



AGENDA ITEM 9
TOWN MANAGER
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TO: Mountain Village Town Council

FROM: Paul Wisor, Town Manager; Lizbeht Lemley, Finance Director; Finn KJome, Public Works Director; Scott Pittenger, Public Works Director

DATE: September 12, 2024

RE: **SGM Capital Reserve Study**

Executive Summary: Building off the 2023 rate study, SGM, at Council's request, is providing a Capital Reserve Study to recommend a replacement schedule for the Town's water system infrastructure.

Background

The purpose of the attached SGM report and presentation is to recommend a replacement schedule for water system infrastructure owned and managed by Town of Mountain Village (the Town), along with present-day and estimated future replacement costs. The recommended replacement schedule balances the replacement of aging infrastructure that is near the end of its anticipated service life with a cost-effective schedule of replacing the water system to minimize the risk of failure for existing infrastructure. The replacement schedule and estimated costs are used to develop long-term reserve goals which can be used by the Town in financial planning and rate setting strategies.

SGM completed a rate study and tap fee study for the Town in 2023 to provide a recommendation and rational nexus for increases in water and sewer rates and tap fees to support the planned capital projects and existing infrastructure, respectively (referred to herein as 2023 Rate and Tap Fee Study). SGM presented the recommendations to the Town Council on October 19, 2023; afterwards, the Council requested SGM conduct this Capital Reserve Study to inform capital improvement project planning and inform future financial planning.

The study builds upon the 2023 Rate and Tap Fee Study to include all infrastructure in the key asset inventory provided by Town Staff in 2023, and evaluates the 2024 present-day replacement costs, expected future replacement costs, and anticipated useful lifetime of the infrastructure.

The exhibits referenced in the report are quite sizeable. For sake of packet length, the exhibits can be found at the link below.

[Town of Mountain Village Reserve Study](#)

CAPITAL RESERVE STUDY

TOWN OF MOUNTAIN VILLAGE

DRAFT



Photo from Town of Mountain Village Webpage

September 2024

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CAPITAL RESERVE STUDY

TOWN OF MOUNTAIN VILLAGE

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SGM PROJECT # 007.06.16 PH. 05

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1.0 Executive Summary

The purpose of this report is to recommend a replacement schedule for water system infrastructure owned and managed by Town of Mountain Village (the Town), along with present-day and estimated future replacement costs. The recommended replacement schedule balances the replacement of aging infrastructure that is near the end of its anticipated service life with a cost-effective schedule of replacing the water system to minimize the risk of failure for existing infrastructure. The replacement schedule and estimated costs are used to develop long-term reserve goals which can be used by the Town in financial planning and rate setting strategies.

The Town is a municipality in San Miguel County located just southwest of Telluride, Colorado. The Town provides water service to residents of Town of Mountain Village, as well as the Ski Ranches and Skyfield subdivisions. The Town provides wastewater service only to residences of Town of Mountain Village, while Ski Ranches and Skyfield subdivisions are on septic systems. The bulk of the water system was constructed in the 1970's and between 1986-1996.

SGM completed a rate study and tap fee study for the Town in 2023 to provide a recommendation and rational nexus for increases in water and sewer rates and tap fees to support the planned capital projects and existing infrastructure, respectively (referred to herein as 2023 Rate and Tap Fee Study). SGM presented the recommendations to the Town Council on October 19, 2023; afterwards, the Council requested SGM conduct this Capital Reserve Study to inform capital improvement project planning and inform future financial planning.

This study builds upon the 2023 Rate and Tap Fee Study to include all infrastructure in the key asset inventory provided by Town Staff in 2023, and evaluates the 2024 present-day replacement costs, expected future replacement costs, and anticipated useful lifetime of the infrastructure.

To evaluate useful service life and develop a recommended replacement schedule, SGM referred to multiple resources provided by the American Water Works Association (AWWA). Present day costs in this reserve study are based on similar projects in the western slope of Colorado and SGM's experience. Future costs were calculated using consumer price index (CPI) projections applied annually to present-day cost values. Assumptions for inflation are consistent with those used in the 2023 Rate and Tap Fee Study.

The study found that the total present-day cost to replace the existing inventory assets is approximately \$227 Million, with most of the existing infrastructure exceeding 50% of their expected useful service lives. Although full infrastructure replacement can be an overwhelming project to consider, it should be anticipated and planned for. The important, and good news for the Town is that very rarely does an entire water system fail at the same time. Setting savings goals and adjusting rates, pursuing grants, implementing best management practices, and incrementally replacing the infrastructure will help to reduce the financial burden on the Town and its customers.

2.0 Introduction

2.1 Purpose

The goal of this study is to recommend capital reserve goals for the Town based on the expected time-frame and costs necessary to replace the existing water system. This report evaluates all infrastructure in the key asset inventory provided by Town Staff in 2023, and evaluates the 2024 present-day costs, expected future costs, and recommended timeframes to replace the infrastructure.

2.2 Background

The Town is a municipality in San Miguel County located just southwest of Telluride, Colorado. The Town provides water service to residents of Town of Mountain Village, as well as the Ski Ranches and Skyfield subdivisions.

Ski Ranches is an unincorporated subdivision bordering the Town of Mountain Village. Ski Ranches was originally supplied drinking water from wells, until a Metro District was formed in 1982. In 2007, the Town of Mountain Village inherited the Metro District's infrastructure and assumed the responsibilities of providing water and sanitation services. The Skyfield Subdivision is located on the west side of Highway 145. Water is supplied to the Skyfield Subdivision through the Ski Ranches distribution system infrastructure. The bulk of the water system was constructed in the 1970's and between 1986-1996.

The Town provides wastewater service only to residences of Town of Mountain Village, while Ski Ranches and Skyfield subdivisions are on septic systems. Wastewater for Mountain Village is treated at the Regional Wastewater Treatment Plant (Regional WWTP) at Society Turn, which the Town of Telluride (Telluride) owns and manages.

In 2023, SGM conducted a rate and tap fee study for the Town to provide a rational nexus for increasing rates and tap fees to better support the cost of planned capital projects and of existing infrastructure, respectively. SGM presented the recommendations to the Town Council on October 19, 2023. Subsequently, the Town Council requested SGM conduct this Capital Reserve Study to inform capital improvement project planning and inform future financial planning.

This study builds upon the 2023 Rate and Tap Fee Study. For the tap fee evaluation, Town staff provided an asset inventory of all key water and sewer infrastructure. SGM evaluated present-day costs of wholesale infrastructure to recommend an appropriate tap fee that ensures new development has a "buy-in" to the current infrastructure. This study builds upon that tap fee study analysis by evaluating costs for the entire asset inventory, rather than only focusing on wholesale infrastructure. SGM estimated useful life and recommended a replacement schedule for each asset. The full asset inventory is included as **Attachment A**. The full 2023 Rate and Tap Fee Study is included as **Attachment B**.

While Telluride is in the preliminary planning stages of a new WWTP and the Town is responsible for part of the funding of this new WWTP, this reserve study does not incorporate the cost for replacing the WWTP. This is because SGM's 2023 Rate and Tap Fee Study incorporated said cost into the rate adjustments and surcharges approved in October 2023.

3.0 Summary of Existing Water Infrastructure

The asset inventory provided to SGM by Town staff in 2023 forms the basis of the assessment of existing water infrastructure. For each asset, SGM reviewed the approximate date of installation, estimated service life, estimated useful life remaining, and recommended replacement schedule.

To develop life expectancies for various components of the water system, SGM referred to a 2010 American Water Works Association (AWWA) report entitled “Buried No Longer: Confronting America’s Water Infrastructure Challenge.” The report, included as **Attachment C**, gives a time frame for materials based on geographic location and climate conditions. SGM also referenced the AWWA Effective Useful Life (EUL) Tool, which is a database of EUL values listed by specific asset type collected from approximately 40 utilities across the United States. The estimated service lives are based on the 2010 AWWA report and the EUL Tool.

A detailed summary of the key infrastructure is listed in **Attachment A**.

3.1 Water Lines

The Town’s existing water lines are largely comprised of 8-inch ductile iron (DI) pipe, which accounts for 69% of all water lines. The Town’s GIS database accounts for 5,972 linear feet of 3-inch DI pipe; 5,877 linear feet of 4-inch DI pipe; 15,006 linear feet of 6-inch DI pipe; 125,574 linear feet of 8-inch DI pipe; 16,538 linear feet of 10-inch DI pipe; and 12,938 linear feet of 12-inch DI pipe.

The water lines) are believed to be constructed between 1986 and 1996. A summary of the existing water lines is provided in **Table 3-1** below.

Table 3-1. Water Line Inventory

Size	Material	Length	Installed	Approximate Age
<i>inches</i>	<i>type</i>	<i>linear feet</i>	<i>approx. date</i>	<i>years</i>
3	DI	5,972	1986-1996	38
4	DI	5,877	1986-1996	38
6	DI	15,006	1986-1996	38
8	DI	125,574	1986-1996	38
10	DI	16,538	1986-1996	38
12	DI	12,938	1986-1996	38

The estimated service life of DI pipe is 60 years. Therefore, at a current age of approximately 38 years, the water lines still have about half of the estimated service life left.

3.2 Sewer Mains

The Town’s GIS database lists that the existing sewer line system is composed of 155,560 linear feet of 8-inch SDR-35 PVC pipe. The sewer lines were installed between 1986 and

1996 in conjunction with the water lines. A summary of the existing sewer lines is provided in **Table 3-2** below.

Table 3-2. Sewer Line Inventory

Size	Material	Length	Installed	Approximate Age
<i>inches</i>	<i>type</i>	<i>linear feet</i>	<i>approx. date</i>	<i>years</i>
3	DI	5,972	1986-1996	38

The estimated service life of the sewer lines is 70 years. Therefore, the sewer lines are at approximately 54% of the expected useful service life.

3.3 Wells

According to the key infrastructure inventory supplied by Town Staff, the Town currently has sixteen wells built between 1986 and 1996, and nine additional proposed wells that have yet to be built, resulting in a total of 25 wells. A summary of the wells is provided in **Table 3-3** below.

Table 3-3. Water Well Inventory

Quantity	Installed	Approximate Age
<i>#</i>	<i>approx. date</i>	<i>years</i>
16	1986-1996	38
9	Proposed	0

The estimated useful service life of a water well is 50 to 75 years, depending on the usage and maintenance of the well. To extend the life of the wells, SGM recommends the wells be inspected every five years with a downhole video to help assess the condition of the casing and determine if additional mechanical or chemical cleaning is needed. At a minimum, the Town should plan to rehabilitate each well every 15 to 20 years. Pumps typically last 15 to 20 years depending upon how they are operated.

This reserve study considers the cost of completely replacing the original wells and pumps, rather than conducting cleaning and rehabilitation.

3.4 Tanks

The Town's asset inventory listed a total of six tanks. There are two 100,000-gallon tanks built between 1986 and 1996; two 200,000-gallon tanks built in 1986 and 1991; one 500,000-gallon tank built in 1986; and one 2,000,000-gallon tank built in 1986. A summary of the Town's existing tanks is listed in **Table 3-4** below.

Table 3-4. Water Tank Inventory

Quantity	Size	Installed	Approximate Age
#	gal	approx. date	years
2	100,000	1986-1996	38
1	200,000	1986	38
1	500,000	1986	38
1	2,000,000	1986	38
1	200,000	1991	33

The average estimated service life for a welded steel tank is approximately 50 years. To maximize service life, SGM recommends regular maintenance and recoating the interior and exterior of the tank every 20 years.

3.5 Other Key Infrastructure

The Town owns one pump station that is approximately 38 years old, having been installed between 1986 and 1996. Pump stations have an average service life of 53 years, with a full service life lasting up to approximately 80 years. The pump station inventory is listed in **Table 3-5** below.

Table 3-5. Pump Station Inventory

Quantity	Installed	Approximate Age
#	approx. date	years
1	1986 - 1996	38

Additionally, the Town owns 706 manholes and 330 hydrants which were installed between 1986 and 1996. The expected service lives are 75 and 40 years, respectively. While the manholes are well within their expected useful life, the hydrants are nearing their expected service lives. The manhole and hydrant inventories are included in **Table 3-6** and **Table 3-7**, respectively.

Table 3-6. Manhole Inventory

Quantity	Installed	Approximate Age
#	approx. date	years
706	1986 - 1996	38

Table 3-7. Hydrant Inventory

Quantity	Installed	Approximate Age
#	approx. date	years
330	1986 - 1996	38

There are six chlorine buildings listed for Mountain Village in the asset inventory. The chlorine buildings are believed to be constructed between 1986 and 1996. The

estimated service life for a chlorine building is 40 years, and the chlorination equipment and instrumentation inside the buildings will likely need to be replaced every 10 years. The chlorine building inventory is listed in **Table 3-8** below.

Table 3-8. Chlorine Building Inventory

Quantity	Installed	Approximate Age
#	<i>approx. date</i>	<i>years</i>
6	1986 - 1996	38

4.0 Present-Day Costs

SGM's present day costs were estimated based on SGM staff experience and expertise, similar projects in the region, AWWA guidance documentation, and recent material and installation costs¹.

SGM calculated a 2024 unit price cost using the methodology described in the 2023 Rate and Tap Fee Study (**Attachment B**) as well as material and installation pricing from recent projects throughout western Colorado. Present day material pricing was applied to the inventory of the Town's water infrastructure to calculate the present-day cost of replacing the system which is shown and summarized in **Table 4-1**.

4.1 Wells

The present-day cost for fully replacing the water wells was estimated using a 2021 project cost for a local well development project by SGM in the Mountain Village area. The estimated project cost for each well, adjusted for inflation to 2024 values (using an inflation rate of 4.76% per year), equated to \$170,000 per well, which included:

- Drilling an exploratory replacement well
- Completing the well with casing
- Water quality and quantity testing
- A well pump, motor, and connection
- Controls and electrical connection, and
- Construction labor and engineering design costs

At a cost of \$170,000 per well, the present-day cost to replace all 16 existing wells and construct all 9 proposed wells would be \$4.25 Million.

4.2 Chlorine Buildings

The estimated cost for replacing each chlorine building is about \$2.0 Million. This cost was estimated by SGM's Water/Wastewater Treatment Team, which regularly designs and estimate costs for similar systems. This cost includes the building itself as well as all equipment and instrumentation as follows:

- The actual building, with approximate size of 650 square feet and a cost of \$1,400 per square foot (~\$1.0 Million)
- Magnetic Flow Meters: 4 count (\$15,000 each)
- Pressure Transmitters: 4 count (\$5,000 each)
- Pressure Gauges: 4 count (\$500 each)

¹ While SGM can provide reasonable estimates of cost, SGM has no control over the cost of labor, materials, equipment, or services furnished by others, over contractor's methods of determining prices, or over-competitive bidding or market conditions, SGM cannot and does not guarantee that actual construction cost will not vary from the cost estimates listed herein.

- Well Service Air Valves: 4 count (\$7,500 each)
- Variable Frequency Drives (VFDs): 4 count (\$20,000 each)
- Chlorine Analyzers: 1 count (\$7,500 each)
- Process Piping and Valving: \$100,000 allowance
- Pipe Supports: \$25,000 allowance
- 15% installation fee including site/civil work, control panels, integration, electrical service, bonds, insurance, contingency, and engineering.

At a unit cost of \$2.0 Million each, the total cost to replace all six chlorine buildings would be \$12.0 Million.

4.3 All Other Key Infrastructure

SGM approximated the cost of all water and sewer lines, tanks, pumps, hydrants, and manholes in the 2023 Rate and Tap Fee Study (**Attachment B**). The water line costs were based on a 2023 construction bid for water line replacements outside of Aspen, Colorado. Sewer line and manhole costs were estimated based on a 2022 Capital Improvement Plan for a nearby water provider prepared by SGM and adjusted for inflation. Costs of all other infrastructure were estimated by SGM's municipal and water/wastewater treatment teams, which regularly design and estimate costs for similar systems. SGM used the estimated costs in the 2023 Rate and Tap Fee Study and adjusted for inflation for 2024 values using a 4.76% inflation rate.

4.4 Present Cost Summary

An overview of the Town's water and sewer asset inventory and replacement costs, adjusted to 2024 dollars and incorporating wells and chlorine buildings is summarized in **Table 4-1** below.

Table 4-1. Overview of Water and Sewer Asset Inventory

System Component		Quantity	Cost in 2024 Dollars
Water Mains	<i>3-in</i>	5,971 LF	\$3,820,955
	<i>4-in</i>	5,877 LF	\$3,760,431
	<i>6-in</i>	15,005 LF	\$9,601,748
	<i>8-in</i>	125,574 LF	\$81,928,875
	<i>10-in</i>	16,537 LF	\$11,010,805
	<i>12-in</i>	12,937 LF	\$8,803,181
Sewer Mains (8-in)	<i>Primary Lines</i>	54,607 LF	\$22,340,082
	<i>Secondary Lines</i>	22,597 LF	\$9,244,863
	<i>All Other Lines</i>	78,355 LF	\$32,055,776
Wells		21 CT	\$4,250,000
Chlorine Buildings		5 CT	\$12,000,000
Tanks		6 tanks 3.1 million gallons	\$17,722,855
Pumps		1 CT	\$524,500
Hydrants		330 CT	\$4,154,040
Manholes		706 CT	\$6,121,009
Total Replacement Cost			\$227,339,112

Notes: LF = linear feet; CT = count

As shown in **Table 4-1**, the total present-day cost to replace the existing inventory assets is approximately \$227 Million.

5.0 Future Costs

Expenses will increase each year with inflation. Long-term inflation rates were determined to be 3% based on the average increase in consumer price index for the Western United States over the last ten years (2013-2024). SGM conservatively selected inflation rates for 2024-2026 to reflect the short-term inflation rate from 2022-2024 at an average rate of 4.90%. Assumptions for inflation are generally consistent with those used in the 2023 Rate and Tap Fee Study, with minor updates for inflation in 2023 and 2024. The inflation assumptions are summarized in **Table 5-1** below.

Table 5-1. Inflation Assumptions for Future Costs

Year	Inflation	Explanation
2024	4.90%	* 4.90% = Average recent increase in consumer price index in Western US – short-term (2022-2024)
2025	4.90%	
2026	4.90%	
2027 on	3.00%	* 3.0% = Average recent increase in in consumer price index in Western US – long-term (2013-2024)

Figure 5-1 illustrates the total present cost for replacing the Town’s infrastructure, as outlined in **Table 4-1**, and the projected future costs based on the inflation rates listed in **Table 5-1**. The Town’s infrastructure is mostly 38 years old, and much of the aging infrastructure will likely need to be replaced around 2060 (explored further in **Attachment A**).

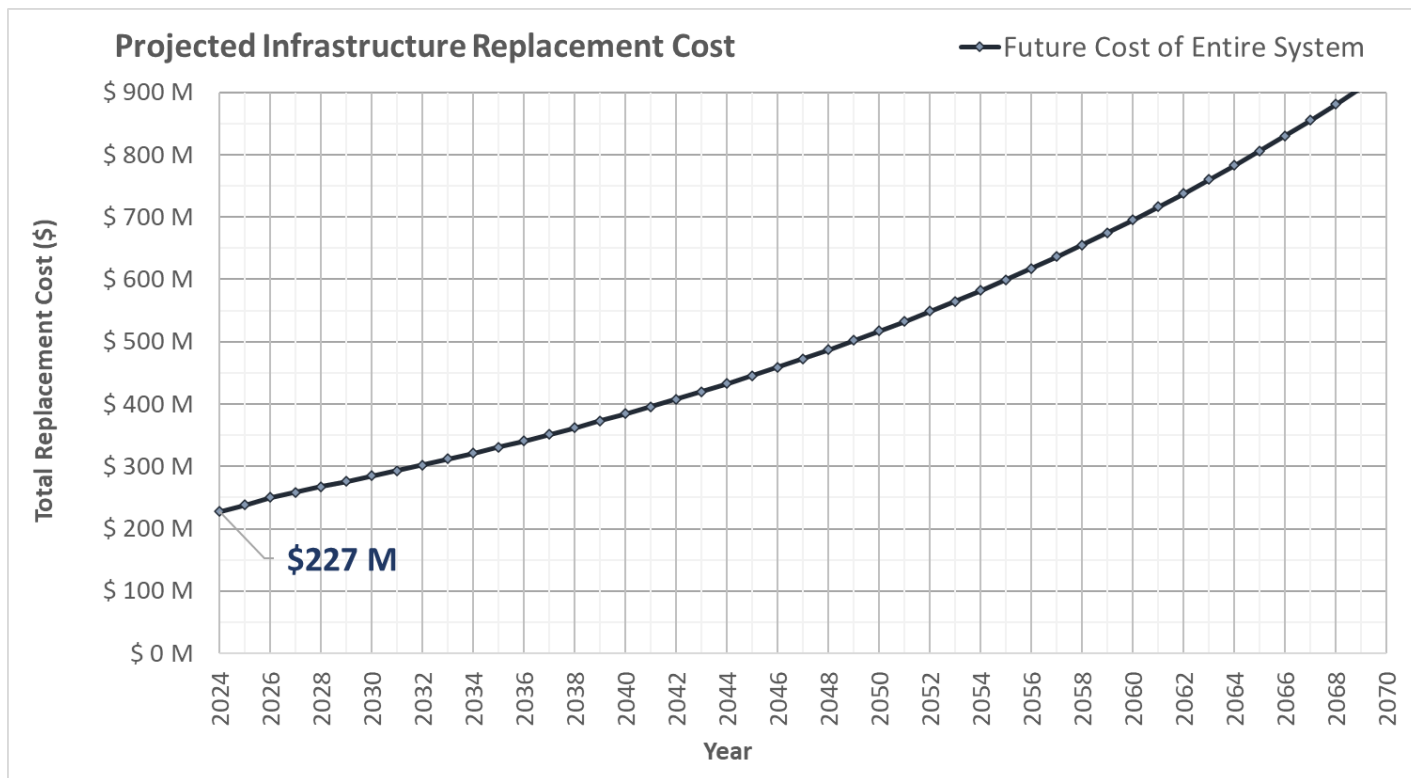


Figure 5-1. Projected Future Infrastructure Replacement Costs

6.0 Financing Options

This section summarizes available financing options for the infrastructure replacements and improvements outlined in this report. This report has identified a total of \$227 Million for the cost to replace all the aging infrastructure.

What is the most economical method of financing the Town's aging infrastructure? The bottom line is there is no simple solution. The Town is not alone in facing the challenge of replacing aging infrastructure. The price of water across the country generally does not reflect the cost of operations and infrastructure maintenance and replacement. The persistently low price of water contributes to the difficulty that water utilities face in funding renewal and replacement efforts. The US is funding just one-third of its water infrastructure needs².

SGM recommends two broad options each with multiple scenarios as described below.

6.1 Incremental Savings

One approach is to incrementally increase rates to develop a Capital Reserve Fund which is used as required to begin to replace the infrastructure over a period of time that represents an annual replacement of a set percentage of the asset value. This approach is practical because even though most of the infrastructure is nearing theoretical useful life, infrastructure does not suddenly fail at the same time. Rather, water infrastructure will begin to fail from leakage, interruption of service, lack of reliability, and in some cases lack of compliance with recent codes and regulatory requirements which can result in higher risk to the Town.

This approach is recommended by the Environmental Protection Agency³ by “structuring water bills not by usage, or how much water each household consumes, which is the most common current practice, but to a fixed fee that includes a portion that pays for the systems eventual end of life”.

In order to catch up to a normalized annual investment, SGM recommends the Town budget for at least 4% of the total \$227 M asset value per year for replacement, which equates to approximately \$9.1 M in 2024 dollars with an additional \$10 M per year. If the savings goal is less than inflation (being a 3% average over the last 12 years (see **Table 5-1**)), then the Town will get behind whereas if the Town saves slightly more than inflation (at least 4%) then the savings will slowly catch up with inflation and the future costs will be met (by 2067 at a 4% rate). Additionally, the Town should decide what percentage of the total replacement cost they would like to save and have on-hand. To visualize this, **Figure 6-1** through **Figure 6-4** show, respectively, 100%, 75%, 50%, and 25% of the total projected infrastructure replacement costs, and how much the Town needs to save annually to reach the respective replacement goal. Each figure shows the present-day replacement goal cost as well as the future breakeven cost. The savings scenarios illustrate additional annual savings needed (above current reserves), not the total recommended reserve balance.

² <https://www.nuca.com/cleanwater>; <https://www.kwwoa.org/wp-content/uploads/2017/12/January-2018-Newsletter.pdf>

³ <https://www.gov1.com/infrastructure/articles/how-can-water-systems-pay-for-aging-infrastructure-PROJ4pahrlQJoAgr/>

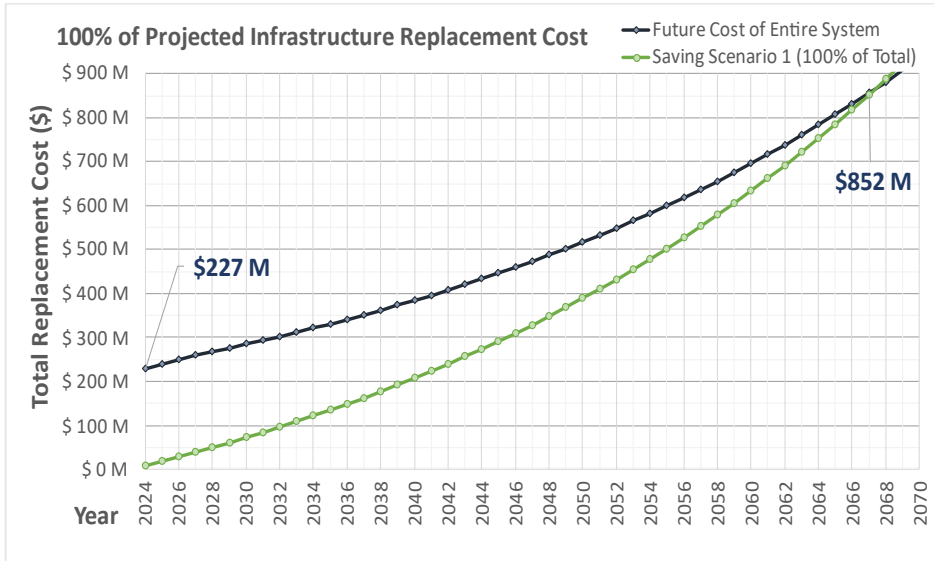


Figure 6-1. Future Cost Goal and Savings Scenario for 100% of Total Cost

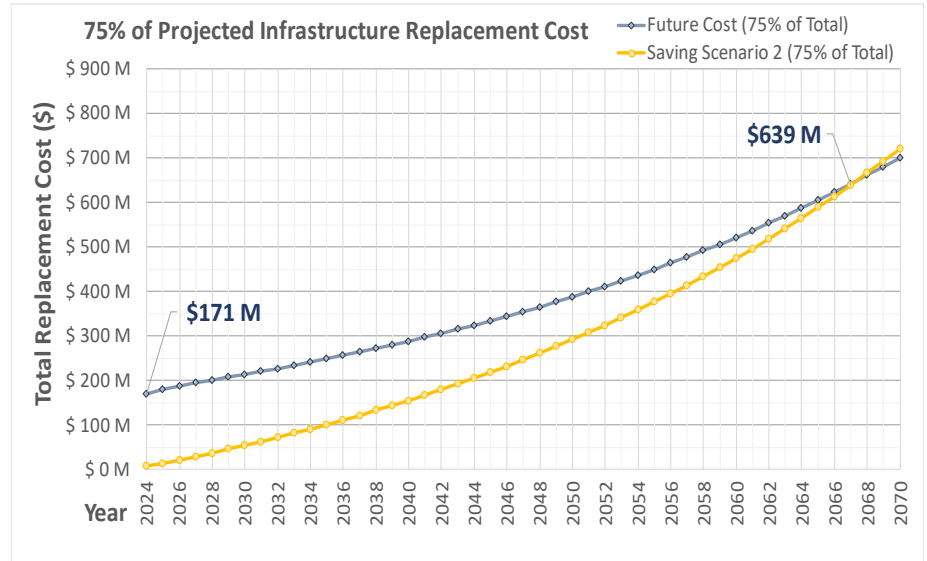


Figure 6-2. Future Cost Goal and Savings Scenario for 75% of Total Cost

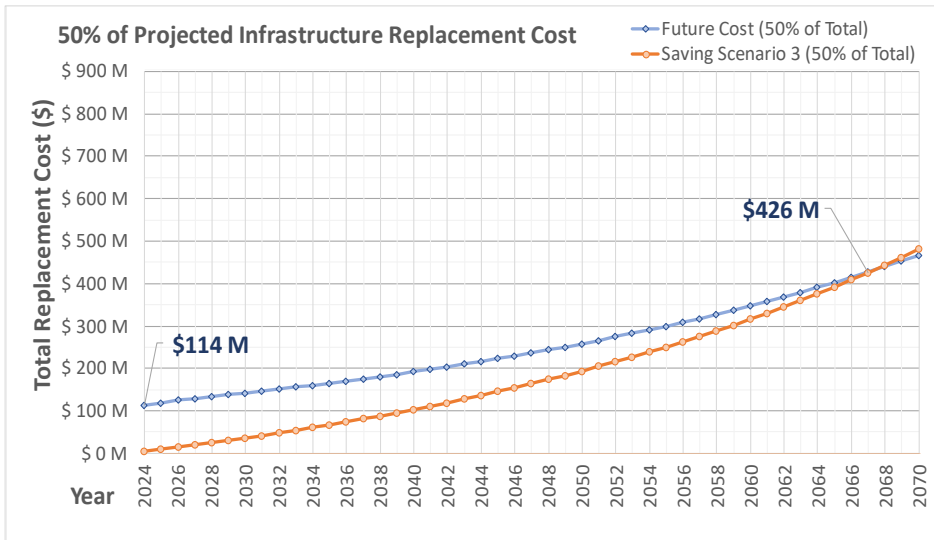


Figure 6-3. Future Cost Goal and Savings Scenario for 50% of Total Cost

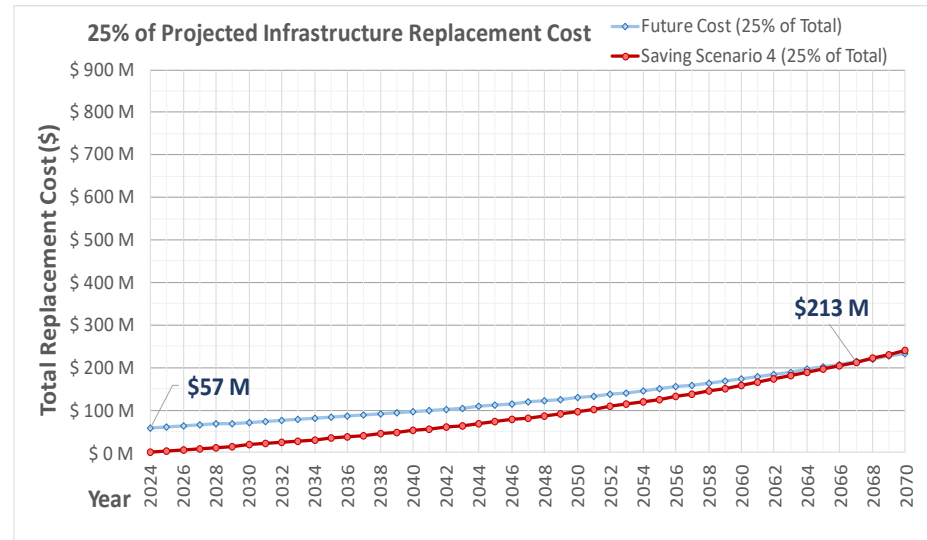


Figure 6-4. Future Cost Goal and Savings Scenario for 25% of Total Cost



A combination of the different savings and goal scenarios is summarized in **Figure 6-5** below.

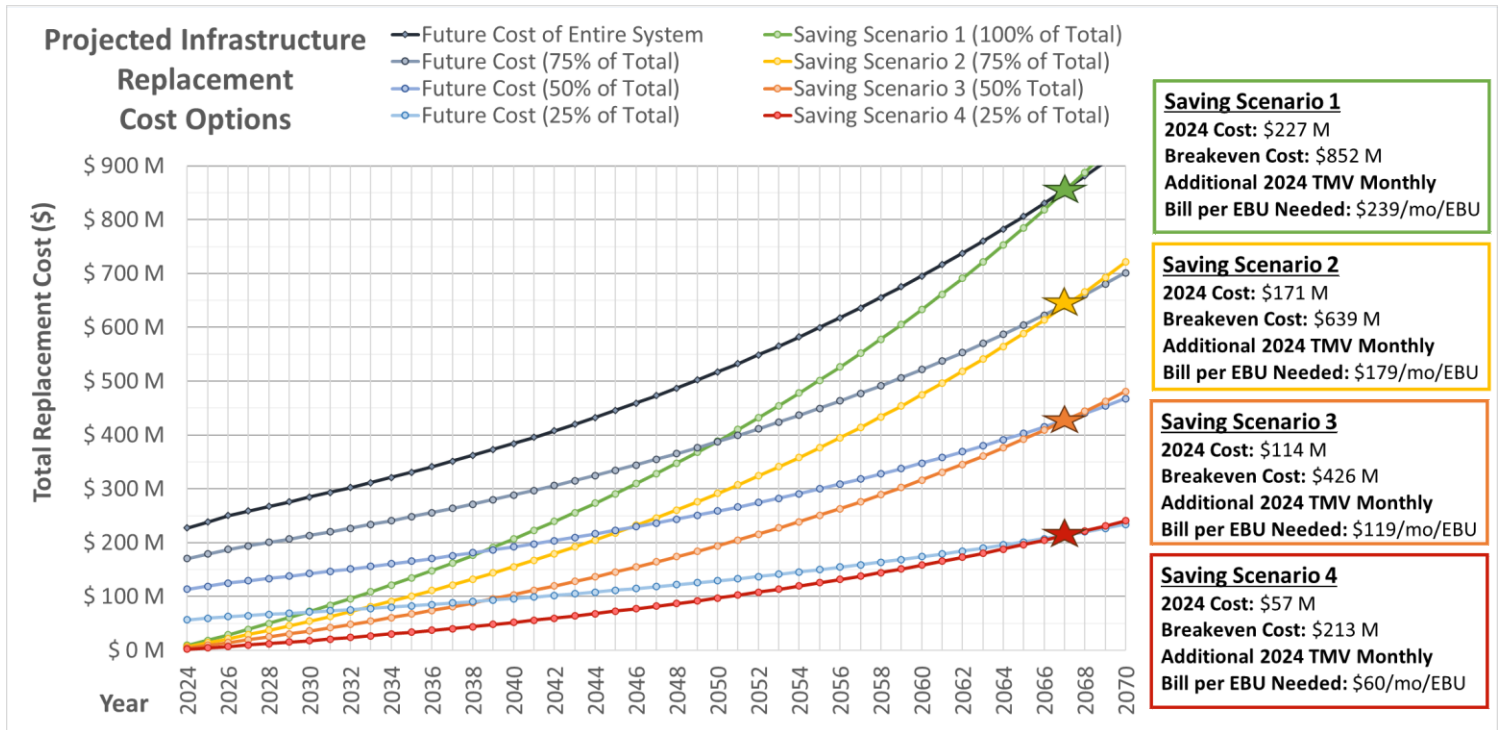


Figure 6-5. Summary of Future Cost and Savings Goal Scenarios

As shown in **Figure 6-5**, the Town could meet a 100% asset replacement goal by 2067 (\$227 M in 2024 dollars, projected to be \$852 M in 2067 dollars) by saving 4% of the total asset cost per year. The 4% annual savings would be \$9.1 M in 2024 dollars, projected at \$34.2 M in 2067 dollars.

6.1.1 Interest on Investments

As the Town builds savings to fund future asset replacement, the Town will earn investment income on the reserve balance. The actual amount of investment income will depend on the reserve account balance and the interest rate. The Town actively invests its reserve funds, and has seen interest rates near 5% in recent years, but interest rates below 1% after the Covid 19 pandemic. Town staff have chosen to plan for an interest rate of 2% based on their experience. Staff consider this to be a conservative projection.

The amount of investment income also depends on the reserve account balance. SGM projected investment income based on the total reserve savings goal. Based on the age of the current infrastructure, most of the infrastructure will likely need to be replaced around 2060, meaning most of the reserve balance would not be needed until around that time. However, as the Town may use portions of this balance to begin infrastructure replacement as individual components break or wear out, portions of these savings may be spent early, lowering the reserve fund and therefore lowering the investment income. Because most of the infrastructure replacement is projected to be needed around 2060, SGM finds it reasonable and appropriate to base investment income on the total reserve goal for each year. It is worth noting that the resulting bill per EBU is not highly sensitive



to the assumptions around investment income, as most of the annual savings will be met by rate increases, not investment income. Incorporating investment income into the projections had the effect of reducing the monthly bill per EBU by \$4, from \$243/month/EBU to \$239/month/EBU.

6.1.2 Rate Increases Necessary to Fund Reserves

To achieve a 100% reserve goal would require an average addition of \$239 per month per EBU to the monthly combined water and sewer bill, with an increase of about \$10 annually to offset inflation. The monthly bill increase per EBU is *in addition* to current utility rates. The current utility rates have been set to cover operations and maintenance costs and known and planned capital improvement projects. The reserve goal is set to replace aging infrastructure, the costs for which are not already factored into capital project planning and are not factored into the current rates. **Figure 6-5** outlines the projected cost, cumulative annual savings, and respective increase in monthly bill per EBU (in 2024 dollars) needed for each saving scenario.

It is important to note that SGM maintained similar assumptions for this analysis as with the 2023 Tap Fee assessment, wherein the rates are estimated using Mountain Village EBUs only. The Ski Ranches and Skyfield systems have a separate sewer system but receive water through the same system as the Town. Therefore, the Town has historically made tap fees for the existing infrastructure for Ski Ranches be 50% of the tap fees for the Town to contribute to the existing water system. There is additional distribution infrastructure associated with Skyfield compared to Ski Ranches, so the ratio for Skyfield is 75% of the tap fees for the Town. The purpose of the tap fee is to ensure that the developers have a “buy-in” to the existing system. The reserve study uses a similar concept where existing development has a “buy-in” to the responsibility of replacing aging infrastructure. Therefore, the reserve study uses the same methodology (Ski Ranches at 50%, Skyfield at 75%, Town of Mountain Village at 100%).

For the total replacement cost saving scenarios, SGM analyzed the Town’s projected infrastructure cost for water and sewer to determine an updated combined savings needed and recommend applying the same percentages currently used for Ski Ranches and Skyfield for any updated rates (50% and 75%, respectively). See **Table 6-1** for an example. This approach is consistent with the assumptions used in the 2023 Rate and Tap Fee Study and is the most conservative savings approach.

As shown in **Figure 6-5**, in order to fund the infrastructure replacement costs, rates would need to increase an additional \$60 to \$239 per EBU per month on top of the current rates depending on the Town’s chosen saving goal. **Figure 6-6** and **Figure 6-7** show an example average monthly water and sewer bill, respectively, for a single-family residence (1 EBU) under the various savings scenarios.

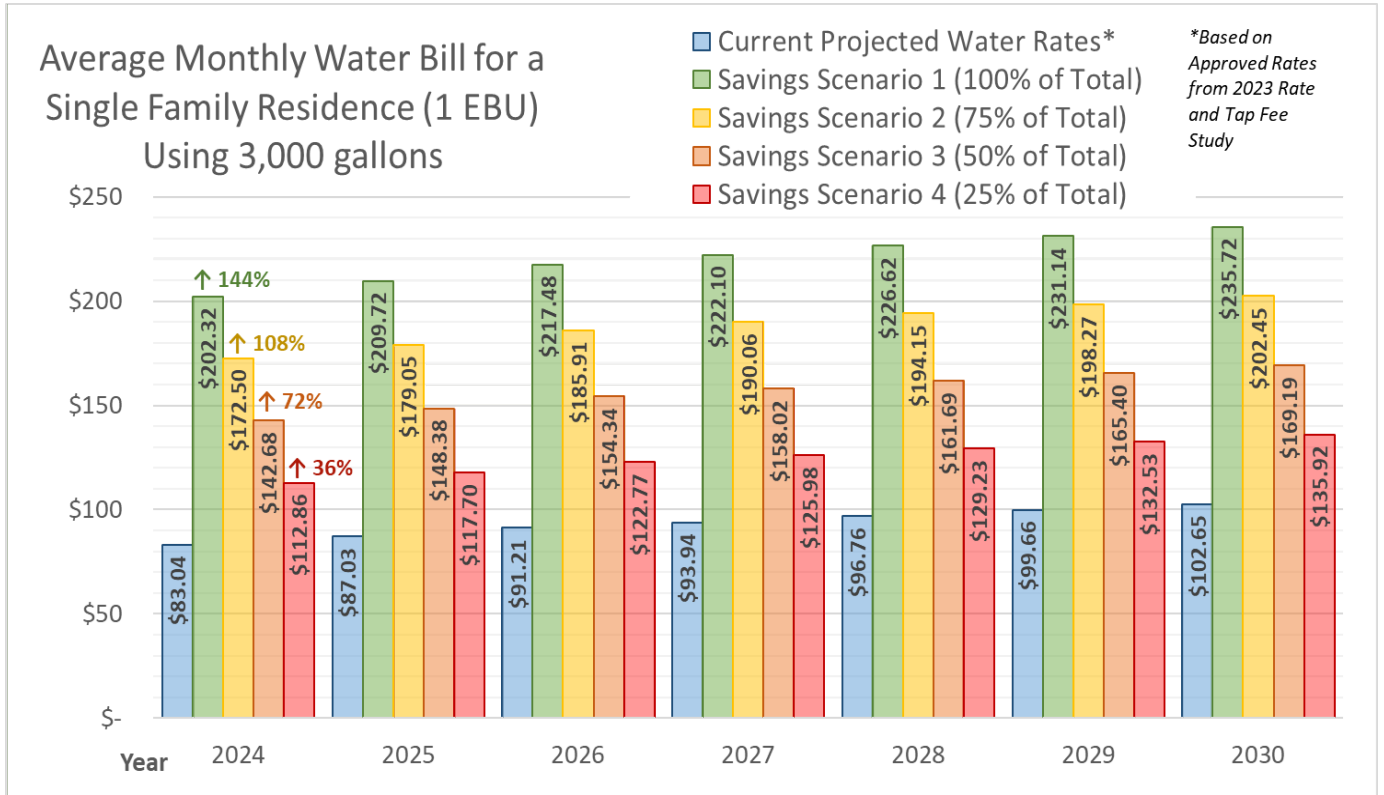


Figure 6-6. Average Monthly Water Bill for TMV Resident under Various Savings Scenarios

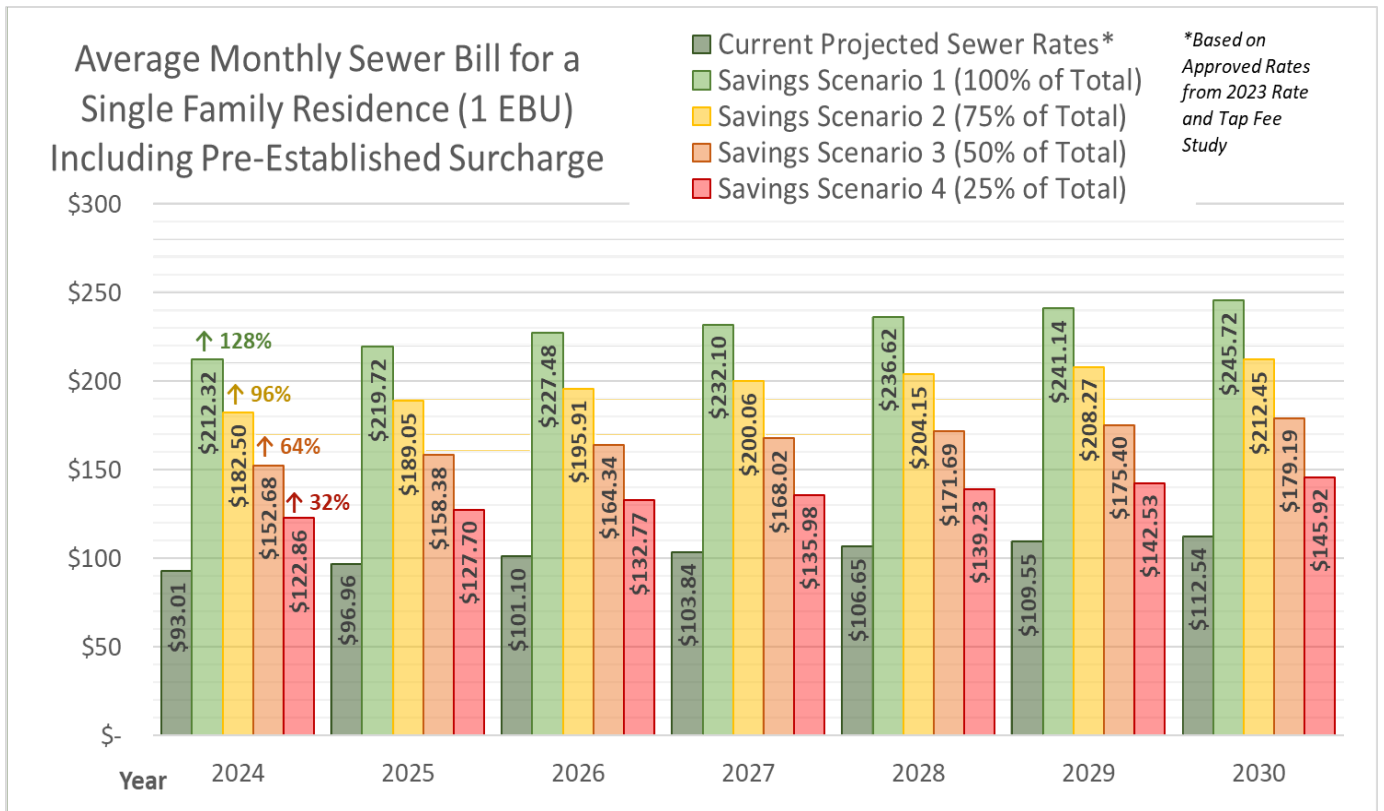


Figure 6-7. Average Monthly Sewer Bill for TMV Resident under Various Savings Scenarios

Table 6-1 shows an example of the increases per water and sewer bill per EBU for each scenario for Mountain Village, Skyfield, and Ski Ranches.

Table 6-1. Increases for Mountain Village, Skyfield, and Ski Ranches Water and Sewer Bills

Funding Scenario	Combined Additional Monthly Bill	Mountain Village		Skyfield		Ski Ranches	
		Increase in Water Bill	Increase in Sewer Bill	Increase in Water Bill	Increase in Sewer Bill	Increase in Water Bill	Increase in Sewer Bill
		50% of Total	50% of Total	75% of Total	N/A	50% of Total	N/A
Scenario 1 (100% of Total)	\$239/mo/EBU	\$119	\$119	\$179	—	\$119	—
Scenario 2 (75% of Total)	\$179/mo/EBU	\$89	\$89	\$134	—	\$89	—
Scenario 3 (50% of Total)	\$119/mo/EBU	\$60	\$60	\$89	—	\$60	—
Scenario 4 (25% of Total)	\$60/mo/EBU	\$30	\$30	\$45	—	\$30	—

6.2 Debt Service

A second option is to finance the replacement by issuing debt and making annual or monthly debt service payments for principal and interest. **Table 6-2** shows an example of the debt service in annual and monthly payments for increments of \$25 Million of debt. The table starts at \$25 Million and ranges up to the replacement cost of the entire existing infrastructure (\$227 Million). Mountain Village likely qualifies as a Direct Loan Non-Disadvantaged Community under the State Revolving Fund; therefore, the assumed interest rate for **Table 6-2** was 3.5% for a 30 year loan term⁴. The table also shows how much the interest payments will be for the period of the debt repayment period of 30 years. This table further shows the amount rates would have to be increased for each customer at buildout, assuming the number of EBUs at buildout for the Mountain Village is 3,113 EBUs, as estimated by Town staff. As described in **Section 6.1**, the rates are estimated using Mountain Village EBUs only—the rates for Ski Ranches and Skyfield would be 50% and 75%, respectively, of the established Mountain Village rates (the same ratios used for setting tap fees).

6.3 Funding Recommendations

SGM recommends the Town replace aging infrastructure incrementally over the next 40 years. While we don't necessarily advocate for any of the financing alternatives herein, this study emphasizes the gravity of the challenges posed by aging infrastructure and high inflation and highlights the importance of developing saving goals to replace aging infrastructure. We recommend that the Town aggressively pursue grant and loan opportunities through State and Federal agencies to reduce the strain on water and sewer customers' bills.

⁴ <https://www.cwrpda.com/current-interest-rates>



Table 6-2. Debt Service Example Summary

Amount to Borrow	% of Present Day Cost	Interest (i)	Term Length (n)	Present to Annual (a/p)	Debt Service Cost		Cost to TMV Residents (3,113 EBU at Buildout)		Interest Paid Over Term Length
					(annually)	(monthly)	(annually)	(monthly)	
(\$)	(\$)	(%)	(years)	(%)					(\$)
\$25.0 M	11%	3.5%	30	5.44%	\$1.4 M	\$0.11 M	\$437	\$36	\$2.2 M
\$50.0 M	22%	3.5%	30	5.44%	\$2.7 M	\$0.23 M	\$873	\$73	\$4.4 M
\$75.0 M	33%	3.5%	30	5.44%	\$4.1 M	\$0.34 M	\$1,310	\$109	\$6.6 M
\$100.0 M	44%	3.5%	30	5.44%	\$5.4 M	\$0.45 M	\$1,747	\$146	\$8.7 M
\$125.0 M	55%	3.5%	30	5.44%	\$6.8 M	\$0.57 M	\$2,183	\$182	\$10.9 M
\$150.0 M	66%	3.5%	30	5.44%	\$8.2 M	\$0.68 M	\$2,620	\$218	\$13.1 M
\$175.0 M	77%	3.5%	30	5.44%	\$9.5 M	\$0.79 M	\$3,057	\$255	\$15.3 M
\$200.0 M	88%	3.5%	30	5.44%	\$10.9 M	\$0.91 M	\$3,493	\$291	\$17.5 M
\$227.3 M	100%	3.5%	30	5.44%	\$12.4 M	\$1.03 M	\$3,966	\$330	\$19.9 M



7.0 Other Recommendations

While it is important to proactively begin developing saving goals to replace the Town's aging infrastructure, there are other recommendations that could help lessen the immediate financial burden on the Town and the customers.

7.1 Maintenance and Best Management Practices

This report assumes full replacement costs of all aging infrastructure; however, regular maintenance, rehabilitation and repair of aging infrastructure, and utilizing best management practices (BMPs) can help extend the life of the infrastructure and help manage costs. Some examples include:

- Water tank maintenance, which includes sand-blasting and recoating the interior and exterior of the tank every 20 years.
- Wells should be inspected every five years with a downhole video to help assess the condition of the casing and should be mechanically or chemically cleaned every 15 to 20 years.
- Sewer and water lines should be regularly flushed and video inspected.
- Sewer manholes should be inspected and repaired on a regular basis.
- Polyphosphate can be added to water lines to minimize corrosion and extend the pipeline life⁵.
- Annual leak detection program on the water system can locate leaks and make repairs to extend the life of water pipelines.
- Trenchless technologies such as cured-in-place pipe (CIPP) lining, pipe bursting, and slip lining could be used to rehabilitate aging sewer pipes without extensive excavation.

7.2 Capital Improvement Planning

The Town's most recent formal Capital Improvement Plan (CIP) report was prepared in 2017 by Russel Planning & Engineering. The Town has since been maintaining its own list of capital projects. SGM recommends the Town complete another formal, comprehensive CIP to develop long-term infrastructure plans that prioritize maintenance, repairs, and replacements based on asset condition assessments and risk analyses. By planning strategically and proactively, the Town can optimize their capital investments and minimize the need for emergency repairs.

7.3 Community Engagement

Water is expensive to treat and distribute and yet is often provided to customers at a relatively low price. When rate increases do occur, there is often a negative response from customers over the increased financial burden. Utility providers can help mitigate

⁵ [The-Use-of-Phosphates-For-Potable-Water-Treatment.pdf \(phosphatesfacts.org\)](https://www.phosphatesfacts.org/The-Use-of-Phosphates-For-Potable-Water-Treatment.pdf)

this negative response through outreach and education to help community members understand the magnitude of the cost required to treat water and wastewater and maintain key infrastructure.

SGM recommends using this report and further community outreach to foster open communication and collaboration with customers and stakeholders to raise awareness about the importance of infrastructure investment and the need for rate adjustments. By engaging with the community and building public support, the Town can navigate the challenges more effectively and ensure that rate increases are perceived as necessary investments rather than just burdensome expenses.

8.0 Conclusions

In summary, in order to replace and upgrade the Town's water and wastewater systems, the Town should expect to spend roughly \$227 Million over the next 40 years. The Town has multiple options for funding the replacement of the infrastructure as explored in **Section 6**. In addition to funding options, the Town should plan to replace the infrastructure in phases.

SGM recommends considering the replacement of the most critical pieces of infrastructure, portions of the infrastructure that have resulted in recent repair costs, remaining service life, and proximity to adjacent infrastructure, such as valves and original fire hydrants. The perfect replacement plan would be to replace everything just before it fails; however, determining the exact date of failure is very difficult. Therefore, SGM recommends replacing infrastructure slowly and incrementally. SGM recommends developing a funding mechanism now to build up a reserve fund for replacement of the infrastructure as it fails or is replaced.

Overall, full infrastructure replacement can be an overwhelming project to consider, but should be anticipated and planned. The important point – and good news for the Town – is that very rarely does an entire water or wastewater system fail at the same time. Operators can take proactive steps to assure the water and wastewater systems will last as long as possible. SGM understands that funding 100% of the suggested projects in 40 years may not be practical or necessary, however, the Town should begin to raise rates to fund each phase of replacing the water system.

LIST OF ATTACHMENTS

- Attachment A – Infrastructure Inventory
- Attachment B – SGM 2023 Rate and Tap Fee Study
- Attachment C – AWWA 2010 Report “Buried No Longer: Confronting America’s Water Infrastructure Challenge”

Attachment A

Infrastructure Summary

Attachment B

SGM 2023 Rate and Tap Fee Study

Attachment C

AWWA 2010 Report