

Introduction

Asset Management: The Basics

The *Managing Small Public Water Systems* series [RG-501] includes worksheets and instructions to help you conduct an inventory of your utility system's resources; prioritize repairs and replacements of assets; plan for future needs; and develop a budget.

In order to complete your budget and determine your projected revenues and expenses, you should read Part A of the *Managing Small Public Water Systems* series [RG-501a].

As you work through the budget process, you may find it beneficial to review other parts of the series to help you prepare a comprehensive asset management plan. To view or download the complete series go to the TCEQ Small Business and Local Government Assistance (SBLGA) section's Public Water Supply Compliance Tools website at www.tceq.texas.gov/assistance/water/pws.html. If you do not have internet access, call the SBLGA's hotline number 800-447-2827 for a paper copy of the complete series.

Getting Started

- Read through Part A of the series RG-501a
- Gather information to enter:
 - o Inventory of assets with each asset's age, condition, cost to repair/replace and priority (importance)
 - o Financial information (annual revenues and expenses)
 - o Average rate of inflation
 - o Average rate of population growth/decline
- Navigate through this workbook by using the tabs at the bottom beginning with **Worksheet 1: Inventory and Prioritization**. When you enter data into Worksheet 1: Inventory and Prioritization, Worksheet 2: Comprehensive Planning, and the Budget of this workbook, the figures will carry forward to the subsequent spreadsheets.

Note: There are instructions listed on each page of the workbook to help you complete the process—look for the gray shaded boxes on the right of each page.

Plan Maintenance

You should adjust your plan based on your own experience and the particular characteristics of your system. You should also reevaluate your plan every year, updating each of the worksheets provided. Your plan is useful only as long as it reflects the current conditions of your water system.

To help ensure your system is sustainable for the next five to thirty years, it is important to evaluate immediate needs along with future needs.

Worksheet 1. System Inventory and Prioritization

| Worksheet 1. System Inventory and Prioritization | | | | | | | |
|--|---------------|---|----------------|----------------------------------|--|--------------------|---------------------------|
| Date (Month & Day): | | Year: | | | | | |
| 3/8 | | 2021 | | | | | |
| | | <input checked="" type="checkbox"/> Initial Inventory | | <input type="checkbox"/> Update | | | |
| 1. Asset | 2. Redundancy | 3. Expected Useful Life (Years) | 4. Age (Years) | 5. Remaining Useful Life (Years) | 6. Expected Replacement/Refurbish Year | 7. Cost to replace | 8. Priority (Rank 1 to 5) |
| <i>Example : Well 1 pump, 2011</i> | None | 15 | 9 | 6 | 2027 | \$9,000 | 4 |
| Emergency Generator | None | 50 | 48 | 2 | 2023 | \$80,000 | 1 |
| Chlorinator | None | 12 | 10 | 2 | 2023 | \$2,100 | 2 |
| Submersible Pump, 40 gpm, 15 hp | None | 10 | 9 | 1 | 2022 | \$15,000 | 1 |
| 10 Wet Barrel Hydrants | None | 40 | 27 | 13 | 2034 | \$44,100 | 4 |
| Elevated Storage Tank, 200,000 gal | None | 25 | 20 | 5 | 2026 | \$395,000 | 2 |
| SCADA System | None | 10 | 3 | 7 | 2028 | \$20,000 | 5 |
| 8 Gate Valves | None | 35 | 12 | 23 | 2044 | \$14,400 | 5 |
| Pickup, 2017 | None | 8 | 4 | 4 | 2025 | \$30,000 | 2 |
| Miscellaneous Tools/Small Equipment | None | 10 | 4 | 6 | 2027 | \$15,000 | 5 |
| Well-behind ballfield #3 | None | 30 | 27 | 3 | 2024 | \$350,000 | 1 |
| Backhoe | None | 30 | 6 | 24 | 2045 | \$3,500 | 5 |
| 300 Manual Read Meters | None | 10 | 8 | 2 | 2023 | \$26,100 | 2 |
| Laptop | None | 8 | 1 | 7 | 2028 | \$950 | 5 |
| 3,000 sq ft Building | None | 15 | 8 | 7 | 2028 | \$225,000 | 4 |
| Security Fence | None | 15 | 6 | 9 | 2030 | \$20,000 | 4 |
| Pocket Colorimeter | One | 6 | 5 | 1 | 2022 | \$470 | 1 |
| Water Pumps and Hoses (for leaks) | One | 15 | 2 | 13 | 2034 | \$1,300 | 5 |
| 10,000 ft of 4" Water Mains | None | 35 | 31 | 4 | 2025 | \$200,000 | 3 |

Instructions

Fill in the date and year in row 3, and check the appropriate box to indicate whether you are making the first inventory of your system or updating an existing inventory. You should update this worksheet at least once a year.

*Please note that the yellow cells will be automatically calculated for you.

- List each of your utility's assets and the year of installation.
- Briefly describe the redundancy of each of the system's assets.
- Use the manufacturer's recommendations, if available, or the information provided in **Table 1** to enter the expected useful life for each asset.
- Fill in how long the asset has been in use. If an asset has been previously used by another system, you should list the total age, not just the length of time your system has used it.
- The remaining useful life will be automatically calculated by subtracting its age (column 4) from its expected useful life (column 3).
- The expected replacement / refurbish year will automatically be calculated by adding the remaining useful life (column 5) to the current year.
- Estimate the cost of replacing each asset, taking into account the expected replacement year. Keep in mind that inflation can affect replacement costs.
- For each asset, consider how critical it is to the operation of your system, its remaining useful life, the availability of replacement or backup equipment, maintenance history and any other factors important in evaluating its priority for receiving funding. Rank each asset from "1" to "5," where "1" is the highest priority and "5" is the lowest. Use the information provided in **Table 2** to determine how each asset should be rated.

Table 1. Estimated Useful Lifespan for Standard Pieces of Equipment

Asset Expected Useful Life (in years)

| | |
|----------------------------------|----------------------------------|
| Backflow Prevention 8–15 | Blow-off Valves 35–40 |
| Buildings ~30 | Chlorination Equipment 10–15 |
| Computers 5 | Distribution Pipes 35–40 |
| Electrical Systems 7–10 | Fencing 10–20 |
| Galleries and Tunnels 30–40 | Generators 10–20 |
| Hydrants ~40 | Intake Structures 35–45 |
| Lab and Monitoring Equipment 5–7 | Landscaping & Grading Equipment |
| ~40 | |
| Meters 10–15 | Office Furniture and Supplies 10 |
| Other Treatment Equipment 10–15 | Pumps 10–15 |
| Service Lines ~30 | Storage Tanks ~30 |
| Tools and Shop Equipment 10–15 | Transmission Mains 35–40 |
| Transportation Equipment 10 | Valves 35–40 |
| Wells and Springs 25–35 | |

Table 2: Description Prioritization Rating

- Effective life exceeded and/or excessive maintenance cost incurred. A high risk of breakdown or imminent failure with serious impact on performance. No additional life expectancy; immediate replacement or rehabilitation needed.
- Very near end of physical life. Substantial on-going maintenance with short, recurrent maintenance levels required to keep the asset operation. Unplanned corrective maintenance is common. Renewal (refurbishment or replacement) is expected in near term.
- Asset functions but requires a sustained high level of maintenance to remain operational. Shows substantial wear and is likely to cause significant performance deterioration in the near term. Near term scheduled rehabilitation or replacement needed
- Asset is sound and well maintained but may be showing some signs of wear. Delivers full efficiency with little or no performance deterioration. Virtually all maintenance is planned preventative in nature. At worst, only minor repair might be needed in the near term.
- Asset is like new, fully operable, well maintained, performs consistently at or above current standards. Little wear shown and no further action required.

BUDGET

| BUDGET | | |
|---|---------------------|--|
| Worksheet for YEAR: | 2021 | |
| Average rate of inflation | 2.20% | Current U. S. inflation rate is averaged at 2.2% |
| Average rate of growth/decline | -0.225% | May be best estimate or based on 2020 census |
| Current Reserve Account | \$30,000.00 | Funds carried over from previous year (cash on hand) |
| Item | Amount | Comments and notes |
| Water Charges | \$231,000.00 | Revenue from the sale of water (all customers) |
| Usage Fees and Service Charges | \$6,300.00 | Include late payments, forfeited deposits, surcharges, impact fees, tap fees, etc. |
| Current Revenue from Interest, and Other Income | \$10,590.00 | Interest accrued from reserve account or other investments and other income |
| Total Revenue | \$247,890.00 | |
| Regular Maintenance & Repair | \$12,400.00 | Cost of performing regular or routine maintenance and repair on equipment. This includes vehicle maintenance and fuel. |
| Utilities, Rent, and Other Overhead | \$12,650.00 | Other overhead may include billing, building maintenance, cleaning, etc. |
| Salaries & Benefits | \$138,340.00 | Include administrative and operations staff |
| Operating Supplies | \$3,800.00 | Operating supplies not classified elsewhere. This includes safety gear/equipment, uniforms, janitorial expenses, ect. |
| Equipment Leases/Purchases/Repairs | \$13,070.00 | Include all equipment leases |
| Chemicals | \$1,700.00 | Chemicals expensed in prior years, but not used, should be included for initial budgets |
| Monitoring and Testing | \$2,814.00 | Include laboratory fees for projected monthly and annual sampling requirements |
| Insurance and Bonds | \$5,200.00 | Costs of insuring buildings, equipment, etc. |
| Professional Services | \$6,792.00 | Accounting, legal, engineering & other professional fees |
| Training Costs & Licenses | \$1,827.00 | Cost of operator training courses and license renewal fees |
| Security | \$800.00 | Cost of maintaining security related items (fencing, alarms, etc.) |
| Debt payments | \$4,000.00 | Include interest paid on debt |
| Transfer to Reserved Funds for Capital Expenditures | \$0.00 | Amounts transferred to capital expenditures |
| Other | \$11,643.00 | List other expenses not classified elsewhere. This includes computers, public notices, postage, printing, ect. |
| Total Expenses | \$215,036.00 | |
| Net Income Budgeted: | \$32,854.00 | |

In order to complete the Budget sheet, you will need to have some general information available (inflation rate, community/system growth, budget and revenue information). Statistics on your specific inflation rate may differ from the national average of 2.2%. If it does, please enter the correct inflation rate. Next, you'll need to know your system's rate of annual growth or decline. You can either use an estimate, or base this figure on the 2010 Census data for your community. Finally, you will enter any reserve or carry over funds from the previous budget year. You may need to check with your system's finance department in case your system works on a zero-based budget, and potential reserve funds are deposited into a general fund that is not dedicated specifically for system improvements.

To complete the rest of the worksheet, fill in the requested information into the blue cells. The yellow cells will be automatically calculated for you.

| Projected Revenues and Expenses Spreadsheet | | | | | | |
|--|--------------|---------------|---------------|--------------|--------------|--------------|
| Year | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
| Inflation | | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% |
| Growth (based on 2010 census or estimated projections) | | -0.225% | -0.225% | -0.225% | -0.225% | -0.225% |
| CAPITAL EXPENDITURES BUDGET: | | | | | | |
| Total Revenues | \$247,890.00 | \$247,332.25 | \$246,775.75 | \$246,220.50 | \$245,666.51 | \$245,113.76 |
| Total Expenses (from Budget) | \$215,036.00 | \$219,766.79 | \$224,601.66 | \$229,542.90 | \$234,592.84 | \$239,753.88 |
| Current Year Net Income | \$32,854.00 | \$27,565.46 | \$22,174.09 | \$16,677.61 | \$11,073.67 | \$5,359.87 |
| Reserve Account (beginning of year carry over) | \$30,000.00 | \$62,854.00 | \$90,419.46 | \$112,593.54 | \$129,271.15 | \$140,344.82 |
| Secured Funding | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| End of Year Reserves: | \$62,854.00 | \$90,419.46 | \$112,593.54 | \$129,271.15 | \$140,344.82 | \$145,704.69 |
| Projected Savings Needed For Capital Expenses: | | \$178,199.16 | \$162,729.00 | \$116,894.00 | \$91,894.00 | \$78,144.00 |
| Reserves Savings Shortfall: | | (\$87,779.71) | (\$50,135.46) | \$12,377.15 | \$48,450.82 | \$67,560.69 |

| PROJECTED RATE INCREASE NEEDED | | | | | | |
|--|-----|------------|------------|---------|----------|----------|
| *Monthly Rate Increase per Connection: | 300 | \$ (24.38) | \$ (13.93) | \$ 3.44 | \$ 13.46 | \$ 18.77 |

* An independat rate study should be conducted for actual rate increases.

**Please note that the only cells that require your input are the blue cells.*

The information you need to enter on this sheet is any grant or loans that are already secured into the blue cells. If you are planning to apply for a grant or loan, do not enter that information until the contract is signed and you are assured of receiving the funding.

Dollar amounts shown in **Row 13** indicate how much additional money will be needed each year to pay for Projected Capital Projects that are planned. In this demonstration, it is clear that there is a shortfall in the first three years of the plan. Keep in mind, as you update your plan each year these figures will change.

If Row 14 indicates a shortfall, you need to ask:

1. How will you fund these projects?
2. Can you increase rates charged to your customers?
3. Do you need to seek funding?

For demonstration purposes only, **Row 17** provides an idea of how your customers may be affected by implementing a rate increase to cover the cost of Capital Improvements.

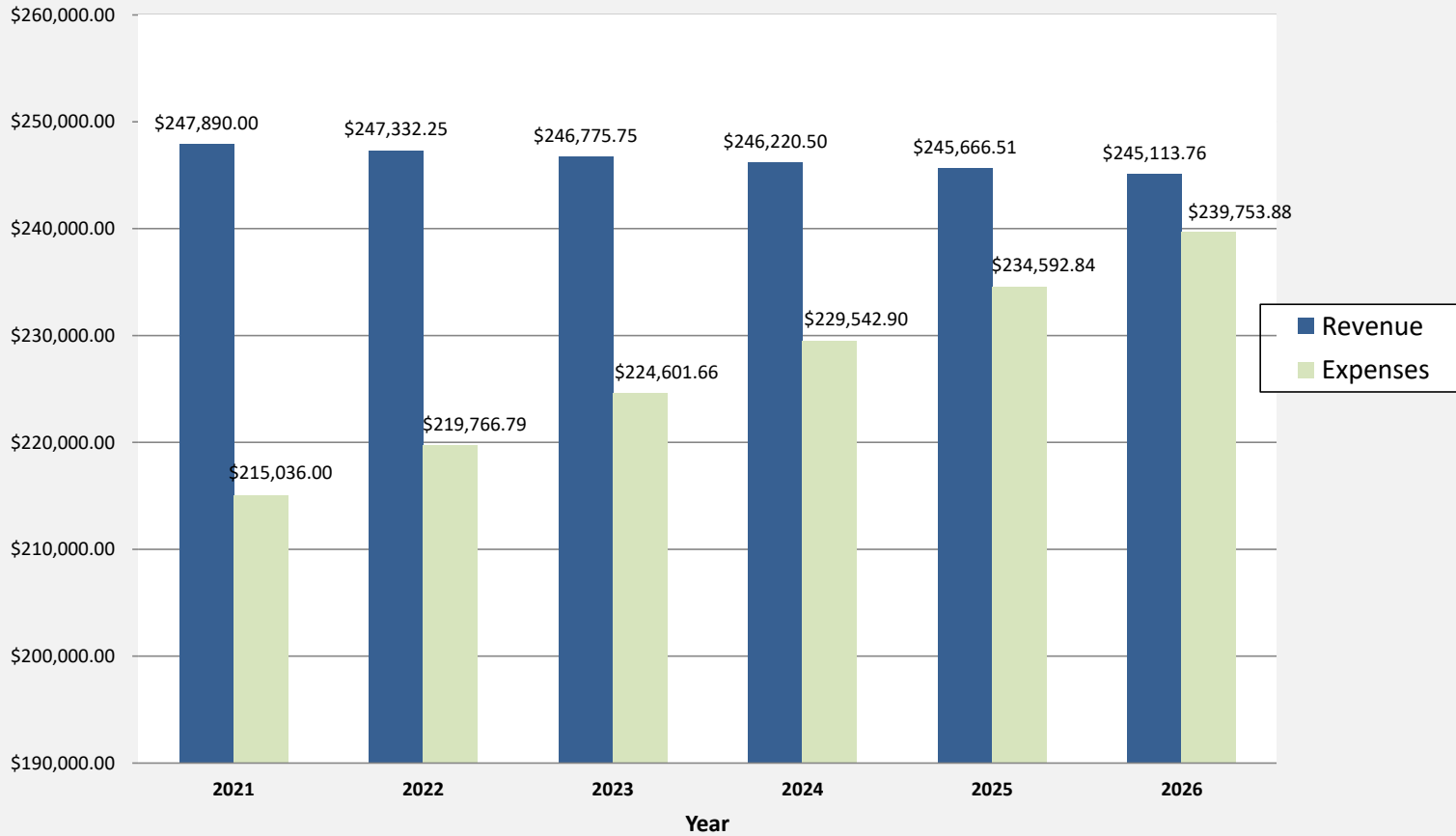
Projected Capital Expenses

| Asset | Cost | Year Needed | # of Years Until Action Needed | Reserve per year | Reserve per year | Reserve per year | Reserve per year | Reserve per year | Total |
|--|---------------------|-------------|--------------------------------|---------------------|---------------------|---------------------|--------------------|--------------------|---------------------|
| | | | | 2022 | 2023 | 2024 | 2025 | 2026 | |
| Emergency Generator | \$80,000.00 | 2023 | 2 | \$40,000.00 | \$40,000.00 | \$0.00 | \$0.00 | \$0.00 | \$80,000.00 |
| Submersible Pump, 40 gpm, 15 hp | \$15,000.00 | 2022 | 1 | \$15,000.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$15,000.00 |
| Well #1-behind ballfield #3 | \$75,000.00 | 2024 | 3 | \$25,000.00 | \$25,000.00 | \$25,000.00 | \$0.00 | \$0.00 | \$75,000.00 |
| Pocket Colorimeter | \$470.00 | 2022 | 1 | \$470.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$470.00 |
| Chlorinator | \$2,100.00 | 2023 | 2 | \$1,050.00 | \$1,050.00 | \$0.00 | \$0.00 | \$0.00 | \$2,100.00 |
| Elevated Storage Tank, 200,000 gal | \$150,000.00 | 2026 | 5 | \$30,000.00 | \$30,000.00 | \$30,000.00 | \$30,000.00 | \$30,000.00 | \$150,000.00 |
| Pickup, 2017 | \$30,000.00 | 2025 | 4 | \$7,500.00 | \$7,500.00 | \$7,500.00 | \$7,500.00 | \$0.00 | \$30,000.00 |
| 300 Manual Read Meters | \$9,570.00 | 2023 | 2 | \$4,785.00 | \$4,785.00 | \$0.00 | \$0.00 | \$0.00 | \$9,570.00 |
| 10,000 ft of 4" Water Mains | \$25,000.00 | 2025 | 4 | \$6,250.00 | \$6,250.00 | \$6,250.00 | \$6,250.00 | \$0.00 | \$25,000.00 |
| 4 Wet Barrel Hydrants | \$17,645.00 | 2034 | 13 | \$1,357.31 | \$1,357.00 | \$1,357.00 | \$1,357.00 | \$1,357.00 | \$6,785.31 |
| 3,000 sq ft Building | \$5,000.00 | 2028 | 7 | \$714.29 | \$714.00 | \$714.00 | \$714.00 | \$714.00 | \$3,570.29 |
| Security Fence | \$4,000.00 | 2030 | 9 | \$444.44 | \$444.00 | \$444.00 | \$444.00 | \$444.00 | \$2,220.44 |
| SCADA System (setup, computer, software) | \$20,000.00 | 2028 | 7 | \$2,857.14 | \$2,857.00 | \$2,857.00 | \$2,857.00 | \$2,857.00 | \$14,285.14 |
| 8 Gate Valves | \$7,200.00 | 2044 | 23 | \$313.04 | \$313.00 | \$313.00 | \$313.00 | \$313.00 | \$1,565.04 |
| Backhoe | \$70,000.00 | 2045 | 24 | \$2,916.67 | \$2,917.00 | \$2,917.00 | \$2,917.00 | \$2,917.00 | \$14,584.67 |
| Laptop | \$950.00 | 2028 | 7 | \$135.71 | \$136.00 | \$136.00 | \$136.00 | \$136.00 | \$679.71 |
| Water Pump and Hoses (for leaks) | \$650.00 | 2034 | 13 | \$50.00 | \$50.00 | \$50.00 | \$50.00 | \$50.00 | \$250.00 |
| Miscellaneous Tools/Small Equipment | \$2,800.00 | 2027 | 6 | \$466.67 | \$467.00 | \$467.00 | \$467.00 | \$467.00 | \$2,334.67 |
| New Well #2 | \$350,000.00 | 2030 | 9 | \$38,888.89 | \$38,889.00 | \$38,889.00 | \$38,889.00 | \$38,889.00 | \$194,444.89 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Total | \$865,385.00 | | | \$178,199.16 | \$162,729.00 | \$116,894.00 | \$91,894.00 | \$78,144.00 | \$627,860.16 |

This worksheet does not require any input by the user. All data will be populated and calculated for you.

The capital expenses worksheet allows you to view all of the expenses listed on Worksheet 2: Comprehensive Planning. It also calculates the reserve capital needed in savings per year for each project based on the year the project is needed.

Annual Revenue and Expense Comparison

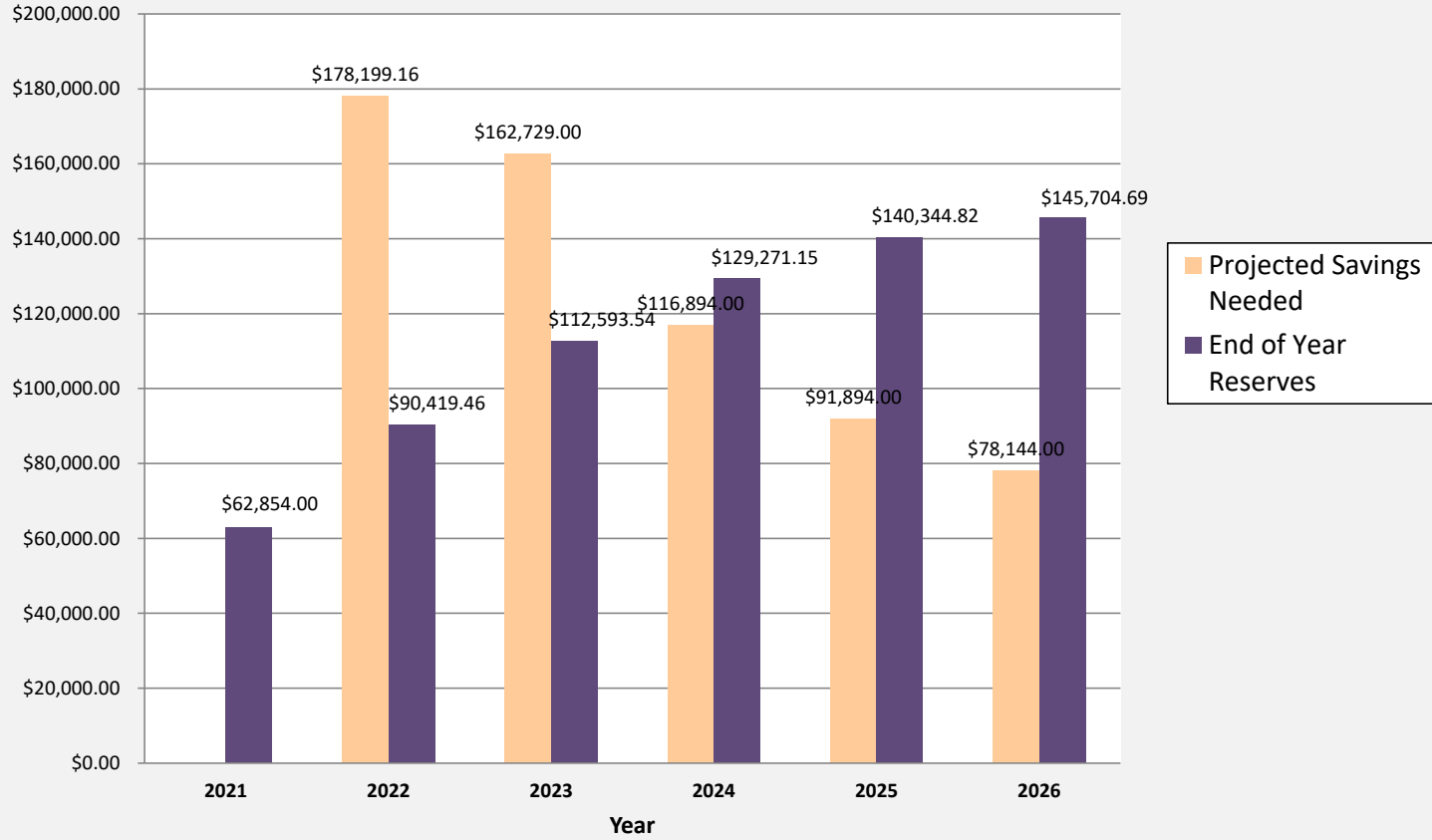


The Graph Worksheet gives you two visual representations. The first compares your annual expenses with your annual revenues. The second shows the projected savings needed to fund your projects with your actual end of year reserves.

The first graph (Annual Revenue and Expense Comparison) shows with a slowly declining population and increasing rate of inflation, your expenses will eventually exceed your revenue unless expenses can be reduced or rates are increased.

This graph does not include any consideration for capital improvements that you have planned or need to prepare for.

Reserves Savings or Shortfall



This graph clearly shows a shortfall during the first three years of your asset management plan. A reserve savings amount is shown in the last two years of the plan. This is due to projects being funded and completed.