1,124,000	2,247,600	2,033,000	1,963,000	280,400	175,200	174,146
2	Government	6,200	3,900	10,100	10,500	9,400	1,400	1,000	504
3	Commercial	711,200	290,200	1,001,400	1,155,400	979,700	138,100	110,900	26,551
4	Industrial	181,400	44,700	226,100	285,500	231,600	32,500	28,300	960
	Manually Billed Industrial								
5	Direct Discharge	1,211,300	0	1,211,300	1,813,700	1,360,300	188,900	188,900	0
6	All Other	257,800	57,400	315,200	403,900	325,300	45,600	40,300	132
	Surcharge								
7	Direct Discharge				0	445,057	0	240,000	
8	All Other				894,964	468,489	129,825	16,405	
9	Total	3,491,500	1,520,200	5,011,700	6,596,964	5,782,846	816,725	801,005	202,293

Ccf - Hundred Cubic Feet

CUSTOMER CLASS COSTS OF SERVICE

Unit costs of service are developed by dividing the total cost allocated to each functional cost component by the total applicable units of service. The customer class responsibility for service is obtained by applying unit costs of service to the number of units for which the customer class is responsible.

Table 16 shows the development of the unit costs of service applicable to each cost function. Lines 1 through 3 summarize the units of service developed in Table 15. Total allocated costs or investment shown on Lines 4 and 6 were previously developed in Table 14 and Table 13, respectively. Units of service for each component are determined simply by dividing the allocated cost of investment by the total units of service and are shown on Lines 5 and 7 of Table 16. Applying the total unit cost of service shown on Line 9 to the units of service shown on Lines 1 and 2 produces the total cost of service shown on Lines 10 and 11.

The costs of service allocated to customer classes are summarized in Table 17. Total costs of service for each class are based on unit costs of service from Table 16 and units of service from Table 15.

Table 18 shows allocated cost of service by customer class from Table 17, revenue under existing rates, and the indicated additional revenue required for each class. The additional revenue will be recovered from a 3.5 percent increase effective January 1, 2020.

Table 16 - Unit Cost of Service

Line No.	Description	Total	Common to All Retail Sewer Customers						City Collection System Users Volume
			Volume Related	Strength Costs				Billing	
				BOD	Suspended Solids	Oil & Grease	Total Nitrogen		
		$	Ccf	Pounds	Pounds	Pounds	Pounds	Bills	Ccf
	Number of Units								
1	City Collection System Users		3,800,400	4,783,264	3,977,489	627,825	372,105	202,293	3,800,400
2	Direct Discharge		1,211,300	1,813,700	1,805,357	188,900	428,900	0	0
3	Total		5,011,700	6,596,964	5,782,846	816,725	801,005	202,293	3,800,400
	Costs of Service								
	Net Operating Expense								
4	Total - $	6,688,900	1,871,700	883,400	827,900	131,000	660,200	269,600	2,045,100
5	Unit Cost - $/unit		0.3735	0.1339	0.1432	0.1604	0.8242	1.3327	0.5381
	Net Capital Costs								
6	Total - $	5,564,400	1,274,700	305,200	260,800	24,600	152,800	0	3,546,300
7	Unit Cost - $/unit		0.2543	0.0463	0.0451	0.0301	0.1908	0.0000	0.9331
8	Total - $	12,253,300	3,146,400	1,188,600	1,088,700	155,600	813,000	269,600	5,591,400
9	Total Unit Costs of Service		0.6278	0.1802	0.1883	0.1905	1.0150	1.3327	1.4713
	Total Cost of Service								
10	City Collection System Users	10,354,800	2,385,900	861,800	748,800	119,600	377,700	269,600	5,591,400
11	Direct Discharge	1,898,500	760,500	326,800	339,900	36,000	435,300	0	0
12	Total - $	12,253,300	3,146,400	1,188,600	1,088,700	155,600	813,000	269,600	5,591,400

Ccf - Hundred Cubic Feet

Table 17 - Allocation of Cost of Service to Customer Classes

Line No.	Description	Total	Common to All Retail Sewer Customers						City Collection System Users
			Volume Related	Strength Costs				Billing	
				BOD	Suspended Solids	Oil & Grease	Total Nitrogen		
			Ccf	Pounds	Pounds	Pounds	Pounds	Bills	Ccf
1	Total Unit Cost - $/unit		0.6278	0.1802	0.1883	0.1905	1.0150	1.3327	1.4713
	Residential								
2	Units		2,247,600	2,033,000	1,963,000	280,400	175,200	174,146	2,247,600
3	Costs - $	5,916,600	1,411,100	366,200	369,500	53,300	177,800	232,000	3,306,700
	Government								
4	Units		10,100	10,500	9,400	1,400	1,000	504	10,100
5	Costs - $	26,900	6,300	1,900	1,800	300	1,000	700	14,900
	Commercial								
6	Units		1,001,400	1,155,400	979,700	138,100	110,900	26,551	1,001,400
7	Costs - $	2,668,900	628,700	208,200	184,400	26,300	112,600	35,400	1,473,300
	Industrial								
8	Units		226,100	285,500	231,600	32,500	28,300	960	226,100
9	Costs - $	605,800	141,900	51,400	43,600	6,200	28,700	1,300	332,700
10	Subtotal - $	9,218,200	2,188,000	627,700	599,300	86,100	320,100	269,400	5,127,600
	Manually Billed Industrial								
	Direct Discharge								
11	Units		1,211,300	1,813,700	1,360,300	188,900	188,900	0	0
12	Costs - $	1,571,100	760,500	326,800	256,100	36,000	191,700	0	0
	All Other								
13	Units		315,200	403,900	325,300	45,600	40,300	132	315,200
14	Costs - $	845,600	197,900	72,800	61,300	8,700	40,900	200	463,800
15	Subtotal - $	2,416,700	958,400	399,600	317,400	44,700	232,600	200	463,800
	Surcharge								
	Direct Discharge								
16	Units			0	445,057	0	240,000		
17	Costs - $	327,400		0	83,800	0	243,600		
	All Other								
18	Units			894,964	468,489	129,825	16,405		
19	Costs - $	291,000		161,300	88,200	24,800	16,700		
20	Subtotal - $	618,400	0	161,300	172,000	24,800	260,300	0	0
21	Total Cost of Service - $	12,253,300	3,146,400	1,188,600	1,088,700	155,600	813,000	269,600	5,591,400

Ccf - Hundred Cubic Feet

Table 18 - Comparison of Cost of Service with Revenue under Existing Rates

Line No.	Customer Class	Allocated Cost of Service	Revenue Under Existing Rates	Indicated Revenue Increase
		$	$	%
1	Residential	5,916,600	5,389,900	9.77
2	Government	26,900	26,100	3.07
3	Commercial	2,668,900	2,722,100	(1.95)
4	Industrial	605,800	646,400	(6.28)
5	Subtotal	9,218,200	8,784,500	4.94
	Manually Billed Industrial			
6	Direct Discharge	1,571,100	1,429,300	9.92
7	All Other	845,600	894,900	(5.51)
8	Surcharge	618,400	730,200	(15.31)
9	Subtotal	3,035,100	3,054,400	(0.63)
10	Total	12,253,300	11,838,900	3.50

Rate Adjustment

The principal consideration in establishing wastewater rate schedules is the establishment of equitable charges to customers, commensurate with the cost of providing that service. The only method of assessing entirely equitable rates for wastewater service would be the determination of each customer's bill based upon their particular service requirements. Since this is impractical, schedules of rates are normally designed to meet average conditions for groups of customers having similar service requirements. Practicality also dictates the use of a rate schedule which is simple to apply, reasonably recovers costs proportionately from all classes, and is subject to as few misinterpretations as possible.

The revenue requirements and cost of service allocations described in this report provide the basis for adjusting wastewater rates. The revenue requirements section shows the need for adjustment and the level of revenue required. The allocations section provides the unit costs of service used in the rate design process and gives a basis for determining whether resultant rates will develop revenues which recover costs of service from customer classes in proportion to service required and provide the total level of revenue required.

EXISTING RATES

The existing schedule for charges for wastewater service became effective September 1, 2016. The rates consist of a monthly service charge, normal strength and low strength uniform volume charges, and extra strength surcharges for biochemical oxygen demand in excess of 250 mg/l, suspended solids in excess of 250 mg/l, oil and grease in excess of 100 mg/l, TKN in excess of 30 mg/l, and nitrates in excess of 25 mg/l. Industrial customers who certify that their sewage contributions are less than normal strength wastewater pay the Industrial Four Part Charge which consists of a reduced volume charge and extra strength surcharges for all wastewater strength discharged. All industrial customers are also charged applicable sampling and monitoring fees.

PROPOSED RATES

The cost of service study described in preceding sections of this report provides a basis for the design of a schedule of wastewater rates to meet total costs of service. As previously indicated in Table 10, wastewater revenues shown for test year 2020 are anticipated to be recovered under an adjusted rate schedule that would generate revenues that exceed revenues recoverable under existing rates by 3.5 percent.

In developing proposed schedules of rates, it must be recognized that the cost of service studies are the result of engineering estimates, based to some extent upon judgment and experience, and detailed results should not be used as literal and exact answers but as guides to the necessity for and nature of rate adjustments. Judgment must enter into the final choice of rates and factors such as previous rate levels, economic impact on the customer, public reaction to the extent of changes, and local practice in the past are commonly recognized in making rate adjustments. It is emphasized that all factors beyond cost of service considerations are strictly a matter of local policy.

Considerations recognized in the derivation of the proposed schedules of wastewater rates subsequently presented herein, developed based on discussions with utility representatives, include the indicated desire to: (1) develop rate modifications so that the total revenues recovered from wastewater charges will be at least adequate to recover the respective revenue requirements of the utility, and (2) recover test year revenues from each class of wastewater customer approximately equal to the allocated

costs of providing service. In attempting to meet these policy criteria, and as a result of the collaborative efforts of the utility staff, proposed schedules of rates for wastewater service are presented and discussed in the following paragraphs.

The existing schedule of rates for wastewater service includes charges based on the quantity of water used, with a service charge. This form of rate is common among wastewater utilities and generally can be designed to recover revenue from system customers reasonably commensurate with the cost of service.

Schedules of proposed wastewater rates, designed to recover revenue requirements generally in accordance with the preceding cost allocation and other practical considerations for each year of the study period, are shown in Table 19. The proposed rate schedule for is similar to the existing structure, with the exception of the elimination of the rates for TKN and Nitrates and the addition of a rate for Total Nitrogen (TN) rate. A rate for TN was selected to simplify the proposed rate structure while still accounting for the costs of treatment previously associated with TKN and Nitrates.

ADEQUACY OF PROPOSED RATES

A comparison of estimated test year revenue under the proposed rates with allocated costs of service for each customer class is shown in Table 20. This comparison indicates that the proposed rates will recover revenues from customer groups reasonably commensurate with the cost of service and practical considerations previously noted.

TYPICAL BILLS

To better reflect the total effect the proposed rates will have on customer's bills, a comparison of typical bills under existing rates and the proposed rates is shown in Table 21.

FY 2021 – FY 2024 RATE ADJUSTMENTS

In addition to the Table 19 schedule of rates proposed for application effective January 1, 2020, schedules of rates proposed for implementation effective October 1, 2020 through October 1, 2023 are presented in Table 22. These rates are designed to provide for the recovery of total revenue requirements previously projected herein for FY 2021 through FY 2024.

It is recommended that the City Council adopt the schedule of rates shown in Table 19 and Table 22.

Table 19 - Proposed Rates (Effective January 1, 2020)

Rate Component	Proposed Rates
Sewer Service Charge - $/Month	
All Customers	8.24
Volume Charge - $/Ccf	
Customers Using City's Collection System - Inside City	3.69
Customers Using City's Collection System - Outside City	4.43
Discharge Directly into City's Treatment Plant	1.19
Bulk Volume Rate	46.38
Excess Strength Surcharge - $/lb	
BOD over 250 mg/l	0.3248
Suspended Solids over 250 mg/l	0.2177
Oil & Grease over 100 mg/l	0.1908
Total Nitrogen over 25 mg/l	0.8900
Industrial Four-Part Charge	
Low Strength Customers Volume Charge - $/Ccf	2.72
BOD - $/lb	0.3248
Suspended Solids - $/lb	0.2177
Oil & Grease - $/lb	0.1908

Ccf - Hundred Cubic Feet
lb - Pound
BOD - Biochemical Oxygen Demand
mg/l = Milligrams per Liter

Table 20 - Comparison of Allocated Cost of Service with Revenue Under Proposed Rates

Line No.	Customer Class	Allocated Cost of Service	Revenue Under Proposed Rates	Revenue Under Existing Rates	Indicated Additional Revenue Required
		$	$	$	$
1	Residential	5,916,600	5,581,000	5,389,900	191,100
2	Government	26,900	27,000	26,100	900
3	Commercial	2,668,900	2,843,100	2,722,100	121,000
4	Industrial	605,800	677,300	646,400	30,900
5	Subtotal	9,218,200	9,128,400	8,784,500	343,900
	Manually Billed Industrial				
6	Direct Discharge	1,571,100	1,441,400	1,429,300	12,100
7	All Other	845,600	940,100	894,900	45,200
8	Surcharge	618,400	742,500	730,200	12,300
9	Subtotal	3,035,100	3,124,000	3,054,400	69,600
10	Total	12,253,300	12,252,400	11,838,900	413,500

Table 21 - Comparison of Typical Monthly Bills under Existing Rates and Proposed Rates

Description	Water Use	Existing Rates	Proposed Rates		
			Amount	Increase	Increase
	Ccf	$	$	$	%
Residential					
Small	5	25.84	26.69	0.85	3.3%
Medium	7	32.88	34.07	1.19	3.6%
Large	15	61.04	63.59	2.55	4.2%
Government					
Small	15	61.04	63.59	2.55	4.2%
Medium	25	96.24	100.49	4.25	4.4%
Large	50	184.24	192.74	8.50	4.6%
Commercial					
Small	15	61.04	63.59	2.55	4.2%
Medium	40	149.04	155.84	6.80	4.6%
Large	75	272.24	284.99	12.75	4.7%
Industrial					
Small (a)	50	353.23	361.73	8.50	2.4%
Medium (b)	500	2,101.35	2,189.39	88.03	4.2%
Large (c)	5,000	21,855.57	22,796.60	941.03	4.3%

(a) Assumes 150 mg/l BOD and 25 mg/l SS
(b) Assumes 250 mg/l BOD, 100 mg/l SS and 25 mg/l O&G
(c) Assumes 250 mg/l BOD, 200 mg/l SS and 75 mg/l O&G

Table 22 - Proposed Rates (Effective October 1, 2020 - October 1, 2023)

Rate Component	Proposed Rates (a)			
	FY 2021	FY 2022	FY 2023	FY 2024
Sewer Service Charge - $/Month				
All Customers	8.24	8.24	8.24	8.24
Volume Charge - $/Ccf				
Customers Using City's Collection System - Inside City	3.88	4.03	4.19	4.33
Customers Using City's Collection System - Outside City	4.66	4.84	5.03	5.20
Discharge Directly into City's Treatment Plant	1.20	1.21	1.22	1.23
Bulk Volume Rate	46.38	46.38	46.38	46.38
Excess Strength Surcharge - $/lb				
BOD over 250 mg/l	0.3248	0.3248	0.3248	0.3248
Suspended Solids over 250 mg/l	0.2177	0.2177	0.2177	0.2177
Oil & Grease over 100 mg/l	0.1975	0.2034	0.2095	0.2147
Total Nitrogen over 25 mg/l	0.8953	0.9222	0.9499	0.9736
Industrial Four-Part Charge				
Low Strength Customers Volume Charge - $/Ccf	2.91	3.06	3.21	3.35
BOD - $/lb	0.3248	0.3248	0.3248	0.3248
Suspended Solids - $/lb	0.2177	0.2177	0.2177	0.2177
Oil & Grease - $/lb	0.1975	0.2034	0.2095	0.2147

(a) Effective October 1 of each fiscal year.

Ccf - Hundred Cubic Feet
lb - Pound
BOD - Biochemical Oxygen Demand
mg/l = Milligrams per Liter

Current Situation

- The utility currently has a strong cash balance but insufficient annual revenues to meet key financial metrics
- Key financial metrics with no future revenue increases:

Financial Metric	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Days of Cash on Hand	763	597	266	-22	-350
Minimum Requirement	120	120	120	120	120
Annual Rate Covenant Coverage	120%	110%	119%	108%	108%
Minimum Requirement	110%	110%	110%	110%	110%

- Potential Impact:
  - The City will not be able to issue future debt due to low coverage and no revenue increases in place
  - The cash balance will be depleted by FY 2023 to fund the capital program
  - Future revenue increases will be larger if revenue increases are delayed

Current Recommendation

- Small, annual revenue adjustments to increase rate revenue while using cash on hand to fund the majority of the capital program

Financial Metric	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Proposed Revenue Increases*	2.5%	2.5%	2.25%	2.25%	2.25%
Cash Financing of Major Capital	$0.96M	$4.0M	$4.0M	$4.0M	$4.5M
Days of Cash on Hand	772	627	459	310	131
Minimum Requirement	120	120	120	120	120
EOY Balance of Cash on Hand	$15.4M	$12.1M	$9.3M	$6.4M	$2.7M
Annual Rate Covenant Coverage	124%	119%	124%	120%	125%
Minimum Requirement	110%	110%	110%	110%	110%

- Key components
  - *FY 2021 – 2024 projected O&M has been revised to remove $400k one-time cost in FY 2020 budget, thereby reducing the proposed revenue increases
  - All financial metrics are met
  - Cash will be used to fund the majority of the CIP
  - Future debt will be issued for the North Collection System Rehab project

Partial Call of 2013 Revenue Bonds Option

- $9,995,800 cash is placed in escrow account to defease a portion of the 2013 bonds

Financial Metric	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Proposed Revenue Increases	2.5%	2.5%	2.5%	2.5%	2.5%
Cash Financing of Major Capital	$0.96M	$2.0M	$2.0M	$2.0M	$1.5M
Days of Cash on Hand	283	246	216	181	143
Minimum Requirement	120	120	120	120	120
EOY Balance of Cash on Hand	$5.6M	$4.8M	$4.4M	$3.7M	$3.0M
Annual Rate Covenant Coverage	130%	130%	136%	127%	123%
Minimum Requirement	110%	110%	110%	110%	110%

- Potential Impacts:
  - Funds in escrow account cannot be accessed for any reason other than debt defeasement
  - There are no savings from defeasing debt early
  - Additional debt will need to be issued to fund future capital projects
  - Higher revenue increases are necessary to meet coverage on additional debt

Current Recommendation – 1 Year Delay

- Small, annual revenue adjustments to increase rate revenue while using cash on hand to fund the majority of the capital program

Financial Metric	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Proposed Revenue Increases	0.0%	3.5%	3.5%	3.5%	3.5%
Cash Financing of Major Capital	$0.96M	$4.0M	$4.0M	$4.0M	$4.5M
Days of Cash on Hand	763	608	438	294	129
Minimum Requirement	120	120	120	120	120
EOY Balance of Cash on Hand	$15.2M	$11.7M	$8.9M	$6.0M	$2.7M
Annual Rate Covenant Coverage	120%	115%	123%	122%	131%
Minimum Requirement	110%	110%	110%	110%	110%

Current Recommendation – 2 Year Delay

- Small, annual revenue adjustments to increase rate revenue while using cash on hand to fund the majority of the capital program

Financial Metric	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Proposed Revenue Increases	0.0%	0.0%	6.0%	6.0%	5.5%
Cash Financing of Major Capital	$0.96M	$4.0M	$4.0M	$4.0M	$4.5M
Days of Cash on Hand	763	558	412	275	131
Minimum Requirement	120	120	120	120	120
EOY Balance of Cash on Hand	$15.2M	$11.4M	$8.3M	$5.6M	$2.8M
Annual Rate Covenant Coverage	120%	107%	120%	125%	139%
Minimum Requirement	110%	110%	110%	110%	110%

Partial Call of 2013 Revenue Bonds Option – 1 Year Delay

- $9,995,800 cash is placed in escrow account to defease a portion of the 2013 bonds

Financial Metric	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Proposed Revenue Increases	0.0%	3.0%	3.0%	3.0%	3.0%
Cash Financing of Major Capital	$0.96M	$2.0M	$1.5M	$1.5M	$1.5M
Days of Cash on Hand	274	224	210	191	146
Minimum Requirement	120	120	120	120	120
EOY Balance of Cash on Hand	$5.5M	$4.3M	$4.2M	$3.9M	$3.1M
Annual Rate Covenant Coverage	126%	124%	131%	123%	120%
Minimum Requirement	110%	110%	110%	110%	110%

Proposed Rates – Current Recommendation

Rate Component	Existing	Proposed Jan 1, 2020	Proposed Oct 1, 2020	Proposed Oct 1, 2021	Proposed Oct 1, 2022	Proposed Oct 1, 2023
Service Charge - $/Month	$8.24	$8.24	$8.24	$8.24	$8.24	$8.24
Volume Charge - $/100 gallons						
Collection System Users	$3.52	$3.64	$3.77	$3.88	$3.99	$4.11
Direct Discharge Users	$1.18	$1.19	$1.205	$1.22	$1.235	$1.25
Low-Strength Industrial Users	$2.47	$2.67	$2.80	$2.91	$3.02	$3.13
Strength Surcharge - $/lb						
BOD	$0.3248	$0.3248	$0.3248	$0.3248	$0.3248	$0.3248
Suspended Solids	$0.2177	$0.2177	$0.2177	$0.2177	$0.2177	$0.2177
Oil & Grease	$0.1519	$0.1908	$0.1956	$0.2000	$0.2045	$0.2091
TKN	$0.0395					
Nitrates	$1.0299					
Total Nitrogen		$0.8900	$0.8866	$0.9065	$0.9269	$0.9478

Typical Bill Comparison – Current Recommendation

Description	Existing	Proposed Jan 1 , 2020	Proposed Oct 1, 2020	Proposed Oct 1, 2021
Residential				
500 cubic feet	$25.84	$26.44	$27.09	$27.64
700 cubic feet	$32.88	$33.72	$34.63	$35.40
1,500 cubic feet	$61.04	$62.84	$64.79	$66.44
Commercial				
2,500 cubic feet	$96.24	$99.24	$102.49	$105.24
4,000 cubic feet	$149.04	$153.84	$159.04	$163.44
7,500 cubic feet	$272.24	$281.24	$290.99	$299.24
Industrial				
5,000 cubic feet	$353.23	$359.23	$365.73	$371.23
50,000 cubic feet	$2,101.35	$2,164.39	$2,229.76	$2,285.11
500,000 cubic feet	$21,855.57	$22,546.60	$23,207.83	$23,768.13

November 12, 2019

Wastewater Rate Study

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Agenda

- Purpose of Presentation
- Background Information
- Rate Study Process & Results

Purpose of Presentation and Background Information

John Collins
Public Works Director

Purpose of Presentation

1. Provide the City Council with background information related to wastewater rates
2. Present the results of the rate study update
3. Respond to questions
4. Gain the City Council's understanding of the proposed rate increases

Background Information

- Most recent comprehensive wastewater rate study was completed in October 2013
  - Council approved 4 revenue increases (12%, 12%, 6%, 5%) from FY 2014 – FY 2017
- Financial plan was updated in 2014 to reflect revised CIP and SRF funding
  - FY 2014 – FY 2017 CIP increased $9,432,100
  - Proposed $37M SRF Loan
  - No change in Council approved revenue increases
- Rates have not been increased since FY 2017
- 2019 comprehensive wastewater rate study develops proposed rates for FY 2020 – FY 2024

Rate Study Process & Results

Anna White
Principal Consultant / Project Manager

Purpose of the Rate Study

Perform independent wastewater rate study that will accomplish the following:

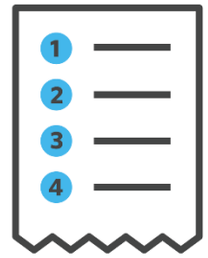
Establish operating and capital financing plans that fully fund activities

Perform a cost of service analysis to determine if cost allocations are fair and equitable among customer classes

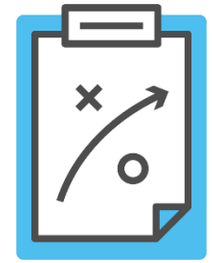
Review the existing rate structure and design proposed rates that provide adequate revenues

Industry Financial Planning / Rate Setting Best Practices

What are the Industry's Rate Setting Best Practices?



Define financial performance standards that support financial resiliency

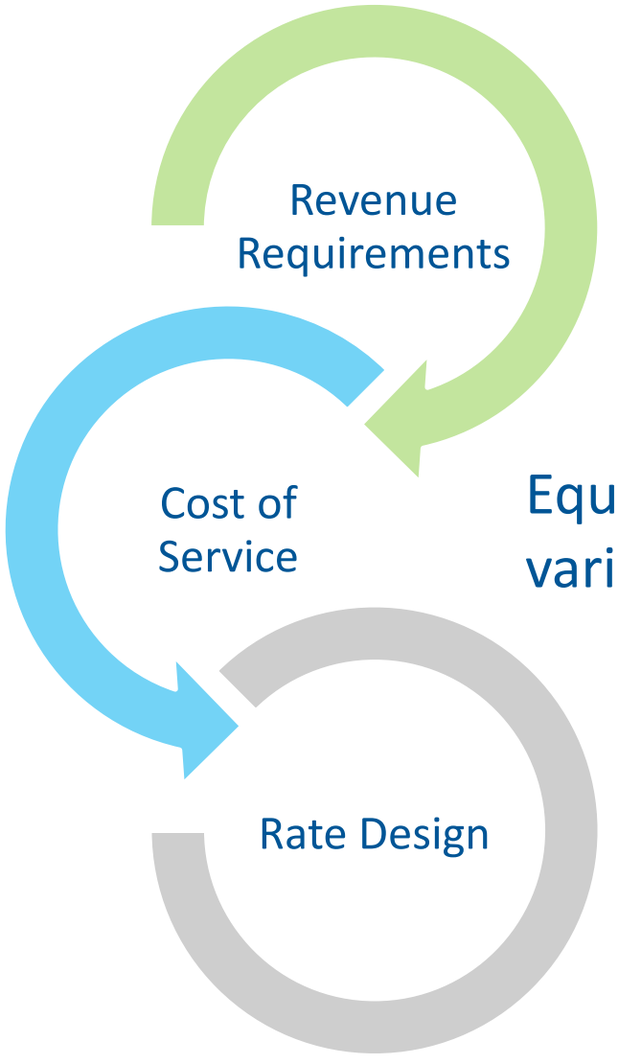


Develop annually a 5 to 10 year financial plan to achieve financial performance

Perform a cost of service study review every 3 to 5 years

Establish rates to ensure self-sufficiency to meet all revenue requirements

Building Blocks of Rate Setting

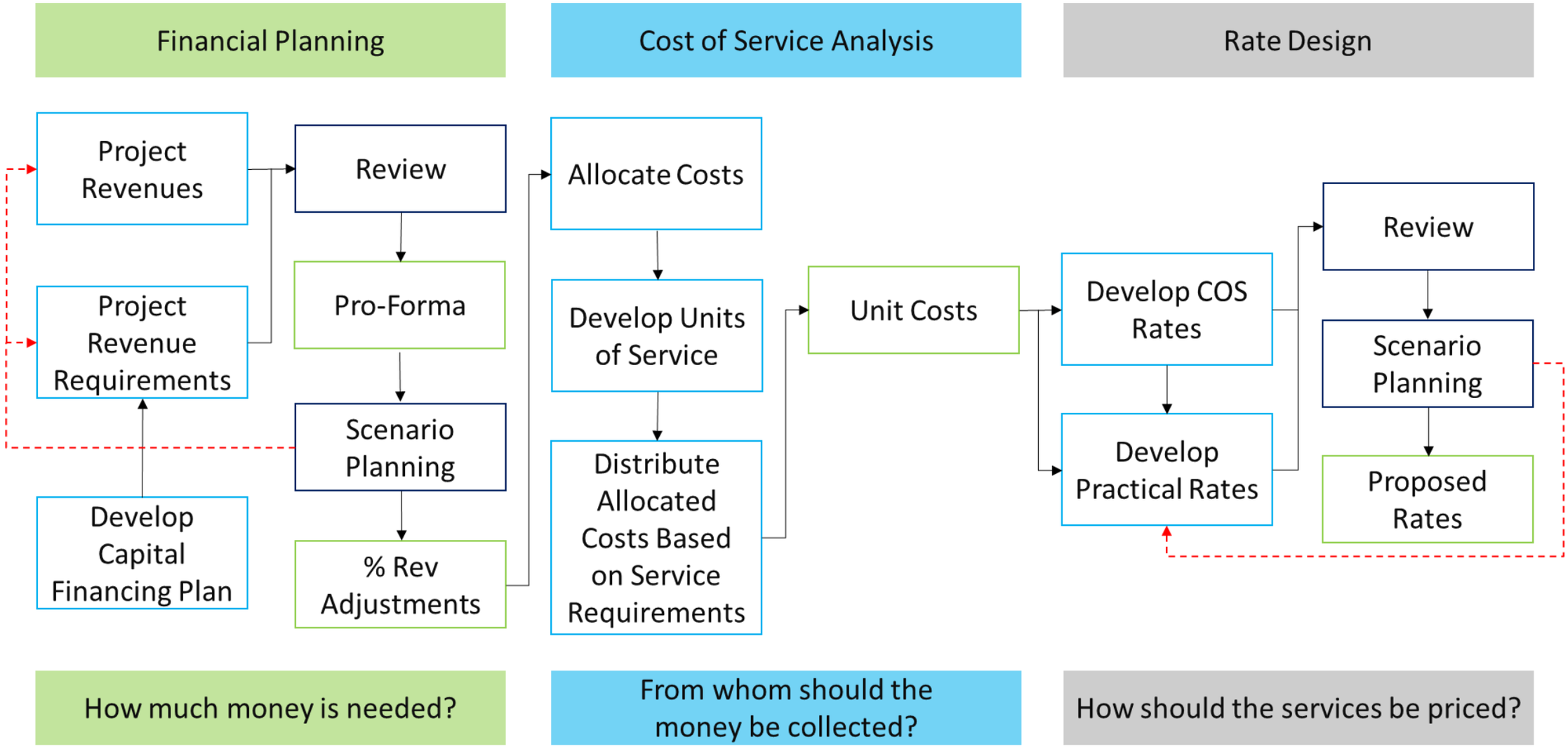


Compares the revenues of the utility to its expenses to determine the overall level of rate adjustment

Equitably allocates the revenue requirements between the various customer classes of service

Design rates for each class of service to meet the revenue needs of the utility, along with any other rate design goals and objectives

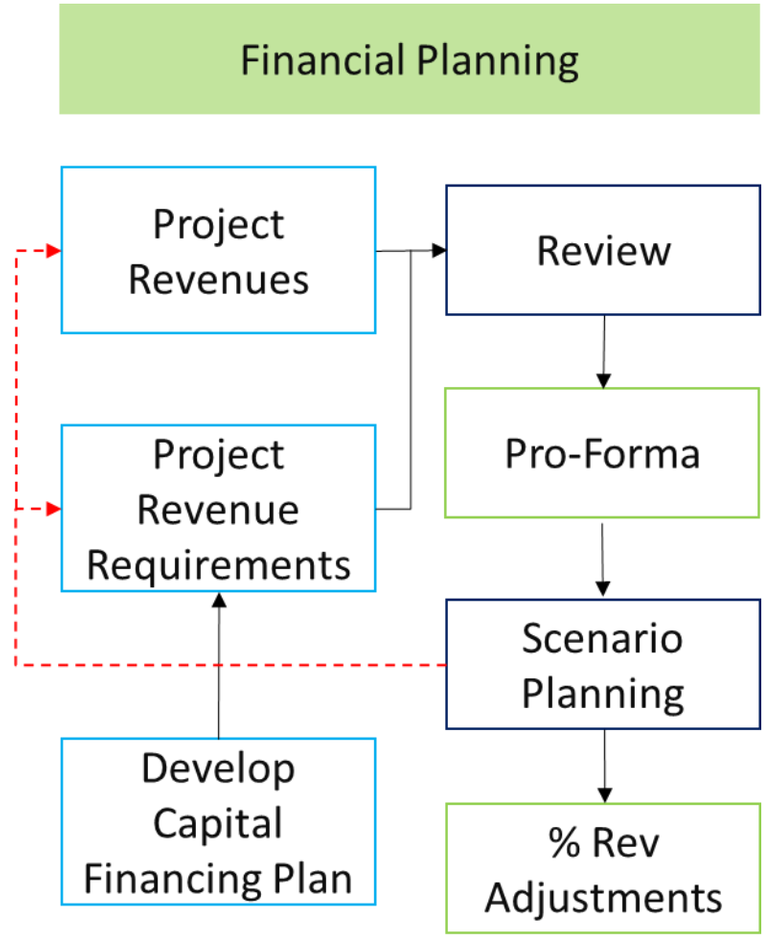
Rate Making Process



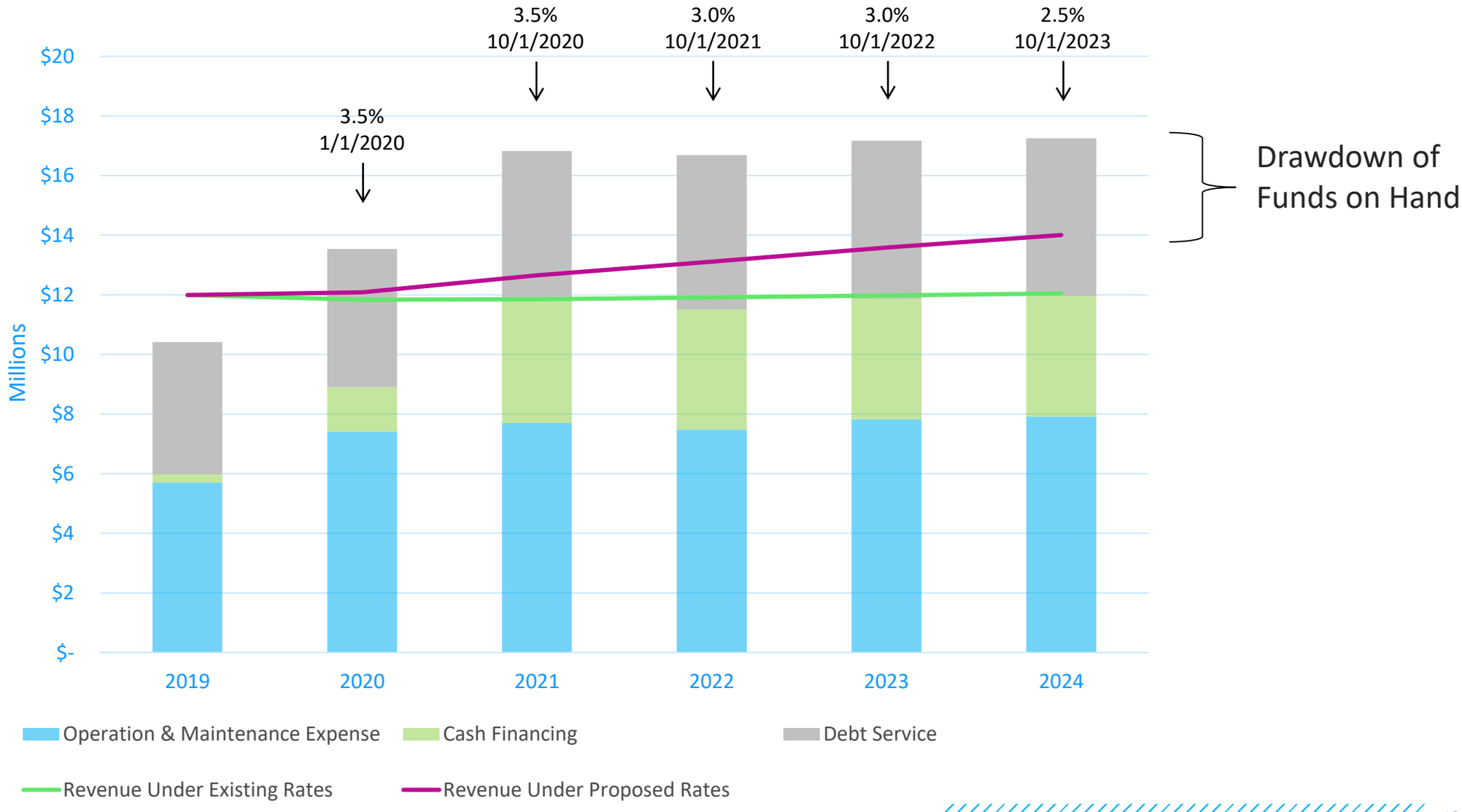
Financial Planning

- **Objective:**
  - Provide adequate funding for future utility operating and capital program needs
  - Set a path for timely revenue adjustments
- **Considerations**:
  - Factors that impact revenue generation
  - Factors that impact revenue requirements
  - Appropriateness of operating and capital reserves
  - Financial performance targets to be achieved

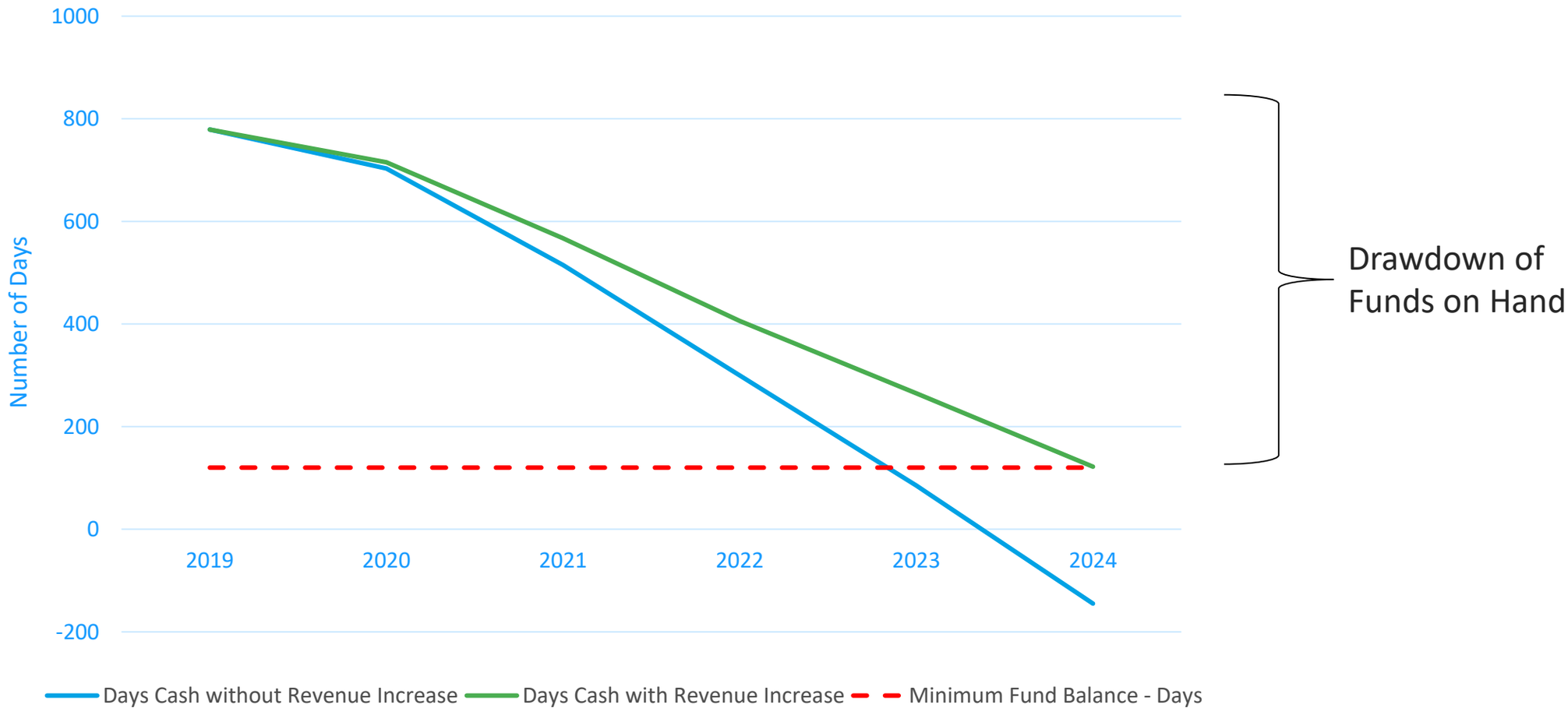
Benefit to You: An optimized Financial Plan that allows you to understand the impacts of Operating and Capital Requirements on Existing Rates



Revenue and Revenue Requirements

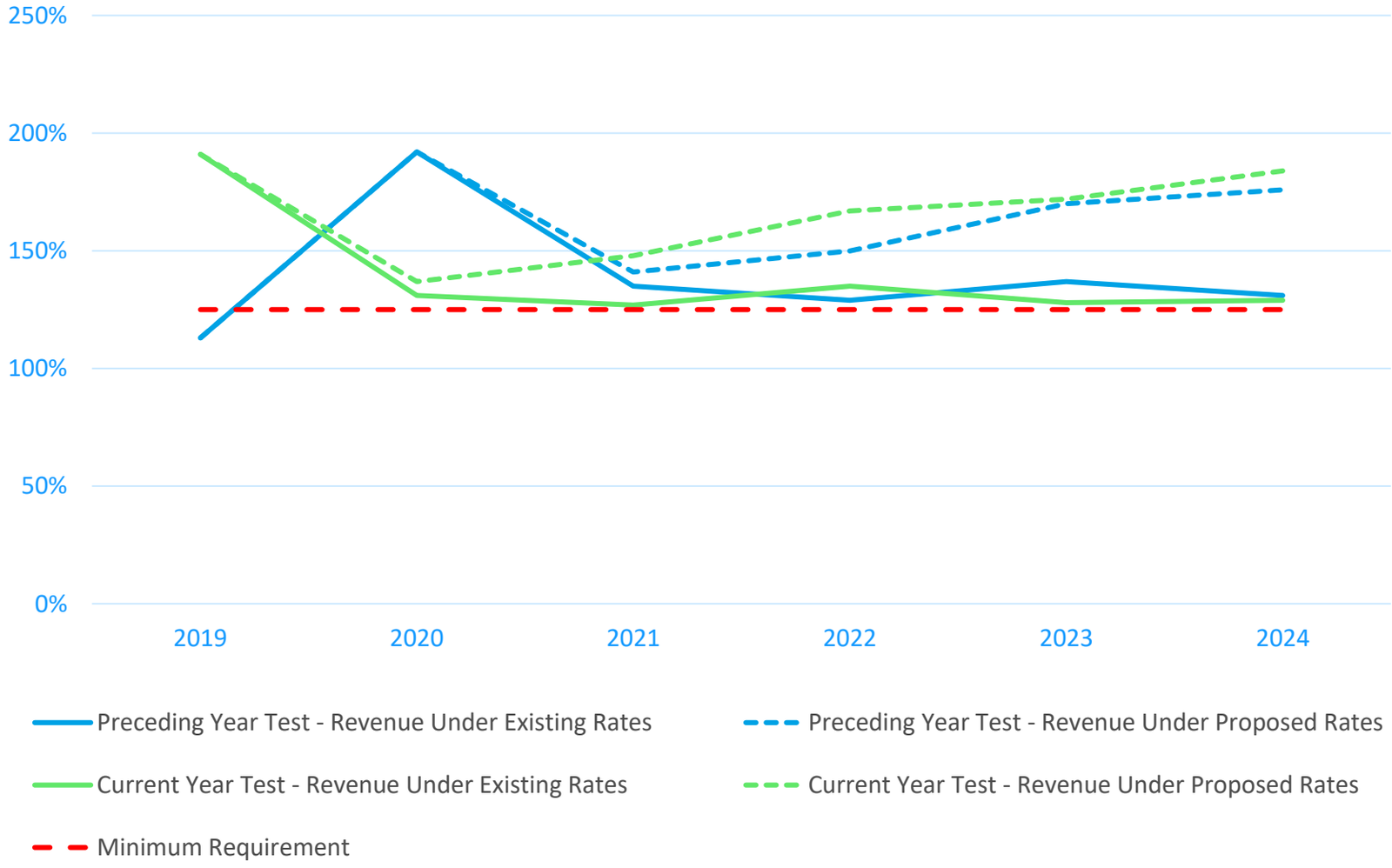


Wastewater Fund Balance



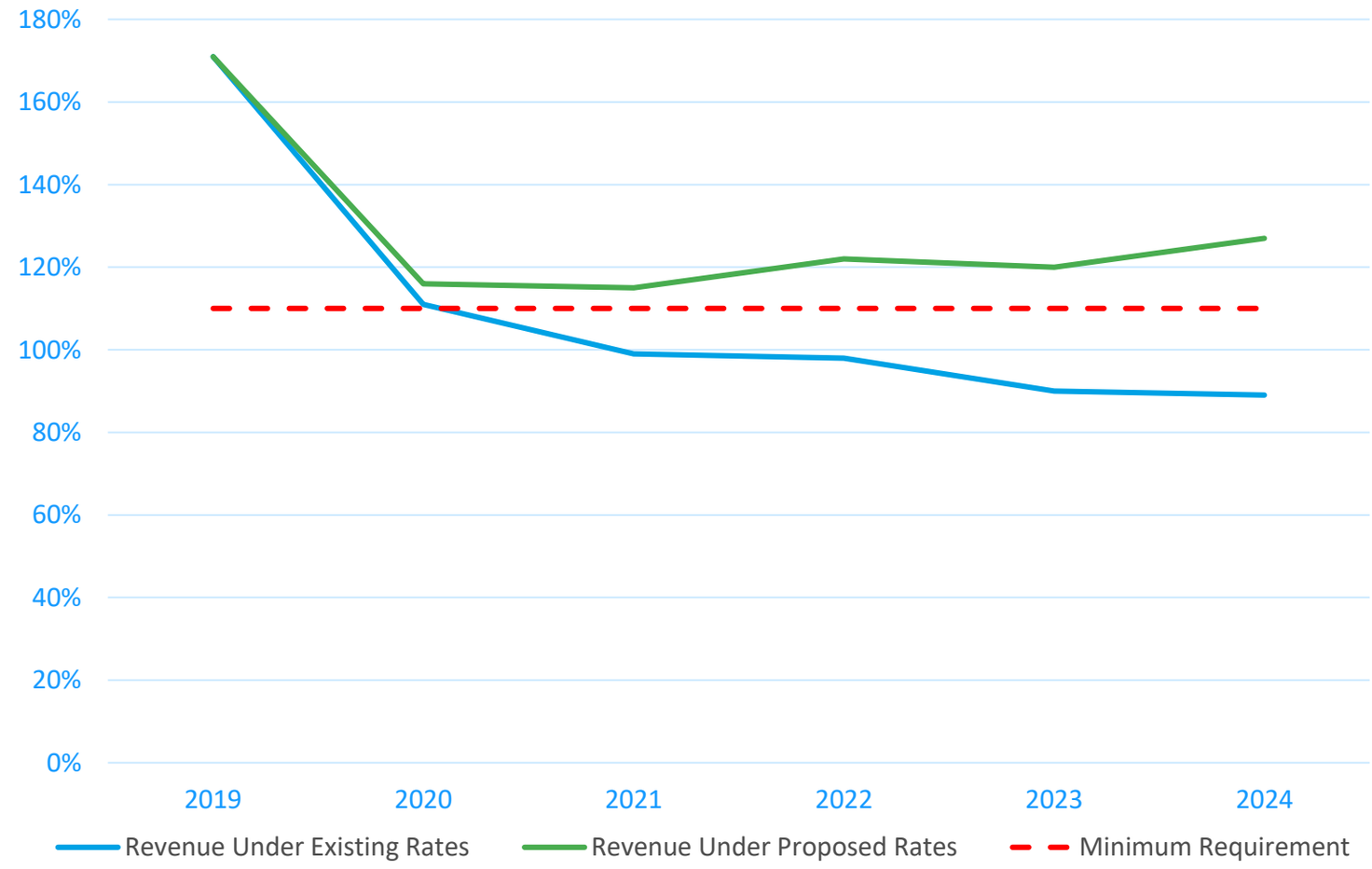
Assumes 3.5% revenue increases in FY 2020 and FY 2021, 3.0% in FY 2022 and FY 2023 and 2.5% in FY 2024

Debt Service Coverage – Additional Bonds Test



The Utility must comply with one of the Additional Bonds Tests

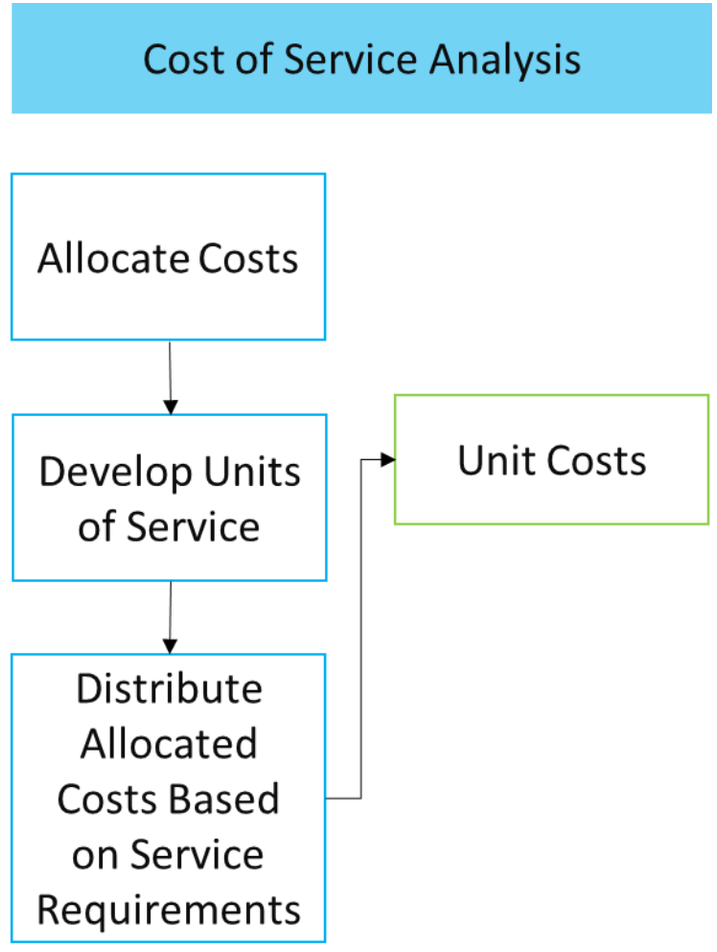
Debt Service Coverage – Annual Coverage Test



Revenue under existing rates will not provide sufficient net revenue to meet annual coverage requirements beginning in FY 2021

Cost of Service Methodology

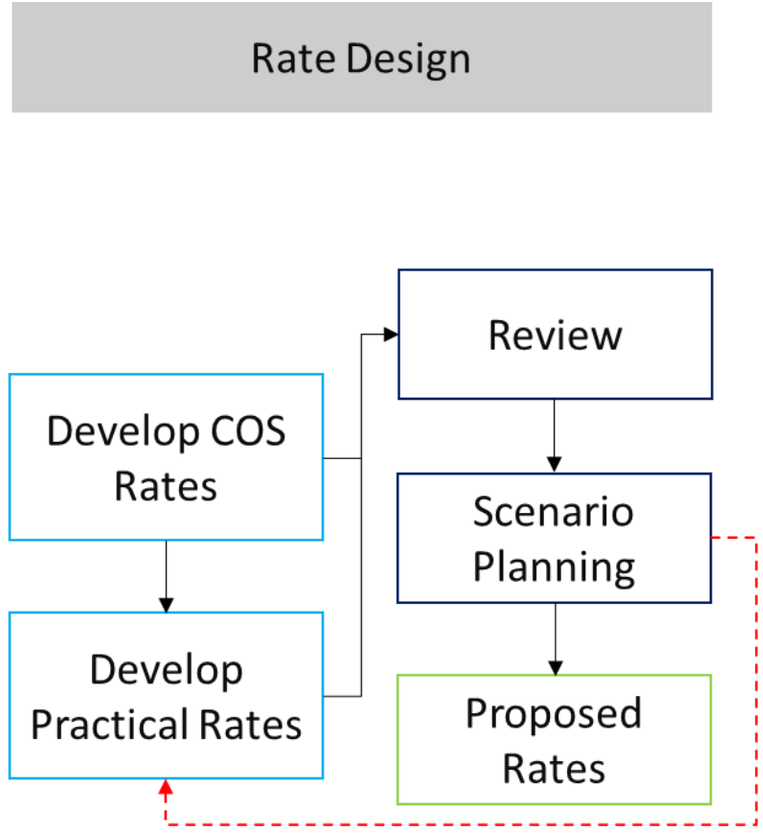
- **Objective:**
  - Recognize the cost-of-service responsibility for each customer class
- **Industry Accepted Methodology**:
  - Water Environment Federation, Financing and Charges for Wastewater Systems



Benefit to You: An equitable and defensible approach to allocate costs amongst all customer groups served by you

Rate Design

- **Rate Setting Principles:**
  - Equitability
  - Revenue Stability
  - Provides Appropriate Price Signals
  - Recognizes Customer Usage Patterns & Demands
  - Easy to Understand and Administer
  - Customer Acceptance
  - Consistent with City Policies
  - Legally Acceptable / Defensible



Benefits to You: A schedule of proposed rates that are defensible, appropriately recover costs, and easy to understand by stakeholders

Proposed Rates

Rate Component	Existing	Proposed Jan 1, 2020	Proposed Oct 1, 2020	Proposed Oct 1, 2021	Proposed Oct 1, 2022	Proposed Oct 1, 2023
Service Charge - $/Month	$8.24	$8.24	$8.24	$8.24	$8.24	$8.24
Volume Charge - $/100 gallons						
Collection System Users	$3.52	$3.69	$3.88	$4.03	$4.19	$4.33
Direct Discharge Users	$1.18	$1.19	$1.20	$1.21	$1.22	$1.23
Low-Strength Industrial Users	$2.47	$2.72	$2.91	$3.06	$3.21	$3.35
Strength Surcharge - $/lb						
BOD	$0.3248	$0.3248	$0.3248	$0.3248	$0.3248	$0.3248
Suspended Solids	$0.2177	$0.2177	$0.2177	$0.2177	$0.2177	$0.2177
Oil & Grease	$0.1519	$0.1908	$0.1975	$0.2034	$0.2095	$0.2147
TKN	$0.0395					
Nitrates	$1.0299					
Total Nitrogen		$0.8900	$0.8953	$0.9222	$0.9499	$0.9736

Typical Bill Comparison

Description	Existing	Proposed Jan 1 , 2020	Proposed Oct 1, 2020	Proposed Oct 1, 2021
Residential				
500 cubic feet	$25.84	$26.69	$27.64	$28.39
700 cubic feet	$32.88	$34.07	$35.40	$36.45
1,500 cubic feet	$61.04	$63.59	$66.44	$68.69
Commercial				
2,500 cubic feet	$96.24	$100.49	$105.24	$108.99
4,000 cubic feet	$149.04	$155.84	$163.44	$169.44
7,500 cubic feet	$272.24	$284.99	$299.24	$310.49
Industrial				
5,000 cubic feet	$353.23	$361.73	$371.23	$378.73
50,000 cubic feet	$2,101.35	$2,189.39	$2,284.91	$2,360.37
500,000 cubic feet	$21,855.57	$22,796.60	$23,762.28	$24,526.08

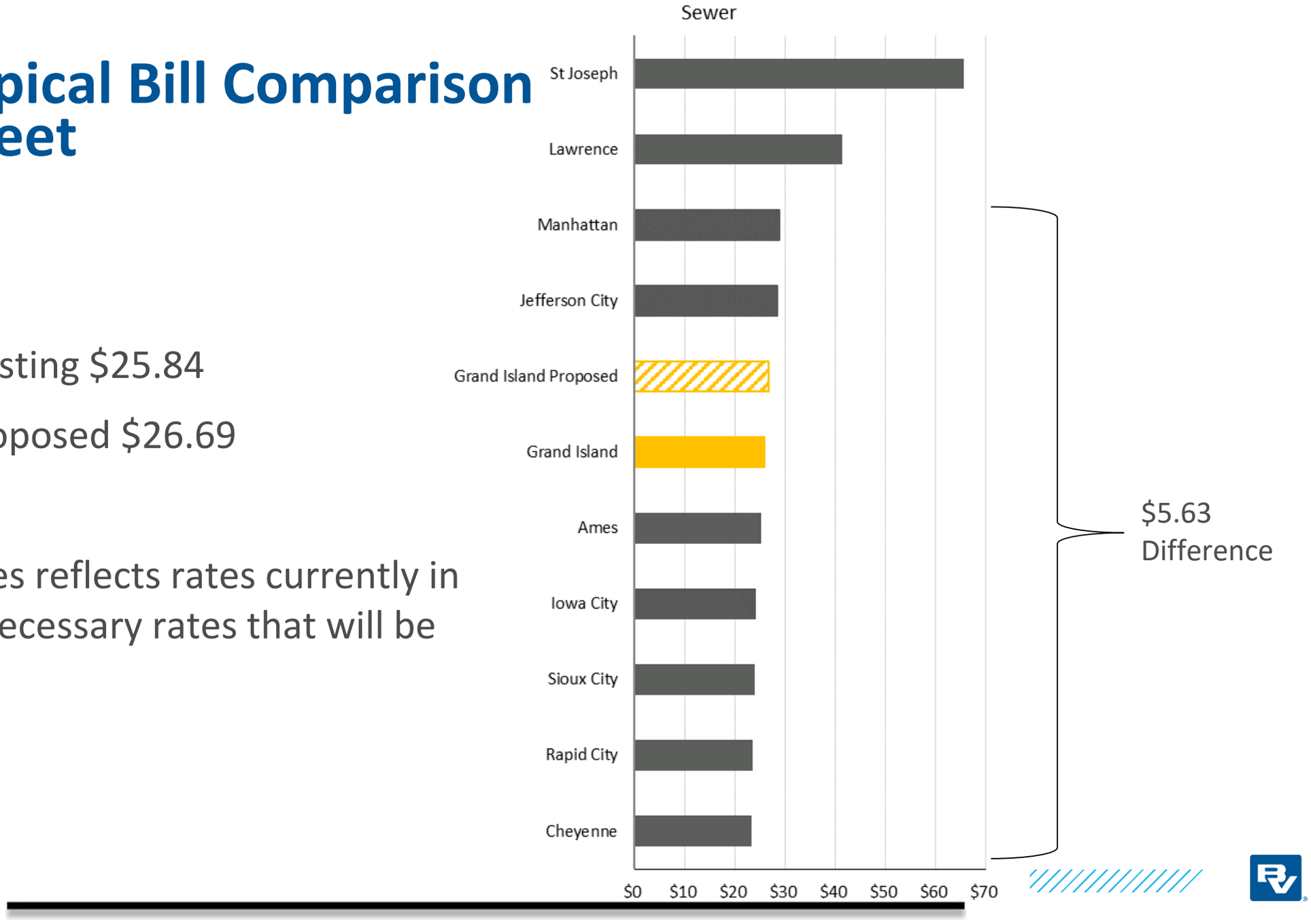
FY 2020 Typical Bill Comparison 500 cubic feet

Average $30.62

Grand Island Existing $25.84

Grand Island Proposed $26.69

Comparison rates reflects rates currently in effect and not necessary rates that will be in effect in 2020



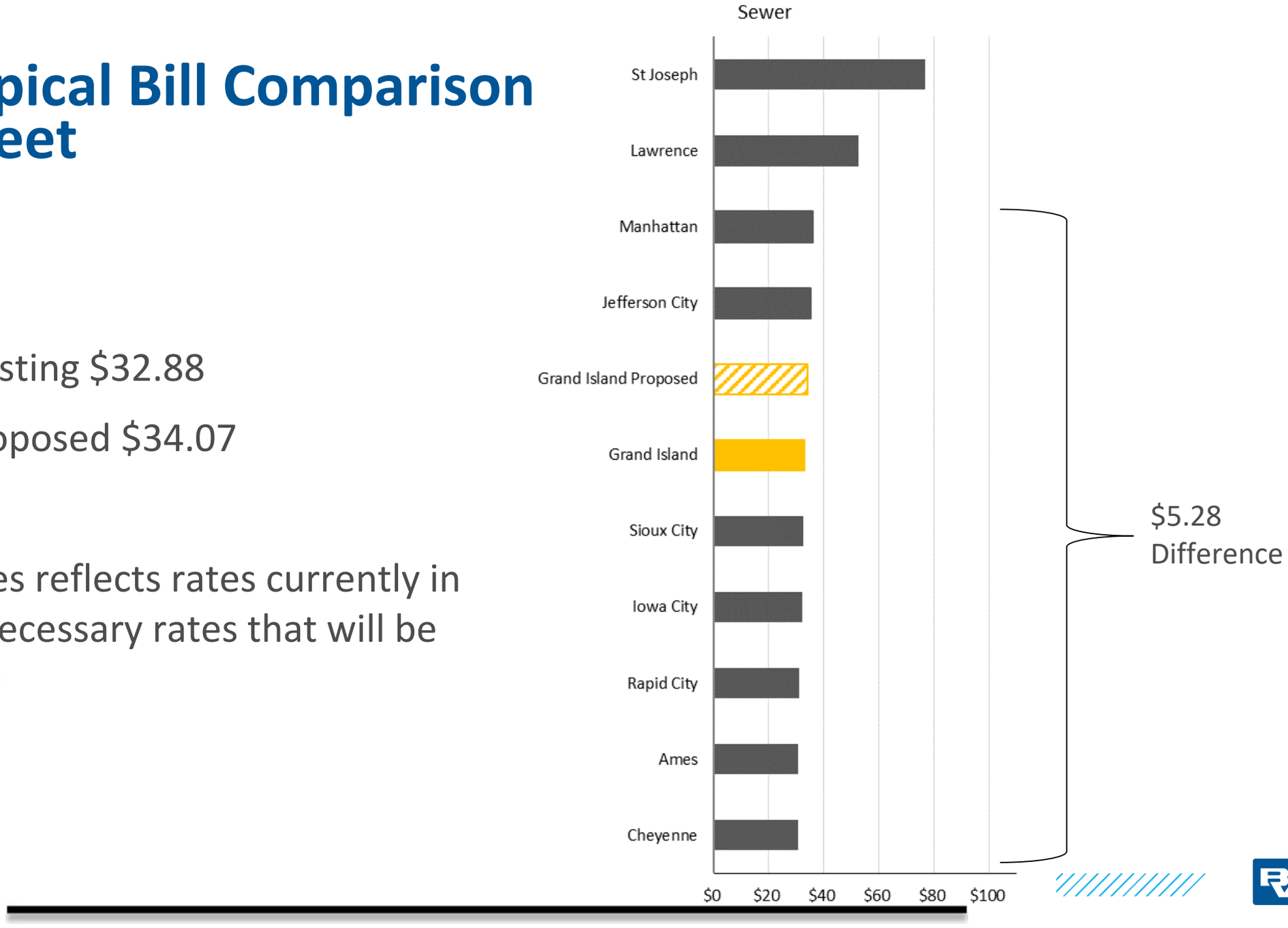
FY 2020 Typical Bill Comparison 700 cubic feet

Average $38.56

Grand Island Existing $32.88

Grand Island Proposed $34.07

Comparison rates reflects rates currently in effect and not necessary rates that will be in effect in 2020



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