

FINAL

**Jersey City Municipal Utilities Authority
WATER AND WASTEWATER RATE STUDY**

**Revised and Corrected
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NW Financial Group, LLC

Hoboken, New Jersey



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SECTION 1. PURPOSE AND OVERVIEW OF THE STUDY

Background and Study Objectives

The Jersey Authority Municipal Utilities Authority ("Authority") supplies municipal water and wastewater service to the City of Jersey City and certain other bulk water customers.

In early 1998 the Jersey City Sewerage Authority was reorganized as the Jersey City Municipal Utilities Authority to operate both the sewer and water systems. As part of the agreement the JCMUA agreed with the City of Jersey City to assume the existing water operating agreement with Suez, assume the debt service of the City then outstanding debt related to the water system which was previously issued by the city and agreed to pay the City an annual franchise fee in connection with its rights to derive revenue from the City owned water system from water system rates.

Water System

The water system is comprised of five major components:

- 1- Impoundment (Combined Storage Capacity 11.3 Billion Gallons)
 - i. Boonton Reservoir, primary water supply
 - ii. Split Rock Reservoir, emergency water supply
 - iii. Also has connections to water from:
 - a. New Jersey District Water Commission
 - b. Passaic Valley Water Commission
 - c. City of Newark
- 2- Water treatment facilities - Boonton treatment plant
 1. 80 MGD capacity
 2. 60 MGD peak use
 3. 50 MGD average usage
 4. 56.8 MGD safe yield
- 3- Water transmission lines
 - i. Gravity piping and tunnel
 - ii. 23 miles in length
- 4- Water distribution facilities
 - i. Troy street pump station
 - ii. Troy street reservoir tank
 - iii. In City piping infrastructure (9148 miles)
- 5- Land
 - i. 2500 acres of land in Morris County, NJ

The JCMUA has a long-term contract (expires April 30, 2027) with Suez to fully operate the water transmission system and directly bill the customers of the water system.

JCMUA has agreed to a rate covenant in its water bond resolution that will be sufficient to pay for:

- A- Water operating expenses in the fiscal year
- B- Debt service on the prior city water bonds
- C- City annual franchise fees
- D- Any other operating expenses
- E- Annual debt service on all JCMUA water bonds

Sewer System

The JCMUA also directly manages and maintains the City's wastewater system. The sewer system consists of pumping stations on both the east and west side of the city and all sewage is pumped to the Passaic Valley Sewerage Authority's treatment plant in Newark, NJ. Under agreement the City also receives sewage from North Bergen at its west side treatment plant.

In addition to the two pump stations the system is comprised of:

- 1- Trunk line to Passaic Valley Sewerage Commission
- 2- Tide gates
- 3- Regulators
- 4- Netting facility intercepts
- 5- Outfall sewers
- 6- Collector sewers (230 miles; 5,000 catch basins)

Under law JCMUA must charge rates sufficient to pay:

- A- Operating and maintenance expenses
- B- Reserves
- C- Insurance
- D- Extensions and replacements
- E- Bond debt service
- F- Maintain required reserves

The Authority inspects and maintains 148 miles of water and sewer lines within City limits. The primary objectives in evaluating the Authority's rates included meeting broader rate design objectives, such as revenue sufficiency, providing adequate funding for rehabilitation and replacement of the Authority's aging water and sewer infrastructure.

JCMUA Budget Summary

Jersey City MUA Budgetary Summary

	2021 Budget SEWER	2021 Budget WATER	2021 Budget TOTAL
REVENUE:			
USER FEES	\$ 57,907,965	\$ 56,000,000	\$ 113,907,965
BULK WATER SALES		\$ 10,800,000	\$ 10,800,000
SERVICE AGREEMENTS	\$ 3,500,000		\$ 3,500,000
CONNECTION FEES	\$ 3,200,000	\$ 1,100,000	\$ 4,300,000
FLAGGERS INCOME	\$ 2,100,000		\$ 2,100,000
METER FINES		\$ 1,000,000	\$ 1,000,000
INTEREST ON DELINQUENT PAYMENTS	\$ 85,000	\$ 100,000	\$ 185,000
INTEREST ON INVESTMENTS	\$ 400,000	\$ 1,000,000	\$ 1,400,000
TOTALS	<u>\$ 67,192,965</u>	<u>\$ 70,000,000</u>	<u>\$ 137,192,965</u>
EXPENSES:			
ADMINISTRATIVE	\$ 4,110,200	\$ 3,246,603	\$ 7,356,803
SEWER OPERATIONS	\$ 24,357,828		\$ 24,357,828
PVSC	\$ 21,396,672		\$ 21,396,672
WATER OPERATIONS		\$ 9,815,352	\$ 9,815,352
SUEZ OPERATING CONTRACT		\$ 14,274,648	\$ 14,274,648
CITY FRANCHISE FEE		\$ 21,000,000	\$ 21,000,000
DEBT SERVICE	\$ 6,228,265	\$ 13,563,397	\$ 19,791,662
RESERVE-PLANT RECON.\REPLACEMENT	\$ 3,900,000	\$ 2,500,000	\$ 6,400,000
OPERATING AND MAINTENANCE RESERVES	\$ 7,200,000	\$ 5,600,000	\$ 12,800,000
TOTALS	<u>\$ 67,192,965</u>	<u>\$ 70,000,000</u>	<u>\$ 137,192,965</u>

A. PURPOSE OF THE STUDY

The Authority has retained NWFG to update its water and sewer rates as a periodic follow up to the rate study it conducted in 2019, examination of funding options and timing for capital improvements and how much revenue is collected from fixed charges vs. volumetric rates are key components of this analysis. The rates developed in this study meet basic requirements and were developed based on industry standards affecting how water rates should be established. In developing proposed new water and sewer rates, NWFG and Authority Staff worked cooperatively in developing study results and rate alternatives. Based on input from the Authority Staff, NWFG recommends the Authority adopt the water and sewer rates summarized in this report.

B. OVERVIEW OF THE STUDY

Key Issues Addressed – As part of the effort to meet the overall objectives summarized above, the specific elements addressed in this study included:

- **Overall Rate Design** – The impacts of rate increase on customer bills are significant concerns to the Authority and staff and, therefore were critical considerations in evaluating the overall rate design, including the amount of revenue collected from fixed charges vs. volumetric rates.
- **Financial Planning Alternatives** – The longer-range financial plans and capital improvement funding alternatives for the water and sewer utilities were closely examined and adjusted to best meet annual operating and longer-term capital improvement costs.

Recommendations – As a part of the long-range financial plan, NWFG evaluated projected revenues and expenditures and developed net revenue requirements. NWFG recommends the Authority adopt the proposed water and sewer service rates shown in the recommendations section.

C. RATE STUDY METHODOLOGY

Components of the Rate Study Methodology – A comprehensive utility rate study, whether for water or sewer rates, typically encompasses three major components: (1) the utility's overall revenue requirements and financial plan, (2) the cost-of-service for each customer class, and (3) rate structure design. These three components were used in this study, and are summarized below:

- A- Revenue Requirements & Financial Plan
 - i. Compare current revenues and expenses
 - ii. Calculate total revenues needed from rates
 - iii. Project annual rate percentage increases needed
- B- Cost of Service Analysis
 - i. Allocate requirements to customer classes
- C- Rate Design
 - i. Determine rate structure by customer class
 - ii. Reflect JCMUA policies and rate objectives

These components reflect general industry standard cost-of-service methodologies and are intended to address general requirements for equity and fairness.

As a part of this rate study, NWFG projected revenues, expenditures, net revenue requirements, performed cost-of-service rate analyses, and evaluated rate design alternatives that resulted in the recommended new water and sewer rates. The following sections present an overview of the methodologies, assumptions, and data used along with the financial plans and rates developed during this study.

Rate Design Criteria – Several criteria are typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been documented in a number of rate-setting manuals. The most commonly referenced industry standard is the AWWA Manual M1. The following is a simplified list of some of the broader attributes of a sound rate structure:

- Rates should be easy to understand from the customer's perspective.
- Rates should be easy to administer from the utility's perspective.
- Rates should promote the efficient allocation of the resource.
- Rates should be equitable and non-discriminating (that is, cost based).
- There should be continuity in the rate making philosophy over time.
- Other utility policies should also be considered (for example, encouraging conservation and economic development).
- Rates should provide month-to-month and year-to-year revenue stability.


The following section covers basic rate design criteria that NWFG and Authority staff considered as a part of their review of the rate structure alternatives.

Rate Structure Issues – One of the most fundamental components in rate design is the relationship between fixed and variable costs; many rate structures contain a fixed charge in combination with a volumetric charge. Fixed costs typically do not vary with the amount of water consumed; debt service and personnel are examples of a fixed cost. In contrast, variable costs tend to change with the quantity of water sold, such as chemicals and electricity.

Key Financial Assumptions

Following are the key assumptions used in the water and sewer rate analyses:

- **Funding of Capital Projects** – Review of the planned five-year capital improvement projects plan (CIP) and develop a funding plan.
- **Reserve Targets** – Target reserves for both Water and Sewer Utilities operations and maintenance (O&M) and capital rehabilitation and replacement (R&R), reflect typical industry practices for utility reserve fund management:

- 
- Operating & Maintenance Reserve target levels – 90 days of O&M expenses.
 - Capital Rehabilitation and Replacement Reserve levels – approximately 3% of utility assets.
 - Emergency Reserve – 30 days of budget

- **Inflation and Growth Projection Assumptions**

- No annual water usage or customer growth.
- General costs (such as professional and contractual services, fuel, vehicle maintenance, electricity) are inflated between 2 percent annually.
- Operating expenses are inflated at a rate of 2 percent annually, and include chemicals purchased, energy, raw water purchases, etc.
- Labor costs are inflated at 2 percent annually and include retirement and benefits.
- No inflation is added to other budget items, such as fixed meter charges and investment income.

SECTION 2. WATER RATE STUDY

A. KEY WATER RATE STUDY OBJECTIVES

A few of the more specific objectives for the water rate study included:

- Evaluating volumetric rates in a manner that incorporates the Authority's need to ensure adequate revenues to pay for the costs of the annual operation of the system as well as to fund required capital improvements over time and prudent reserve requirements.
- Finding an acceptable plan for generating sufficient revenue, without creating spikes in rates, to meet projected future funding requirements.

B. WATER UTILITY REVENUE REQUIREMENTS

It is important for municipal utilities to maintain reasonable reserves to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices.

Water revenues for 2020 as provided by Suez, who serves as the billing agent, were as follows:

WATER

Bill Frequency	Revenue Class Code	Consumption - MGL	Revenues	Facility Charges	Revenues and Facility Charges	Tax and Surcharges	Total
D	COM	-	\$ -	\$ 80,103.86	\$ 80,103.86	\$ -	\$ 80,103.86
	RES	-	\$ -	\$ 27,380.34	\$ 27,380.34	\$ -	\$ 27,380.34
	Subtotal	-	\$ -	\$ 107,484.20	\$ 107,484.20	\$ -	\$ 107,484.20
M	COM	3,298,606.70	\$ 17,167,402.21	\$4,433,187.97	\$ 21,600,590.18	\$ -	\$ 21,600,590.18
	IND	4,566,012.54	\$ 11,491,879.85	\$ 770,285.77	\$ 12,262,165.62	\$ -	\$ 12,262,165.62
	RES	654,866.52	\$ 3,732,087.27	\$ 998,299.67	\$ 4,730,386.94	\$ -	\$ 4,730,386.94
	Subtotal	8,519,485.75	\$ 32,391,369.33	\$6,201,773.41	\$ 38,593,142.74	\$ -	\$ 38,593,142.74
Q	COM	1,027,937.50	\$ 5,819,502.03	\$ 760,745.42	\$ 6,580,247.45	\$ -	\$ 6,580,247.45
	IND	18,334.98	\$ 104,163.44	\$ 37,262.41	\$ 141,425.85	\$ -	\$ 141,425.85
	RES	2,397,115.60	\$ 13,554,131.90	\$2,859,762.60	\$ 16,413,894.50	\$ -	\$ 16,413,894.50
	Subtotal	3,443,388.08	\$ 19,477,797.37	\$3,657,770.43	\$ 23,135,567.80	\$ -	\$ 23,135,567.80
Total for Water		11,962,873.83	\$ 51,869,166.70	\$9,967,028.04	\$ 61,836,194.74	\$ -	\$ 61,836,194.74

Rate increases are governed by the need to meet operating and capital costs, maintain adequate debt coverage, and maintain reserve funds. The current state of the Authority's water utility, regarding these objectives is as follows:

- **Meeting Net Revenue Requirements:** The Authority's water utility is currently running a positive fund balance in 2021, if no rate increases are implemented. For FY 2020 through 2026, the projected net revenue requirement will rise by significantly due primarily to increased debt service obligations as the result of the implementation of the over \$500 million capital program.
- **Building and Maintaining Reserve Funds:** The Authority should maintain sufficient reserves; this analysis assumes reserves will be gradually built over time with the intent of reaching recommended target reserve fund target balances.
- **Operating Reserve** is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. Fluctuations might be caused by weather patterns, the natural inflow and outflow of cash during billing cycles, natural variability in demand-based revenue streams (for example, variable charges), and – particularly in periods of economic distress – changes or trends in age of receivables. Typical industry practices are to maintain 90 days (or 25 percent) of the Utility's budgeted annual operating expenses.
- **Capital Rehabilitation and Replacement (R&R) Reserve** should typically be equal to a minimum of 3 percent of utility capital assets, which equates to a 33-year replacement cycle for capital assets. This target serves as a starting point for addressing long-term capital repair and replacement needs.
- **Rate Stabilization Fund** is designed to further promote financial stability when there are fluctuations in rate revenue. The target fund balance is typically set to 30 days of the Utility's budgeted annual operating expenses.

Capital Improvement Plan Funding Scenarios

The following table summarizes the net revenue requirements for the next 5 years. Any annual surpluses are used to meet pay-as-you-go capital needs or to build up reserves, with the intent of meeting target reserve-fund balances at some point in the future and to provide liquidity when needed.

Summary of Water Revenue Requirements

Cost of Service

Water Revenue Requirement	Actual 2019	Actual 2020	Budget 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025	Projected 2026
Operating Expenses								
Administrative	\$ 2,893,627	\$ 4,467,958	\$ 3,246,603	\$ 3,311,535	\$ 3,377,766	\$ 3,445,321	\$ 3,514,227	\$ 3,584,512
Non Administrative	\$ 5,308,452	\$ 4,769,364	\$ 5,501,147	\$ 5,611,170	\$ 5,723,394	\$ 5,837,851	\$ 5,954,619	\$ 6,073,711
Original Franchise Fee	\$ 21,000,000	\$ 22,000,000	\$ 22,000,000	\$ 22,000,000	\$ 22,000,000	\$ 23,000,000	\$ 23,000,000	\$ 23,000,000
2020 Prepayment Applied			\$ (1,000,000)	\$ (2,000,000)	\$ (2,000,000)	\$ (2,000,000)	\$ (2,000,000)	\$ (2,000,000)
Net Franchise Fee Due	\$ 21,000,000	\$ 22,000,000	\$ 21,000,000	\$ 20,000,000	\$ 20,000,000	\$ 21,000,000	\$ 21,000,000	\$ 21,000,000
Operating Contract - Suez	\$ 13,845,000	\$ 13,610,967	\$ 14,274,648	\$ 14,988,380	\$ 15,288,148	\$ 15,593,911	\$ 15,905,789	\$ 16,223,905
Sewer Treatment RVSA	\$ 4,146,679	\$ 4,229,613	\$ 4,314,205	\$ 4,400,489	\$ 4,488,499	\$ 4,578,269	\$ 4,669,834	\$ 4,763,231
Debt Service								
Principal	\$ 6,085,499	\$ 6,395,043	\$ 9,415,042	\$ 8,324,970	\$ 7,425,971	\$ 7,723,966	\$ 9,492,152	\$ 9,492,152
City p	\$ 3,525,000	\$ 3,110,000						
Interest	\$ 2,906,725	\$ 2,621,923	\$ 623,750	\$ 1,581,250	\$ 3,888,569	\$ 4,614,675	\$ 1,020,136	\$ 1,020,136
Existing Debt Service Total	\$ 12,517,224	\$ 12,126,966	\$ 10,038,792	\$ 9,906,220	\$ 11,314,540	\$ 12,338,641	\$ 10,512,288	\$ 10,512,288
Work In Progress								
New Reserves	\$ 3,621,584	\$ 6,452,913	\$ 8,100,000	\$ 8,100,000	\$ 8,100,000	\$ 7,500,000	\$ 7,500,000	\$ 6,000,000
Total Cost of Service	\$ 63,332,566	\$ 67,657,781	\$ 66,475,395	\$ 67,817,795	\$ 71,985,346	\$ 74,882,503	\$ 76,611,720	\$ 79,723,155
Surplus (Deficiency) before rate increase	\$ 4,470,516	\$ (2,663,508)	\$ 1,961,338	\$ 618,939	\$ (3,548,613)	\$ (6,445,770)	\$ (8,174,987)	\$ (11,286,422)

Meeting Net Revenue Requirement

No Rate Increase Scenario	Actual 2019	Actual 2020	Budget 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025	Projected 2026
Revenues								
Rate Revenue	\$ 44,655,738	\$ 42,997,798	\$ 46,332,446	\$ 46,332,446	\$ 46,332,446	\$ 46,332,446	\$ 46,332,446	\$ 46,332,446
Facility Fee	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554
Connection Fees	\$ 1,364,214	\$ 896,492	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000
Other Revenue	\$ 401,117	\$ 401,117	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
Delinquent Payment Interest	\$ 987,336	\$ 875,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Interest Earnings	\$ 402,102	\$ 319,579	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000
Bulk Water	\$ 10,325,021	\$ 9,836,733	\$ 9,836,733	\$ 9,836,733	\$ 9,836,733	\$ 9,836,733	\$ 9,836,733	\$ 9,836,733
Total Revenues	\$ 67,803,082	\$ 64,994,273	\$ 68,436,733	\$ 68,436,733	\$ 68,436,733	\$ 68,436,733	\$ 68,436,733	\$ 68,436,733
Water Revenue Requirement	\$ 63,332,566	\$ 67,657,781	\$ 66,475,395	\$ 67,817,795	\$ 71,985,346	\$ 74,882,503	\$ 76,611,720	\$ 79,723,155
Surplus (Deficiency) before rate increase	\$ 4,470,516	\$ (2,663,508)	\$ 1,961,338	\$ 618,939	\$ (3,548,613)	\$ (6,445,770)	\$ (8,174,987)	\$ (11,286,422)

Self-Supporting Rate Increase Scenario

Rate Increase Scenario	Actual 2019	Actual 2020	Budget 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025	Projected 2026
Annual Rate Increase			9.00%	3.75%	3.75%	3.75%	3.75%	3.75%
Rate Adjustment Date		July 1	January 1	January 1	January 1	January 1	January 1	January 1
Revenues								
Rate Revenue	\$ 44,655,738	\$ 42,997,798	\$ 46,332,446	\$ 48,069,913	\$ 49,872,534	\$ 51,742,754	\$ 53,683,108	\$ 55,696,224
Facility Fee	\$ 9,667,554	\$ 9,667,554	\$ 9,667,554	\$ 10,030,087	\$ 10,406,216	\$ 10,796,449	\$ 11,201,315	\$ 11,621,365
Connection Fees	\$ 1,364,214	\$ 896,492	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000	\$ 1,100,000
Meter Fines	\$ 401,117	\$ 401,117	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
Delinquent Payment Interest	\$ 987,336	\$ 875,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Interest Earnings	\$ 402,102	\$ 319,579	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000
Bulk Water	\$ 10,325,021	\$ 9,836,733	\$ 10,722,039	\$ 11,124,115	\$ 11,124,115	\$ 11,124,115	\$ 11,124,115	\$ 11,124,115
Total Revenues	\$ 67,803,082	\$ 64,994,273	\$ 69,322,039	\$ 71,824,115	\$ 74,002,865	\$ 76,263,319	\$ 78,608,539	\$ 81,041,705
Water Revenue Requirement	\$ 63,332,566	\$ 67,657,781	\$ 66,475,395	\$ 67,817,795	\$ 71,985,346	\$ 74,882,503	\$ 76,611,720	\$ 79,723,155
Surplus (Deficiency) after rate increase	\$ 4,470,516	\$ (2,663,508)	\$ 2,846,644	\$ 4,006,321	\$ 2,017,519	\$ 1,380,815	\$ 1,996,818	\$ 1,318,550

c. COST-OF-SERVICE ANALYSIS

The second component of a water rate study is the cost-of-service analysis whereby annual revenue requirements are fairly and equitably allocated to customer classes.

A key component of any multi-user water system rate study is the development of the cost of the water commodity being delivered to assure a fair allocation of price on a per gallon of consumption basis.

In considering the commodity cost for the JCMUA and its customers the cost is determined by allocating both the operating cost and the capital cost for all expenses/investment related to the:

- 1- Impoundment
 - i. Boonton Reservoir, primary water supply
 - ii. Split Rock Reservoir, emergency water supply
- 2- Water treatment facilities
 - a. Boonton treatment plant
 - i. 80 MGD capacity
 - ii. 60 MGD peak use
 - iii. 45 MGD average usage
 - iv. 56.8 MGD safe yield
- 3- Water transmission lines
 - a. Gravity piping and tunnel
 - b. 23 miles in length

Based upon information provided by JCMUA and Suez the following represent the 2020 water commodity costs that should be allocated to water users:

Water Commodity Cost	Gross Water Costs	Water Commodity Cost	Water Distribution Cost
Direct Suez Operating Costs	\$ 14,274,648	\$ 4,710,634	\$ 9,564,014
JCMUA Costs excluding debt service	\$ 27,872,750	\$ 9,198,008	\$ 18,674,743
Debt Service	\$ 10,038,792	\$ 3,312,801	\$ 6,725,991
Gas and Electric Cost	\$ 550,000	\$ 550,000	\$ -
Sludge Removal Cost	\$ 400,000	\$ 400,000	\$ -
Real Estate Taxes	\$ 900,000	\$ 900,000	\$ -
Rockaway Valley Sewer Authority	\$ 4,314,205	\$ 4,314,205	\$ -
Permits	\$ 25,000	\$ 25,000	\$ -
Annual Capital Costs	\$ 8,100,000	\$ 6,997,544	\$ 1,102,456
Total 2020 Water Commodity Costs	\$ 66,475,395	\$ 30,408,192	\$ 36,067,203
1000 Gallons of Water Transmitted		11,963	
Water Commodity Cost per MG		\$ 2,541.88	
Bulk Water Sales MG		4,533	
Bulk Water Revenue (Projected)		\$ 11,522,343	
In City Water Commodity Cost			\$ 18,885,849
In City Distribution Cost			\$ 36,067,203
Total in City Water Cost			\$ 54,953,052
Jersey City Cost per 1000 Gallons			\$ 7,396
2020 Bulk Water Cost per MG		\$ 2,450	
Percentage Cost Increase for 2022			3.75%

JCMUA currently charges only volumetric fees to its bulk water customers while charging a combination of volumetric fees and a fixed meter charge to its retail and commercial customers within the boundaries of the City of Jersey City.

Based upon the water commodity charge analysis shown above the cost of treated water transmitted to bulk customers would be \$2,541.88 per MG. The current rate for bulk water is the same at \$2,450 per MG.

IMPACT OF CAPITAL IMPROVEMENT PROGRAM

The JCMUA water utility system is over 100 years old and in constant need of major capital improvement and repairs. JCMUA has recently updated its Capital Improvement program which projects expenditures in excess of \$521,000,000 in total needs over time, of which over \$380,000,000 is over the five-year horizon.

The combination of the debt issuance would result in new annual debt service for the water utility system as follows:

New Bonds Issued		Water System New Debt Service				
		2022	2023	2024	2025	2026
\$ 50,000,000	Year 1 Projects	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 2,550,963	\$ 2,550,963
\$ 73,100,000	Year 2 Projects		\$ 2,193,000	\$ 2,193,000	\$ 2,193,000	\$ 1,178,545
\$ 29,850,000	Year 3 Projects			\$ 895,500	\$ 895,500	\$ 895,500
\$ 63,850,000	Year 4 Projects				\$ 1,915,500	\$ 1,915,500
\$ 167,500,000	Year 5 Projects					\$ 5,025,000
\$ 384,300,000	Total Debt Service	\$ 1,500,000	\$ 3,693,000	\$ 4,588,500	\$ 7,554,963	\$ 11,565,508

BULK WATER RATE ANALYSIS

Based upon our analysis of Water Commodity Cost the 2007 Wholesale Rate Study (See Appendix A) of \$2,450 per million gallons is lower than the commodity cost of water delivered to bulk water customers and needs to be increased to \$2,542 to direct cover costs of service.

WATER CONNECTION FEE ANALYSIS

Reserved for future analysis

SECTION 3. SEWER RATE STUDY

A. KEY SEWER RATE STUDY OBJECTIVES

The specific objectives addressed in the sewer rate analysis included:

- Evaluating alternatives for generating the additional revenue needed to meet projected revenue requirements, which are primarily driven by the need to fund capital improvement costs.
- Increasing the volumetric-based charge.

As with the water rates, all rate structure alternatives reflect industry standards and cost-of-service principles.

The updated rates considered the net revenue requirements, number of customer accounts, number of equivalent dwelling units (EDUs), and water consumption.

JCMUA has determined to charge the same sewer rate to each class of customer as has been its historic practice.

Rate Design: The revenue collected from residential, commercial and industrial customers are based on their water meter readings. Billing based on water consumption provides a reasonable estimate of indoor water use that enters the sewer collection system and is ultimately processed at the wastewater treatment plant. The current rate for sewer is \$6.31 per ccf of water billed.

2020 Sewer Revenues as reported by Suez, who serves as billing agent, are as follows:

SEWER

Bill Frequency	Revenue Class Code	Consumption - MGL	Revenues	Facility Charges	Revenues and Facility Charges	Tax and Surcharges	Total
M	COM	2,978,387.90	\$ 22,124,989.09	\$ -	\$ 22,124,989.09	\$ -	\$ 22,124,989.09
	IND	292,675.94	\$ 2,008,220.43	\$ -	\$ 2,008,220.43	\$ -	\$ 2,008,220.43
	RES	654,022.78	\$ 5,082,301.49	\$ -	\$ 5,082,301.49	\$ -	\$ 5,082,301.49
Subtotal		3,925,086.62	\$ 29,215,511.01	\$ -	\$ 29,215,511.01	\$ -	\$ 29,215,511.01
Q	COM	1,007,716.07	\$ 7,849,199.42	\$ -	\$ 7,849,199.42	\$ -	\$ 7,849,199.42
	IND	17,358.84	\$ 134,364.33	\$ -	\$ 134,364.33	\$ -	\$ 134,364.33
	RES	2,387,395.34	\$ 18,572,830.94	\$ -	\$ 18,572,830.94	\$ -	\$ 18,572,830.94
Subtotal		3,412,470.25	\$ 26,556,394.69	\$ -	\$ 26,556,394.69	\$ -	\$ 26,556,394.69
Total for Sewer		7,337,556.86	\$ 55,771,905.70	\$ -	\$ 55,771,905.70	\$ -	\$ 55,771,905.70

B. SEWER UTILITY REVENUE REQUIREMENTS

It is important for municipal utilities to maintain reasonable reserves to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices.

Rate increases are governed by the need to meet operating and capital costs, maintain and build reserve funds.

- **Meeting Net Revenue Requirements:** The Authority's sewer utility is projecting running a modest surplus in FY 2021. However, beginning in FY 2022 will begin to experience increased costs due to increases in debt service related to the 5-year capital improvement program and operating costs, if no rate increases are implemented these increased costs would result in deficits.

Recommended annual rate increases are needed to fund all O&M and the expected Capital Improvement Program funding scenario. If rate increases aren't implemented, the sewer utility will not be able meet its debt service obligations for its outstanding debt, and will begin running annual deficits, which will require even larger rate adjustments in later years.

Building and Maintaining Reserve Funds

NWFG recommends that the Authority adopt and maintain the following reserve fund targets:

- ✓ **Operating Reserve** is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. This reserve should be set to equal 90 days of the Utility's budgeted annual operating expenses.
- ✓ **Capital Rehabilitation and Replacement Reserve** equal to a minimum of 3% percent of utility capital assets. This reserve provides for capital repair and replacement needs.
- ✓ **Rate Stabilization Fund** is designed to further promote financial stability when there are fluctuations in rate revenue. The target fund balance is set to 30 days of the Utility's budgeted annual operating expenses.

Summary of Sewer Revenue Requirements

Cost of Service

	Actual 2019	Actual 2020	Budget 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025	Projected 2026
Sewer Revenue Requirement								
Operating Expenses								
Administrative	\$ 5,892,589	\$ 6,699,732	\$ 4,110,200	\$ 4,192,404	\$ 4,276,252	\$ 4,361,777	\$ 4,449,013	\$ 4,537,993
Non Administrative	\$ 19,055,530	\$ 23,403,222	\$ 24,357,828	\$ 24,844,985	\$ 25,341,884	\$ 25,848,722	\$ 26,365,696	\$ 26,893,010
Sewer Treatment PVSC	\$ 21,202,113	\$ 21,363,895	\$ 21,396,672	\$ 21,824,605	\$ 22,261,098	\$ 22,706,319	\$ 23,160,446	\$ 23,623,655
Debt Service								
Principal	\$ 5,041,299	\$ 5,146,599	\$ 4,924,176	\$ 4,285,530	\$ 4,320,132	\$ 4,424,711	\$ 4,469,171	\$ 4,469,171
Interest	\$ 1,286,436	\$ 1,256,356	\$ 1,304,089	\$ 1,190,617	\$ 1,084,119	\$ 979,050	\$ 874,690	\$ 874,690
Existing	\$ 6,327,735	\$ 6,402,955	\$ 6,228,265	\$ 5,476,147	\$ 5,404,251	\$ 5,403,761	\$ 5,343,861	\$ 5,343,861
Work In Progress NJEIT2021			\$ 666,259	\$ 664,249	\$ 667,749	\$ 670,874	\$ 663,624	\$ 671,374
New				\$ 3,666,000	\$ 5,466,000	\$ 3,024,000	\$ 3,213,553	\$ 7,092,209
Reserves	\$ 3,610,349	\$ 6,997,122	\$ 3,000,000	\$ 7,000,000	\$ 7,000,000	\$ 7,000,000	\$ 7,000,000	\$ 7,000,000
Capital Expenses	\$ 10,731,718	\$ 5,000,000	\$ 7,200,000					
Total Cost of Service	\$ 66,820,034	\$ 69,866,926	\$ 66,959,224	\$ 67,668,390	\$ 70,417,234	\$ 69,015,454	\$ 70,196,194	\$ 75,162,102

Net Revenue Need

	Actual 2019	Actual 2020	Budget 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025	Projected 2026
No Rate Increase Scenario								
Revenues								
Rate Revenue	\$ 55,074,795	\$ 55,714,754	\$ 57,907,965	\$ 57,907,965	\$ 57,907,965	\$ 57,907,965	\$ 57,907,965	\$ 57,907,965
North Bergen	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993
Service Agreements	\$ 5,805,298	\$ 6,070,485	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000
Non Budget Revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Grant Revenues	\$ 203,108	\$ 1,747,017						
Connection Fees	\$ 7,860,359	\$ 5,054,009	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000
Other Revenue	\$ 4,815,440	\$ 3,209,632						
Flagger Service Income			\$ 2,100,000	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000
Delinquent Payment Interest	\$ 443,315	\$ 67,837	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000
Interest Earnings	\$ 188,918	\$ 37,991	\$ 40,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000
Total Revenues	\$ 75,077,226	\$ 72,587,718	\$ 67,518,958	\$ 67,523,958	\$ 67,523,958	\$ 67,523,958	\$ 67,523,958	\$ 67,523,958
Sewer Revenue Requirement	\$ 66,820,034	\$ 69,866,926	\$ 66,959,224	\$ 67,668,390	\$ 70,417,234	\$ 69,015,454	\$ 70,196,194	\$ 75,162,102
Surplus (Deficiency) before rate Increase	\$ 8,257,192	\$ 2,720,792	\$ 559,734	\$ (144,432)	\$ (2,893,276)	\$ (1,491,496)	\$ (2,672,236)	\$ (7,638,145)

Self-Supporting Rate Increase Scenario

	Actual 2019	Actual 2020	Budget 2021	Projected 2022	Projected 2023	Projected 2024	Projected 2025	Projected 2026
Rate Increase Scenario								
Annual Rate Increase				3.75%	3.75%	3.75%	3.75%	3.75%
Rate Adjustment Date		July 1	January 1	January 1	January 1	January 1	January 1	January 1
Revenues								
Rate Revenue	\$ 55,074,795	\$ 55,714,754	\$ 57,907,965	\$ 60,079,514	\$ 62,332,495	\$ 64,669,964	\$ 67,095,088	\$ 69,611,153
North Bergen	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993	\$ 685,993
Service Agreements	\$ 5,805,298	\$ 6,070,485	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000	\$ 3,500,000
Non Budget Revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Grant Revenues	\$ 203,108	\$ 1,747,017						
Connection Fees	\$ 7,860,359	\$ 5,054,009	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000	\$ 3,200,000
Other Revenue	\$ 4,815,440	\$ 3,209,632						
Flagger Service Income			\$ 2,100,000	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000
Delinquent Payment Interest	\$ 443,315	\$ 67,837	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000
Interest Earnings	\$ 188,918	\$ 37,991	\$ 40,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000	\$ 45,000
Total Revenues	\$ 75,077,226	\$ 72,587,718	\$ 67,518,958	\$ 69,695,507	\$ 71,948,488	\$ 74,285,957	\$ 76,711,081	\$ 79,227,146
Sewer Revenue Requirement	\$ 66,820,034	\$ 69,866,926	\$ 66,959,224	\$ 67,668,390	\$ 70,417,234	\$ 69,015,454	\$ 70,196,194	\$ 75,162,102
Surplus (Deficiency) after rate increase	\$ 8,257,192	\$ 2,720,792	\$ 559,734	\$ 2,027,116	\$ 1,531,254	\$ 5,270,503	\$ 6,514,887	\$ 4,065,044

IMPACT OF CAPITAL IMPROVEMENT PROGRAM

The JCMUA sewer utility system is also over 100 years old and in constant need of major capital improvement and repairs. JCMUA has recently updated its 5 Year Capital Improvement program which projects expenditures in excess of \$535,000,000 over the five-year horizon.

The combination of the debt issuance would result in new annual debt service for the water utility system as follows:

New Bonds Issued	Sewer System New Debt Service					
	2022	2023	2024	2025	2026	
\$ 122,200,000	Year 1 Projects	\$ 3,666,000	\$ 3,666,000	\$ 3,666,000	\$ 6,234,553	\$ 6,234,553
\$ 182,200,000	Year 2 Projects		\$ 1,800,000	\$ 1,800,000	\$ 1,800,000	\$ 3,061,156
\$ 100,800,000	Year 3 Projects			\$ (2,442,000)	\$ (2,442,000)	\$ (2,442,000)
\$ 21,500,000	Year 4 Projects				\$ (2,379,000)	\$ (2,379,000)
\$ 108,750,000	Year 5 Projects					\$ 2,617,500
\$ 535,450,000	Total Debt Service	\$ 3,666,000	\$ 5,466,000	\$ 3,024,000	\$ 3,213,553	\$ 7,092,209

SEWER CUSTOMER CHARACTERISTICS

JCMUA has determined not to charge customers by disposal strength characteristics and therefore only charges its sewer customers unified volumetric rate for disposal based upon the actual water meter readings of the customer.

SEWER CONNECTION FEE ANALYSIS

Reserved for future analysis

SECTION 4. RATE RECOMMENDATIONS

JCMUA

Per Unit Rate Charges

		2020	2021	2022	2023	2024	2025	2026
Water	Current Charge/ccf	\$ 4.41	\$ 4.58	\$ 4.75	\$ 4.93	\$ 5.11	\$ 5.31	\$ 5.51
	percent increase	2.50%	2.50%	3.75%	3.75%	3.75%	3.75%	3.75%
	Average Volume/ Month ccf	7	7	7	7	7	7	7
	Average Volume Cost/ Month	\$ 30.87	\$ 32.06	\$ 33.26	\$ 34.51	\$ 35.80	\$ 37.15	\$ 38.54
	Meter Charge /Month	\$ 6.07	\$ 6.22	\$ 6.46	\$ 6.70	\$ 6.95	\$ 7.21	\$ 7.48
	Residential Bill per Month	\$ 36.94	\$ 38.28	\$ 39.72	\$ 41.21	\$ 42.75	\$ 44.36	\$ 46.02
	Monthly Increase	\$ 1.47	\$ 1.34	\$ 1.44	\$ 1.49	\$ 1.55	\$ 1.60	\$ 1.66
Sewer	Current Charge/ccf	\$ 6.04	\$ 6.31	\$ 6.55	\$ 6.79	\$ 7.05	\$ 7.31	\$ 7.59
	Percent Increase	4.50%	4.50%	3.75%	3.75%	3.75%	3.75%	3.75%
	Residential per Month	\$ 42.28	\$ 44.18	\$ 45.84	\$ 47.56	\$ 49.34	\$ 51.19	\$ 53.11
	Monthly Increase	\$ 1.82	\$ 1.90	\$ 1.66	\$ 1.72	\$ 1.78	\$ 1.85	\$ 1.92
Combined Monthly Water/Sewer Bill		\$ 79.22	\$ 82.47	\$ 85.56	\$ 88.77	\$ 92.09	\$ 95.55	\$ 99.13
Connection Fees								
Water	Per EDU	\$ 600						
Sewer	Per EDU	\$ 1,791						
Bulk Water Rate/MG		\$ 2,248	\$ 2,450	\$ 2,542				