CITY OF NAPERVILLE

2025-2027 Water and Wastewater Utilities Rate Study

Water and Wastewater Rate Study Report

FINAL / October 2024

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Abbreviations

ADD	average day demand
AWWA	American Water Works Association
Carollo	Carollo Engineers, Inc.
CIP	capital improvement plan
City	City of Naperville
DSCR	debt service coverage ratios
DWC	DuPage Water Commission
FY	fiscal year
gpm	gallons per minute
HCF	hundred cubic feet
MDD	max day demand
mgd	million gallons per day
MHD	max hour demand
MMD	max month demand
O&M	operations and maintenance
Paygo	pay as you go capital
Study	Water and Wastewater Rate Study
SWRC	Springbrook Water Reclamation Center
WEF	Water Environment Federation

SECTION 1 EXECUTIVE SUMMARY

The City of Naperville (City) has retained Carollo Engineers, Inc. (Carollo), to perform a rate study for its Water Utility for the fiscal years 2025 to 2027.[1] This report summarizes the financial plan analysis and results, and discusses the proposed rate increases for the next three years. **Annual rate increases of 12 percent for water rates and 10 percent for wastewater rates in 2025 through 2027 are projected to maintain the City's reserve balances above its internal policy target of 30 days of operations and maintenance expenses.** Furthermore, these increases are projected to maintain calculated debt coverage above levels that would be considered sound.

While this Water and Wastewater Rate Study Report (Study) was limited to the next three years in its recommendations, annual rate increases of 5 percent for both water and wastewater in the years beyond 2027 are project to maintain financial benchmarks and targets.

The bill impact will vary for each customer based on the volume of water used, the meter size serving the account, and the customer class type (residential versus non-residential). **For a typical residential customer, the estimated bill impact is 9 percent, or approximately $9 per month, based on monthly water usage of 8 hundred cubic feet (HFC).** Across all residential customers, **approximately 80 percent of bills are projected to increase by less than 10 percent** when comparing the same usage profile in 2024 and 2025.

1.1 Five-Year Financial Plan

This analysis began with a projection of revenues and expenses over the next five years. Projected expenses were estimated based on the City's adopted 2024 budget, which was then escalated based on inflationary factors. DuPage Water Commission (DWC) water purchases were calculated based on projected DWC rates and City customer water demand. Rate revenues were projected based on the 2023 water sales and billing data, forecasted assuming a 0.5 percent growth rate in customer base and no change in per account water or sewer demand. The City's multi-year capital improvement plan (CIP) was funded through a mix of rate and debt funding. This forecast also incorporated a drawdown of the City's Phosphorus Fund to support wastewater capital expenses.

Based on the projected operating and capital expenses, 12 and 10 percent annual rate increases are proposed for water and sewer, respectively, for 2025 through 2027. The five-year financial forecast, which includes 5 percent annual rate increases for water and sewer in 2028 and 2029 as forecast assumptions but not as proposed rates, is shown in Table 1.

[1] The City's fiscal year begins on January 1, aligning with the calendar year. As a result, the term "fiscal year" is omitted from this Report.

Table 1 Combined Utility Financial Forecast

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Total Revenues	$103,470	$126,080	$153,988	$154,828	$160,032	$133,665
Total Expenses	$103,709	$126,041	$146,386	$161,596	$174,710	$134,714
Cash Flow Surplus / (Deficit)	**($239)**	**$40**	**$7,602**	**($6,768)**	**($14,678)**	**($1,049)**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

Following this forecast, Carollo used a two-test approach to review the sufficiency of the proposed rates and charges:

- **Reserve Sufficiency Test:** The City has a target of maintaining 30 days of operation and maintenance (O&M) expenses in reserves at the end of each year.
- **Debt Service Coverage Test:** Revenue bond issuances regularly include a stipulation that the issuing agency must maintain sufficient cash flows to meet annual debt service payments plus an additional amount. Typical requirements for debt service coverage ratios (DSCR) range from 1.10 times to 1.50 times annual debt service, depending on an agency's specific financial situation and the type of debt instrument issued. While the City issues General Obligation bonds, which do not have the same coverage requirements as a revenue bond for the utility, this benchmark is a useful proxy of fiscal health and debt capacity. This analysis used a coverage target of 2.00 times debt service. While DSCR requirements are typically lower than this target, a higher ratio is often considered a signal of creditworthiness to ratings agencies.

The reserve target test is shown in Table 2. With the proposed rate increases, the City is projected to maintain utility reserves above the target of 30 days of O&M expenses.

Table 2 Reserve Target Sufficiency Test

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Beginning Fund Balance	$22,401	$22,162	$22,202	$29,804	$23,036	$8,359
Sources of Funds	$103,470	$126,080	$153,988	$154,828	$160,032	$133,665
Uses of Funds	$103,709	$126,041	$146,386	$161,596	$174,710	$134,714
Ending Total Balance	$22,162	$22,202	$29,804	$23,036	$8,359	$7,310
Operating Fund Target	$4,913	$5,226	$5,489	$5,766	$6,042	$6,331
Reserves Surplus/(Deficit)	**$17,250**	**$16,976**	**$24,315**	**$17,270**	**$2,317**	**$979**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

The debt coverage test is shown in Table 3. Not all revenues and expenses are included in the coverage calculation. Expenses are limited to operating expenses and do not include capital expenditures, while revenues include rate revenues and other operating revenues, but do not include capital funding sources.

Table 3 Debt Service Coverage Reserve Test

	2024	2025	2026	2027	2028	2029
Revenues	$83,369	$90,547	$99,083	$108,449	$114,406	$120,588
Expenses						
Operating Expenses	$59,771	$63,577	$66,780	$70,149	$73,508	$77,032
Debt Service	$3,076	$5,446	$6,594	$8,829	$11,469	$13,399
Debt Coverage (2)	$3,076	$5,446	$6,594	$8,829	$11,469	$13,399
Total Coverage-Related Expenses	$65,924	$74,470	$79,969	$87,807	$96,446	$103,831
Debt Coverage Surplus/(Deficit)	**$17,445**	**$16,078**	**$19,114**	**$20,643**	**$17,960**	**$16,757**
Calculated Coverage Ratio	**7.67 x**	**4.95 x**	**4.90 x**	**4.34 x**	**3.57 x**	**3.25 x**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.
(2) Based on 200% coverage ratio.

1.1.1 Cost-of-Service Review

This Study included a review of the current rate structure and its consistency with cost-of-service principles. In rate-setting, cost-of-service is the methodology used to tie the rates charged to each customer with the expenses incurred to deliver a given service to that customer. Cost-of-service-based rates are intended to maintain proportionality between and among customers, with each customer being charged based on the benefit received.

The City last undertook a full cost-of-service rate review in 2017, which realigned the commercial and residential rates to meet the cost-of-service allocation of expenses. For several reasons which are further explained in this Report, this Study performed a cost-of-service review that assessed the appropriateness of that existing cost-of-service basis, rather than performing a complete cost-of-service review.

This Study analyzed the peaking factors for residential and non-residential customers based on water usage over the last several years and compared these factors with those developed in 2017, which were used when calculating the current rate structure. Based on this review, the proportionality between residential and non-residential has not significantly changes in that time, with the ratio of peak demand currently at 1.16, compared with 1.20 in 2017. As a result, the existing rate structure sufficiently captures the cost-of-service proportionality between classes.

1.1.2 Rate Calculation

Given that the cost-of-service review did not find a need for rate structure changes, the current water and sewer rates can be increased by 12 and 10 percent, respectively, in an across-the-board manner. The proposed rates are shown in the following tables.

As part of this Study, the City and Carollo also modeled an increase of the outside city surcharge from 10 to 30 percent. This change would bring the City's outside city surcharge in line with other utilities in the region. Other utility surcharges average approximately 40 percent and range from 30 to 100 percent surcharge.

1.1.2.1 Water Rates

Table 4 Proposed Water Monthly Customer Charge

Meter Size	2024	2025	2026	2027
Inside City				
5/8" x 3/4"	$9.31	$10.43	$11.69	$13.10
1"	$15.52	$17.39	$19.48	$21.82
1.5"	$31.03	$34.76	$38.94	$43.62
2"	$49.64	$55.60	$62.28	$69.76
3"	$99.28	$111.20	$124.55	$139.50
4"	$155.13	$173.75	$194.60	$217.96
6"	$310.25	$347.48	$389.18	$435.89
8"	$496.40	$555.97	$622.69	$697.42
10"	$1,303.05	$1,459.42	$1,634.56	$1,830.71
12"	$1,644.33	$1,841.65	$2,062.65	$2,310.17
Monthly Surcharge for Water-Only Customers	$5.43	$6.09	$6.83	$7.65
Outside City				
5/8" x 3/4"	$10.24	$13.56	$15.20	$17.03
1"	$17.07	$22.61	$25.33	$28.37
1.5"	$34.14	$45.19	$50.63	$56.71
2"	$54.62	$72.28	$80.97	$90.69
3"	$109.23	$144.56	$161.92	$181.35
4"	$170.67	$225.88	$252.98	$283.35
6"	$341.34	$451.73	$505.94	$566.66
8"	$546.14	$722.77	$809.50	$906.65
10"	$1,433.60	$1,897.25	$2,124.93	$2,379.93
12"	$1,809.07	$2,394.15	$2,681.45	$3,003.23
Monthly Surcharge for Water-Only Customers	$6.02	$7.92	$8.88	$9.95

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 5 Proposed Water Monthly Capital Charge

Meter Size	2024	2025	2026	2027
Inside City				
5/8" x 3/4"	$1.09	$1.23	$1.38	$1.55
1"	$1.82	$2.04	$2.29	$2.57
1.5"	$3.64	$4.08	$4.57	$5.12
2"	$5.82	$6.52	$7.31	$8.19

Meter Size	2024	2025	2026	2027
3"	$11.63	$13.03	$14.60	$16.36
4"	$18.17	$20.36	$22.81	$25.55
6"	$36.34	$40.71	$45.60	$51.08
8"	$58.14	$65.12	$72.94	$81.70
10"	$152.60	$170.92	$191.44	$214.42
12"	$192.57	$215.68	$241.57	$270.56
Outside City				
5/8" x 3/4"	$1.20	$1.60	$1.80	$2.02
1"	$2.01	$2.66	$2.98	$3.35
1.5"	$4.01	$5.31	$5.95	$6.66
2"	$6.41	$8.48	$9.51	$10.65
3"	$12.80	$16.94	$18.98	$21.27
4"	$19.99	$26.47	$29.66	$33.22
6"	$39.98	$52.93	$59.28	$66.41
8"	$63.96	$84.66	$94.83	$106.21
10"	$167.86	$222.20	$248.88	$278.75
12"	$211.83	$280.39	$314.05	$351.73

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 6 Proposed Water Volumetric Charges – Inside City

	2024	2025	2026	2027
Residential				
Naperville Retail Delivery Charge	$2.43	$2.73	$3.06	$3.43
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Residential	**$6.60**	**$7.11**	**$7.66**	**$8.26**
Non-Residential				
Block 1 (1st 100,000 CF)				
Naperville Retail Delivery Charge	$2.28	$2.56	$2.87	$3.22
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Non-Residential - Block 1	**$6.45**	**$6.94**	**$7.47**	**$8.05**
Block 2 (Over 100,000 CF)				
Naperville Retail Delivery Charge	$1.35	$1.52	$1.71	$1.92

	2024	2025	2026	2027
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Non-Residential – Block 2	**$5.52**	**$5.90**	**$6.31**	**$6.75**

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) DWC rates are billed as a pass-through and are shown as an estimate. DWC updates its rates on May 1 of each year. Actual rates are subject to change based on DWC ordinance.

Table 7 Proposed Water Volumetric Charges – Outside City

	2024	2025	2026	2027
Residential				
Naperville Retail Delivery Charge	$2.66	$3.55	$3.98	$4.46
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Residential	**$7.25**	**$9.25**	**$9.97**	**$10.75**
Non-Residential				
Block 1 (1st 1,000 HCF)				
Naperville Retail Delivery Charge	$2.50	$3.33	$3.74	$4.19
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Non-Residential - Block 1	**$7.09**	**$9.03**	**$9.73**	**$10.48**
Block 2 (Over 1,000 HCF)				
Naperville Retail Delivery Charge	$1.52	$1.98	$2.23	$2.50
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Non-Residential – Block 2	**$6.11**	**$7.68**	**$8.22**	**$8.79**

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) DWC rates are billed as a pass-through and are shown as an estimate. DWC updates its rates on May 1 of each year. Actual rates are subject to change based on DWC ordinance.

Table 8 Proposed Water Monthly Private Fire Line Charge

Meter Size	2024	2025	2026	2027
3" and smaller	$11.04	$12.37	$13.86	$15.53
4"	$16.60	$18.60	$20.84	$23.35
6"	$36.93	$41.37	$46.34	$51.91
8"	$66.41	$74.38	$83.31	$93.31
10"	$103.34	$115.75	$129.64	$145.20
12"	$147.70	$165.43	$185.29	$207.53

1.1.2.2 Wastewater Rates

Table 9 Proposed Wastewater Monthly Customer Charge

Meter Size	2024	2025	2026	2027
5/8" x 3/4"	$11.04	$12.15	$13.37	$14.71
1"	$18.40	$20.24	$22.27	$24.50
1.5"	$36.80	$40.48	$44.53	$48.99
2"	$58.88	$64.77	$71.25	$78.38
3"	$117.76	$129.54	$142.50	$156.75
4"	$184.00	$202.40	$222.64	$244.91
6"	$368.00	$404.80	$445.28	$489.81
8"	$588.80	$647.68	$712.45	$783.70
10"	$1,545.60	$1,700.16	$1,870.18	$2,057.20

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 10 Proposed Wastewater Monthly Capital Charge

Meter Size	2024	2025	2026	2027
5/8" x 3/4"	$2.04	$2.25	$2.48	$2.73
1"	$3.38	$3.72	$4.10	$4.51
1.5"	$6.75	$7.43	$8.18	$9.00
2"	$10.81	$11.90	$13.09	$14.40
3"	$21.61	$23.78	$26.16	$28.78
4"	$33.75	$37.13	$40.85	$44.94
6"	$67.50	$74.25	$81.68	$89.85
8"	$108.00	$118.80	$130.68	$143.75
10"	$283.48	$311.83	$343.02	$377.33
12"	$357.71	$393.49	$432.84	$476.13

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) This rate was previously published as the Phosphorus charge.

Table 11 Proposed Wastewater Volumetric Rates

	2024	2025	2026	2027
Volumetric Charge ($/HCF)	$3.15	$3.47	$3.82	$4.21
Wastewater Only Charges				
Volume Charge	$20.00	$22.00	$24.20	$26.62
Customer Charge	$30.37	$33.41	$36.76	$40.44

	2024	2025	2026	2027
Phosphorus Charge	$3.38	$3.72	$4.10	$4.51
Total Monthly Flat Rate	**$53.75**	**$59.13**	**$65.06**	**$71.57**

1.1.3 Bill Impact

Based on the proposed rate increases—12 and 10 percent annually for water and wastewater, respectively—the combined bill for a typical customer is projected to increase by approximately $9 per month, from $101.21 to $110.28, an increase of 9.0 percent. This is based on a typical SFR customer with a 5/8-inch x 3/4-inch meter using approximately 8 HCF of water per month.[2]

Based on an analysis of the current SFR bill distribution and assuming no change in usage, approximately 95 percent of all bills would increase by less than $20 per month, while no bills are projected to increase more than 11 percent.

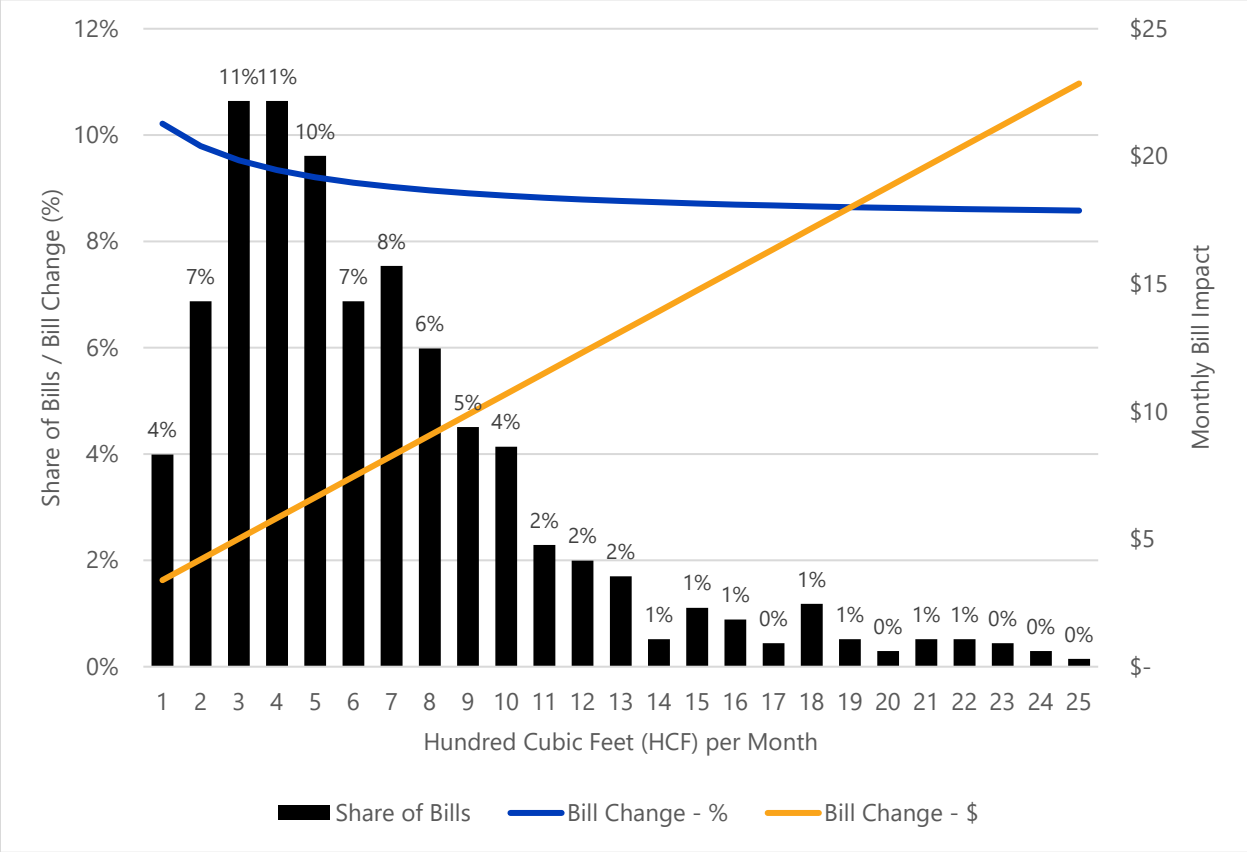

Figure 1 Single Family Residential Water and Wastewater Bill Impact Profile

[2] 1 HCF is equal to 748 gallons, and 8 HCF is equal to 5,985 gallons.

1.1.4 Regional Rate Survey

In addition to a bill impact analysis, a regional rate survey is useful for contextualizing the current and proposed rates. While comparing the rates of two agencies is difficult due to several factors, such as operating cost differences, wholesale agreements, age of system, regulatory requirements, and other considerations, it is useful to see how the rate proposal compares to an average bill.

This survey gathered data from other utilities in the region, primarily those that also purchase water from DWC. The analysis then used the same average customer to calculate the same bill for each agency (8 HCF per month and 5/8-inch meter). It's important to note that this rate survey is based on currently implemented rates for each agency and does not account for rate increases that will occur in 2025 by other agencies.

For agencies that provide both water and wastewater service, the total average bill is $120. Naperville's current typical SFR bill is below that average at $101. The proposed rates for 2025 would increase that bill to $110 per month, which would remain below the regional average. The rate survey is shown in Figure 2.

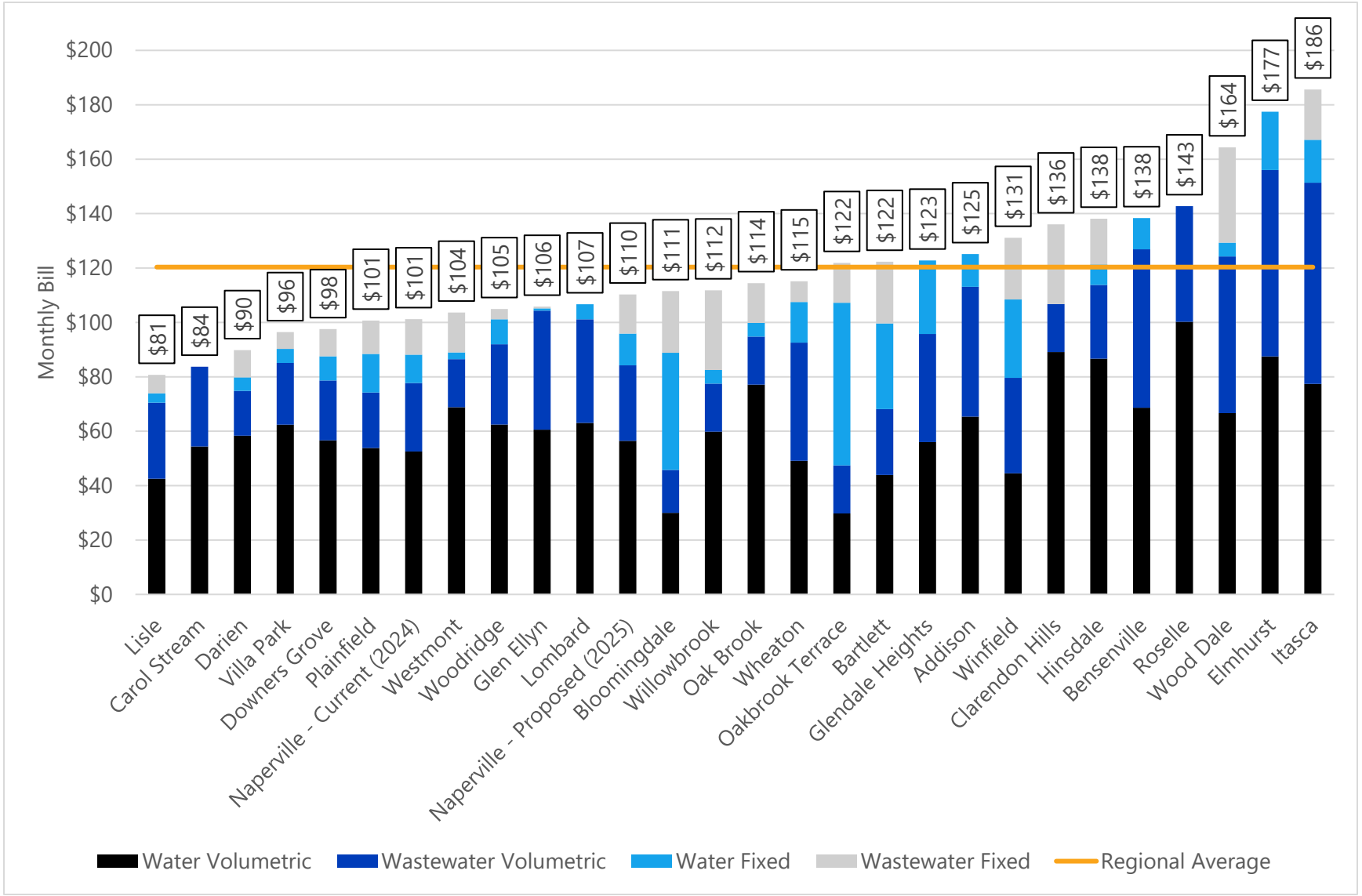

Figure 2 Single Family Residential Water and Wastewater Rate Survey

SECTION 2 INTRODUCTION

The City retained Carollo to conduct a study for rates effective from fiscal years 2025 through 2027.[3] The City maintains rates to equitably recover the costs from customers to meet operational, capital, policy, and regulatory needs. Carollo performed a rate analysis based on cost-of-service principles, as well as industry standards published by the American Water Works Association (AWWA) and the Water Environment Federation (WEF). This report outlines Carollo's methodology and recommendations.

2.1 About City of Naperville Water and Wastewater Utilities

2.1.1 Water Service

The City owns and operates more than 700 miles of main potable water lines to serve approximately 46,000 connections within the City and an additional 1,500 customers outside the City. The City's water supply comes from nearby Lake Michigan, with water purchased from the DWC. The City of Chicago provides DWC with this water supply, treating the water at its Jardine Water Purification Plant. The City of Naperville charges its customers a wholesale rate equivalent to DWC's current unit costs. DWC rate increases have historically been directly passed on to customers.

2.1.2 Wastewater Service

The City's wastewater system provides services to approximately 44,300 customers inside the City and 900 customers outside the City. Naperville provides wastewater-only services to approximately 5,000 customers in Warrenville. The City maintains a separate sanitary sewer system, with a stormwater system in addition to its sewer collection system.

Within the City's sanitary sewer system, there are two permitted interceptors conveying wastewater from Naperville and Warrenville to the Springbrook Water Reclamation Center (SWRC) where over seven billion gallons of water are treated each year. Treated water is then discharged into the DuPage River, while solids are recycled into over 2,000 dry tons of biosolids for fertilizer.

[3] The City's fiscal year begins on January 1, aligning with the calendar year. As a result, the term "fiscal year" is omitted from this Report.

2.2 Overview of the Rate-Setting Process

2.2.1 Step-By-Step Rate Setting Approach Overview

Carollo used an industry standard step-by-step approach when reviewing the City's rate structure. This approach is consistent with industry standards established within both the *Principles of Water Rates, Fees and Charges: M1 Manual* (M1 Manual) from the AWWA for the water rates and the *Manual of Practice 27: Financing and Charges for Wastewater Systems* published by the Water Environment Federation for the wastewater rates.

2.2.1.1 Revenue Requirements

The revenue requirements analysis is a test of a utility's fiscal health. It compares the City's forecasted revenues to its forecasted O&M expenses, capital improvement costs, and reserve policies to determine the adequacy of the existing rates to recover the utility's costs.

2.2.1.2 Cost-of-Service Analysis

The cost-of-service analysis allocates the estimated cost to provide service to each customer in accordance with the customer's demand on the utility's system. This process allocates each item in the water and wastewater system budgets a corresponding system function. Organizing the budget in terms of end function allows the creation of a direct nexus between the budget item and the rate, bridging the cost incurred by the City and the benefits delivered to each customer.

A rate study can include a full cost-of-service allocation, where each line-item expenditure is assigned to a functional cost category, and then assigned to each customer class in accordance with their respective demand on the system. However, this methodology can often result in drastic changes to the rate structure due to differences in how costs are incurred at that point in time versus when the rates were originally developed. It can also result in small rate changes that would be unnoticeable on most bills but would still require the administrative challenges associated with a rate structure adjustment.

Carollo and the City opted instead to conduct a rate structure review where the cost-of-service review would be conducted with a focus on rate equity between classes. This review would then be used to test the existing rate structure, rather than implementing a new rate structure. If the updated cost-of-service analysis differed significantly from the existing rate structure, then changes would be reviewed for implementation.

2.2.1.3 Rate Design

The final part of the rate study process is the rate design and calculation. This provides the nexus between the revenue requirements, the cost-of-service analysis, and the final rates that customers are charged. This process connects planned expenditures to the designed rates by establishing rates to match the estimated revenue generation with expenditures. The rate design involves developing rates that proportionately recover costs from customers.

SECTION 3 INPUTS AND ASSUMPTIONS

3.1 Current Rates and Charges

3.1.1 Water Rates

The City's existing rate structure consists of three components: a monthly service charge (fixed); a monthly capital charge (fixed); and a monthly commodity charge (variable).

The service charge captures costs related to both customer service and billing and maintaining capacity for a given meter size, regardless of the amount of water used. For the monthly service charge, equivalent meters units are used, recognizing the increasing water flow potential and greater system capacity reserved with larger meter sizes. Meter equivalents are derived based on the hydraulic capacity in gallons per minute (gpm) of a given meter size. These capacity figures are based on guidance from AWWA and are then converted to equivalents based on the capacity ratio relative to the hydraulic flow of a 3/4-inch meter. This minimum monthly service charge is intended to recognize that the utility incurs fixed costs to provide the availability of water service, which must be recovered independent of monthly water demands and consumption.

Table 12 Current Water Monthly Customer Charge

Meter Size	Inside City	Outside City
5/8" x 3/4"	$9.31	$10.24
1"	$15.52	$17.07
1.5"	$31.03	$34.14
2"	$49.64	$54.62
3"	$99.28	$109.23
4"	$155.13	$170.67
6"	$310.25	$341.34
8"	$496.40	$546.14
10"	$1,303.05	$1,433.60
12"	$1,644.33	$1,809.07
Monthly Surcharge for Water-Only Customers	$5.43	$6.02

As part of the last rate study, the City implemented a fixed monthly capital charge to support its ongoing repair and replacement of the water system. Like the monthly service charge, the capital charge is also assessed based on meter size using the same meter equivalents.

Table 13 Current Water Monthly Capital Charge

Meter Size	Inside City	Outside City
5/8" x 3/4"	$1.09	$1.20
1"	$1.82	$2.01
1.5"	$3.64	$4.01

Meter Size	Inside City	Outside City
2"	$5.82	$6.41
3"	$11.63	$12.80
4"	$18.17	$19.99
6"	$36.34	$39.98
8"	$58.14	$63.96
10"	$152.60	$167.86
12"	$192.57	$211.83

The water system commodity charge is assessed based on metered water usage per HCF and is intended to recover the cost incurred for delivering each unit of water.[4] There is one uniform volumetric rate for residential customers and two tiered rates for commercial customers, with decreasing commodity charges for any commercial usage over 1,000 HCF.

Both customer classes are also charged the wholesale water rate determined by DWC, which supplies the City's water. Customers served outside the City pay a 10 percent surcharge on all water rates (110 percent of retail + wholesale charge, plus 110 percent of fixed monthly customer charge).

Table 14 Current Water Volumetric Charges

	Inside City	Outside City
Residential		
Naperville Retail Delivery Charge	$2.43	$2.66
DWC Wholesale Purchased Charge (2)	$4.17	$4.59
Total Residential	**$6.60**	**$7.25**
Non-Residential		
Block 1 (1st 100,000 CF)		
Naperville Retail Delivery Charge	$2.28	$2.50
DWC Wholesale Purchased Charge (2)	$4.17	$4.59
Total Non-Residential - Block 1	**$6.45**	**$7.09**
Block 2 (Over 100,000 CF)		
Naperville Retail Delivery Charge	$1.35	$1.52
DWC Wholesale Purchased Charge (2)	$4.17	$4.59
Total Non-Residential – Block 2	**$5.52**	**$6.11**

Notes:
(1) All rates shown in $/HCF.
(2) DWC rates are updated on May 1 of each year. The rate shown in this table is the rate in effect as of the completion of this Study in October 2024.

[4] 1 HCF is equal to 748 gallons.

3.1.2 Wastewater Rates

The City's wastewater rate structure has volumetric and fixed components. It also has surcharges for industrial customers and a fixed monthly charge for those customers without City water service and therefore without water meter data to calculate a volumetric bill.

In 2017, an additional monthly Phosphorus charge was introduced for all wastewater customers, with or without water service. That charge was originally intended to support treatment upgrades and improvements at the SWRC. Those improvements are set to take place over the next several years, drawing down the Phosphorus Fund where the proceeds of that charge were deposited. The City would like to maintain this charge as a general capital charge going forward, similar to the water capital charge. These funds would be applicable to general repair and replacement throughout the system, and not just limited to the treatment plant.

Customers with City water service are charged a non-tiered volumetric charge, a fixed monthly customer charge based on equivalent meter units like the corresponding water charge, and a Phosphorus charge to fund capital expenses at SWRC. Beginning in 2025, the Phosphorus charge will be relabeled as a Capital charge because its revenue will support the broader capital program beyond just SWRC. The volumetric charge for residential customers is based on their average usage during the winter months, while non-residential customers are charged for wastewater volume based on actual monthly water meter readings throughout the calendar year. Wastewater-only customers without a water meter are charged a flat rate to cover all rate components.

Table 15 Wastewater Monthly Charges

Meter Size	Customer	Phosphorus / Capital
5/8" x 3/4"	$11.04	$2.04
1"	$18.40	$3.38
1.5"	$36.80	$6.75
2"	$58.88	$10.81
3"	$117.76	$21.61
4"	$184.00	$33.75
6"	$368.00	$67.50
8"	$588.80	$108.00
10"	$1,545.60	$283.48

Table 16 Wastewater Rates

	Current Rate
Volumetric Charge ($/HCF)	$3.15
Wastewater Only Charges	
Volume Charge	$20.00
Customer Charge	$30.37
Phosphorus Charge	$3.38
Total Monthly Flat Rate	**$53.75**

3.2 Customer Base and Demand Profiles

The City provided billing data for water and wastewater for 2020 through 2023. Carollo aggregated this billing data to calculate the number of connections and bills in each year. Carollo also used this data to calculate how many units of water and wastewater were billed for each customer class in each year.

3.2.1 Number of Accounts

This analysis assumed that the City's customer base would grow by 0.5 percent annually. Based on that forecasting assumption, the projected number of water accounts by meter size is shown in Table 17. The projected number of wastewater accounts is shown in Table 18.

Table 17 Projected Water Accounts

	2023	2024	2025	2026	2027
Inside City					
5/8" x 3/4"	28,946	29,091	29,236	29,382	29,529
1"	11,442	11,499	11,557	11,614	11,673
1.5"	1,964	1,974	1,984	1,994	2,004
2"	1,536	1,544	1,551	1,559	1,567
3"	355	357	359	360	362
4"	112	113	113	114	114
6"	20	20	20	20	20
8"	-	-	-	-	-
10"	1	1	1	1	1
Outside City					
5/8" x 3/4"	1,403	1,410	1,417	1,424	1,431
1"	28	28	28	28	29
1.5"	25	25	25	25	26
2"	27	27	27	27	28
3"	2	2	2	2	2
Total	**45,861**	**46,090**	**46,321**	**46,552**	**46,785**

Notes:
(1) Totals may not sum due to rounding.

Table 18 Projected Wastewater Accounts

	2023	2024	2025	2026	2027
Inside City					
With Water Service					
5/8" x 3/4"	28,898	29,042	29,188	29,334	29,480
1"	11,376	11,433	11,490	11,547	11,605
1.5"	1,962	1,972	1,982	1,992	2,002

	2023	2024	2025	2026	2027
2"	1,506	1,514	1,521	1,529	1,536
3"	328	330	331	333	335
4"	112	113	113	114	114
6"	20	20	20	20	20
8"	-	-	-	-	-
10"	1	1	1	1	1
Wastewater Only					
Residential	100	100	100	100	100
Non-Residential	7	7	7	7	7
Outside City					
5/8" x 3/4"	1,460	1,467	1,475	1,482	1,490
1"	29	29	29	30	30
1.5"	26	26	26	26	27
2"	28	28	28	29	29
3"	2	2	2	2	2
Total	**45,855**	**46,084**	**46,314**	**46,545**	**46,777**

Notes:
(1) Totals may not sum due to rounding.

3.2.2 Water Usage

3.2.2.1 Historical Demand Analysis

Forecasting water system sales and purchases is a critical component in the rate setting process. Carollo reviewed customer usage data from 2021 through 2023 to develop a baseline demand level. Over the last four years, total water sales have remained steady, with the 12-month moving average remaining between 13.1 and 13.8 million gallons per day (mgd) throughout that period. Total water demand increased modestly in 2023.

Based on this historical water sales data, no change in per account water usage is anticipated during the study period. As a result, the forecasted water usage increases by 0.5 percent per year based on the annual growth rate in the service area. This forecast is shown in Table 19. This forecast also includes the projected water production needed, which are higher than metered water sales due to non-revenue water from various sources throughout the distribution system, such as leaks and system flushing. This non-revenue water is expected, but the City has nonetheless taken steps to reduce system losses in recent years. As a result, non-revenue water in 2023 is estimated at 16 percent of water sales, while 2024 and beyond are projected at 12 percent based on City efforts to reduce losses.

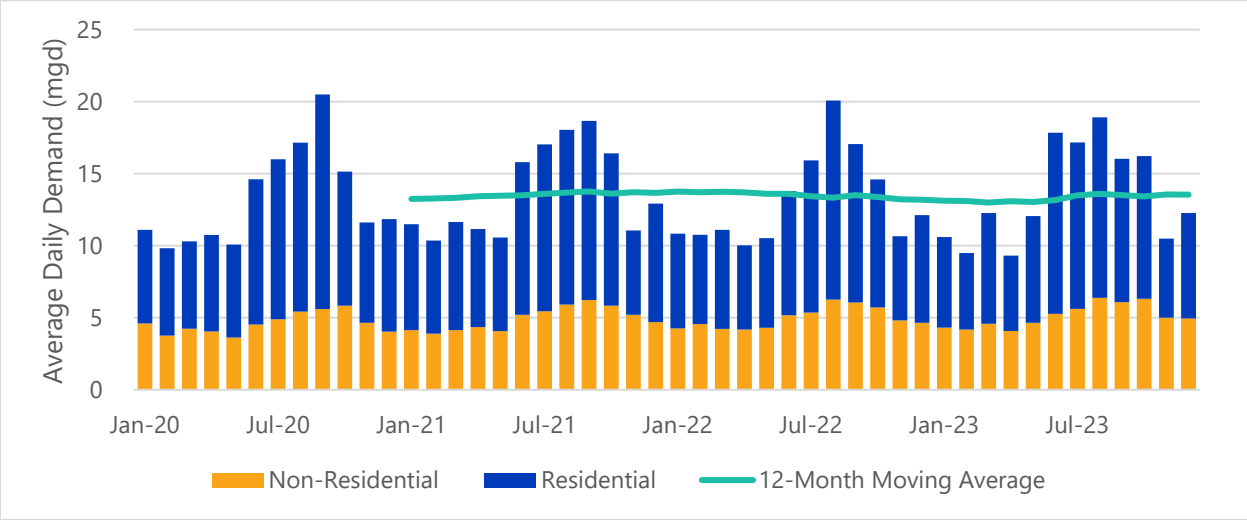

Figure 3 Historical Water Demand, 2020-2023

Table 19 Projected Water Sales and Purchases

	2023	2024	2025	2026	2027
Inside City					
Non-Residential					
Block 1	2,399,602	2,411,600	2,423,658	2,435,776	2,447,955
Block 2	56,796	57,080	57,365	57,652	57,940
Residential	4,031,748	4,051,907	4,072,167	4,092,527	4,112,990
Outside City					
Non-Residential					
Block 1	46,654	46,887	47,122	47,357	47,594
Block 2	-	-	-	-	-
Residential	99,303	99,799	100,298	100,800	101,304
Total Sales	**6,634,103**	**6,667,274**	**6,700,610**	**6,734,113**	**6,767,784**
Total Production Needed	**7,695,560**	**7,467,346**	**7,504,683**	**7,542,207**	**7,579,918**

Notes:
(1) All figures shown are in hundred cubic feet. Totals may not sum due to rounding.

3.2.3 Wastewater Usage

The City bills wastewater customers with water service based on their winter water usage. Winter water usage is a useful proxy of wastewater discharge because it typically does not include any outdoor water usage, which does not return to the sewer system. The City updates these winter water usage figures for each customer annually.

The projected wastewater usage based on the same forecasting assumptions as the water system—0.5 percent annual growth in the service area and no per account demand change—were used in this forecast. The projection is shown in Table 20.

Table 20 Projected Wastewater Sales

	2023	2024	2025	2026	2027
Inside City					
Non-Residential	2,135,523	2,146,201	2,156,932	2,167,716	2,178,555
Residential	3,000,528	3,015,531	3,030,608	3,045,761	3,060,990
Outside City					
Non-Residential	23,362	23,479	23,596	23,714	23,833
Residential	50,378	50,630	50,883	51,137	51,393
Total	**5,209,791**	**5,235,840**	**5,262,019**	**5,288,329**	**5,314,771**

Notes:
(1) All figures shown are in hundred cubic feet. Totals may not sum due to rounding.

3.3 Baseline Financial Data

This analysis used the City's 2024 budget for the Water Utility, Water Capital, and Phosphorus funds. While the City budgets each of these funds separately, these three funds were consolidated into one revenue requirement for each year to better assist the rate-setting calculation. The revenue requirement was then allocated between the Water and Wastewater rate bases. While this approach does not prevent the City from continuing to track these funds separately, consolidating these funds eliminated the need to track interfund transfers and tie the rates to the overall financial targets.

Budgeted operating and capital expenses for 2024 were allocated to Water and Wastewater by category based on the percentages shown in Table 21.

Table 21 Expense Allocation to Water and Wastewater

	Water	Wastewater
Operating Expense Categories		
Operations		
Water Utilities	50%	50%
Water Utilities - Repair & Excavation	50%	50%
Water Utilities - Wastewater Collection & Pumping	0%	100%
Water Utilities - Water Reclamation	0%	100%
Water Utilities - Water Supply & Distribution	100%	0%
Water Utilities - Water Purchases	100%	0%
All Other Expenses (1)	50%	50%
Capital Expense Categories		
Collections and Pumping	0%	100%
Springbrook Water Reclamation Center	0%	100%
Water Distribution and Metering	100%	0%

	Water	Wastewater
Water Supply	100%	0%
Combined Projects (2)	50%	50%

Notes:
(1) Administration, Engineering, Support Services, Safety, Communications and Marketing, Customer Service, Dispatch Services, Building and Development, Transportation and Engineering, and Buildings and Grounds expense categories.
(2) Site Security Improvements for shared facilities.

Capital expenses were further adjusted based on an expected 80 percent completion rate for non-SWRC capital projects. This rate was chosen based on feedback from staff and reflects the recent rate of completion for budgeted capital projects over the last several years.

Several SWRC projects are eligible for funding through the City's Phosphorus fund, a designated reserve that the City has been funding through its Phosphorus charge to support projects that improve wastewater treatment. This analysis assumed that this fund would be drawn down to zero by these eligible projects, and the Phosphorus charge would be transitioned to a general capital charge that could be used to fund all wastewater projects going forward.

The beginning balance for each of the three funds was updated based on end of 2023 values. The beginning values are found in Table 22.

Table 22 Beginning Reserve Balances

	Balance - January 1, 2024
Water Utility Fund	$3,054,000
Phosphorus Fund	$22,371,000
Water Capital Fund	($3,024,000)
Total	**$22,401,000**

SECTION 4 FIVE-YEAR FINANCIAL PLAN ANALYSIS

4.1 Revenue Requirements

The revenue requirement analysis sets the basis for rate planning by evaluating the utility's revenues, expenses, debts, and other budget inputs, and assessing the viability of the projected rate revenue to meet fiscal policies and targets going forward. If rate revenue is not projected to sustain those targets, additional cash flows can be modeled to meet all funding goals.

Carollo used the City's 2024 budget for the Water Utility Fund as the base input for O&M costs. Expenses and non-rate revenues were projected through 2027 using appropriate inflationary assumptions, while rate revenues were projected based on forecasted water sales and account growth. Capital expenses were forecasted based on the planned funding approach (rates or debt) and debt service was also included. The resulting cash flows were integrated with the end of year reserve balances to perform two financial tests:

- **Reserve Sufficiency Test:** The City has a target of maintaining 30 days of O&M expenses in reserves at the end of each fiscal year.
- **Debt Service Coverage Test:** Revenue bond issuances regularly include a stipulation that the issuing agency must maintain sufficient cash flows to meet annual debt service payments plus an additional amount. Typical debt service coverage ratios (DSCR) range from 1.10 times to 1.50 times annual debt service, depending on an agency's specific financial situation and the type of debt instrument issued. While the City issues General Obligation bonds, which do not have the same coverage requirements as a revenue bond for the utility, this analysis used a coverage target of 2.00 times debt service for financial planning purposes. While DSCR requirements are typically lower than this target, a higher ratio is often considered a signal of creditworthiness to ratings agencies. Monitoring debt coverage ratio, although not required in the City's case, is a useful proxy of fiscal health and provides an indication of future debt capacity.

4.1.1 Water Revenue Requirements

4.1.1.1 Water Purchase Costs

Purchased water is the single largest expenditure in the water utility budget. The City purchases water from the DWC, which charges a per unit rate for water sold to the City. DWC adjusts its rates on May 1 of each year. Because DWC rates are adjusted in the middle of the City's fiscal year, part of the year's water purchases is charged one rate, while the remainder of the year is charged a different rate. To forecast water purchase costs, historical monthly water sales were used to calculate the share of sales in each month, which was then used to weight the DWC rates.

Based on water purchases over the last several years, 27 percent of sales occurred before May 1, while the remaining 73 percent occurred after. These percentages were used to calculate a weighted DWC rate. For 2024, this rate is $5.33 per thousand gallons (kgal), based on the $5.39/kgal charged before May 1 and the $5.58/kgal charged after.[5]

The projected water purchase costs for each year are shown in Table 23. DWC rates are forecasted to increase 5 percent annually.

Table 23 Water Purchase Costs

	2024	2025	2026	2027	2028	2029
Jan 1 Rate ($/kgal)	$5.39	$5.66	$5.94	$6.24	$6.55	$6.88
May 1 Rate ($/kgal)	$5.58	$5.86	$6.15	$6.46	$6.78	$7.12
Weighted Rate ($/kgal)	$5.52	$5.80	$6.09	$6.40	$6.71	$7.05
Projected Purchases (HCF)	7,467,346	7,504,683	7,542,207	7,579,918	7,617,817	7,655,906
Projected Purchases (kgal)	5,585,963	5,613,893	5,641,962	5,670,172	5,698,523	5,727,016
Total Water Purchase Cost (1)	**$30,858**	**$32,563**	**$34,362**	**$36,261**	**$38,264**	**$40,378**

Notes:
(1) Figures in thousands of dollars.

4.1.1.2 Operating Expenses

To forecast Naperville's budget for the duration of this Study, Carollo and City staff collaborated to set projected inflation rates for distinct categories of expenses. All expenses in this Study are escalated by four percent annually, except water purchases and capital, which are calculated in the preceding section.

The following table presents a summary of the City's expenditures for the next three years. Water Purchase Costs from Table 23 are contained within the Operations category.

Table 24 Water Operating Expenses

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Administration	$5,648	$5,874	$6,108	$6,353	$6,607	$6,871
Engineering	$576	$599	$623	$648	$673	$700
Operations	$34,904	$37,560	$39,559	$41,665	$43,884	$46,223
Support Services	$533	$555	$577	$600	$624	$649
Safety	$32	$33	$34	$35	$37	$38
Communications And Marketing	$38	$39	$41	$42	$44	$46
Customer Service	$700	$728	$757	$787	$818	$851
Dispatch Services	$17	$17	$18	$19	$19	$20
Building And Development	$50	$52	$54	$56	$58	$61

[5] DWC adopts its water rates in dollars per thousand gallons.

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Transportation And Engineering	$3	$3	$3	$3	$3	$3
Projected Additional Staffing	$0	$0	$82	$172	$179	$186
Buildings And Grounds	$110	$114	$119	$124	$129	$134
Total Operating Expenses	**$42,609**	**$45,572**	**$47,974**	**$50,503**	**$53,077**	**$55,783**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.1.3 Capital Forecast

The City anticipates approximately $160.6 million in CIP spend for 2024 through 2029. This covers projects related to water distribution and metering, water supply, and combined projects serving both the Water and Wastewater utilities, as shown in the table below.

Table 25 Water Capital Improvement Plan

Capital Improvement Project	2024	2025	2026	2027	2028	2029
Water Distribution and Metering	$11,782	$18,790	$15,764	$30,145	$32,367	$19,828
Water Supply	$2,747	$9,147	$9,533	$7,768	$4,000	$6,814
Combined Projects	$0	$144	$64	$64	$64	$0
Total Water CIP Projects	**$14,529**	**$28,081**	**$25,361**	**$37,977**	**$36,431**	**$26,642**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

Capital Improvement Funding

The majority of the water-related CIP projects for 2025-2027 are projected to be funded on a "pay as you go" (Paygo) basis from rates and reserves, while a portion of the projects are planned to be funded with new debt issuances. Carollo and City staff worked with the City's financial advisor to forecast the projected debt service schedule for this funding, which is included in the subsequent revenue requirement tables. The project funding by source is shown in Table 26.

Table 26 Water Utility Capital Improvement Plan by Funding Source

Funding Source	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Debt	$7,491	$6,463	$9,879	$8,171	$7,842	$2,593
Paygo	$7,038	$21,618	$15,482	$29,806	$28,590	$24,049
Total CIP	**$14,529**	**$28,081**	**$25,361**	**$37,977**	**$36,431**	**$26,642**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.1.4 Water Revenue Requirement Summary

After compiling the O&M and capital expenses outlined in the preceding sections, the annual cash flow for the next three years is shown in Table 27. This includes proposed annual rate increases of 12 percent for water rates from 2025 through 2027, followed by projected 5 percent rate increases thereafter.

Outside City Surcharge Changes

After reviewing the current outside city surcharge of 10 percent and benchmarking that surcharge with other utilities in the region, City staff plans to recommend an increase to the outside city surcharge to 30 percent. The average utility in the region uses a surcharge of 40 percent, and most agencies use 50 percent.

Outside city customers are assessed a surcharge for several reasons. The outside city rate base can leave the City's system, unlike the inside city customers. If this were to occur, the City would see a reduction in potential capital funding and the outside city surcharge must therefore account for this risk. In addition, outside city customers require the City to build a larger distribution network, which comes with greater operating and capital costs. For 2025 and beyond, the outside city revenues were increased accordingly.

Table 27 Water Utility Revenue Requirement

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Water Rate Increase	**-**	**12%**	**12%**	**12%**	**5%**	**5%**
Operating Revenues						
DWC Pass-Thru	$27,638	$29,154	$30,800	$32,502	$34,297	$36,192
Inside City - Fixed & Volumetric	$23,109	$23,225	$23,341	$23,458	$23,575	$23,693
Outside City - Fixed & Volumetric	$625	$744	$748	$751	$755	$759
Inside City - Capital	$911	$915	$920	$924	$929	$934
Outside City - Capital	$22	$22	$23	$23	$23	$23
Additional Revenue from Adjustments	$0	$2,989	$6,368	$10,186	$12,013	$13,947
Total Operating Revenues	**$52,305**	**$57,049**	**$62,198**	**$67,844**	**$71,592**	**$75,547**
Non-Operating Revenues						
Water Connection Charge	$536	$494	$504	$514	$524	$534
Charges for Service	$22	$22	$23	$23	$24	$24
Other Water Utility Fund	$574	$406	$406	$414	$422	$431
Water Capital Fund	$0	$0	$0	$0	$0	$0
Bond Proceeds	$7,491	$6,463	$9,879	$8,171	$7,842	$2,593
Total Non-Operating Revenues	**$8,623**	**$7,385**	**$10,811**	**$9,122**	**$8,811**	**$3,582**

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Total Revenues	**$60,927**	**$64,433**	**$73,010**	**$76,966**	**$80,403**	**$79,130**
Expenses						
Operating Expenses	$42,609	$45,572	$47,974	$50,503	$53,077	$55,783
Debt Service	$1,484	$2,250	$2,329	$2,629	$3,173	$3,570
Debt Funded Capital	$7,491	$6,463	$9,879	$8,171	$7,842	$2,593
Paygo Capital	$7,038	$21,618	$15,482	$29,806	$28,590	$24,049
Total Expenses	**$58,622**	**$75,903**	**$75,664**	**$91,110**	**$92,681**	**$85,995**
Cash Flow Surplus / (Deficit)	**$2,306**	**($11,470)**	**($2,654)**	**($14,144)**	**($12,278)**	**($6,865)**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.2 Wastewater Revenue Requirements

4.1.2.1 Operating Expenses

The following table presents a summary of wastewater expenditures for the duration of this Study.

Table 28 Wastewater Operating Expenses

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Administration	$5,648	$5,874	$6,108	$6,353	$6,607	$6,871
Engineering	$576	$599	$623	$648	$673	$700
Operations	$9,458	$9,836	$10,230	$10,639	$11,064	$11,507
Support Services	$533	$555	$577	$600	$624	$649
Safety	$32	$33	$34	$35	$37	$38
Communications And Marketing	$38	$39	$41	$42	$44	$46
Customer Service	$700	$728	$757	$787	$818	$851
Dispatch Services	$17	$17	$18	$19	$19	$20
Building And Development	$50	$52	$54	$56	$58	$61
Transportation And Engineering	$3	$3	$3	$3	$3	$3
Projected Additional Staffing	$0	$156	$244	$341	$354	$369
Buildings And Grounds	$110	$114	$119	$124	$129	$134
Total Operating Expenses	**$17,162**	**$18,005**	**$18,807**	**$19,646**	**$20,432**	**$21,249**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.2.2 Capital Forecast

The City anticipates approximately $218.5 million in wastewater CIP spend for 2024 through 2029. This covers projects related to collections and pumping, SWRC, and combined projects serving both the water and wastewater systems, as shown in the table below.

Table 29 Wastewater Capital Improvement Plan

Project Category	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Collections and Pumping	$6,302	$9,424	$7,136	$7,202	$8,382	$5,030
SWRC	$20,030	$19,368	$40,450	$37,375	$44,855	$12,610
Combined Projects	$0	$144	$64	$64	$64	$0
Total Wastewater CIP Projects	**$26,332**	**$28,936**	**$47,650**	**$44,641**	**$53,301**	**$17,640**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

Capital Improvement Funding

The City has built capital within the Phosphorus reserve with the intention of fully drawing down these funds to pay for wastewater improvement projects. Naperville anticipates using a combination of Phosphorus reserve funds, new General Obligation bond issuances, and rate revenues to cover SWRC costs over the length of the project (2025 through 2030). The following table presents the capital improvement plan for all wastewater projects by funding source for the duration of this Study. Like the water CIP, Carollo worked with City staff and the City's financial advisor to develop a debt service schedule for this projection.

Table 30 Wastewater Utility Capital Improvement Plan by Funding Source

Funding Source	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Phosphorus	$0	$2,863	$6,543	$6,161	$6,804	$0
Debt	$12,509	$24,937	$38,121	$31,529	$30,258	$10,007
Paygo	$13,823	$1,136	$2,986	$6,952	$16,239	$7,634
Total CIP	**$26,332**	**$28,936**	**$47,650**	**$44,641**	**$53,301**	**$17,640**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

Warrenville Eligible Funding

The City of Warrenville reimburses the City for SWRC and other wastewater capital projects based on its proportional usage of the treatment facilities. This Study applied a cost allocation rate of 7.5 percent based on historical averages to the projects identified as eligible for this funding, as shown in the table below. For debt funded capital, the Warrenville allocated cost is based on the forecasted debt service, which includes associated financing costs and interest. Because the annual Warrenville capital payment is typically determined based on a running average of capital costs, the actual amount paid by Warrenville may differ from what is projected here.

Table 31 Warrenville Projected Capital Payments

Funding Source	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Annual Debt Service	$0	$34	$123	$292	$444	$406
Paygo	$97	$132	$235	$223	$274	$67
Warrenville Capital	**$97**	**$166**	**$358**	**$514**	**$718**	**$473**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.2.3 Wastewater Revenue Requirement Summary

After compiling the wastewater O&M and capital expenses outlined in the preceding sections, the annual cash flow for the next three years is shown in the table below. This includes proposed annual rate increases of 10 percent for wastewater rates from 2025 through 2027, followed by projected 5 percent rate increases thereafter.

Table 32 Wastewater Revenue Requirement

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Wastewater Rate Increases	**-**	**10%**	**10%**	**10%**	**5%**	**5%**
Operating Revenues						
Inside City	$27,144	$27,279	$27,415	$27,552	$27,689	$27,827
Outside City	$239	$240	$241	$243	$244	$245
Less: Total Revenue Adjustments	$0	$2,752	$5,808	$9,200	$11,105	$13,122
Total Operating Revenues	**$27,383**	**$30,271**	**$33,464**	**$36,994**	**$39,038**	**$41,194**
Non-Operating Revenues						
Wastewater Connection Charge	$931	$579	$590	$602	$614	$626
Charges for Service	$22	$22	$23	$23	$24	$24
Other Water Utility Fund	$1,597	$1,705	$1,875	$2,035	$2,169	$2,207
Water Capital Fund	$4	$1,104	$4	$4	$4	$4
Warrenville Capital Reimbursement	$97	$166	$358	$514	$718	$473
Phosphorus Funding	$0	$2,863	$6,543	$6,161	$6,804	$0
Bond Proceeds	$12,509	$24,937	$38,121	$31,529	$30,258	$10,007
Total Non-Operating Revenues	**$15,160**	**$31,376**	**$47,514**	**$40,868**	**$40,591**	**$13,341**
Total Revenues	**$42,543**	**$61,647**	**$80,979**	**$77,863**	**$79,629**	**$54,535**

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Expenses						
Operating Expenses	$17,162	$18,005	$18,807	$19,646	$20,432	$21,249
Debt Service	$1,593	$3,196	$4,265	$6,199	$8,296	$9,830
Phosphorus Funded Capital	$0	$2,863	$6,543	$6,161	$6,804	$0
Debt Funded Capital	$12,509	$24,937	$38,121	$31,529	$30,258	$10,007
Paygo Capital	$13,823	$1,136	$2,986	$6,952	$16,239	$7,634
Total Expenses	**$45,087**	**$50,137**	**$70,722**	**$70,487**	**$82,029**	**$48,719**
Cash Flow Surplus / (Deficit)	**($2,544)**	**$11,510**	**$10,257**	**$7,376**	**($2,400)**	**$5,817**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.3 Combined Revenue Requirements

The following section summarizes the financial forecast of the combined water and wastewater systems and applies the debt coverage and reserve financial tests to the combined revenue requirements.

Under the proposed rate recommendations, the utility is forecasted to meet the debt service coverage and reserve targets over the next three years.

In addition, this forecast projects the drawdown of the Phosphorus fund to fund the SWRC projects.

4.1.3.1 Cash Flow Forecast

Under the current and proposed rate increases, the combined utility is projected to have a negative annual cash flow in 2024 and 2027 to 2029. The negative cash flows are projected to be funded through a combination of the drawdown of Phosphorus funds and other utility reserve funds.

Table 33 Combined Utility Revenue Requirement

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Revenues						
Water Rate Revenues	$52,305	$57,049	$62,198	$67,844	$71,592	$75,547
Wastewater Rate Revenues	$27,383	$30,271	$33,464	$36,994	$39,038	$41,194
Non-Operating Revenues	$3,681	$3,227	$3,420	$3,611	$3,776	$3,847
Capital Funding	$20,101	$35,533	$54,906	$46,379	$45,626	$13,077
Total Revenues	**$103,470**	**$126,080**	**$153,988**	**$154,828**	**$160,032**	**$133,665**

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Expenses						
Operating Expenses	$59,771	$63,577	$66,780	$70,149	$73,508	$77,032
Debt Service	$3,076	$5,446	$6,594	$8,829	$11,469	$13,399
Phosphorus Funded Capital	$0	$2,863	$6,543	$6,161	$6,804	$0
Debt Funded Capital	$20,000	$31,400	$48,000	$39,700	$38,100	$12,600
Paygo Capital	$20,861	$22,755	$18,468	$36,758	$44,828	$31,682
Total Expenses	**$103,709**	**$126,041**	**$146,386**	**$161,596**	**$174,710**	**$134,714**
Cash Flow Surplus / (Deficit)	**($239)**	**$40**	**$7,602**	**($6,768)**	**($14,678)**	**($1,049)**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.3.2 Reserves Target Test

The Operating Fund carries the utility's only mandated reserve target. This Study is only required to test the revenue sufficiency to meet a minimum of 30 days of O&M for this fund. Under the proposed rate increases, the combined utility is forecasted to meet the operating reserve target in every year of this Study period.

Table 34 Reserve Target Sufficiency Test

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Beginning Fund Balance	$22,401	$22,162	$22,202	$29,804	$23,036	$8,359
Sources of Funds						
Revenue from Rates	$79,687	$87,320	$95,663	$104,838	$110,630	$116,741
Other Revenue	$3,314	$2,981	$3,067	$3,155	$3,247	$3,341
Interest Income	$367	$246	$353	$455	$529	$505
Warrenville Capital Reimbursement	$97	$166	$358	$514	$718	$473
Grant/Bond Proceeds	$20,004	$32,504	$48,004	$39,704	$38,104	$12,604
Phosphorus Funds	$0	$2,863	$6,543	$6,161	$6,804	$0
Total	**$103,470**	**$126,080**	**$153,988**	**$154,828**	**$160,032**	**$133,665**
Uses of Funds						
Operating Expenses	$59,771	$63,577	$66,780	$70,149	$73,508	$77,032
Non-Operating Expenses	$0	$0	$0	$0	$0	$0

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Debt Service	$3,076	$5,446	$6,594	$8,829	$11,469	$13,399
Capital	$40,861	$57,017	$73,011	$82,618	$89,733	$44,282
Total	**$103,709**	**$126,041**	**$146,386**	**$161,596**	**$174,710**	**$134,714**
Ending Total Balance	**$22,162**	**$22,202**	**$29,804**	**$23,036**	**$8,359**	**$7,310**
Operating Fund Target	$4,913	$5,226	$5,489	$5,766	$6,042	$6,331
Reserves Surplus/(Deficit)	**$17,250**	**$16,976**	**$24,315**	**$17,270**	**$2,317**	**$979**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.1.3.3 Debt Service Coverage Test

While the City does not have legal debt coverage obligations on these loans that need to be met by the Water Utility, this analysis did calculate the debt coverage for each year. The DSCR is calculated by dividing the difference between total operating revenues and operating expenses by the annual debt service.

After the proposed rate increases, the utility is projected to meet a debt coverage target of 2.00x through 2029, with projected debt coverage remaining above 3.00x through the next five years. This level of coverage indicates that the City has sufficient revenue to support the level of borrowing assumed in this forecast.

Table 35 Debt Service Coverage Reserve Test

	2024	2025	2026	2027	2028	2029
Revenues						
Water Rate Revenues	$52,305	$57,049	$62,198	$67,844	$71,592	$75,547
Wastewater Rate Revenues	$27,383	$30,271	$33,464	$36,994	$39,038	$41,194
Other Allowable Revenues	$3,681	$3,352	$3,440	$3,611	$3,776	$3,847
Total Operating Revenues	**$83,369**	**$90,672**	**$99,102**	**$108,449**	**$114,406**	**$120,588**
Expenses						
Operating Expenses	$59,771	$63,577	$66,780	$70,149	$73,508	$77,032
Debt Service	$3,076	$5,446	$6,594	$8,829	$11,469	$13,399
Debt Coverage Target	$3,076	$5,446	$6,594	$8,829	$11,469	$13,399
Total Coverage-Related Expenses	**$65,924**	**$74,470**	**$79,969**	**$87,807**	**$96,446**	**$103,831**
Debt Coverage Surplus/(Deficit)	**$17,445**	**$16,078**	**$19,114**	**$20,643**	**$17,960**	**$16,757**

	2024	2025	2026	2027	2028	2029
Calculated Coverage Ratio	**7.67 x**	**4.95 x**	**4.90 x**	**4.34 x**	**3.57 x**	**3.25 x**
Coverage Ratio Target	2.00 x	2.00 x	2.00 x	2.00 x	2.00 x	2.00 x

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

4.2 Rate Increase Sensitivity Analysis

As part of this analysis, Carollo also developed a sensitivity analysis to calculate the impact of a range of rate increases, specifically for the water system. This sensitivity analysis looked at the ending reserve balance under a range of annual rate increases below the proposed 12 percent for water, while holding the wastewater rate increases constant at 10 percent annually.

Based on this analysis, decreasing the water rate increase from 12 to 11 percent results in a projected revenue reduction of approximately $2.0 million over the next three years. As the revenue increase is further reduced, each incremental decrease results in less revenue loss because of the effect of compounding. When reducing from 4 to 3 percent, the incremental revenue loss is approximately $1.6 million due to this effect but the cumulative revenue loss compared to 12 percent is approximately $14.7 million.

These revenue decreases would need to be offset either by lower ending reserves, deferring capital projects, or finding alternative funding sources, such as additional debt. Figure 4 shows both the revenue impact and the end of year reserve balance at the end of 2027 under a range of lower water rate increases. This figure assumes that wastewater increases are held at 10 percent. While the projected 2027 end of year reserve balance is above the target across a range of annual rate increases down to 3 percent annually, the rate increases for 2025 through 2027 also consider planned capital and debt service obligations in 2028 through 2030.

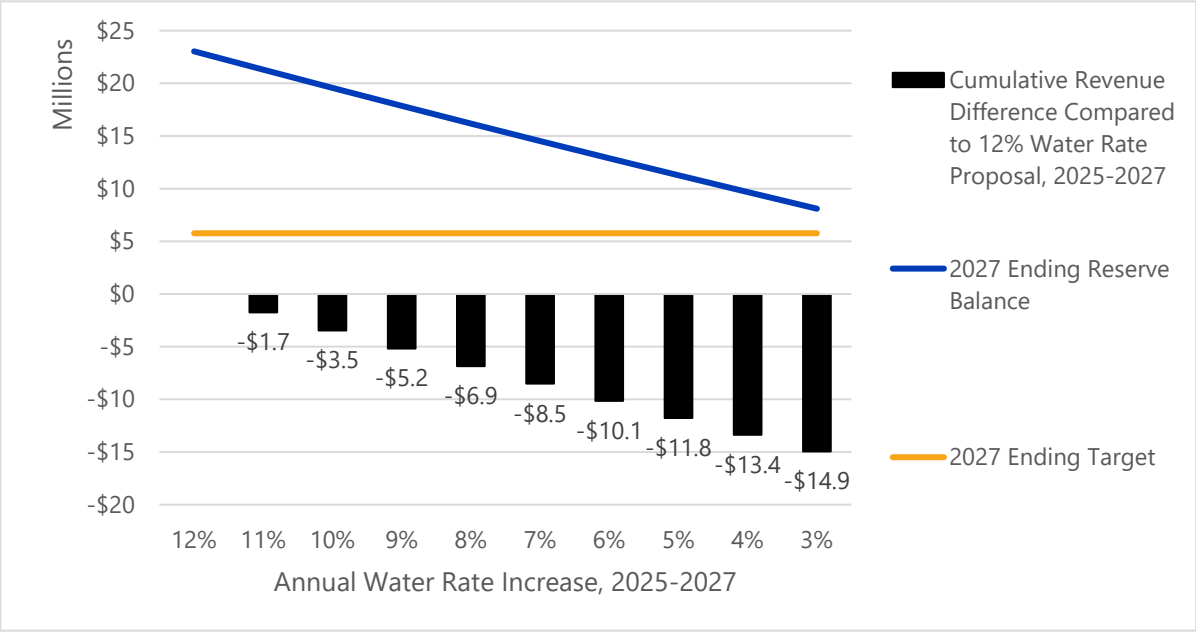

Figure 4 Revenue Reduction from Lower Water Rate Increases

SECTION 5 COST-OF-SERVICE REVIEW

Rate studies often include a component known as a cost-of-service analysis. The cost-of-service analysis is method of taking costs and allocating them fairly and reasonably to each customer through the rates. There are typically two broad steps to this analysis: cost functionalization followed by customer class allocation. Additional steps are often used to refine this process, but these two steps generally define the cost-of-service process.

The City conducts regular rate studies approximately every three years, with the most recent rate study completed in 2021 for rates in effect from 2022 through 2024. The current rate structure and the associated cost-of-service was developed during the 2017 rate study. Rather than performing a full cost-of-service update, this Cost-of-Service Review assessed the feasibility of maintaining that existing cost-of-service basis for several reasons. First and most importantly, if the existing rates are in line with cost-of-service, then there is little to be gained from a full analysis and the review can serve as a stopping point to further cost-of-service analysis. Second, whenever rate changes are implemented, significant outreach and communication to ratepayers can be necessary at times. Third and finally, the City strives to balance affordability for its customers with maintaining funding for its water and sewer infrastructure. The City has found that the current rate structure achieves this balance reasonably well and changes would have to be supported by clear cost-of-service differences. As a result of these factors, the streamlined cost-of-service review is sufficient to assess the appropriateness of the rates considering these factors.

5.1 Cost Functionalization and Allocation to Rate Components

The cost functionalization ties costs to rate components, such as tying customer service and meter reading costs to the fixed charge or linking the water distribution costs to the volumetric rates. This is often referred to as the cost functionalization because costs are functionalized based on how they benefit the system.

Carollo reviewed the existing cost functionalization for both the water and wastewater rates and did not find that the City's expense profile changed sufficiently to necessitate an update to the functionalization profile.

5.2 Customer Class Allocation

The second step of the cost-of-service process is to allocate these rate components to rate classes, such as residential and non-residential.

5.2.1 Water

For volumetric water rates, the cost-of-service allocation to classes is commonly achieved using peaking factors, which estimate how much peak system capacity each customer class requires in the system. This is estimated using the average day and max month demand for each class, and then estimating the max day and max hour peaking factors based on systemwide data. This serves as an estimate of how much of the peak system capacity is needed to serve each class.

Carollo gathered billing data for all City customers for the last several years and developed a peak profile analysis of the two major rate classes (residential and non-residential). This analysis relies on the max day and max hour capacity needs for each class, which are calculated as follows:

1. Gather the average day demand (ADD), max month demand (MMD), max day demand (MDD), and max hour demand (MHD) figures for the entire water system for the last several years.
2. Calculate the peaking ratios for each demand scenario for each year. Select the year with the highest max hour to average day ratio, which illustrates the greatest capacity need. In this case, 2021 and 2023 both had the same MHD/ADD ratio. As a result, 2023 was selected for recency. The demand criteria and peaking factors are summarized in Table 36.
3. Determine total ADD and the ADD for the max month for each class.
4. Estimate the MDD for each class based on the MDD/MMD ratio for the entire system.
5. Estimate the MHD for each class based on the MHD/MDD ratio for the entire system.

Table 36 Water System Demand Data

Demand Criteria / Ratio	2023 Values
Average Day Demand (mgd)	13.60
Max Month Demand (mgd)	18.91
Max Day Demand (mgd)	27.16
Max Hour Demand (gpm)	40,955.00
MHD (mgd)	58.98
MMD / ADD	1.39
MDD / MMD	1.44
MDD / ADD	2.00
MHD / ADD	4.34
MHD / MDD	2.17

Table 36 summarizes the customer class analysis, which shows that peak profiles for both classes are largely unchanged relative to one another from the assumptions used in the 2017 cost-of-service. While the actual max day and max hour peaking factors for each class is higher than 2017, these factors have largely moved in tandem, meaning that the relative peaking profile is unchanged. For example, the inter-class ratio for the MHD peaking factor from 2017 was 1.20 (4.76 divided by 3.96), while it is 1.16 based on the 2023 data (4.96 divided by 4.28). More detail is shown in the table below and in the appendix of this report.

Table 37 Water Peaking Factor Analysis

	Non-Residential	Residential	Systemwide
Average Day Demand (ADD) (mgd) (1)	4.62	8.67	13.28
Max Month ADD (mgd)	6.17	13.43	19.60
Estimated Max Day (mgd) (2)	8.89	19.34	28.23
MDD Peaking Factor (3)	1.93	2.23	2.12
2017 Rate MDD Peaking Factor	1.79	2.15	2.01

	Non-Residential	Residential	Systemwide
Estimated Max Hour (mgd) (4)	19.77	43.01	62.79
MHD Peaking Factor (5)	4.28	4.96	4.73
2017 Rate MDD Peaking Factor	3.96	4.76	4.45

Notes:
(1) Based on average usage from 2021 through 2023.
(2) Equal to max month ADD multiplied by the systemwide max day to max month ratio for the highest max day year (1.44 for 2021).
(3) Max day divided by average day.
(4) Equal to max day multiplied by the systemwide max hour to max day ratio for the highest max day year (2.22 for 2021).
(5) Max hour divided by average day.

For wastewater, this is based on estimated treatment requirements. Because all wastewater rates are the same for all customer classes, there was no further review of that cost-of-service basis.

SECTION 6 RATE CALCULATION

Because there are no changes to the cost-of-service and no rate design changes are recommended based on collaboration between the City and Carollo, the rate calculation is based on an across-the-board increase of rates using the proposed percentages—12 percent for water and 10 percent for wastewater.

6.1 Water Rate Calculation

There are four main components to the water rate structure. There are two monthly fixed charges—the customer and capital charges—based on a customer's meter size. There are also two volumetric charges: the City's retail delivery rates, which are uniform for all usage for residential customers and tiered for non-residential customers; and the DWC wholesale supply rate pass-through. The DWC rate is increased directly in line with DWC's annual increases, while the other rates are increased by the proposed 12 percent annually from 2025 through 2027.

In addition to those four primary rates, the City also has separate private fire line monthly charges based on the fire line size, and monthly surcharges for water-only customers to cover the portion of administrative costs that are split with wastewater.

All rates in the subsequent sections include the increased outside city surcharge of 30 percent beginning in 2025.

6.1.1 Fixed Charges

The proposed monthly customer charges for both inside and outside city customers are outlined in Table 38.

Table 38 Proposed Water Monthly Customer Charge

Meter Size	2024	2025	2026	2027
Inside City				
5/8" x 3/4"	$9.31	$10.43	$11.69	$13.10
1"	$15.52	$17.39	$19.48	$21.82
1.5"	$31.03	$34.76	$38.94	$43.62
2"	$49.64	$55.60	$62.28	$69.76
3"	$99.28	$111.20	$124.55	$139.50
4"	$155.13	$173.75	$194.60	$217.96
6"	$310.25	$347.48	$389.18	$435.89
8"	$496.40	$555.97	$622.69	$697.42
10"	$1,303.05	$1,459.42	$1,634.56	$1,830.71
12"	$1,644.33	$1,841.65	$2,062.65	$2,310.17
Monthly Surcharge for Water-Only Customers	$5.43	$6.09	$6.83	$7.65

Meter Size	2024	2025	2026	2027
Outside City				
5/8" x 3/4"	$10.24	$13.56	$15.20	$17.03
1"	$17.07	$22.61	$25.33	$28.37
1.5"	$34.14	$45.19	$50.63	$56.71
2"	$54.62	$72.28	$80.97	$90.69
3"	$109.23	$144.56	$161.92	$181.35
4"	$170.67	$225.88	$252.98	$283.35
6"	$341.34	$451.73	$505.94	$566.66
8"	$546.14	$722.77	$809.50	$906.65
10"	$1,433.60	$1,897.25	$2,124.93	$2,379.93
12"	$1,809.07	$2,394.15	$2,681.45	$3,003.23
Monthly Surcharge for Water-Only Customers	$6.02	$7.92	$8.88	$9.95

Notes:
(1) Rates have been rounded up to the nearest $0.01.

The proposed monthly capital charges for both inside and outside city customers are outlined in Table 39.

Table 39 Proposed Water Monthly Capital Charge

Meter Size	2024	2025	2026	2027
Inside City				
5/8" x 3/4"	$1.09	$1.23	$1.38	$1.55
1"	$1.82	$2.04	$2.29	$2.57
1.5"	$3.64	$4.08	$4.57	$5.12
2"	$5.82	$6.52	$7.31	$8.19
3"	$11.63	$13.03	$14.60	$16.36
4"	$18.17	$20.36	$22.81	$25.55
6"	$36.34	$40.71	$45.60	$51.08
8"	$58.14	$65.12	$72.94	$81.70
10"	$152.60	$170.92	$191.44	$214.42
12"	$192.57	$215.68	$241.57	$270.56
Outside City				
5/8" x 3/4"	$1.20	$1.60	$1.80	$2.02
1"	$2.01	$2.66	$2.98	$3.35
1.5"	$4.01	$5.31	$5.95	$6.66
2"	$6.41	$8.48	$9.51	$10.65
3"	$12.80	$16.94	$18.98	$21.27
4"	$19.99	$26.47	$29.66	$33.22
6"	$39.98	$52.93	$59.28	$66.41

Meter Size	2024	2025	2026	2027
8"	$63.96	$84.66	$94.83	$106.21
10"	$167.86	$222.20	$248.88	$278.75
12"	$211.83	$280.39	$314.05	$351.73

Notes:
(1) Rates have been rounded up to the nearest $0.01.

6.1.2 Volumetric Charges

The proposed volumetric rates for inside city customers are outlined in Table 40.

Table 40 Proposed Water Volumetric Charges – Inside City

	2024	2025	2026	2027
Residential				
Naperville Retail Delivery Charge	$2.43	$2.73	$3.06	$3.43
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Residential	**$6.60**	**$7.11**	**$7.66**	**$8.26**
Non-Residential				
Block 1 (1st 100,000 CF)				
Naperville Retail Delivery Charge	$2.28	$2.56	$2.87	$3.22
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Non-Residential - Block 1	**$6.45**	**$6.94**	**$7.47**	**$8.05**
Block 2 (Over 100,000 CF)				
Naperville Retail Delivery Charge	$1.35	$1.52	$1.71	$1.92
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Non-Residential – Block 2	**$5.52**	**$5.90**	**$6.31**	**$6.75**

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) DWC rates are billed as a pass-through and are shown as an estimate. DWC updates its rates on May 1 of each year. Actual rates are subject to change based on DWC ordinance.

The proposed volumetric rates for outside city customers are outlined in Table 41.

Table 41 Proposed Water Volumetric Charges – Outside City

	2024	2025	2026	2027
Residential				
Naperville Retail Delivery Charge	$2.66	$3.55	$3.98	$4.46
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Residential	**$7.25**	**$9.25**	**$9.97**	**$10.75**
Non-Residential				
Block 1 (1st 1,000 HCF)				

	2024	2025	2026	2027
Naperville Retail Delivery Charge	$2.50	$3.33	$3.74	$4.19
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Non-Residential - Block 1	**$7.09**	**$9.03**	**$9.73**	**$10.48**
Block 2 (Over 1,000 HCF)				
Naperville Retail Delivery Charge	$1.52	$1.98	$2.23	$2.50
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Non-Residential – Block 2	**$6.11**	**$7.68**	**$8.22**	**$8.79**

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) DWC rates are billed as a pass-through and are shown as an estimate. DWC updates its rates on May 1 of each year. Actual rates are subject to change based on DWC ordinance.

6.1.3 Other Water Charges

The City also maintains monthly charges for its customers with private fire protection lines. These charges increase based on the diameter of the fire line.

Table 42 Proposed Water Monthly Private Fire Line Charge

Meter Size	2024	2025	2026	2027
3" and smaller	$11.04	$12.37	$13.86	$15.53
4"	$16.60	$18.60	$20.84	$23.35
6"	$36.93	$41.37	$46.34	$51.91
8"	$66.41	$74.38	$83.31	$93.31
10"	$103.34	$115.75	$129.64	$145.20
12"	$147.70	$165.43	$185.29	$207.53

6.2 Wastewater Rate Calculation

There are three components to the wastewater rate structure, including two monthly fixed charges and volumetric rates. The monthly customer charge is assessed based on meter size. The monthly capital charge, which was previously billed as the Phosphorus charge, is also assessed based on meter size.

Residential volumetric rates are billed based on the customer's average winter usage, which is recalculated each year. Non-residential volumetric rates are billed directly based on the customer's metered water usage each month.

The proposed wastewater rate increase is 10 percent annually for the next three years.

6.2.1 Fixed Charges

The proposed fixed charges are shown in Table 43 and Table 44.

Table 43 Proposed Wastewater Monthly Customer Charge

Meter Size	2024	2025	2026	2027
5/8" x 3/4"	$11.04	$12.15	$13.37	$14.71
1"	$18.40	$20.24	$22.27	$24.50
1.5"	$36.80	$40.48	$44.53	$48.99
2"	$58.88	$64.77	$71.25	$78.38
3"	$117.76	$129.54	$142.50	$156.75
4"	$184.00	$202.40	$222.64	$244.91
6"	$368.00	$404.80	$445.28	$489.81
8"	$588.80	$647.68	$712.45	$783.70
10"	$1,545.60	$1,700.16	$1,870.18	$2,057.20

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 44 Proposed Wastewater Monthly Phosphorus/Capital Charge

Meter Size	2024	2025	2026	2027
5/8" x 3/4"	$2.04	$2.25	$2.48	$2.73
1"	$3.38	$3.72	$4.10	$4.51
1.5"	$6.75	$7.43	$8.18	$9.00
2"	$10.81	$11.90	$13.09	$14.40
3"	$21.61	$23.78	$26.16	$28.78
4"	$33.75	$37.13	$40.85	$44.94
6"	$67.50	$74.25	$81.68	$89.85
8"	$108.00	$118.80	$130.68	$143.75
10"	$283.48	$311.83	$343.02	$377.33
12"	$357.71	$393.49	$432.84	$476.13

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) Beginning in 2025, this charge will be labeled as the Capital charge.

6.2.2 Volumetric Charges

Table 45 Proposed Wastewater Volumetric Rates

	2024	2025	2026	2027
Volumetric Charge ($/HCF)	$3.15	$3.47	$3.82	$4.21
Wastewater Only Charges				
Volume Charge	$20.00	$22.00	$24.20	$26.62
Customer Charge	$30.37	$33.41	$36.76	$40.44
Phosphorus Charge	$3.38	$3.72	$4.10	$4.51
Total Monthly Flat Rate	**$53.75**	**$59.13**	**$65.06**	**$71.57**

SECTION 7 BILL IMPACTS AND RATE SURVEY

To assess the impact of a rate proposal on customers, a bill impact analysis is useful. This analysis can determine which customers are most impacted and the magnitude of that impact.

7.1 Single Family Residential Bill Impact

Based on the proposed rate increases—12 and 10 percent annually for water and wastewater, respectively—the combined bill for a typical customer is projected to increase by approximately $9 per month, from $101.21 to $110.28, an increase of 9.0 percent. This is based on a typical SFR customer with a 5/8-inch x 3/4-inch meter using 8 HCF of water per month.

Based on an analysis of the current SFR bill distribution, approximately 95 percent of all bills would increase by less than $20 per month, while no bill would increase more than 11 percent.

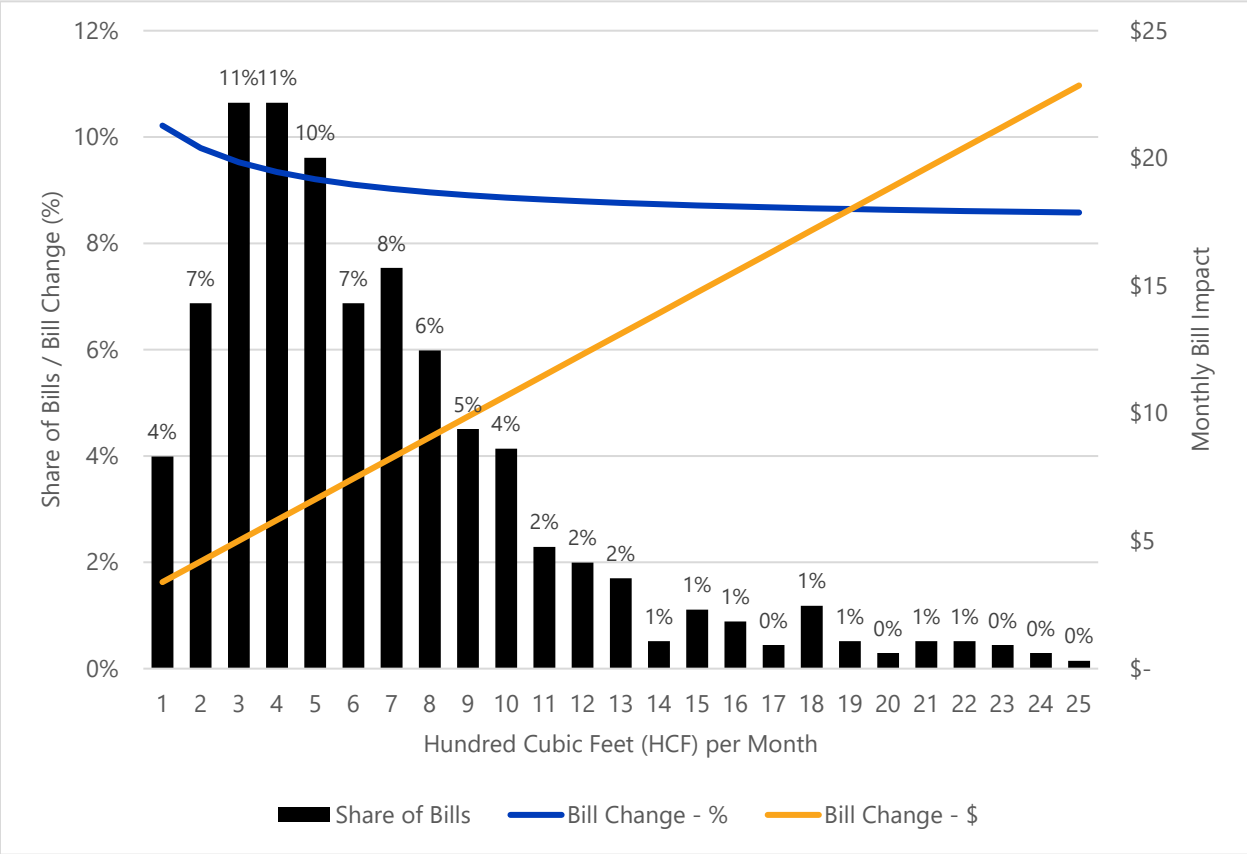

Figure 5 Single Family Residential Water and Wastewater Bill Impact Profile

7.2 Regional Rate Survey

In addition to a bill impact analysis, a regional rate survey is useful for contextualizing the current and proposed rates. While comparing the rates of two agencies is difficult due to several factors, such as operating cost differences, wholesale agreements, age of system, regulatory requirements, and other considerations, it is useful to see how the rate proposal compares to an average bill.

This survey gathered data from other utilities in the region, primarily those that also purchase water from DWC. The analysis then used the same average customer to calculate the same bill for each agency (8 HCF per month and 5/8-inch meter). It's important to note that this rate survey is based on currently implemented rates for each agency and does not account for rate increases that will occur in 2025 by other agencies.

7.2.1 Water Rate Survey

Based on a survey of other agencies in the region, the current water bill for a typical Naperville SFR customer ($63) is below the regional average of $75 per month. The proposed rates for 2025 would increase that bill to $68 per month, placing it in line with the regional average. This survey is shown in Figure 6.

7.2.2 Wastewater Rate Survey

Based on a survey of other agencies in the region, the current wastewater bill for a typical Naperville SFR customer ($38) is below the regional average of $43 per month. The proposed rates for 2025 would increase that bill to $42 per month, which would be in line with the regional average.

While all the communities shown in the water rate survey provide water service, several of the communities do not provide wastewater treatment. In these cases, the corresponding rates from the appropriate wastewater utility are shown as follows:

- Darien and Downers Grove bills are based on wastewater service provided by Downers Grove Sanitary District.
- Oak Brook, Oakbrook Terrace, and Willowbrook bills are based on service by Flagg Creek Water Reclamation District.
- Clarendon Hills and Hinsdale bills are based on DuPage County Public Works.

The rate survey is shown in Figure 7.

7.2.3 Total Bill Rate Survey

For agencies that provide both water and wastewater service, the total average bill is $120. Naperville's current typical SFR bill is below that average at $101. The proposed rates for 2025 would increase that bill to $110 per month, which would remain below the regional average. The rate survey is shown in Figure 8.

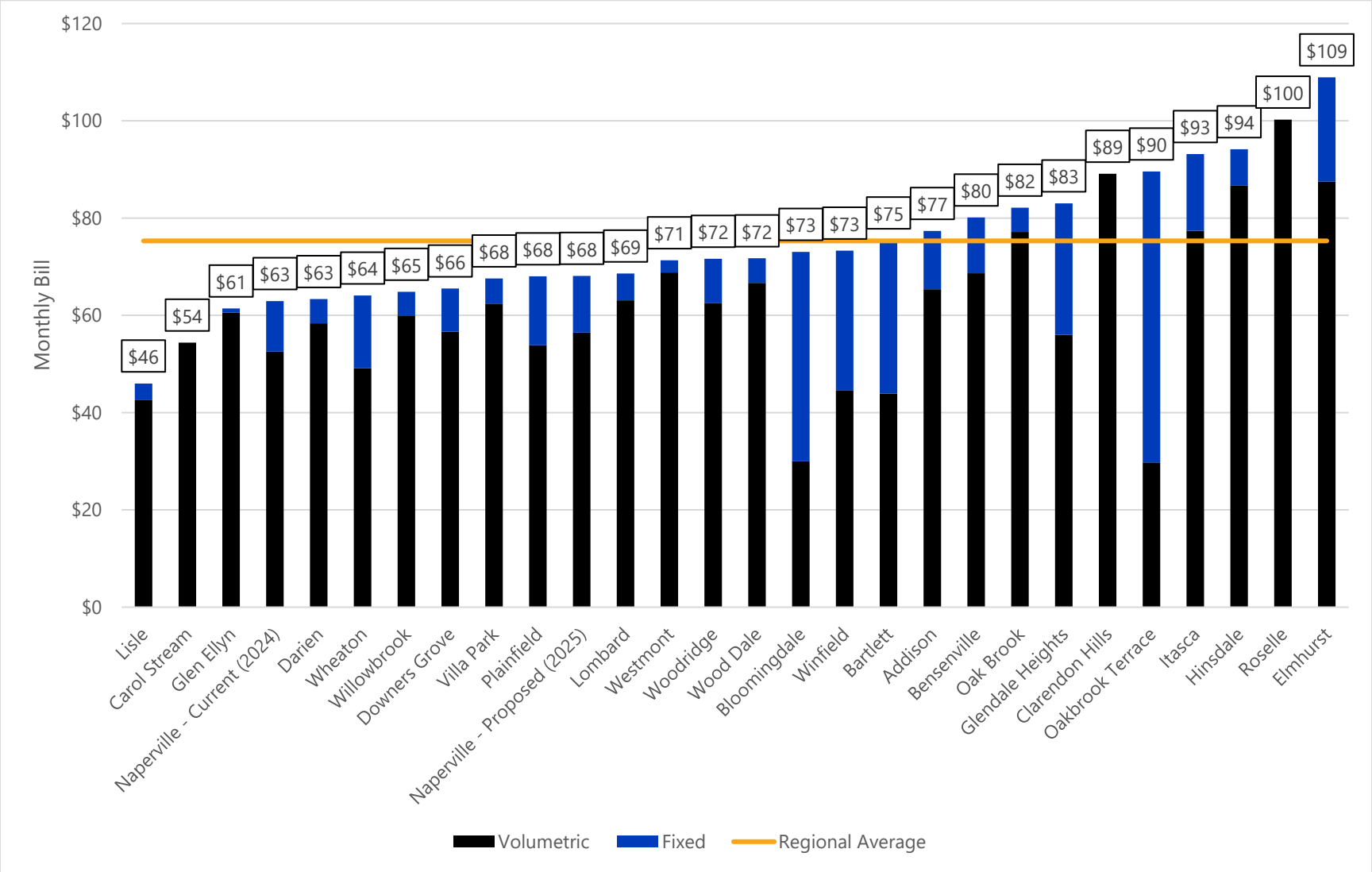

Figure 6 Single Family Residential Water Rate Survey

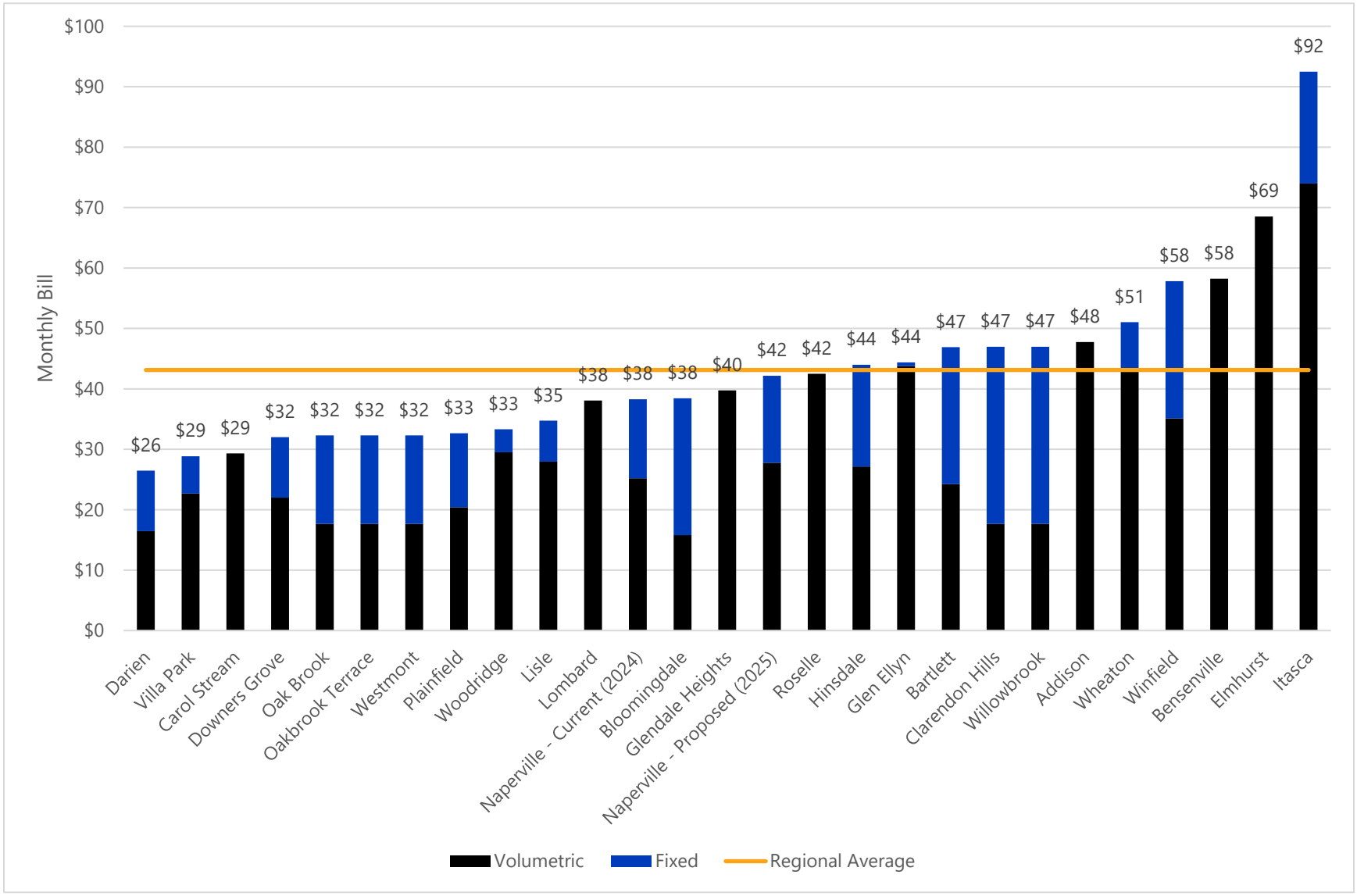

Figure 7 Single Family Residential Wastewater Rate Survey

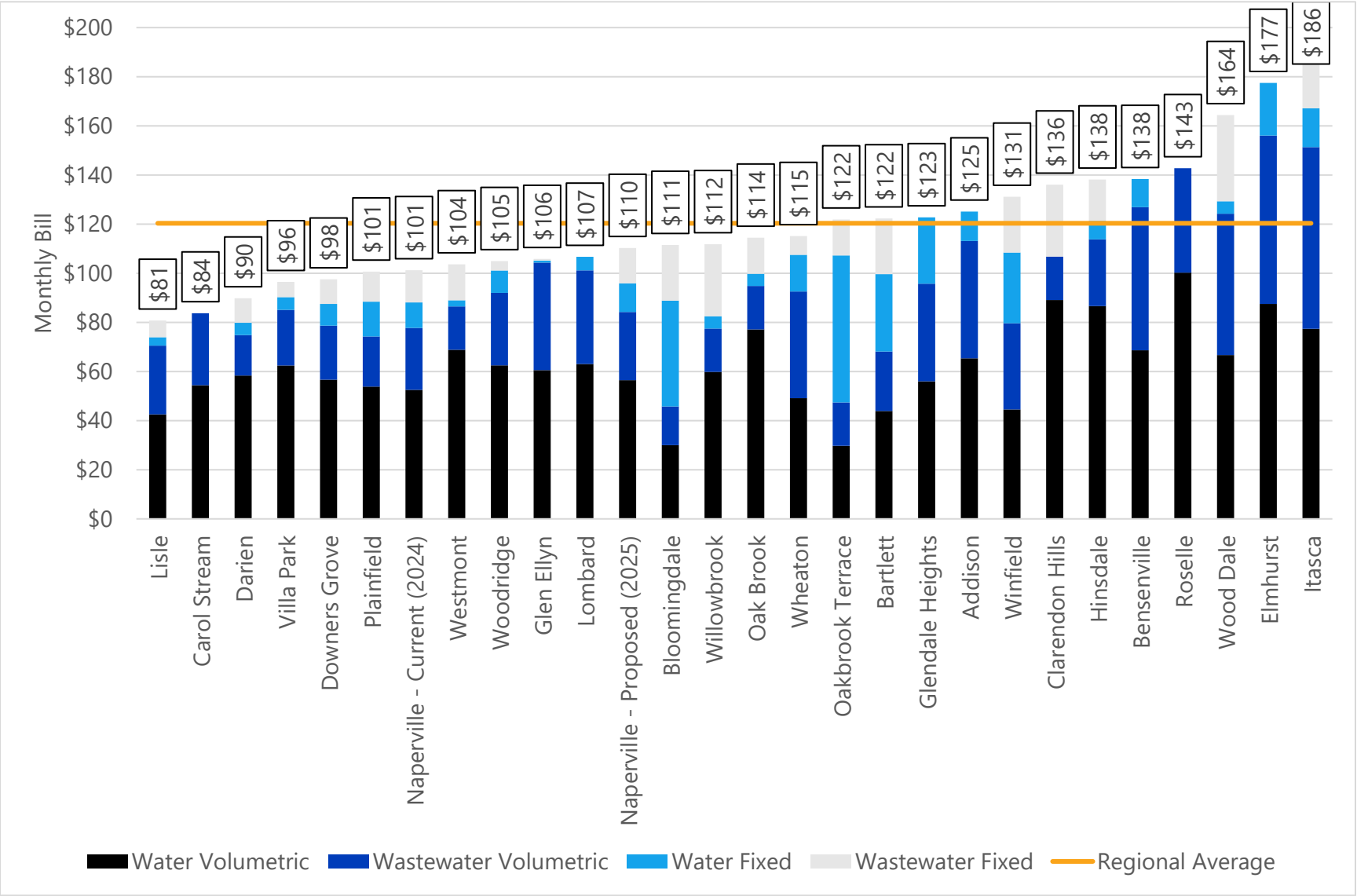

Figure 8 Single Family Residential Water and Wastewater Rate Survey

SECTION 8 APPENDIX ALTERNATIVE RATE FUNDING APPROACH SUMMARY

The proposed rates of 12 and 10 percent for Water and Wastewater, respectively, are based on projected new debt of $119.1 million over the next three years. City staff and Carollo prepared an alternative rate analysis based on a lower new debt assumption of approximately $81.6 million.

The following section summarizes the forecast under this alternative rate funding scenario. This section should not be considered a recommendation or proposal of rates. It does however, provide a summary of the rates that are projected to meet benchmarks given higher rate funding and lower debt funding of capital over the next three years.

With this lower debt funding amount, **annual rate increases of 22 for water and 10 for wastewater for 2025 through 2027 are projected to maintain the City's reserve balances above its internal policy target of 30 days of operations and maintenance expenses.**

The bill impact will vary for each customer based on the volume of water used, the meter size serving the account, and the customer class type (residential versus non-residential). **For the typical residential customer, which is based on monthly water usage of 8 hundred cubic feet, the bill impact is 12 percent, or approximately $12 per month.** Across all residential customers, approximately 80 percent of bills are projected to increase by less than 14 percent.

8.1 Five-Year Financial Plan

This analysis began with a projection of revenues and expenses over the next five years. Projected expenses were estimated based on the City's adopted 2024 budget, which was then escalated based on inflationary factors. DWC water purchases were calculated based on projected DWC rates and City customer water demand. Rate revenues were projected based on the 2023 water sales and billing data, forecasted assuming a 0.5 percent growth rate in customer base and no change in per account water or sewer demand. The City's multi-year CIP was funded through a mix of rate and debt funding. This forecast also incorporated a drawdown of the City's Phosphorus Fund to support wastewater capital expenses.

Based on the projected operating and capital expenses, 22 and 10 percent annual rate increases are proposed for water and sewer, respectively, for 2025 through 2027. The five-year financial forecast, which includes 5 percent annual rate increases for water and sewer in 2028 and 2029 as forecast assumptions but not proposed rates, is shown in Table 46.

Table 46 Combined Utility Financial Forecast

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Total Revenues	$103,470	$113,659	$145,634	$156,463	$170,754	$145,120
Total Expenses	$103,709	$125,709	$145,466	$159,238	$171,982	$132,081
Cash Flow Surplus / (Deficit)	**($239)**	**($12,050)**	**$168**	**($2,775)**	**($1,228)**	**$13,040**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

Following this forecast, Carollo used a two-test approach to review the sufficiency of the proposed rates and charges:

- **Reserve Sufficiency Test:** The City has a target of maintaining 30 days of O&M expenses in reserves at the end of each fiscal year (FY).
- **Debt Service Coverage Test:** Revenue bond issuances regularly include a stipulation that the issuing agency must maintain sufficient cash flows to meet annual debt service payments plus an additional amount. Typical debt service coverage ratios (DSCR) range from 1.25 times to 1.50 times annual debt service, depending on an agency's specific financial situation and the type of debt instrument issued. While the City issues General Obligation bonds, which do not have the same coverage requirements as a revenue bond for the utility, this analysis used a coverage target of 2.00 times debt service for financial planning purposes.

The reserve target test is shown in Table 47. With the proposed rate increases, the City is projected to maintain utility reserves above the target of 30 days of O&M expenses.

Table 47 Reserve Target Sufficiency Test

	2024 Budget	2025 Projected	2026 Projected	2027 Projected	2028 Projected	2029 Projected
Beginning Fund Balance	$22,401	$22,162	$10,112	$10,280	$7,505	$6,277
Sources of Funds	$103,470	$113,659	$145,634	$156,463	$170,754	$145,120
Uses of Funds	$103,709	$125,709	$145,466	$159,238	$171,982	$132,081
Ending Total Balance	$22,162	$10,112	$10,280	$7,505	$6,277	$19,317
Operating Fund Target	$4,913	$5,226	$5,489	$5,766	$6,042	$6,331
Reserves Surplus/(Deficit)	**$17,250**	**$4,887**	**$4,792**	**$1,739**	**$236**	**$12,986**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.

The debt coverage test is shown in Table 48. Not all revenues and expenses are included in the coverage calculation. Expenses are limited to operating expenses and do not include capital expenditures, while revenues include rate revenues and other operating revenues, but do not include capital funding sources.

Table 48 Debt Service Coverage Reserve Test

	2024	2025	2026	2027	2028	2029
Revenues	$83,369	$93,038	$104,857	$118,665	$125,199	$132,071
Expenses						
Operating Expenses	$59,771	$63,577	$66,780	$70,149	$73,508	$77,032
Debt Service	$3,076	$5,115	$5,674	$6,470	$8,741	$10,766
Debt Coverage (2)	$3,076	$5,115	$5,674	$6,470	$8,741	$10,766
Total Coverage-Related Expenses	$65,924	$73,808	$78,129	$83,090	$90,990	$98,564
Debt Coverage Surplus/(Deficit)	$17,445	$19,230	$26,728	$35,575	$34,209	$33,507
Calculated Coverage Ratio	**7.67 x**	**5.76 x**	**6.71 x**	**7.50 x**	**5.91 x**	**5.11 x**

Notes:
(1) All figures in thousands of dollars. Totals may be off due to rounding.
(2) Based on 200% coverage ratio.

8.1.1 Cost-of-Service Review

This Study included a review of the current rate structure and its consistency with cost of service. In rate-setting, cost of service is the methodology used to tie the rates charged to each customer to the expenses incurred to deliver water and sewer service to that customer. Cost-of-service-based rates maintain proportionality between and among customers, with each customer being charged only for the benefit that they receive.

The City last undertook a full cost of service rate review in 2017, which realigned the commercial and residential rates to meet the cost of service allocation of expenses. For several reasons which are further explained in this Report, this Study performed a simplified cost of service review that assessed the appropriateness of that existing cost of service basis, rather than performing a complete cost of service review from scratch.

This Study analyzed the peaking factors for residential and non-residential customers based on water usage over the last several years and compared these factors with those developed in 2017, which were used when calculating the current rate structure. Based on this review, the proportionality between residential and non-residential has not significantly changes in that time, with the ratio of peak demand currently at 1.16, compared with 1.20 in 2017. As a result, the existing rate structure sufficiently captures the cost-of-service proportionality between classes.

8.1.2 Rate Calculation

Given that the cost-of-service review did not find a need for rate structure changes, the current water and sewer rates can be increased by 22 and 10 percent, respectively. The proposed rates are shown in the following tables.

As part of this Study, the City and Carollo also modeled an increase of the outside city surcharge from 10 to 22 percent. This change would bring the City's outside city surcharge in line with other utilities in the region. Other utility surcharges average approximately 40 percent and range from 30 to 100 percent surcharge.

8.1.2.1 Water Rates

Table 49 Proposed Water Monthly Customer Charge

Meter Size	2024	2025	2026	2027
Inside City				
5/8" x 3/4"	$9.31	$11.36	$13.86	$16.91
1"	$15.52	$18.94	$23.11	$28.20
1.5"	$31.03	$37.86	$46.19	$56.36
2"	$49.64	$60.57	$73.90	$90.16
3"	$99.28	$121.13	$147.78	$180.30
4"	$155.13	$189.26	$230.90	$281.70
6"	$310.25	$378.51	$461.79	$563.39
8"	$496.40	$605.61	$738.85	$901.40
10"	$1,303.05	$1,589.73	$1,939.48	$2,366.17
12"	$1,644.33	$2,006.09	$2,447.43	$2,985.87
Monthly Surcharge for Water-Only Customers	$5.43	$6.63	$8.09	$9.87
Outside City				
5/8" x 3/4"	$10.24	$14.77	$18.02	$21.99
1"	$17.07	$24.63	$30.05	$36.66
1.5"	$34.14	$49.22	$60.05	$73.27
2"	$54.62	$78.75	$96.07	$117.21
3"	$109.23	$157.47	$192.12	$234.39
4"	$170.67	$246.04	$300.17	$366.21
6"	$341.34	$492.07	$600.33	$732.41
8"	$546.14	$787.30	$960.51	$1,171.82
10"	$1,433.60	$2,066.65	$2,521.33	$3,076.03
12"	$1,809.07	$2,607.92	$3,181.66	$3,881.64
Monthly Surcharge for Water-Only Customers	$6.02	$8.62	$10.52	$12.84

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 50 Proposed Water Monthly Capital Charge

Meter Size	2024	2025	2026	2027
Inside City				
5/8" x 3/4"	$1.09	$1.33	$1.63	$1.99
1"	$1.82	$2.23	$2.73	$3.34
1.5"	$3.64	$4.45	$5.43	$6.63
2"	$5.82	$7.11	$8.68	$10.59
3"	$11.63	$14.19	$17.32	$21.14
4"	$18.17	$22.17	$27.05	$33.01
6"	$36.34	$44.34	$54.10	$66.01
8"	$58.14	$70.94	$86.55	$105.60
10"	$152.60	$186.18	$227.14	$277.12
12"	$192.57	$234.94	$286.63	$349.69
Outside City				
5/8" x 3/4"	$1.20	$1.73	$2.12	$2.59
1"	$2.01	$2.90	$3.55	$4.35
1.5"	$4.01	$5.79	$7.06	$8.62
2"	$6.41	$9.25	$11.29	$13.77
3"	$12.80	$18.45	$22.52	$27.49
4"	$19.99	$28.83	$35.17	$42.92
6"	$39.98	$57.65	$70.33	$85.82
8"	$63.96	$92.23	$112.52	$137.28
10"	$167.86	$242.04	$295.29	$360.26
12"	$211.83	$305.43	$372.62	$454.60

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 51 Proposed Water Volumetric Charges – Inside City

	2024	2025	2026	2027
Residential				
Naperville Retail Delivery Charge	$2.43	$2.97	$3.63	$4.43
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Residential	**$6.60**	**$7.35**	**$8.23**	**$9.26**
Non-Residential				
Block 1 (1st 100,000 CF)				
Naperville Retail Delivery Charge	$2.28	$2.79	$3.41	$4.17

	2024	2025	2026	2027
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Non-Residential - Block 1	**$6.45**	**$7.17**	**$8.01**	**$9.00**
Block 2 (Over 100,000 CF)				
Naperville Retail Delivery Charge	$1.35	$1.65	$2.02	$2.47
DWC Wholesale Purchased Charge (2)	$4.17	$4.38	$4.60	$4.83
Total Non-Residential – Block 2	**$5.52**	**$6.03**	**$6.62**	**$7.30**

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) DWC rates are billed as a pass-through and are shown as an estimate. DWC updates its rates on May 1 of each year. Actual rates are subject to change based on DWC ordinance.

Table 52 Proposed Water Volumetric Charges – Outside City

	2024	2025	2026	2027
Residential				
Naperville Retail Delivery Charge	$2.66	$3.87	$4.72	$5.76
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Residential	**$7.25**	**$9.57**	**$10.71**	**$12.05**
Non-Residential				
Block 1 (1st 1,000 HCF)				
Naperville Retail Delivery Charge	$2.50	$3.63	$4.44	$5.43
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Non-Residential - Block 1	**$7.09**	**$9.33**	**$10.43**	**$11.72**
Block 2 (Over 1,000 HCF)				
Naperville Retail Delivery Charge	$1.52	$2.15	$2.63	$3.22
DWC Wholesale Purchased Charge (2)	$4.59	$5.70	$5.99	$6.29
Total Non-Residential – Block 2	**$6.11**	**$7.85**	**$8.62**	**$9.51**

Notes:
(1) Rates have been rounded up to the nearest $0.01.
(2) DWC rates are billed as a pass-through and are shown as an estimate. DWC updates its rates on May 1 of each year. Actual rates are subject to change based on DWC ordinance.

Table 53 Proposed Water Monthly Private Fire Line Charge

Meter Size	2024	2025	2026	2027
3" and smaller	$11.04	$13.47	$16.44	$20.06
4"	$16.60	$20.26	$24.72	$30.16
6"	$36.93	$45.06	$54.98	$67.08
8"	$66.41	$81.03	$98.86	$120.61
10"	$103.34	$126.08	$153.82	$187.67
12"	$147.70	$180.20	$219.85	$268.22

8.1.2.2 Wastewater Rates

Table 54 Proposed Wastewater Monthly Customer Charge

Meter Size	2024	2025	2026	2027
5/8" x 3/4"	$11.04	$12.15	$13.37	$14.71
1"	$18.40	$20.24	$22.27	$24.50
1.5"	$36.80	$40.48	$44.53	$48.99
2"	$58.88	$64.77	$71.25	$78.38
3"	$117.76	$129.54	$142.50	$156.75
4"	$184.00	$202.40	$222.64	$244.91
6"	$368.00	$404.80	$445.28	$489.81
8"	$588.80	$647.68	$712.45	$783.70
10"	$1,545.60	$1,700.16	$1,870.18	$2,057.20

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 55 Proposed Wastewater Monthly Phosphorus Charge

Meter Size	2024	2025	2026	2027
5/8" x 3/4"	$2.04	$2.25	$2.48	$2.73
1"	$3.38	$3.72	$4.10	$4.51
1.5"	$6.75	$7.43	$8.18	$9.00
2"	$10.81	$11.90	$13.09	$14.40
3"	$21.61	$23.78	$26.16	$28.78
4"	$33.75	$37.13	$40.85	$44.94
6"	$67.50	$74.25	$81.68	$89.85
8"	$108.00	$118.80	$130.68	$143.75
10"	$283.48	$311.83	$343.02	$377.33
12"	$357.71	$393.49	$432.84	$476.13

Notes:
(1) Rates have been rounded up to the nearest $0.01.

Table 56 Proposed Wastewater Volumetric Rates

	2024	2025	2026	2027
Volumetric Charge ($/HCF)	$3.15	$3.47	$3.82	$4.21
Wastewater Only Charges				
Volume Charge	$20.00	$22.00	$24.20	$26.62
Customer Charge	$30.37	$33.41	$36.76	$40.44
Phosphorus Charge	$3.38	$3.72	$4.10	$4.51
Total Monthly Flat Rate	**$53.75**	**$59.13**	**$65.06**	**$71.57**

8.1.3 Bill Impact

Based on the proposed rate increases—22 and 10 percent annually for water and wastewater, respectively—the combined bill for a typical customer is projected to increase by approximately $12 per month, from $101.51 to $113.67, an increase of 12.0 percent. This is based on a typical SFR customer with a 5/8-inch x 3/4-inch meter using approximately 8 HCF of water per month.

Based on an analysis of the current SFR bill distribution, approximately 90 percent of all bills would increase by less than $20 per month, while approximately 80 percent of bills would increase by 13 percent or less.

8.1.4 Regional Rate Survey

In addition to a bill impact analysis, a regional rate survey is useful for contextualizing the current and proposed rates. While comparing the rates of two agencies is difficult due to several factors, such as operating cost differences, wholesale agreements, age of system, regulatory requirements, and other considerations, it is useful to see how the rate proposal compares to an average bill.

This survey gathered data from other utilities in the region, primarily those that also purchase water from DWC. The analysis then used the same average customer to calculate the same bill for each agency (8 HCF per month and 5/8-inch meter). It's important to note that this rate survey is based on currently implemented rates for each agency and does not account for rate increases that will occur in 2025 by other agencies.

For agencies that provide both water and wastewater service, the total average bill is $120. Naperville's current typical SFR bill is below that average at $101. The proposed rates for 2025 would increase that bill to $114 per month, which would remain below the regional average.