September 19, 2024

Mr. Troy Smith, Mayor
City of Willard
224 W Jackson St.
Willard, Missouri 65781

Subject: Water and Sewer Rate Analysis Report

Dear Mayor Smith:

About one month ago, I sent to the City Administrator the City's water and sewer rate analysis report. We all thought that was the final report. But City staff recently updated the City's capital improvement plan (CIP) and changed how to fund the revised CIP. And City staff, performing due-diligence review of the report, found that I had incorrectly recorded in my models several data points. We all wanted the report and model to be as correct and up to date as possible, so I corrected and updated all those things. Thus, you and all others need to discard the previously received report. It is out of date. Use the enclosed report, instead.

Before I address the report, I want to speak to everyone who will read this.

Interim City Administrator Donna Stewart got the rate analysis ball rolling. I was impressed with her drive and ability to shepherd this project early on. Of course, her stint as interim ended soon and she turned everything over to Carolyn Halverson, Director of Finance. I worked with Ms. Halverson closely and almost exclusively for data gathering, proofing and more. Ms. Halverson was so fast, accurate and helpful. She made my work go quickly, and accurately. I really appreciate that.

About the time the data gathering and model building phase was being completed, Wesley Young, your new City Administrator, came on board. And Mike Ruesch, your Director of Planning & Development joined in about then, too. All these folks have helped by reviewing draft reports, giving me feedback for corrections, updates and improvements. And all have been great to work with.

I am sure you and the Board recognize the expertise and value of these staff. I hope citizens and ratepayers will also get a glimpse of just how well they are being served by these folks. Without them, and without their accurate assistance, my analysis work would not be possible.

The report and the included rate models cover a lot of technical ground. Board members may have questions after reviewing the report, so filter questions to me through any of these contacts and I will answer them all. And when I meet with the Board, I look forward to discussing anything that is too complicated to cover in e-mails. As you will see, some of it is complicated. In particular, the sewer fund is projected to exhaust its reserves soon and the sewer utility is in the process of making major upgrades. Some actions will need to be taken very soon to solve those problems.

Finally, I am sure you and Board members know of other cities and utilities that also need rate setting help. As you run into these folks at municipal league and other meetings and venues, I hope you will tell them about my services. I get much of my business from referrals by past clients. I hope to be able to trace several future clients back to my work with Willard, as well.

Best regards,
GettingGreatRates.com

Carl E. Brown
President

Enclosure

Water and Sewer

Rate Analysis Report

Willard, Missouri

Prepared September 19, 2024

Carl Brown, President
GettingGreatRates.com

Contents

Index of Model Tables and Charts

Executive Summary

These analyses calculate water and sewer rates for Willard that are in a cost-to-serve structure with a level minimum charge and unit charge for in-City customers, and a higher and level minimum charge and unit charge for out-of-City customers to account for generally higher costs to serve outside of the City. The user charge rates are "description-based," but system development fees are based on meter size. The modeling includes rates to fund the most likely set of conditions the utilities will experience. Overall, water rate revenue needs to increase by 48.6 percent and sewer by 51.3 percent. Each set of rates needs to be restructured to make them fairer, too.

The Meaning of This Report, in a Nutshell

Willard, later at times just called the "City," the "utility," or "you," hired GettingGreatRates.com, later called "me," or "I," to perform rate analysis of its water and sewer utilities; to produce a report of my findings and recommendations; and to provide guidance on rate setting.

This report is detailed and somewhat long. The math behind the report is complex. Some assumptions had to be made about data and outcomes, which is normal. Still, these things make the modeling complex and interpreting the models difficult. Following is the "Cliff's Notes" version of what the calculated rates will do and what they mean to customers.

The set of rate calculations in this report for each utility are quite closely based on the principle called, "cost-of-service" or "cost-to-serve" rates. This is the prime industry standard for utility rate analysis. Quite simply, if a customer causes the utility to incur a cost, that customer should reimburse the utility for that cost. In your case, meter size-based minimum charges are not warranted. There are so few large meters, assessing higher rates to those meters would not lower the rates of smaller meters very much. Thus, simpler rates where you assess a single minimum and a single unit charge to all in-City customers is simpler and fair enough. Assessing rates to out-of-City customers with that same structure, only higher, will also suffice. Importantly, rate revenues need to go up moderately to make the utilities sustainable.

Introduction

I analyzed rates for the City that will cover the costs of significant system improvements, pay all operating and related costs, and build appropriate reserves over the next ten years. These things will be big drivers of higher rates.

The utilities' customer bases are growing rapidly. That improves the ability of the utilities to become more economical to own and operate over time, because there will be many new customers to share costs.

As for me, your rate analyst, I have analyzed rates as a consultant since 2005, completing 389 analyses since then. Before that, from 1991 to 2005, I did similar work, as well as grant and loan coordination work, for the Missouri Department of Natural Resources. My experience is deep. I calculated your rates with due diligence using the best methodologies and reasoning I can. I trust my expertise and the results I get. You should, too. You can adopt the rates recommended in this report and all should turn out well for you.

But it is reasonable for you to be curious about my methodologies and why and how I employ them. "Trust but verify" is a reasonable attitude for you to have because rate setting is one of your most critical and criticized tasks. You need to get it right. Just summarizing my methodologies requires a lot of discussion, therefore, I left that discussion out of the main part of the report. I placed those discussions in Appendix A, starting on page 19.

If you have a basic working knowledge of rate setting, and if you consider the logic of what follows, you should be able to read on and learn what you need to know to set rates appropriately and confidently. If, however, you read something that you do not understand and you want to understand it, go to Appendix A. I likely covered the issue there. If I did not and if the issue is important to you, just call and I will talk you through it.

Appendix A summarizes my rate analysis methodologies, theories, and general issues.

The water user charge rate structure is "description" based – in-City residential customers, in-City commercial customers and the same outside of the City. The minimum charge and unit charge are higher for out-of-City customers in recognition of the fact that it is generally more costly to serve outside of the City. For water there is a 1,000 gallons per month usage allowance. Sewer does not have a usage allowance.

This report is the culmination of a process where I submitted information and data requests to my primary City contact, Carolyn Halverson, Director of Finance. I am sure others behind the scenes assisted but I coordinated all communications through Ms. Halverson.

As I received information and data, I modeled the utilities' finances and rates and submitted drafts for review to get feedback. Ms. Halverson reviewed those drafts to assure accuracy, and when needed, she corrected data. Note: Late in the analysis phase, Mr. Wesley Young came on board as the new City Administrator, so he provided feedback, as well.

The rate analysis modeling covered 12 years, as follows:

- The "test year" is the one-year period from which data was used as the starting place for the analysis. We almost always use the last completed fiscal year as the test year. That is what we did in your case, too.
- The modeling was started and completed during the next year. In the model tables, this is called, "0 Year."
- For the next ten years, the modeling used budget figures, capital improvement cost estimates, etc. when available. Those normally cover one or two future years. For the remainder of the ten projection years, we increased incomes, costs, etc. by expected inflationary factors.

I prepared and submitted a draft final report. Again, my contacts reviewed and gave me feedback. We cycled through this process a few times to arrive at this, the final report.

The report is in two parts. The first part is this narrative report that tells readers what should be done to the utilities' rates and why and interprets much of the mathematical modeling.

The second part is a printout of the models. The models are named and described as follows:

- "Willard, MO, Water Rates Model 2024-3." Later this model will just be called "the Water Model." (Many other models were created during analysis to determine the rate effects of variables. The appropriate aspects of those early models have been incorporated into the final Water Model.) The Water Model assumes the City will continue many practices, but it would restructure rates.
- "Willard, MO, Sewer Rates Model 2024-3," later called, "the Sewer Model," is like the Water Model except it covers sewer rates.

As you read this report, please keep this in mind. The report does not *direct* the City to do anything. Actions you take or do not take are strictly up to you. The report is meant to inform and educate so you can make well-informed decisions about actions to take. And the report and models are not legal recommendations. For legal issues consult your attorney.

About the Models, Generally

The models were built to match the systems' financial statements and other data as much as possible. Because incomes and expenses in standard financial statements, and other data, are seldom grouped in such a way as to enable the required rate calculation methodology, the Models do not always match financial statements.

For modeling purposes, it does not matter whether funds are held in the general system account, a debt service sinking fund, repair and replacement account, etc. Therefore, the Models account for funds in a more simplified way than most utilities do it. When it comes to segregating funds, staff knows best how to do that, so the Models do little in this regard and I leave the segregating up to staff.

Several line graph charts in the Models graphically depict some things which would be difficult to pick out of the tables. In all the charts, the **blue line** represents what would happen under the **modeled** rates and the **red line** under the **current** rates. Financial trends for the red lines are (generally) bad. Those for the blue lines are (generally) good. Review the definitions section of the Water Model to learn the meaning of terms used in the charts. A few explanations should help you interpret the charts.

Chart 2 of either model can depict the blue line, the modeled rates coverage ratio, at zero or going to zero. That could be a good thing, or a bad thing. It is a good thing if you have no debt, or the debt is paid off during the time being modeled. It is a bad thing if you have debt but no current income available to pay that debt.

Charts 1 and 2, page 91 of the Sewer Model can be confusing. This is what they depict.

Chart 1 measures a utility's ability to pay operating costs using current incomes. The current incomes part of the definition is key. When you have reserves, those can be used to pay debt or pay cash for other things. But the classic definition of the operating ratio does not include reserves, only current incomes. Therefore, an operating ratio at 1.0 means current income equals current operating costs – that income is at the break-even point with operating costs. For sewer, you started below 1.0. That means you did not have enough current income to fully pay current operating costs and there was no current income left over to pay debt or cash-paid system improvement costs, either. But you had reserves, so temporarily, you were fine. After raising rates (the blue line) as modeled, the operating ratio rises.

Chart 2 of the Sewer Model, the coverage ratio, measures a utility's ability to pay debt service from current income after satisfying operating costs and setting aside appropriate operating reserves. For sewer, you had no current income above what it would take to satisfy the operating reserves goal, so you started with no coverage ratio. Since even the rate revenue increases modeled do not generate net revenue above what it will take to satisfy the operating reserves goal, the classic coverage reserve stays at zero.

Because of a shortcoming in how the classic coverage ratio is calculated, I also calculate an "alternative coverage ratio," which is the green line in Chart 2. For this ratio, I include reserves, because undedicated reserves, when you have them, are available to pay debt service. Now your picture still looks odd because the green line goes below zero. That indicates that, during those years you will not have enough income and reserves combined to pay all operating costs plus pay debt service. Later in the report I will describe how you probably will cover this shortfall.

Charts 1 and 2 or the Water Model function the same as those in the Sewer Model, but the income and debt situations for water were very different, so those charts look very different compared to the Sewer Model charts.

Where do the current rates trend lines come from?

Comparison of the chart trend lines between the current rates (red) and the modeled rates (blue) are useful to planning and action.

My modeling template models incomes, expenses, capital improvement plans and much more, resulting in a set of system development fees and user charge rates that will pay all costs well into the future.

In the background the template also runs a second analysis that assumes the above things but assumes the current rate and fee structures will continue for the next ten years and apply to customers as the customer base grows.

Thus, the results of that "background" analysis can be compared to the "foreground" analysis. That enables an "apples to apples" comparison of what likely will happen under the current rates versus what likely will happen under the modeled rates. Often, the best course of action is then very easy to see.

On to other charts, Chart 8 depicts reserve levels under the existing rates (red line) and the modeled rates (blue line). When the blue line goes up, that is a good thing for the utility. When the red line goes down, that is a bad thing, at least, if you were to decide to keep your current rates for very long.

In contrast to Chart 8, Charts 3 and 4 in the Models depict user rates. When the Chart 3 and 4 blue lines go up, meaning rates are going up, customers do not like that. But the utility will be better funded as a result and that benefits ratepayers because it makes their utility more resilient and able to make improvements that will serve them better. Effectiveness is the first priority. Efficiency (low cost, as customers view it) is the second priority. Customers want efficiency. But if the system is not effective, cost is a moot point.

One thing you will notice in viewing Chart 5 is this. Only the red line (current rates) and the black line (goal amounts) show up at all, or most of the time. When that happens, the line depicting the proposed rates is taking the same path as the line depicting the goal. That is because, in the Models, I programmed all funds that exceed what is needed to meet the working capital goal to "spill over" into the CIP and Debt Service fund reserve. Thus, the recommended rates line is taking the same path as the goal line.

Chart 8 spells the net revenue difference between the current rates and the modeled rates. The modeled rates will generate more revenue over time and, thus, produce stronger total reserves. It is useful if you can understand the other charts, but Chart 8 is the one to focus on.

As you set and later reset rates, I suggest you follow the guidance I give in my book, "How to Get Great Rates." This book is one of the rate setting resources I mentioned earlier.

The remainder of this report directly addresses the analysis findings and my recommendations, starting with water rates.

Water Model Discussion

System Development Fees and Minimum Charge Surcharges

The discussions in the rest of this subsection are brief because I recommend you stay with description-based minimum charges, and you continue with the system development fees (plant investment fees) calculated by Cochran Engineering and already adopted by the City.

There are a few ways to raise money to pay for system capacity costs:

1. System development fees (plant investment fees) paid when new connections are made, and
2. System development surcharges to the minimum charge, which are paid monthly. These direct from whom this money is raised.
3. A third undirected way is to just cover system development costs as they come along, probably by setting regular user charge rates high enough to cover costs as they appear. This alternative may or may not have customers pay according to the system capacity costs they cause.

You are already using Alternative 1 (the Cochran-recommended and since adopted system investment fees) and Alternative 3, which nearly every water and sewer utility is using. You are not using Alternative 2, meter size-based minimum charges. In your case, I recommend you not adopt meter size-based minimum charges, too. In your case, there is little improvement in rate structure fairness with meter size-based rates and those rates would be much more complicated than a description-based rate structure, like the current one.

A special note: The City engaged Cochran Engineering to calculate the plant investment fees (system development fees) for a large development. Cochran issued its report last April. Cochran found that the water plant investment fee for a five-eighths inch or three-quarter inch meter should be $800, and a four-inch meter should be $9,600, with in-between meter size fees falling within that range. Sewer plant fees should be between $1,000 and $22,500 for those same meter sizes. I incorporated the Cochran fees into my model and found them to be appropriate. The City has since adopted the Cochran fees. For those reasons, I recommend you stay with the Cochran fees.

Terminology

In the practice of setting rates and fees, many terms are used to denote the price of things and services.

In rate analysis practice, the terms "system development fee" and "system capacity fee," and a few others are interchangeable.

This narrative report and the included rate model(s) use the term "system development fee." If you use a different term and it suits your purpose, continue.

In contrast, the terms "new connection fee" or "tap-on fee" refer to payment to the utility for the cost of issuing a permit to connect, the cost of inspecting new connections before they are buried, the cost of providing a water meter and pit, and similar out-of-pocket costs.

To adhere to the principle of "cost-to-serve" rates, a utility should recover at least part of its capacity costs through system development fees. In addition, they should recover out-of-pocket costs through connection fees.

In the models, Tables 11 through 16 calculate meter size-based system development fees and minimum charges. Since you already have plant investment fees covered, there is no need to show Tables 11 through 14, so I left those out of this report. And since I am recommending description-based minimum charges, not meter size-based minimums, I "zeroed out" Tables 15 and 16, they were not used at all in the modeling, and those tables have been left out, too. Thus, Tables 11 through 16 do not appear in the report. That is not an oversight. They simply were not needed in your case.

On a related issue, I do recommend one set of changes to minimum charges. That is, the premium for out-of-City service should be much higher than the current premium of 8.8 percent for the minimum charge and 9.1 percent for the unit charge. Most out-of-City premiums are set at between 25 and 100 percent of the in-City rates for both minimum and unit charges. I usually recommend a 50 percent premium, and that is what I modeled and recommend for you, too.

As to new connections, part of what you call "METER REPLACEMENT/ INSTALLATIONS…" in Table 3, page 49, those are fees currently being charged for service connection costs, not plant investments. Therefore, you should continue to assess the "METER REPLACEMENT…" fees in addition to the recently adopted plant investment fees.

Expected Incomes

Table 3, page 49, shows the various past incomes and future incomes to expect, as well as several other things related to revenues. The modeling assumes new rates will be adopted early enough to begin assessing at the new rates on January 1, 2025. If you adopt new rates sooner, you will begin to build reserves sooner. The sewer fund is projected to go into the red soon, even with the new higher rates. Thus, the sooner you can adopt new rates, the less in the red that fund will go and the more reserves the water fund will have to lend to the sewer fund.

High in Table 3 is a line called, "Rate Increases Projected for Future Years." As mentioned earlier, after the initial adjustment, revenues are expected to rise by 48.6 percent. In years following that, rates will need to be raised enough to match budget inflation each year, assumed to be 4.0 percent. To be conservative, I assumed plant investment fees would not be increased, but you should examine those fees for need of increases each year, too. Details will be provided later.

Expected Operating Costs

Table 4, page 50, shows expected operating costs. Those in the first column came from the utility's financial statement. In the years after that, I expect most operating costs will inflate by four percent per year. Some costs rise due to inflation plus growth in customers and growth in use. Those costs are highlighted green.

To make calculation of a few financial indicators accurate and simple, I do not include as "operating costs" those costs associated with building and financing capital improvements. Those costs are covered in Table 5.

Capital Improvements and Related Issues

Capital Improvements are a Key Rates Driver

Capital improvements and their costs will be a big driver of higher rates. In a few years, the City plans to invest in a new well(s) and a storage tower. Those costs are expected to be paid with certificates of participation (COPs). Other on-going projects called "Capital Assets" will be paid with cash. All these things are shown in Table 5, page 52.

Repair and Replacement Scheduling

The utility does not have a "formal" equipment repair and replacement (R&R) schedule. You handle those things through your regular budgeting process. Therefore, Tables 6 and 7 of the Model have been left out. That said, I encourage you to create an R&R schedule because it takes most of the risk out of paying for these kinds of needs. You are welcome to use my "ReplacementScheduler" worksheet, available free at https://gettinggreatrates.com/Freebies to make that process easy.

Target Reserve Levels

According to your test year balance sheet, your total reserves were right at where they should have been for a system of your size. Therefore, I targeted reserves in the tenth year at that level, plus the amount of inflation I expect by then.

To give you a sense of how I arrived at the amount of target reserves, the following bullet points state them. I recommend these for you, too:

1. Unobligated cash and cash equivalent reserves equal to at least 50 percent of the annual operating costs, not including debt service and general administration costs.
2. A 20-year repair and replacement (R&R) schedule reserve, in the 20th year equal to at least twice the average year's cost of R&R. In your case, the above reserve will need to cover R&R, too.
3. Capital improvement and debt reserves at the end of the tenth year, after debt is paid, equal to that year's debt payments plus cash-paid capital improvement expenses.

The above actions, and the rates recommended from this Model will cause reserves to stay nearly level, except for the years when the well and tower work is expected. Chart 8, page 70 gives you a visual picture of what this will look like.

Projecting budgets and ending balances for next year is a difficult task. Doing the same five years out, I can usually get close. Ten years out, there are so many assumptions we must make now that will not pan out years from now that you should not bank on those numbers. But they serve as good planning targets. In most cases, a utility will see big cost, income, growth, debt, and other changes looming on the horizon a few years out. When that happens, it is time to do a new rate analysis to get rates back on track to meet those challenges. Thus, target balances give you something to aim for, but the target will move over time. With each new rate analysis, we will bring you back on course.

What if Expenses in the Model Miss the Mark Someday?

First, missing the mark is a certainty. Eventually, the projected expenses will miss the mark. That is why analysis needs to be redone periodically. With time, things change.

If you adopt the Water Model rates, then in a future year it turns out the Model failed to accurately predict the expenses you experience, what should you do? That depends upon which way (higher or lower) your expenses went, and how much they differed from what was predicted. It may also depend upon which expense(s) varied because that could markedly affect cost structure, and therefore, rate structure. And it will depend upon what happened to revenues, too.

- Your "fix" for a situation may be to continue with future rate adjustments as recommended. Not all "misses" need to be addressed. Some right themselves.

- Or it may be to speed up or slow down future inflationary increases to get revenues and reserves back on track.
- Or it may be to do a proportional increase to minimum and unit charges based upon the percentage that the experienced expenses are higher or lower than those in the Water Model.
- Or it may be to give me a call if you are not clear about how to make the needed adjustments.

My suggestion is this. When in doubt, err on the side of calling me for advice. I can usually talk folks through how to make the appropriate adjustment and I do not charge for that.

If your new situation requires modeling, I probably will request a fee for that. In that case, I would estimate the hours needed to do the analysis adjustment and I would propose to do that at the hourly rate I used to calculate the fees for the original project, if not much time has passed. Otherwise, I would propose using my then current hourly rate. Most such projects, including the reporting out, take a day or less to do, so they rarely go over $1,000.

If "getting back on track" is a problem several or many years into the future, many issues could then be in play. In that case, it is time for a new rate analysis.

The critical point is this. Do not hesitate to make the recommended rate adjustments just because you are not positive it will work out. Make the adjustments and then track how it works out through the years. If you get concerned about something later, just call. I cannot say, "I have seen it all." But I have seen a lot. I probably can work you through any rate setting situation you will experience.

Ratepayers ask, "Why should I pay more?"

Nearly every ratepayer served by every one of my client systems wants to keep their current (lower) rates. No one wants to pay more for their water than someone "down the road." That is human nature. We are wired that way, and that is not a bad thing.

Nearly all my client systems have system improvements they need to make. They cannot fund them out of current revenues. That is why they have a backlog of improvement needs. Quite simply, rates need to go higher, so improvements can be done. While your rates may go higher than those in other systems nearby, that is likely a temporary situation. Those other systems have a backlog of improvement needs. Once they start to attack that problem, their rates will go up, too.

Saying this will not make anyone feel good about higher rates. But this situation is going on nearly everywhere. Maybe not on the same schedule as you, but their day is coming, too.

Rate Affordability

I calculate each rate analysis client's rate affordability, measured by the Affordability Index (AI). For most utilities, it is a very useful tool to assess how "cheap" or "expensive" their rates will be. The AI is also used by many grant and loan programs to determine if an applicant will be awarded a grant, how much grant, an interest subsidized loan or no funding assistance at all.

Income growth, as determined by the Census Bureau, averaged 4.26 percent over 22 years through 2022. That is shown in the top left corner of Table 3, page 49. That is a strong growth rate.

Water use for all in-City customers averaged 4,230 gallons monthly. That is a bit below the national use benchmark for affordability of 5,000 gallons monthly. Based on the available data, the bill affordability for your average in-City customer will be lower than the Affordability Index that appears in Table 17, page 64. The Affordability Index is also shown graphically in Chart 4, page 68.

In the table, the Affordability Index calculation for the test year was 0.40 percent. That means, a 5,000 gallon per month residential customer earning at the City-wide median household income level paid 0.40 percent of their monthly household income to pay their monthly water bill. The national average is thought to be approximately 1.0 percent, so your current rates should be considered "cheap" when compared to the national average. And your average water usage is less than that benchmark, so those rates are cheaper, still.

Under the modeled rates for the fiscal year that will start in 2025, the first full year after the initial adjustments have been completed, this customer's Affordability Index would go up to 0.46 percent. That is almost no change from the current rates. Compared to most of my client utilities, you are in great shape on this metric. But be aware, based on rate affordability, you probably do not qualify for grants, so it is good you are not "banking" on grants.

The Affordability Index does not depict how new rates will affect customers using different volumes. Table 18, page 65, shows "before and after" bills for customers using different volumes of water. It is one of the few tables from the Model that I recommend you copy and bring to the Board meeting as a handout for the public. Because most customers are concerned about what will happen to their bills, you should give this table to everyone who wants a copy.

Affordability Index: The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. The Affordability index is a primary factor in determining grant and loan eligibility and grant amount.

How to Implement the Water Model Rates

These are the rates I recommend you adopt.

In the following, I summarize most things you would need to do to get set on this course of rates. In your case, you should adopt rate adjustments in two phases.

1. The first set of adjustments is a revenue increase and rate restructuring. Table A states the initial set of rates to adopt. Adopt these rates early enough to become effective by January 1, 2025. Adopt earlier, if you can. You would need to satisfy all Statutory requirements for making rate adjustments in advance of billing at the adjusted rates.
    a) In this table, I did not include system development fees (plant investment fees) because my analysis indicates you should keep the current plant investment fees.

2. The next adjustment needs to occur one year later, at the same time of year or to be effective right after the start of the next fiscal year. Increase minimum and unit charges across-the-board by 4.0 percent annually, but whatever the budget inflation rate is expected to be each year, raise rates across-the-board by that percentage rate. Again, satisfy Statutory requirements.
3. Inflationary increases should continue each year. Again, I assumed you will need to raise all minimum and unit charges by 4.0 percent annually, but whatever the budget inflation rate is expected to be each year, raise rates across-the-board by that percentage rate.
4. When making inflationary increases, you should examine the costs and incomes the utility experienced during the then current year, plus the balances that accrued. Compare those items to the same items in Tables 3, 4, 5 and 17, of the Model for the year in question:
    a) If all criteria are performing close to the values in the Model, raise all rates by 4.0 percent, as shown near the top of Table 3, page 49.
    b) If criteria are not performing as shown at the bottom of Table 17, page 64, but they are not egregiously different, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly, adjusting for variations in incomes, costs, etc. Download that book for free from https://gettinggreatrates.com/Freebies.
    c) If any criterion is performing poorly by an amount that is troubling to you (balances too low, incomes too low, expenses too high), call me to discuss the situation. It is likely I will be able to "talk you through" how to make appropriate rate adjustments to correct the situation. If not, I can do a model revision for a small fee.
5. I recommend repeating the Bullet Point 4 task each following year until you have raised rates and fees by a total of 20 percent. However, if your costs, capital improvements, and other things change dramatically over the next few years, I suggest you get a new rate analysis done when it seems to you it will be most productive. Otherwise, if these criteria are near what I modeled, and for most utilities they usually are, you may not need the next analysis for several additional years. A subsequent rate analysis would likely be useful just before you solidify plans for a major system improvement. That would let you use the analysis to support planning. When rate analysis time arrives, have me or another rate analyst of your choice perform a new rate analysis.

Table A: Rates From the Water Model

Table A: System Development Fees; Minimum and Unit Charges; No Usage Allowance, Calculated by the Willard, MO, Water Rates Model 2024-3

Water Meter Size	Customer Class	Monthly Minimum Charge, Including Peak Capacity	Usage Allowance in 1,000s	Unit Charge per 1,000 Gallons
All	In-City	$12.57	0.000	$3.91
All	Out-of-City	$18.86	0.000	$5.87

Closing

The utility needs more revenue to cover all costs, temporarily lend to the sewer fund for a few years, and arrive at appropriate reserves in ten years. It should also restructure rates, so they are fairer. The recommended rates accomplish those goals.

It is important that you examine incomes, costs, and accrued balances each year to assure the rates are bringing in adequate revenue to meet needs and maintain reserves. If they are not, increase rates across-the-board by a percentage that will bring the balances up to where I calculated they need to be each year.

Sewer Model Discussion

Most issues for sewer are the same as for water, so many of the issues are not discussed again here and duplicative tables have been left out. Things that are different are discussed.

System Development Fees and Minimum Charges

Handle new connection fees and sewer system development fees as described in the Water Model section.

One difference that applies to sewer rates but not water rates is how to bill for residential customers. You currently bill residential customers each month based on winter averaged water use. In essence, for each residential customer you calculate their monthly average use for some selected months, you apply the unit charge rate to that, add the residential minimum charge and bill that customer that amount each month until you set new rates. That is a good practice, and I recommend you continue it.

Expected Operating Costs

Table 4, page 77, shows expected operating costs. The big difference between water and sewer operating costs is the cost of wastewater treatment done by the City of Springfield for Willard. City staff shared with me a letter from Springfield outlining treatment rate increases Springfield will be assessing to Willard. They will be expensive. Plus, Willard is sending more of its wastewater to Springfield for treatment than it did just a year or two ago. And as Willard grows, it will send even more wastewater to Springfield. As a result, the "Springfield Sewer Charges…" cost item in Table 4 is expected to more than double to $1.1 million per year by the tenth year. By then, treatment by Springfield will amount to 42.5 percent of Willard's wastewater utility operating budget.

Inflow and Infiltration (I&I)

Related to the cost of wastewater treatment is inflow and infiltration (I&I). It is prudent for wastewater systems to try to reduce I&I as much as is practical. It costs money to transport and treat I&I. that is especially the case for Willard, looking at a high bill for treatment. To put numbers to this cost, in Table 9, page 84, bottom right corner of that table, I calculated the marginal cost of I&I at $8.87 per 1,000 gallons. Then in the bottom right corner of Table 8, page 82, I calculated the total variable cost of I&I at $198,001 per year. That will be more than ten percent of your total operating cost.

I reviewed draft Ordinance Number 240529 for the City. This ordinance involves control and reduction of I&I. I believe such ordinances are standard procedure for most wastewater systems. It only makes sense to not treat water that should not be in the wastewater system in the first place. The ordinance was quite normal for this issue. I found it to be reasonable in every regard and I encourage the Board to adopt this ordinance. Doing so should help to drive down this cost.

Capital Improvements and Borrowing From the Water Fund

Table 5, page 78 shows that you expect to take on nearly $5.2 million in two large system improvements. Most of that will be paid for by grants, another $1.2 million with certificate of participation borrowing, and a smaller part will be paid from reserves. The immediate cash outlay is projected to be approximately $700,000 for those projects. Add another nearly $500,000 for other improvements paid for with cash in the next two years and the total cash outlay will be more than the net sewer income and total reserves for those years and a few years to follow. That will drop the total sewer reserves to a negative $616,000 by the end of 2026. After that, reserves will begin to recover.

If expenses and their timing come in like this, you will need to borrow to cover the shortfall. Fortunately, the water reserve is projected to be strong during that time, so I have assumed sewer will borrow from water for a few years. But by 2032 the water loan should be paid back in full, and the sewer fund will quickly recover to reach its target reserve by the tenth year.

The critical message is this. The water fund will be strong for the next ten years. Both sets of rates will rise substantially, though sewer reserves will go negative during the middle years. The need for and the cost of improvements is so great that the sewer fund will need to borrow from the water fund. And in about 2028, there will only be about $500,000 in total reserves between the two funds. Thus, you must adjust and raise water and sewer rates soon, continue to raise rates in the future and be careful about the cost and timing of improvements to avoid exhausting both funds.

Some ratepayers may think that all these rate increases are not needed or are too much. Without these increases, financial vigilance and careful timing of improvements, the utilities will financially fail. Increases are critical.

Target Reserve Levels

According to your test year balance sheet, your total reserves were a bit higher than what I recommend. For sewer, I recommend the same percentages of reserves as described in the Water Model section earlier, so the sewer rates I modeled will grow those reserves slightly over the long term. But reserves will fall and go negative for a few years before getting to the target level in the tenth year.

Rate Affordability

In Table 17, page 88, the Affordability Index for the test year was 0.83 percent, a bit below the national average of 1.0 percent. Under the modeled rates for the fiscal year that will start in 2025, this customer's Affordability Index would go up to 1.21 percent. Table 18, page 89, shows "before and after" bills for customers using different volumes of sewer service.

How to Implement the Sewer Model Rates

These are the rates I recommend you adopt.

For sewer rate adjustments, follow the instructions for water rate adjustments that start on page 14, except adopt the rates shown in Table B that follows.

Table B: Rates From the Sewer Model

Table B: System Development Fees; Minimum and Unit Charges; No Usage Allowance, Calculated by the Willard, MO, Sewer Rates Model 2024-3

Water Meter Size	Customer Class	Monthly Minimum Charge, Including Peak Capacity	Usage Allowance in 1,000s	Unit Charge per 1,000 Gallons
All	In-City	$26.34	0.000	$11.58
All	Out-of-City	$39.51	0.000	$17.37

Closing

The utility needs more revenue to cover all costs and arrive at appropriate reserves in ten years. Even with that, in a year or so it will run negative reserves and need to borrow for a few years to get through a high-cost, low-reserves period. But reserves will recover. The recommended rates will be fairly structured and build those reserves.

Conclusion

"Conclusion" is a misnomer here. This report provides information to help the City make decisions. Thus, it begins the process by which you will initially adjust rates and fees and take other actions. I will continue to help you as you do that, so always feel free to call me to discuss any concerns you have as the years pass. Having the Model available to track your progress and determine the effect of condition changes later, I should be able to test changes easily and advise you quickly.

As time passes you will need to adjust rates incrementally as modeled in this report and as described in more detail in my book. Eventually, you will start this cycle over.

As you take on the initial adjustments, keep the following in mind.

- Everyone impacted by the City's water rates should at least be made aware of the results of this report.
- My default recommendation is to give any customer as much information as they want. If they want a copy of the full report, give them that.
- Give the media a copy of the full report so they can quote the report directly and accurately rather than be forced to "figure things out." Much of this is very complex. Few people know how to, or have the time to, calculate utility rates. Make it easy for everyone to get the facts right.
- For most customers, what would happen to their bills is as much as they will care to know about this analysis. To satisfy those information needs, the City can publicize the current and modeled rates and/or the bill comparisons.
- A few customers will want to know more, especially high-volume customers. Give them the full report if that is what they want.
- A good way to accomplish these things is to post the report on the City's Web site, Facebook page or other social media, so everyone can see for themselves what the report says. Publicize the posting widely and publicly. Information is a good thing. ***Being seen*** as trying hard to get information out to folks is also a good thing.

You have engaged me to pay an in-person visit to the City's Board on September 23, 2024. At that meeting I will discuss my findings and recommendations, answer questions, and do my best to get you over the new rates finish line as soon as possible. I look forward to that.

Appendix A: Rate Analysis Methodology and Related Issues

This appendix covers many issues related to rate analysis and rate setting generally, and specifically to how I do rate analysis. But first, I thank governing bodies for the valuable service they give to us.

The Governing Body's Job is Broad and Critical

The report covered my findings. Based on those findings, I made rate and fee setting recommendations. I may have offered some options, too. However, and this is important, my job is only to advise. The governing body's job is to set rates, among many other things.

Utility management requires the governing body to consider rates-related issues:

- How would the recommended rate structure and overall level of the rates affect ratepayers and funding of system needs?
- How different is the recommended structure compared to the current rate structure, meaning, how much "rate shock" would the recommended rates create for some customers?
- How might the governing body prudently reduce system costs, delay capital improvements, obtain grant or other outside funding for improvements and do many other things to reduce the need for additional revenue?
- And even if rate increases are not a problem, how might the utility be managed differently to reduce costs and be more efficient?

Those are just a few issues related to rate setting the governing body must consider. The job of the governing body is a big one, covering much more than rate setting. The members of the governing body have intimate knowledge of "conditions on the ground," community needs and ratepayer feelings. I only got a glimpse of such things. As the governing body considers those, and many other things, it will decide how to set rates and fees. My analyses and recommendations should be helpful as they do that, but my charge is only to advise, not direct.

All ratepayers and utility customers should be thankful that people from the community stepped forward and joined the governing body to do that critical work. Without such civic-minded people making utility services function well, quite literally, community-based living would not be possible. It is common for some citizens these days to not believe officials and even work against "government" at all levels. That is unfortunate because local government officials make it possible for the rest of us to live and work where we do.

To the governing body members, I say a heartfelt, "thank you." I feel privileged to advise you and I trust you to seek the best overall outcome for your citizens and utility customers.

Now, on to issues that related more narrowly to rate analysis and rate setting.

Rate Setting Resources Beyond This Report

Over the years, I have found that several topics are common to many utilities. Others can be important to a utility at certain times in their development. Rather than cover such issues here, I cover them in separate guides and a rate setting book, all available for FREE download at https://gettinggreatrates.com/Freebies. Following is a listing and descriptions of a few those guides and resources:

1. How to Get Great Rates© (e-book) – The book focuses on basic rate setting issues. It is most applicable to smaller, simpler systems.
2. Rate Setting Best Practices Guide© – This guide expands upon the book to cover affordability, sustainability, bill assistance programs, meter size-based system development fees and minimum charges, how to acquire rate analysis services, and more.
3. Rate Setting Issues Guide© is just that.
4. Replacement Scheduler© is a spreadsheet application that enables users to build their own equipment repair and replacement schedule, which calculates the annuity (savings amount) needed to fund all items in the schedule.
5. CIP Planner© is a similar spreadsheet application for capital improvements planning.

The two spreadsheets were extracted from my rate analysis model template and made a bit more user-friendly for do-it-yourselfers. I encourage my rate analysis clients to use these two sheets so they can make repair and replacement and capital improvement plans more formal, more forward looking and less reactive. Plus, the sheets make data gathering easy for clients and me.

There are other guides and resources on this site. All are FREE, so check them out.

Recommendations for Policy and General Issues

Many of the following things you probably are already aware of or are already doing, but they are worth repeating. A comprehensive list of rate setting best practices is presented in the "Rate Setting Best Practices Guide," cited above.

Whether your entity is a city, town, district, or utility authority, you can use the following as a checklist of "to-do" tasks for rate setting and rate analysis. If a reference you see in the following does not quite fit your situation, consider how you can apply the information to your special situation:

1. It is easy to export data from a robust, user-friendly billing program. Your staff gathered volume usage data from that program for my analysis work. For you to examine payment history and problems, usage trends, new connection trends, the effects of usage allowances and other rate structures on revenue generation, and many other issues, you must have a billing program that is user-friendly and robust. If your current billing

program is not as usable as you would like, I recommend you acquire a program that is. A good first contact to research billing programs is your state rural water association.

2. You should charge for the various services staff perform for customers and others. These include various services you provide in the field, such as after-hours service, meter disconnects and reconnects, special meter readings, etc. Just driving to a customer's site takes a minimum amount of time. That is time the staff person cannot perform other duties. To assess appropriate fees:

    a. You should periodically determine how long it takes to drive to and back from the average site and to perform each service.

    b. Determine how much it costs the utility per hour, on average, to have staff perform these services. Include staff wages, benefits, taxes, use of utility vehicles, tools, and minor equipment, etc.

    c. Include a fair amount to cover the time that office staff devotes to working on these services to track them, bill for them, etc.

    In almost all cases, these estimated costs should be recovered with fees for the various services. In addition, set a minimum that you will charge for showing up. In that minimum fee, grant a certain amount of time spent on-site, such as 10 minutes for a special meter reading or 30 minutes for a meter change-out.

    In essence, set your fees in the same way plumbers and similar technicians do – a set fee for showing up, which buys the customer a set amount of time, and an hourly rate if the job takes longer than the show up charge will cover.

    While accounting for time and other investments in the various services staff perform is important, do not make the costing tracking process burdensome. For many services you likely can just estimate staff time occasionally and charge fees based upon those estimates.

3. Retain required funds in interest bearing debt service and debt reserve accounts when required by your lender(s).

4. Have me or another rate analyst of your choosing conduct a full rate analysis again when the ***actual*** financial performance and my ***projection of future*** performance diverge enough to make a new analysis worthwhile. Conditions should dictate rate analysis timing. Most utilities benefit from rate analysis on about a five-year cycle or when total costs have risen by 20 percent. But if you are planning to do significant capital improvements that were not previously included in the rate modeling, or when actual improvement costs or funding plans have changed significantly compared to those that were modeled, those factors call for a new rate analysis as soon as you can get it done.

5. Fully adopt management strategies that are included in what is commonly called, "advanced asset management." These strategies can yield better service and reduced costs for a utility, especially those looking to build new facilities or replace existing facilities soon. At a basic level, you can use my free spreadsheet tools called, "CIP Planner©" and "ReplacementScheduler©" to do capital improvement and equipment repair and replacement scheduling, costing, and annuity calculations. These functions are at the core of asset management and may be all, or nearly all the "asset management" a small, simple system needs to do. Download these tools and others from https://gettinggreatrates.com/Freebies.
6. As a reminder, check with your attorney for language and legality of all issues discussed in this report.

Cost-based Rate Calculations

To give you a synopsis of rate analysis, as I do it, and to make it easier for you to read and understand my findings and recommendations, a tutorial on my methodology is in order. Most situations are simple enough that I do not need to use all these methods, but it will serve you well to know the breadth of the methodology.

When I analyze rates for a government-owned water-based utilities, and other utilities that are empowered to assess cost-of-service rates, I use the cost-needs approach. The approach is exhaustively described in the American Water Works City's "M1 Manual, Principles of Water Rates, Fees and Charges," Seventh Edition. This manual, in use since the 1960s and periodically updated, is considered by many to be the "Bible" of water rate setting best practices.

While the manual focuses on water rate setting and uses terms, units of measure and other things specific to water, the principles and approaches work just as well for electric, sewer, stormwater, trash collection and other utilities and services that are paid for with rates and fees. One just needs to use the appropriate units of measure and a few conventions common to the other types of utilities and services when applying these principles to them.

Important Terms

The cost-needs approach results in rates that are called, "cost-to-serve" or "cost-of-service" rates. Simply stated, the costs for a targeted budgeting period, usually a year during the next five years, are classified as "fixed," "variable," "capacity-to-serve," or some combination of the three.

- Fixed costs are converted to a base minimum charge.
- Variable costs are converted to a unit charge.
- Capacity costs are converted to some combination of system development fees and surcharges to the base minimum charge.

The cost-needs approach is a static (one year) rate calculation. One could do a new rate study every year to arrive at the rates to assess each year, spread over many years. But that is a lot of work or expense with very little practical benefit to be gained. It also can lead to rates that would rise drastically one year just to fall the next year. It is much more palatable to ratepayers if you keep their rates more stable. That requires calculating rates, revenues, costs, and many other things over a long period of time, say five to ten years and setting rates to bridge the cost highs and lows with prudent reserves.

A typical rate study considers the rates needed to fund one year, usually the coming fiscal year. Utilities need to plan farther into the future than that, hence, the more accurate term of rate "analysis" rather than a rate "study."

Most utilities are better served by getting a rate analysis when rate restructuring may be in order or when rates will need to go up markedly. During the years in between rate analyses, it is simple and convenient to just raise all significant rates and fees by an across-the-board percentage, which should have been specified by the analyst. Such increases may be aimed at keeping up with inflation. Or they may be designed to achieve other goals. In whatever way these increases are to be done, they were planned for in the analysis and described in the foregoing report.

To guide utilities to do future increases well, I expand the cost-needs approach by projecting costs, revenues, rates, and other criteria ten years into the future. That gives each utility a "road map" of what they can expect in the future, so they can reset rates appropriately.

Because I intend for utilities to reset rates on their own for some years into the future (I describe to them how to do that), and I want those rates to be "fair enough" to serve them well, I calculate the initially restructured rates so that they take future across-the-board increases into account. This is how it works.

Based on my calculations, the initially adjusted rates will be closer to a "cost-to-serve" structure than the current rates. And as across-the-board increases are applied, rates will move even closer to a cost-to-serve structure until the year used for cost classification has arrived, which normally is four to five years in the future. After that, additional across-the-board increases will move the rate structure further away from cost-to-serve. Eventually, a new rate analysis should be done to make the structure fair again. For most moderate sized utilities, that is about five years into the future. For most smaller utilities, that may be eight or more years away.

To arrive at cost-to-serve rates in a future year, I must choose an appropriate year for cost classification.

- The best year may be the first year after a big capital improvement is planned to be finished because the debt service for that improvement probably will have already started.
- Or, if costs are expected to inflate uniformly, the best year may simply be five years in the future, the year in which most utilities should consider having a new rate analysis done anyway.

Rate Analysis, in a Nutshell

At its simplest, rate analysis helps a utility arrive at rates and fees that are adequate – they will pay all the utility's costs. The next level of complexity is to arrive at rates that, on an average cost basis, will enable the utility to recover fixed and variable costs "fairly." Most small water and sewer utilities need analysis only to this level of complexity – doing more than that results in rates that are impractical for small systems.

Another level of complexity includes calculation of meter size-based minimum surcharges and system development (connection) fees. Another includes calculation of rates on a "marginal" cost basis, for special groups of customers. Yet another level is marginal cost basis calculation of rates for individual customers, such as a wholesale customer. These facets of analysis result in accurate but complex rate structures; appropriate for the larger utility with diverse customers.

Analysis can and should provide a sound basis for advising the utility to "go or don't go" concerning various actions it might take. Some of these actions are purely financial. Some, like the decision to enter into, or not enter into, a wholesale supply agreement, for example, include "hassle factor" and other non-financial issues. And because such are agreements are made for nearly forever, a mistake made in the beginning can hamstring a utility for years or decades to come. Regardless of system size, thorough analysis should always be done before entering into such agreements.

There are some basic steps to arrive at cost-to-serve rates. Calling these "steps" implies that I do one and then move on to the next. In practice, most steps are affected by, and affect, what happens in other steps. Therefore, they are all done in concert with the others.

That said, here are the basic steps:

1. Cost Classification: Operating costs are placed into different categories – fixed, variable, peak flow capacity, and sometimes others. I classify costs projected for a year in the future, usually within five years of the present. And I use a year that appears to be typical of what the utility can expect in the future.

For all utility types, operating cost classification is done in Table 8 of the model(s) that will follow in this report. The core notion of cost-to-serve rates is this: The basic minimum charge assessed to all customers should recover the sum of all fixed costs; and the average unit charge should recover the sum of all variable costs.

System capacity costs can, and usually should be recovered on a cost basis, too. That is a bit complicated and will be covered shortly.

Back to recovery of operating costs, near the bottom of Table 8 in the foregoing report, you will see the "Average Fixed Cost/User/Month" and the "Average Variable Cost to Produce/1,000 gallons (or other units)." These are the basic minimum charge and the average unit charge based on the costs expected in that future year. The same model template is used for calculating rates for the various utility types. The main difference for those analyses is the measurement method for unit charges.

An aside, but an important one in my mind, is this. The M1 Manual describes how to calculate cost-to-serve rates down to the customer class level. If a rate analyst classifies costs to that level and the utility sets rates that achieve that result, it can correctly be said that the utility has cost-to-serve rates. Those rates will be fairly structured, but only at the customer class level.

I classify costs to the customer level. Thus, rates that I calculate are cost-to-serve to the customer level. My reasoning for doing this is, rate structure fairness if felt at the customer level, not at the customer class level. Customers pay utility bills. Classes do not.

2. Capacity costs: In the ideal, capacity costs should be assessed on a cost-to-be-able-to-serve basis, but these costs are a long-term proposition. No one knows at present what the cost of capacity is because those costs unfold over decades. Thus, the dollar cost of capacity can only be estimated, but that is not a problem. The key is, whatever one estimates capacity will cost, or whatever portion of capacity a utility desires to recover with capacity charges, that cost should be divvied out to new connections and current customers on a fair basis. The following goes to that goal.

    - The American Water Works City has done excellent research on the sustainable peak flow capacity of different water meter sizes and types, so I generally use the flow capacity of each meter size and type as the basis for divvying water and sewer peak flow capacity costs. That math is lengthy, so it is spread out over Tables 11 through 16 of the model(s) in the report. The notion of capacity applies to all utility services, so:
    - When I calculate water and sewer rates where meters are used, I use meter flow capacity as the capacity share criterion.
    - When I calculate electric rates, I use what is commonly called the "demand" exerted on the wholesale power supplier. If the client produces its own power, I use the demand measured by the client's metering system.

- When I calculate sanitation (trash collection) rates, I use the cubic foot capacity of the various bin and dumpster sizes times the number of pickups per month of each as the capacity criterion. Thus, for trash collection services except for the rare ones that actually weigh trash as it is collected, the capacity of bins times the pickup frequency becomes a component of the "unit" charge for each customer.
- Stormwater capacity is like trash collection in that impervious surface area is the usual capacity, and "unit" charge criterion. Square footage or the equivalent of impervious surface area appears in the rates as the unit charge analogue.

3. Future cost projections: I project costs ten years into the future. Generally, this is done by applying an expected inflationary factor to each cost. But it is also common that some costs, like the cost of debt service needed to build a new treatment plant in two years, will change future costs markedly. Such cost changes are estimated, then entered into the model in the year in which they are expected to occur. Some expenses, like postage, treatment chemicals and electricity for production, treatment, and distribution, rise with inflation plus growth in the customer base and use. Those are increased in future years by inflation and growth.
4. Reserves: Reserve goals are set through the tenth year. Those goals will only be met if (primarily) rates are set high enough and/or (secondarily) grants and subsidized loans are large enough to enable the utility to generate net revenues over the modeling period. The amount or percentages and types of reserves are dependent upon each utility's needs, so that is discussed in the foregoing report.

For the techie reader, the analysis model we use – a Microsoft Excel spreadsheet application we call, "CBGreatRates" – is usually 3.8 mega-bites in size. Each rate analysis includes one of these sheets.

For a 1,000-connection utility, for example, we use another spreadsheet, 12.1 mega-bites in size, to sort and calculate customer volume use. We use one of these sheets for each rate class. There are usually five or so for the simplest rates. Each of these sheets is linked to the client's usage data file, usually a few mega-bites in size, for importing usage data. Thus, an analysis for a 1,000 connection utility totals 65 or so mega-bites in size.

For some of our larger client utilities with more rate classes and more customers, total size of all the linked spreadsheets runs over 250 mega-bites. We run computers with lots of RAM and memory but some of the calculations for a larger utility can take around 60 minutes to run. When usage data sheet runtimes get long, we usually switch to a database format application to speed up the heavy number crunching.

5. Calculate rates: The full suite of rates needed to fully fund the utility and do it fairly is a dynamic set of calculations, too complex to completely explain here. And each situation requires variations on this theme. I will leave out some details, so this is the "Cliff's Notes" version of rate calculation:
    - Capacity cost recovery is calculated first. Likewise, penalties collected, and other non-user charge fee incomes are calculated. These revenues are

deducted from the total revenue needed to arrive at the revenues needed from user charge fees.

- Next, the across-the-board future rate increase rate (a percentage) is set. In the future, starting about one year after the initial rate adjustments have been done, rates will increase annually by this percentage. The revenue needed from the initial rate adjustments, here called the "net revenue need," will come from the revenues generated by the initial rate adjustments. (In truth, future inflationary revenue increases, plus interest earnings on balances accrued are dependent upon the rates that are initially set, so most "pre-calculated" revenue streams are adjusted dynamically as initial rate revenues rise or fall.)
- The calculated bases for fixed costs and variable costs (Table 8) establish a ratio of the revenues that each rate component would generate in a cost-to-serve structure.
- To increase (or very rarely decrease) overall revenues to satisfy the net revenue need, each revenue stream is increased or decreased by the same percentage. Thus, the revenue streams remain in the same ratio to each other. That means they retain their cost-to-serve proportions.
- Once the overall revenue increase (or decrease) is established:
    - The base minimum charge is "back calculated" from the adjusted minimum charge revenue amount. (Every customer, regardless of their meter size, pays the base minimum charge.) The meter size-based surcharge, for water and sewer systems, is added to the base minimum charge to arrive at the full minimum charge for each meter size. (Similar math is done for other utility types.)
    - The average unit charge is calculated from the unit charge revenue amount. If inclining or declining rates are to be assessed, or if there is to be a usage allowance, unit charge revenues are calculated dynamically based on those variations.

        - The resulting rates are the starting user charge rates – the initial adjusted rates – what you will (hopefully) adopt initially. In later years, you will increase these starter rates and fees across-the-board by the inflationary factor, generally to keep them tracking with rising costs.
    - After examining balances projected for future years, the future inflationary increase rate may be raised or lowered to enable the utility to accrue appropriate balances either sooner or later. That, of course, will result in initial rate adjustments that would need to be either lower or higher, respectively, to offset the change to the future adjustments rate.
    - Finally, it is common for managers and decision-makers of utilities to want to "tweak" rates into a different structure, timing of adjustment or in other ways. Having built the model to handle "on-the-fly" adjustments, I model their preferences to arrive at the rates needed to fund the utility as they desire.

6. Reporting out: The culmination of all this data gathering, calculations and more ends up in a rate analysis report like the report this appendix is attached to. The report covers everything that seems to be important and gives the client my recommendations and guidance on how to adjust rates now, and in the future.

   If desired by the client, I present the report, my findings and recommendations, and answer questions, usually at a Board or Board meeting. Before COVID-19 that was always done in person or rarely by phone call into their Board or Board meeting. During COVID-19, that was almost always done by remote video. After COVID-19, these meetings are being done either way, as the client desires. Many of my client systems are small and their management had not yet adopted on-line meetings. COVID has changed that. Many of my "meetings" now are done on-line, even with very small utilities. Cutting out my travel saves them a lot.

System Development (Capacity) Fees and Surcharges

System development (capacity) fees (SDFs), and (minimum charge) surcharges (later often called, "SDFs" collectively to be brief), are common and useful rate structuring tools. They also require quite involved calculations to arrive at these fees and surcharges in a cost-based structure. I touched on the topic in the body of the report and I cover these fees and surcharges in more detail here.

There are two main things one must do to determine, mathematically, how to set SDFs:

1. Determine how much of the system's capacity development costs to recover.
2. Determine when, and how much of those costs to recover from each customer. Determining "who pays how much and when," is easier when the utility sells the commodity based on metering of some sort.

Calculating proportionality and level of fees is a process. This process is not a single pass through a list of calculations. I go through the calculations and then consider if the resulting fees are "doable." If they come out too high, or if some fees come out markedly higher or lower than the "competition's" fees, or they are markedly different than the utility's current fees, and if any of these could be a problem, one should consider how the calculations may be tailored to arrive at more "doable" fees.

To keep it simple, let's go through the steps and calculations one time and then circle back to making the fees doable.

Step 1: Meter Equivalent Ratio (Capacity Share)

Meter flow capacities have been determined by the American Water Works Association (AWWA). Based on AWWA meter peak flow capacity research, the flow capacity of a five-eighths inch meter (the smallest practical size and commonly used for residential connections) is assigned a flow capacity of 1.0. Larger meters can pass more peak flow, so each size and type is assigned a proportionately higher peak flow capacity factor or "share." These results are shown in Table 11, page 31, in the "Meter Equivalent Ratio (Capacity Shares)" column. In simple terms, a five-eighths inch meter would be charged one share of peak flow capacity cost. A two-inch meter would be charged eight shares of peak flow capacity cost because it has eight times more peak flow capacity than a five-eighths inch meter.

Capacity "shares" are the basis for the proportionality of capacity fees calculated later.

Step 2: SDF Cost Basis

No one can know how much it will cost to build capacity-to-serve in the future, how many customers will be available to pay those costs in the future, or how long built capacity will be serviceable before it must be rebuilt or improved. But that is not an insurmountable problem because few utilities will recover all system development costs with SDFs and surcharges anyway. Thus, the cost of system development is mainly the starting place for calculating proportionality of the resulting SDFs and surcharges.

To set SDFs, one should start with calculation of the amount of cost to recover through SDFs. Oftentimes, SDFs only cover peak flow costs. The flatter the distribution of meter sizes is, the more reasonable that approach is. (If all customers are served by one meter size, there is no immediate need for varying SDFs, or surcharges based on meter size.) As larger meters come into play, varying fees and surcharges begin to make structure fairness and practical sense.

Costs to be recovered may be forward looking – future capital improvement needs, debt service and such (Table 5 in the modeling). Much of that will come from a capital improvements plan and debt repayment schedules for existing debt, or calculated payments for yet-to-be-incurred debt. At best, most of these are estimates.

Alternatively, the cost basis may be backwards looking – dollars invested in "plant" or "hard assets" in the past. Those values are typically tracked in the balance sheet as original plant investments. For most utilities, these values are known and tracked. That is the cost basis I

normally use for a few reasons. Quite important is, that basis is not subject to the debate of, "Do we really need that capital improvement, or need it now, and what should it cost?" Investments that appear on the balance sheet have already been made and in the future, at least that dollar amount will probably need to be made again. Future capacity costs can easily be argued about. Balance sheet plant investments cannot.

Part of the cost basis should be recovered "up front" with SDFs. But there is also the surcharge to the basic minimum charge to consider. Some system development costs should be recovered with surcharges because system capacity development is an on-going process. Capacity must be rebuilt for existing customers.

This brings up an important fact to stress. That is, capacity costs are not incurred just once, and then they are paid for with fees paid by new connections (customers) just once. They occur over time. They are paid for by different new connections (customers) over a long span of time. Likewise, some capacity costs will be paid for by existing customers by way of user charge rates over a long span of time. The time factor is a part of SDF calculations and surcharge calculations.

Said another way, a new connection (customer) makes a one-time payment toward system development costs and then they are done. But other new connections are made over time, with each one making their one-time payment. But one-time payments occur over time. Alternatively, surcharges are a long series of payments made periodically by existing customers, essentially the same customers.

This discussion has gone esoteric, so let's move on.

In Table 12, I classified costs as peak flow-related with the balance, if any, being base flow-related. Only the peak flow-related costs will be used further down the table for calculating SDFs (the middle section of the table). Surcharges, if any, appear in the last section of the table. Frequently, I only calculate the peak Flow-related cost "share." But sometimes, if my client contact tells me the "powers that be or the developers" will not accept a marked change in SDFs, I also use the base flow calculation subsection to calculate a base flow component to the SDF. By varying the peak flow, base flow, and surcharge "shares" I can tailor the resulting fees and surcharges to better fill the needs of each utility. I can make these fees and surcharges "doable."

Step 3: Capacity Share Dollar Value

The dollar value of one Capacity Share is calculated in Table 12, page 32. In this case, capacity comes in three flavors, peak and base SDFs, and a surcharge to the basic minimum charge.

Subsection 2 of that table calculates the dollar value of peak and base capacity costs per Capacity Share. To do that, one must determine what part of that annual cost to recover each year. You can target recovering little of it, all of it or even more than all of it. I usually can only recover a small percentage of the annual cost basis and keep the resulting SDFs competitive with neighboring systems. (Nearly every system in the U.S. is recovering too little of its system

capacity costs. To a degree that is reasonable, because a high percentage of system capacity costs are initially paid for with loans, and loan payments get added to user charge fees, so some capacity costs are being passed on to customers. But many systems simply have rates and fees that are too low to fully pay their system capacity costs.) In competing for development, which is a reasonable goal, systems often must keep their system capacity fees lower than full cost. When that happens, some costs are shifted to the user charge rates of existing customers, or to future customers.

Surcharges to the minimum charge, the last subsection of Table 12, are also based on meter size, and are calculated in nearly the same way except that recovery is paid periodically (usually monthly).

Step 4: SDF for Each Meter Size

Once the per share cost has been established, the SDF for each meter size and type can be calculated. For SDFs, that step is done in Table 13, page 33. It is quite easy: multiply the "Peak Capacity Cost per Capacity Share" by the number of shares for each meter size being connected, then add the "Base Capacity Cost per New Connection…" amount to those values.

For surcharges to the minimum charge, that step is done in Table 15, page with similar calculations.

Step 5: SDF and Surcharge Total Expected Revenues

Finally, using all prior data and calculations, and the assumed number of connections of each meter size and type, the revenues those SDFs will generate can be calculated. Those results show in Table 14, page 34 for SDFs and Table 16, page for surcharges.

To summarize data and calculation flows through the tables:

- Table 5, page 29, can serve as the basis for peak and base system development costs to recover. Otherwise, the original plant value from the utility's balance sheet, undepreciated, is a good basis for calculating these fees.
- Table 11, page 31, develops the share of costs that each meter size is responsible for,
- Table 12, page 32, calculates the dollar values of a peak capacity share, a base capacity share, and a surchargeable share,
- Table 13, page 33, calculates the SDF for each meter size and type, and
- Table 14, page 34, calculates the SDF revenue to be generated in a full year by connecting an assumed number of new meters of assumed sizes.
- Table 15, page 33, calculates the minimum charge, including surcharges for each meter size and type, and
- Table 16, page , shows the surcharge revenues to be generated in a full year, listed by meter size.

Finally, it is often prudent to compare the calculated SDFs and surcharged minimum charges with the "competition." It can be useful to compare the calculated fees and rates to the current fees and rates, too. After all, the new fees and surcharges must be doable. If the calculated fees and rates are markedly higher, it may be useful to circle back to the capacity cost to be recovered or the split between peak capacity and base capacity. To make the new fees and surcharges palatable, these may need to be adjusted and the fees and surcharge calculations run again.

There is much more to calculating these fees and surcharges, but you have probably learned more than you cared or needed to learn, so we move on.

Regional Cities' and Districts' Fees – the "Competition"

I do not recommend comparing user charge rates in your city, town, or district to others. Your cost structure, indeed, the whole system, is unique.

However, you may want your SDFs to be competitive with neighboring cities and districts, so you can get your fair "share" of new development. In most utilities, SDF revenue is minimal. User charge rates are where they make the real money to pay the bills. Once you connect a new customer, their property will be a user charge paying customer forever, for all practical purposes. Set SDFs too high and they will not come. You will lose the chance to get that "forever" user charge paying customer. Yes, things change over the forever time span, but you will have them for a very long time.

Therefore, be at least somewhat competitive with neighboring communities' SDFs. But if your city, district or area has other great reasons for a person or business to "move to town," you can charge more in SDFs and surcharges.

I love calculating SDFs and surcharges. You are probably worn out with this discussion, so I will move on.

The Nature of Rate Structure Parts and Types

Cost-to-serve rates are considered by many, including me, to be the most mathematically fair and defensible rate structure. While I previously described how I do such calculations, I will now tell you what I consider to be "fixed" costs, "variable" costs and "capacity-to-serve" costs:

- ***Fixed operating costs are those that are related to the fact that you have customers.*** For every customer, the utility incurs one increment of this type of cost. Billing is the simplest, purest example of a fixed cost. Whether a customer uses a lot of the commodity or none, it (almost always) takes the same work, equipment, software and more to calculate their bill, "send it out" and collect the money.
    - Another part of the minimum charge will likely be a surcharge intended to recover all or part of peak flow or unusual capacity costs. These are almost always based upon water meter size because the larger a meter is, the greater is its capacity to sustainably pass peak flows. This peak flow capacity relates

well to the cost of building infrastructure "big enough" to handle peak flows. Thus, ***capacity costs are related to the fact that a particular customer has a certain capacity to demand flow or service, regardless of how much flow or service they actually use.*** These surcharges are added to the base minimum charge to arrive at the full minimum charge for each meter size.

  - Larger systems invariably have more large meter customers and that makes surcharging the larger meters worthwhile and fair.
  - However, small systems with few "unusual" customers and few meters larger than one inch often find it expedient to consider even peak flow capacity cost to be a fixed cost, equally sharable by all customers. At some point, there is more to be gained from administration simplicity than exact rate structure fairness.

- ***Unit charges are related to the volume of service received.*** While unit charges can be structured in various ways, the revenues they generate should be adequate to pay those costs that are related to the flow that customers use.

There are three unit charge structures that I commonly recommend, depending on the situation:

- Some systems need "conservation rates," or, their administrations simply like the notion of encouraging customers to use less of the utility's services. In this rate structure, the unit charge goes up as volume used goes up. Most of us respond to, or at least we think twice about it, when we are assessed a higher price to buy more of something. Conservation rates are most appropriate in areas with limited water supplies or in a utility that is bumping up against its capacity to produce water.

If you are going to err either on the side of complex rates that precisely assess costs to each customer or simpler rates that round off some of the accuracy corners but are easier to administer, choose simple rates.

- Most systems use, and should use, level unit charges – a unit charge that is the same regardless of how much volume a customer uses. With level unit charges, customers are assessed unit charges on an average unit cost basis. Such rates are the easiest to calculate, they are the easiest for a clerk to explain to a complaining customer on the phone and the revenues such rates will produce next year are the easiest to accurately predict. Most water utilities, and almost all sewer utilities assess level unit charges.

- The last major unit charge structure is called, "declining" rates. These are the reverse of conservation rates. I often call them, "use encouragement" rates. It is popular these days for many to belittle those who do not conserve resources at every opportunity. Declining rates are often scorned for that reason. However, if a system has an ample water supply and ample infrastructure to produce and distribute it, doing so will not cause unintended bad (mostly environmental) consequences; and if the governing body wants to encourage high use (which often entails such users hiring more or better paid workers), declining rates can make good sense. Declining rates are most appropriate in areas that have many high-volume industrial users or folks in that area want to attract such users. Declining rates seem to be most common in the industrial east, but they seem to be less popular everywhere these days. However, keep this in mind. One can accurately calculate the average unit charge and "prove up" that rate case. One cannot do the same with inclining or declining rates.
- Another unit charge structure is the "usage allowance." For example, a usage allowance of 3,000 gallons per month means you get the first 3,000 gallons at no additional cost beyond the minimum charge. Thus, the unit charge between zero and 3,000 gallons is zero dollars per 1,000 gallons. At 3,001 gallons, you start to add unit charges to your monthly bill.

  As described earlier, the minimum charge should cover fixed costs, not variable costs. The costs to source, pump, treat, store and distribute water are not all fixed costs, so not all of those costs belong in a minimum charge. And the first gallons of water are the most expensive to produce. In a cost-to-serve rate structure, those gallons should get paid for by the customers that use them.

Rate Modeling and Rate Setting Advice

Rate setting is first about recovering costs. Job one of utility rates is to pay the utility's bills. But usually, proper rate setting is also about building adequate reserves; funding a capital improvements program (CIP); catching up on needed equipment repair and replacement (R&R); and covering similar needs. Thus, these soon-to-be-experienced costs or likely-to-be-experienced costs need to be factored into rates and fees, as well. Because time marches on and costs usually inflate over time, rate setting should account for the need for future incremental increases to cover inflation. And you cannot just assume that because the utility needs more revenue that your ratepayers will be glad to pay higher rates. Rate affordability, and the public's perception of affordability, must be addressed, too.

Even the simplest rates situation requires some complex and integrated calculations to account for these factors. For that reason, I build a spreadsheet for each analysis that depicts, in virtual reality, the utility's real-life financial and rates situation.

These models are dynamic. When the initial rate increase is set higher, future inflationary increases can be lower. When minimum charges are set lower, unit or other charges need to be set higher to make up the shortfall. When future expenses need to be higher, or lower, or of a

different nature, the Model adjusts rates and fees accordingly. Such modeling enables me to do dynamic "what-if" scenario calculations. That enables me to arrive quickly at the "best fit" rates for each utility. Usually, the client goes with what I recommended. Sometimes they don't, although once I show them the results of doing what they think would be better, they often circle back to my original recommendations. That's OK. I have learned a lot while taking these detours.

My model is dynamic. It is easy to calculate the effects of changes to rates and other things over the years. If a change does not affect the cost structure drastically, I can do the same for almost any cost or rate change. If one, two or three years from now, you discover your costs or incomes will be different from what you and I had assumed, you can call me up, tell me what is different, I will enter the changes into the model(s) and re-run the rates. If the change is small and quick to model, I do that for no charge. If it is more complex and will take some time and usually a written report, I do those projects on an hourly basis. Fees for those usually come in under $1,000. Some clients find that to be a very accurate and cost-effective way to maintain good rates, even when conditions change dramatically.

I have been building my template model since 2005. It is the starting place for all my analyses. The template is so robust that I can set a few "switches" here and there, build in a few things that are unique to a new client's situation and soon, I am modeling rates tailored to their needs.

Temptation Happens

I could build a static model that arrived at what I thought was the best rates outcome for a client. If the client asked for something different, I would be tempted to tell the client that, "In my experience, blah blah, blah, that would not be a good thing to do." Based on my experience, I probably would be right, but that tack would be self-serving – it would save me work.

- Half the reason I build dynamic models is to be able to show the client the outcome of what they asked for and that usually proves up the case for what I originally recommended.
- The other half reason is, when I model what the client asked for, I sometimes find that indeed, it is doable and may even be superior to the solution I assumed was best.

Assumptions based upon deep experience are useful. But facts and good math are a great training experience for a rate analyst.

Two final thoughts on the rate modeling and adjustment topic:

- Almost always, rate adjustments include bill increases. Thus, time is money, often big money, to the utility. A rate increase delayed is a rate increase that must be even higher to reach the same reserve target in the same amount of time. Get to know this report well but do not spend months mulling it over. Time will not make your rate setting task easier. Proceed deliberately but quickly and make the needed changes. If you cannot make all the needed changes at the same time, make those that you can as soon as you can. Then, circle back to the rest as soon as you can.
- You will get complaints about customers' bills going up. I do not want to be dismissive, but in my experience, most of the time, when the math is laid out for all to see, most people are understanding. Cost-to-serve rate analysis does not arrive at unfair rates. It arrives at fair rates. Who doesn't want fair rates? Well, those who are

paying cheaper than fair rates. If they can convince those who are subsidizing them to keep subsidizing them, even though the analysis shows that is not fair, more power to them. But generally, cost-to-serve rates win the day.

- These statements do not mean "do-it-yourself" rate adjustments are always unfair or insufficient, or that rate adjustments calculated by a "rate analyst" are always fair and sufficient. I always try to calculate and advocate for rates that are fairly structured. But over time, costs and other conditions change, so even cost-to-serve rates I have calculated will become unfair after some years.
  - A good blend of fair rates and a low cost to achieve them is this. You get a rate analysis done occasionally and adjust accordingly. For a few years after that, do-it-yourself across-the-board increases will keep revenues tracking with inflation. Eventually, you analyze again.

Please keep the above summary of cost-based rate calculations in mind as I close with some principles.

Principles

I use several guiding principles when I help systems set their utility rates, fees, and policies. I considered these principles as I prepared the foregoing rate analysis report and the model(s) that follow:

1. Water, sewer, and all other utilities are businesses, regardless of who owns them. The first order of business is, stay in business. Your customers want you to do that. They do not want their investments in homes and businesses to be left high and dry without utility services to support them.
2. The second order of business is, perform in a business-like manner. First, be effective. If you do nothing else, be effective. Next, be as efficient as is reasonably possible. Efficiency tends to foster lower rates, which ratepayers like. Effectiveness and efficiency fight against each other. In most utility services and situations, effectiveness trumps efficiency. It does not benefit water customers if you pump lots of water cheaply if that water will make them sick, or if too much of it leaks out of holes in the pipe. Customers also gain more benefit from water rates that are a bit higher than they would like, but those extra funds are used to keep the utility sustainable.
3. If a service costs the utility money, the utility should recover that cost from the most logical "person" if that makes good business and community administration sense. For example, generally "growth should pay for growth." Developers should fairly pay for their consumption of utility capacity obligated to what they build by paying commensurate system development fees. Likewise, service users should pay for what they use. Each class of users should pay their fair share of service costs. Ideally, each individual user should do that, too.

> As you consider rate adjustments, always keep this customer in mind:
>
> The "little old lady, widowed, retired, living alone on Social Security." Treat her badly, or just be seen as treating her badly, and you lose the goodwill contest. Lose goodwill and you may never get it back.

4. It sometimes contradicts point number 3 above, but if adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, or discourage development that the community desires, you should consider the necessity of making the change carefully before doing it. For example, while it may be warranted, raising the minimum charge markedly to your residential customers may make it very difficult for fixed, low-income customers to pay their utility bill. That may cause more of them to pay late or not pay at all. That may trigger the utility's attorney to write collection letters to those customers and eventually require shutoff of service. Thus, in the attempt to generate more net revenue by raising rates, net revenues may go down due to non-payment and payment collection costs. Likewise, stifling development with uncompetitive system development fees costs a utility in the form of additional paying customers because they chose to "build down the road." That forces existing customers to pay all the costs of the utility rather than sharing them with new customers.
5. While cost-based rates are the most demonstrably fair rate structure, purely cost-to-serve rates can be impractical for some utilities. Consider this:
    a. A large city has thousands of customers served by a wide range of meter sizes and those customers have a wide range of service use. That city needs rates that are cost-based and, necessarily, those rates will be complicated. Such rate complexity is worthwhile because the utility's situation is complicated.
    b. In contrast, a small town serves few customer. Those customers usually have only a few meter sizes and few of them use high volumes of service. That town would not be well-served by complicated rates. Simpler rates are better for them.

However, both should still get a cost-to-serve rate analysis at least occasionally, so even if they adopt rates in a different structure, they will know what you are giving up.

That is probably more than you care to know about rates and rate analysis but if I did not answer all your questions, just give me a call, or drop me an e-mail.

Willard, MO, Water Rates Model 2024-3

This model calculated cost-to-serve rates, with level minimum and unit charges for in-City customers, and out-of-City rates in the same structure, but higher due to higher costs to serve outside of the City.

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Note: This document is a print out of the spreadsheet model used to calculate new user charge and other rates and fees for the next 10 years. These calculations are complex and are based upon many conditions and assumptions. These issues, and others, are described in a narrative report that accompanies this model.

Definitions

Affordability Index	The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. Affordability index is often a factor in determining grant and loan eligibility and grant amount.
Analysis Year	The year following the "test year." Generally, rate analysis is done during the year following the "test year" and intial rate adjustments are done later still during the analysis year or sometime during the following year once the analysis shows how rates should be adjusted. See related "test year."
Capacity Cost (also see System Development Charge)	The cost incurred to design and build the infrastructure needed to provide a utility service. As the infrastructure ages and wears out from use, it must be refurbished and replaced, which is a continual capacity cost. Capacity costs are recovered in various ways - connection fees, system development fees, regular user charges and others. The cost of that capacity and the nature of the costs - base flow capacity versus peak flow capacity - should determine the way these costs are recovered.
Capital Improvement Plan or Program (CIP)	A schedule of anticipated capital improvements. These are the more expensive items such as treatment plants, lines and other expensive infrastructure that generally requires bond or grant funding.
Capital Improvement Reserves	Cash reserves dedicated to funding the CIP
Comprehensive Rate Analysis	A thorough examination of a system's operating, capital improvement, equipment replacement and other costs, revenues, current rates, number of users and their use of the system, growth rates and all other key issues surrounding the system. This examination will determine how rates and fees should be set in the future to cash-flow the system properly, to build appropriate reserves and to be fair to ratepayers. It also will determine how policies should be adjusted to enable the system to operate well now, operate well in the medium-range future (about 10 years) and prepare for expected and expectable events such as capital improvements and equipment replacement.
Connection Charge	See system development fee
Conservation (Inclining) Rates	Unit charges that go up as the volume used goes up
Cost-to-produce	There are several ways to define and calculate cost-to-produce. Each is acceptable for different purposes. Generally, cost-to-produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. This calculation will yield the average cost-to-produce. In a proportional to use rate structure, this is the unit charge. See "Cost Calculations" at the bottom of Table 19.
Cost-to-serve, or Cost-of-service Rates	Rates where, at the customer class level, fixed and variable costs caused by each customer class are paid by that class primarily with minimum and unit charges, respectively. However, this analysis model takes it one step further and calculates cost-to-serve rates at the individual customer level.
Cost Types; Fixed and Variable	The two main types of costs are fixed - those that are related to the fact that someone is a customer; and variable - those that are related to the volume of the commodity delivered to customers. Generally, fixed costs should be recovered with minimum charges and variable costs with unit charges.
Coverage Ratio (CR)	Incomes available to pay debt divided by the amount of the debt for that year. A CR of 1.0 is "break-even." Most systems should have a CR greater than 1.25.
Current Position	For purposes of this report, for one year, the sum of all incomes and undedicated reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position, often called "cash and cash equivalents," is a good measure of liquidity.
Declining Rates	Rates where unit charges go down as the volume used goes up
Fire Sprinkler Systems and Related Costs	Generally, fire suppression in businesses is provided by a built-in system of fire sprinklers. "Service" to such systems is primarily in the form of peak flow capacity availability to fight a fire. Capacity costs money, so larger, more sophisticated water systems should assess at least part of such costs to fire suppression systems. Small water systems usually do not charge separately for these costs, and that is reasonable.
Fixed Cost	Accounting considers a cost that does not change to be a fixed cost. That definition does not work fairly for rate setting purposes. For rate setting, a fixed cost is one that is related to the fact that you have customers. The simplest example is billing, because the utility incurs billing costs not in relation to the volume of service a customer consumes. Rather, those costs are equal for all customers, or they are so close to being equal for all customers that one likely could not justify such a cost being different for one customer compared to other customers.

Definitions

Flat Rates	Rates where all users pay exactly the same fee regardless of the volume of service they use
Equivalent Dwelling Unit (EDU) or Equivalent Residential Unit (ERU)	This definition is for water and sewer service. Based upon number of water using fixtures, average flow, potential flow or similar criteria; the consumption rate of the average single family home is rated at one ERU. All other types of customers are then compared on this basis and multiples or parts of an ERU are assigned to each for billing purposes.
Equivalent Residential Unit (ERU) for Stormwater	This definition is for stormwater. As compared to water and sewer, that are concerned with water flow, one ERU of stormwater service is the average square footage of impervious surface of a single family home. Then, larger and non-residential properties are rated by their multiples or parts of an ERU of impervious surface area for the purpose of billing for stormwater impact costs. When there is a large variation in single family home size and impervious surface area, some cities and similar places use the smaller size range of homes as their ERU standard and assess larger homes at multiples of that ERU basis, as well.
Incremental Rate Increases (Inflationary Increases)	Rate increases done, generally annually, following the initial rate adjustment. The usual goal of such increases is to keep the system's incomes on track with inflation. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in response to the comprehensive rate analysis. Generally, the goal of such adjustments is to establish rates that cover the system's short-term expected costs and do it with a structure that is fair to ratepayers. Initial adjustments should be followed in subsequent years with incremental rate increases.
Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts, plus leaks in manholes and sewer lines (infiltration)
Infrastructure	Most commonly thought of as the hard assets, such as buildings, treatment plants and lines needed to provide service to customers connected to the system. In reality, staff, software and other "soft" assets should be thought of as infrastructure, as well because the hard assets cannot run well or run for long without staff.
Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of, or decommission, an asset. One asset may cost less to build but it may be more expensive to operate and maintain, yielding a higher total life-cycle cost. Life-cycle cost is an important consideration of asset management.
Marginal Costs	The parts of a utility's costs that are unavoidable in the course of serving a particular customer, a group of customers, more volume to all customers or some other marginal use of the system. Such customer(s) or extra use could be added at a discounted but still profitable fee, if desired. Generally marginal costs are less than the average costs but when extra use requires a system upsizing, they can be greater. These costs are especially useful when considering selling service at wholesale or charging "snow birds" while they are away, for example.
Minimum Charge	This rate, charge or fee goes by other names. "Base charge" and "availability charge" are common. This is the periodic fee paid for having water, sewer or other commodity service made available to the customer to use. Most common is a monthly or quarterly minimum charge. Generally, this charge should recover fixed costs.
Mixed Costs	Fixed and variable costs are defined elsewhere. Costs that are mixed are those that are a blend of fixed and variable. For example, a utility hires staff and provides them benefits partly just to have staff on hand to deal with line breaks, equipment breakdowns and other problems. But most staff time and related costs are incurred because the utility is doing what it was designed to do - provide water or other commodity services to customers. Two gross examples illustrate the extremes of staff costs. In one small water system with one operator, the operator sits around in the shop all day, every day with nothing to do. The cost of that operator is fixed and should be shared by all customers equally in a minimum charge. Another water system has one operator, but that operator works all day, every day operating and maintaining the system. That operator is enabling the system to do what it was designed to do - provide a commodity - so that operator's time and related costs should be considered variable and recoverable through unit charges. In reality, staffing and many other costs are a blend of fixed and variable costs, so they should be consider partly a fixed cost and partly a variable cost.
Operating Costs	Definitions and calculations vary. For rate setting purposes operating costs are costs incurred because a system is operated. Such costs are usually recovered primarily through unit charges.
Operating Reserves or Working Capital	Analogous to current position, this is the net revenues generated during "profitable" years and retained to fund operating costs during times when costs exceed incomes.
Operating Revenues	Revenues collected in the form of user fees and similar operating cost-related fees
Operating Ratio (OR)	Current incomes divided by current expenses, not including debt. An OR of 1.0 is "break even." Most systems should have an OR of 1.25 or higher.
Payback Period	In this case, time required for the investment made to get this analysis done to return that investment through increased user and other fees.

Definitions

Peak Flow Capacity or Demand	The volume of service that a user could demand for a short period of time at full volume use. In water systems, and generally in sewer systems, too, the peak flow capacity limiting factor is usually the size of the customer's meter or service line. In electric systems, demand for each commercial and industrial customer (and sometimes others) is usually calculated annually based upon the peak energy usage during a defined short period.
Proportional to Use Rates	Rates where the minimum charge recovers all fixed costs, the unit charge recovers all variable costs, the unit charge is the same for all volume sold, and there is no usage allowance in the minimum charge. This rate structure is similar to and often the same as cost-to-serve rates.
Replacement Schedule	A timetable that describes equipment replacement and important repairs that are too infrequent and/or too expensive to cover as annual operating costs but not so expensive that they need to be covered as capital improvements.
Replacement Reserves	Cash reserves used to fund the Replacement Schedule
Return on Investment	In this case, the dollar amount or percentage of revenue gain enabled by this rate analysis. Related to payback period.
Snow Bird	A customer, usually residential, that goes away during part of the year. Most commonly, these are people of "means" who live in the north who "fly south" for the winter. But, this category includes everyone who is absent for a significant part of the year but returns to their permanent residence.
Stormwater	Precipitation that falls on and then leaves a site, flows elsewhere, potentially causing or adding to flooding and often carries with it sediment and pollutants.
Stormwater Management	The practice of reducing and mitigating off-site stormwater flows and impacts.
System Development Charge, or Fee	Fee assessed to pay for at least part of the cost to build system capacity. For purposes of this model, all charges related to connecting new customers will be "rolled together" into a system development charge, usually including a charge that buys a new customer system capacity. This combined charge may be a few hundred dollars for a residential customer, if little or no capacity costs are included. If capacity costs are included, it could be many thousands of dollars for a large industrial customer. Similar terms in common use include "tap-on fee," "connection fee or charge," "hook-up fee," "impact fee," "availability charge," and "capacity charge."
Test Year	The one year period from which data was gathered to be the basis of the rate analysis, the starting place, which is usually the last completed fiscal year. See related "analysis year."
Unit Charge	This rate, charge or fee goes by other names, too. It is the rate paid for water, sewer or other commodity per unit of measurement, like per 1,000 gallons or per 100 cubic feet. Generally, this charge should recover variable costs.
Usage Allowance	The volume, if any, that is "given away" with the minimum charge. Most systems give away no volume. Those that give away an unlimited volume have what are called "flat rates" - a minimum charge only.
User Fee, User Charge, User Rates	Fees assessed to customers for use of the system. This does not include system development charges, late payment penalties or other types of charges.
Variable Cost	Accounting and rate setting agree on this definition. For rate setting, a variable cost is one that rises and falls as the customer uses the commodity. The simplest example is electricity used to treat and move water around. While the power company assesses a minimum charge and demand charges to the water or other utility that is "signed up" for electric service, the majority of the electric bill rises and falls with the volume of water produced by that utility. Therefore, variable costs should be recovered with unit charges.
Water Loss and Unbilled-for Water	Measured by volume or percent, the part of a water system's net water production that does not reach customers or is not billed to customers. This loss also includes billable volume lost due to under-registering customer meters. "Unbilled-for water" includes water loss, but it also includes water actually given away at no charge.
Working Capital, Net Income	The amount left in the operating fund after paying all costs due during that month, year or other time period.
Working Capital Goal or Operating Reserves Goal	The desired operating fund reserve, in dollars or percent, at a stated point in time. Small systems (1,000 connections) generally should target 35 percent or greater. Larger systems can target a lower percentage. The goal for each system should be based upon the needs of that system and the risk the customers are willing to take.

Table and Chart Descriptions

The tables and charts of this model tell a story about the rates and finances of the utility.

The tables you first see in this model depict utility data, like the rates that were being assessed to customers during the test year, the volume of service those customers used, how much income the utility collected, what its costs were, and more. This data came from utility records. In addition, the tables in this model go beyond the utility's historical data and include projections of incomes that will be generated by the new rates, future expenses as they grow with inflation and other forward-looking features.

Tables in the middle part of the model primarily calculate new rates and fees that will generate enough revenue to pay the utility's costs over time.

The tables in the last part of the model show the results of new rates and fees. Those include the rates themselves, surcharges to rates, if appropriate, the affordability of the new rates, and reserves generated by the new rates. Many of these results as shown graphically in charts at the end of the model.

As you progress through the model, keep this story in mind. You probably understand much the math performed by the model. There is some you likely do not recognize, and that is OK. Just know that new, adequate rates were calculated based upon the utility's historical data, projected into the future.

A final note: When a numbered table or chart listed below is not in the package, that was not a mistake. It simply means that table or chart from our master program was not needed in this situation, so it was bypassed and left out.

Now, here are descriptions of the tables and charts.

Name	What Each is or Does
Definitions (List)	The meaning of terms used in this report and in rate setting generally
Return on Investment (Calculation)	A summary of financial outcomes enabled by the proposed rates
Table 1 - Rates	User rates in effect at the end of the test year. Unless rates were recently changed, these are the current rates.
Table 2 - Test Year Usage	Compilation of actual volume of service used by customers during the test year
Table 3 - Basic User Data and Operating Incomes	Basic user statistics and operating revenues, projected for 10 years, based on the assumption the modeled rates and future inflationary increases will ber adopted
Table 4 - Operating Costs and Net Income	Operating costs projected for 10 years
Table 5 - Capital Improvements Program (CIP)	Capital improvements and how they will be paid over next 10 years, including debt service
Table 6 - Equipment Replacement Schedule - Detailed	If applicable, detailed schedule of equipment replacements for next 20 years
Table 7 - Equipment Replacement Annuity Calculation	If applicable, calculation of the annual annuity (yearly savings amount) needed to pay for all equipment replacements as they come due and ending with the desired balance
Table 8 - Average Cost Classification	Sumation of a target year's costs and calculation of the "cost-of-service" rate structure basis for recovery of fixed costs and variable costs. Unless directed to do otherwise, this analysis developed cost-to-serve rates based on cost classification in this table.
Table 9 - Marginal Cost Classification	If applicable, calculation of costs incurred to serve a specified type of customer
Table 10 - Initial Rate Adjustments and Resulting Revenues	These are the modeled user rates and the resulting "blended" revenues they, and the current rates, will generate during the rate adjustment year
Table 11 - AWWA Safe Operating Flow by Meter Size	If applicable, this table calculates the meter equivalent ratio, which is used for calculating peak flow capacity-based system development fees, surcharges and revenues in Tables 13 through 16 for water meters, and when applicable, capacity costs for fire sprinklers.
Table 11B - Fire Sprinkler Peak Flow Capacity Factor	If applicable, this table shows peak flow capacity shares of various size fire sprinkler systems.

Table 12 - Flow Capacity Costs	If applicable, calculation of the various costs to build base and peak flow capacity to serve customers, when such fees will be based on water meter size
Table 12B - Capacity Costs Attributable to Fire Sprinkler Systems	If applicable, nearly the same as Table 12, except it applies to fire suppression systems.
Table 13 - System Development Fees	If applicable, calculation of meter size-based system development fees needed to recover costs calculated in Table 11, when such fees will be based on water meter size.
Table 13B - System Development Fees for Fire Sprinkler Systems	If applicable, nearly the same as Table 13, except it applies to fire suppression systems
Table 14 - Revenues From System Development Fees	If applicable, calculation of total fee revenues that would be generated during one full year at the fees in Table 13.
Table 14B - Revenues From System Development Fees for Fire Sprinkler Systems	If applicable, nearly the same as Table 14, except it applies to fire suppression systems
Table 15 - Minimum Charge Fees, Including Capacity Surcharges	If applicable, calculation of meter size-based capacity surcharges and minimum charges to recover costs calculated in Table 11, when such fees will be based on water meter size
Table 15B - Sprinkler System Capacity Charges	Nearly the same as Table 15, except it applies to fire suppression systems.
Table 16 - Revenues From Minimum Charge Surcharges	If applicable, calculation of total fee revenues that would be generated during one full year at the fees in Table 15.
Table 16B - Revenues From Sprinkler System Charges	Nearly the same as Table 16, except it applies to fire suppression systems
Table 17 - Financial Capacity Indicators and Reserves	Shows the financial effects of the modeled rates, costs, etc. on the utility and on the benchmark 5,000 gallon per month residential water or sewer customer, as appropriate
Table 18 - Bills Before and After Rate Adjustments	Bills at the modeled rates are compared to those under the current rates. Note: the modeled bills do not include capacity surcharges to the minimum charges unless they are included in the minimum charges column of Table 10.
Table 19 - User Statistics	If included, this table shows volumes and percentages of use, revenue generated and other statistics
Chart 1 - Operating Ratio	*Graph of operating ratio for 10 years as a result of the modeled rates and the current rates*
Chart 2 - Coverage Ratio	*Graph of coverage ratios for 10 years of the modeled rates and the current rates*
Chart 3 - 5,000 Gallon Residential User's Bill	*Graph of the bill for the benchmark 5,000 gallon per month residential user, with smallest available meter size (used in grant and loan eligibility determinations) as a result of the modeled rates, and the current rates*
Chart 4 - Affordability Index	*Graph of the affordability index for 10 years of the benchmark residential user's bill (used in grant and loan eligibility determinations)*
Chart 5 - Working Capital vs Goal	*Graph for 10 years of total (unobligated) cash assets at modeled rates compared to the goal for total cash assets*
Chart 6 - Value of Cash Assets Before Inflation	*Graph for 10 years of unobligated cash assets NOT adjusted for inflation at modeled rates and current rates*
Chart 7 - Value of Cash Assets After Inflation	*Graph for 10 years of unobligated cash assets adjusted for inflation at modeled rates and current rates. This is the real buying power of cash reserves.*
Chart 8 - Sum of All Reserves	*Graph of all reserves of all kinds at the modeled rates and at the current rates*

Table 1 - Rates

Willard, MO, Water Rates Model 2024-3

If we received the now current rates for the utility, the current rates are in this table. Otherwise, these rates were in effect at the end of the test year. If a volume range was left out of the table, rest assured, it is in the Model. We just hid some volume ranges to make the table and report shorter. In such cases, the unit charge that applies to next lowest volume range also applies to the hidden volume ranges.

Rates in Effect Now

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use Within Each Range in 1,000 Gallons	Billing Cycle Minimum Charge	Usage Allowance in 1,000s	Unit Charge per 1,000 Gallons
In-City Res, Irr, Water Only	0	999	0.940	$15.28	1.000	$2.86
	1,000	1,999	0.872	$15.28	1.000	$2.86
	2,000	2,999	0.793	$15.28	1.000	$2.86
	3,000	3,999	0.733	$15.28	1.000	$2.86
	4,000	4,999	0.698	$15.28	1.000	$2.86
	5,000	5,999	0.682	$15.28	1.000	$2.86
	10,000	19,999	3.713	$15.28	1.000	$2.86
	800,000	800,001	0.000	$15.28	1.000	$2.86
In-City Commercial, Irr, Water Only	0	999	0.662	$15.28	1.000	$2.86
	1,000	1,999	0.736	$15.28	1.000	$2.86
	2,000	2,999	0.845	$15.28	1.000	$2.86
	3,000	3,999	0.878	$15.28	1.000	$2.86
	4,000	4,999	0.911	$15.28	1.000	$2.86
	5,000	5,999	0.905	$15.28	1.000	$2.86
	10,000	19,999	8.422	$15.28	1.000	$2.86
	800,000	800,001	0.000	$15.28	1.000	$2.86
Rural Residential, Irr, Water Only	0	999	0.950	$16.63	1.000	$3.12
	1,000	1,999	0.902	$16.63	1.000	$3.12
	2,000	2,999	0.821	$16.63	1.000	$3.12
	3,000	3,999	0.765	$16.63	1.000	$3.12
	4,000	4,999	0.734	$16.63	1.000	$3.12
	5,000	5,999	0.739	$16.63	1.000	$3.12
	10,000	19,999	4.827	$16.63	1.000	$3.12
	800,000	800,001	0.000	$16.63	1.000	$3.12
Rural Commercial, Irr, Water Only	0	999	0.840	$16.63	1.000	$3.12
	1,000	1,999	0.777	$16.63	1.000	$3.12
	2,000	2,999	0.734	$16.63	1.000	$3.12
	3,000	3,999	0.794	$16.63	1.000	$3.12
	4,000	4,999	0.963	$16.63	1.000	$3.12
	5,000	5,999	0.910	$16.63	1.000	$3.12
	10,000	19,999	4.081	$16.63	1.000	$3.12
	800,000	800,000	0.000	$16.63	1.000	$3.12
No Charge ("Zero")	0	999	0.705	$0.00	0.000	$0.00
	800,000	800,001	0.000	$0.00	0.000	$0.00

Table 2 - Test Year Usage
Willard, MO, Water Rates Model 2024-3

This table shows usage by all customers during the test year.

Test year = the one-year period being analyzed starts: 1/1/2023

Date this model created: 7/3/2024

Residential meter readings per year: 12

Other customer readings per year: 12

Bills per year: 12

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
In-City Res, Irr, Water Only	0	999	26,483,139	142	3.8%	0.0%
	1,000	1,999	23,082,000	283	7.6%	1.5%
	2,000	2,999	18,315,000	397	10.7%	4.3%
	3,000	3,999	13,425,000	408	11.0%	6.6%
	4,000	4,999	9,375,000	338	9.1%	7.3%
	5,000	5,999	6,394,000	248	6.7%	6.7%
	6,000	6,999	4,454,000	162	4.3%	5.2%
	7,000	7,999	3,136,000	110	3.0%	4.1%
	8,000	8,999	2,364,000	64	1.7%	2.8%
	9,000	9,999	1,754,000	51	1.4%	2.5%
	10,000	19,999	6,513,000	121	3.3%	8.1%
	20,000	29,999	1,864,000	16	0.4%	2.0%
	30,000	39,999	750,000	5	0.1%	0.8%
	40,000	49,999	447,000	2	0.1%	0.5%
	50,000	59,999	221,000	1	0.0%	0.4%
	60,000	69,999	145,000	0	0.0%	0.1%
	70,000	79,999	108,000	0	0.0%	0.1%
	80,000	89,999	72,000	0	0.0%	0.1%
	90,000	99,999	70,000	0	0.0%	0.0%
	100,000	199,999	203,000	1	0.0%	0.3%
	200,000	299,999	53,000	0	0.0%	0.1%
	300,000	399,999	0	0	0.0%	0.0%
			119,228,139	2,349	63.2%	53.4%
In-City Commercial, Irr, Water Only	0	999	1,379,000	59	1.6%	0.0%
	1,000	1,999	1,015,000	30	0.8%	0.2%
	2,000	2,999	858,000	13	0.4%	0.1%
	3,000	3,999	753,000	9	0.2%	0.1%
	4,000	4,999	686,000	6	0.2%	0.1%
	5,000	5,999	621,000	5	0.1%	0.1%
	6,000	6,999	583,000	3	0.1%	0.1%
	7,000	7,999	556,000	2	0.1%	0.1%
	8,000	8,999	518,000	3	0.1%	0.1%
	9,000	9,999	488,000	3	0.1%	0.1%
	10,000	19,999	4,110,000	11	0.3%	0.9%
	20,000	29,999	3,029,000	7	0.2%	1.0%
	30,000	39,999	2,263,000	5	0.1%	1.0%
	40,000	49,999	1,687,000	5	0.1%	1.3%
	50,000	59,999	1,220,000	2	0.1%	0.6%
	60,000	69,999	977,000	2	0.1%	0.8%
	70,000	79,999	714,000	1	0.0%	0.6%
	80,000	89,999	616,000	1	0.0%	0.3%
	90,000	99,999	533,000	1	0.0%	0.4%
	100,000	199,999	2,905,000	3	0.1%	2.0%
	200,000	299,999	1,212,000	1	0.0%	1.1%
	300,000	399,999	517,000	0	0.0%	0.6%
	400,000	499,999	186,000	0	0.0%	0.4%
	500,000	599,999	37,000	0	0.0%	0.2%
	600,000	699,999	0	0	0.0%	0.0%
			27,463,000	174	4.7%	12.3%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
Rural Residential, Irr, Water Only	0	999	13,346,000	59	1.6%	0.0%
	1,000	1,999	12,042,000	109	2.9%	0.6%
	2,000	2,999	9,882,000	180	4.8%	1.9%
	3,000	3,999	7,557,000	194	5.2%	3.1%
	4,000	4,999	5,546,000	168	4.5%	3.6%
	5,000	5,999	4,098,000	121	3.2%	3.2%
	6,000	6,999	3,026,000	89	2.4%	2.9%
	7,000	7,999	2,333,000	58	1.6%	2.2%
	8,000	8,999	1,827,000	42	1.1%	1.8%
	9,000	9,999	1,477,000	29	0.8%	1.4%
	10,000	19,999	7,130,000	87	2.3%	6.0%
	20,000	29,999	2,605,000	21	0.6%	2.7%
	30,000	39,999	1,142,000	8	0.2%	1.4%
	40,000	49,999	598,000	3	0.1%	0.7%
	50,000	59,999	368,000	2	0.0%	0.5%
	60,000	69,999	244,000	1	0.0%	0.2%
	70,000	79,999	197,000	1	0.0%	0.2%
	80,000	89,999	132,000	0	0.0%	0.2%
	90,000	99,999	98,000	0	0.0%	0.1%
	100,000	199,999	392,000	1	0.0%	0.4%
	200,000	299,999	84,000	0	0.0%	0.2%
	300,000	399,999	0	0	0.0%	0.0%
			74,124,000	1,171	31.5%	33.2%
Rural Commercial, Irr, Water Only	0	999	179,000	3	0.1%	0.0%
	1,000	1,999	139,000	3	0.1%	0.0%
	2,000	2,999	102,000	3	0.1%	0.0%
	3,000	3,999	81,000	2	0.0%	0.0%
	4,000	4,999	78,000	0	0.0%	0.0%
	5,000	5,999	71,000	1	0.0%	0.0%
	6,000	6,999	65,000	1	0.0%	0.0%
	7,000	7,999	58,000	1	0.0%	0.0%
	8,000	8,999	45,000	1	0.0%	0.0%
	9,000	9,999	37,000	1	0.0%	0.0%
	10,000	19,999	151,000	3	0.1%	0.2%
	20,000	29,999	50,000	0	0.0%	0.0%
	30,000	39,999	30,000	0	0.0%	0.0%
	40,000	49,999	12,000	0	0.0%	0.0%
	50,000	59,999	10,000	0	0.0%	0.0%
	60,000	69,999	10,000	0	0.0%	0.0%
	70,000	79,999	10,000	0	0.0%	0.0%
	80,000	89,999	10,000	0	0.0%	0.0%
	90,000	99,999	2,000	0	0.0%	0.0%
	100,000	199,999	0	0	0.0%	0.0%
			1,140,000	18	0.5%	0.5%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
	0	999	67,000	2	0.1%	0.0%
	1,000	1,999	57,000	1	0.0%	0.0%
	2,000	2,999	47,000	1	0.0%	0.0%
	3,000	3,999	40,000	1	0.0%	0.0%
	4,000	4,999	38,000	0	0.0%	0.0%
	5,000	5,999	35,000	0	0.0%	0.0%
	6,000	6,999	30,000	0	0.0%	0.0%
	7,000	7,999	29,000	0	0.0%	0.0%
	8,000	8,999	23,000	1	0.0%	0.0%
	9,000	9,999	19,000	0	0.0%	0.0%
	10,000	19,999	97,000	1	0.0%	0.1%
	20,000	29,999	61,000	0	0.0%	0.0%
No Charge ("Zero")	30,000	39,999	50,000	0	0.0%	0.0%
	40,000	49,999	48,000	0	0.0%	0.0%
	50,000	59,999	36,000	0	0.0%	0.0%
	60,000	69,999	29,000	0	0.0%	0.0%
	70,000	79,999	20,000	0	0.0%	0.0%
	80,000	89,999	20,000	0	0.0%	0.0%
	90,000	99,999	17,000	0	0.0%	0.0%
	100,000	199,999	100,000	0	0.0%	0.0%
	200,000	299,999	100,000	0	0.0%	0.0%
	300,000	399,999	100,000	0	0.0%	0.0%
	400,000	499,999	58,000	0	0.0%	0.2%
	500,000	599,999	0	0	0.0%	0.0%
			1,121,000	8	0.2%	0.5%
		Grand Totals:	223,076,139	3,719	100%	100%

Table 3 - Operating Incomes and Basic User Data
Willard, MO, Water Rates Model 2024-3

This table depicts user statistics, customer growth, and system incomes and across the board "inflationary" style rate increases through the 10th year.

Annual Median Household Income (AMHI)

$76,681	Census Bureau estimate of AMHI for the year 2022
$39,565	Census Bureau estimate of AMHI for the year 2000
$37,116	AMHI growth during this time period
4.26%	Simple annual income growth rate during this time period (used to project future household incomes)

Test Year Growth of Customer Base and Average Tap Fee Paid per Connection

40	Number new Water connections made during test year
$811	Average Water tap or installation fee assessed during the test year

This model is programmed for rates to be reset in the "Analysis Year," also called the "0 Year" column below (heading highlighted blue). Revenues will be collected at the now-current rates for the first part of the analysis year and the modeled rates for the last part of the analysis year. Thus, the revenues shown that column of the table are "blended" revenues; part collected at the old rates and part collected at the new rates. It was then assumed that all rate adjustments made after the initial (major) adjustment will be done annually on approximately the anniversary of the first adjustment. If rates will not be adjusted during the "0 Year," an adjustment (normally a revenue reduction) was calculated below to account for the late start in making the first adjustments.

Basic User (Customer) Data

(First year balances and incomes are actual, subsequent years are projected.)	Inflation/ Deflation (–) Factor	Test Year	Analysis Year 0 Year	Years Following the Analysis Year (for Which Results Have Been Projected) 1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting 1/1/23	Starting 1/1/24	Starting 1/1/25	Starting 1/1/26	Starting 1/1/27	Starting 1/1/28	Starting 1/1/29	Starting 1/1/30	Starting 1/1/31	Starting 1/1/32	Starting 1/1/33	Starting 1/1/34
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
				The row above shows the rate at which user charge fees should be increased for each year beyond the initial rate adjustment year. Unless stated otherwise, these should be across-the-board increases to all rates and fees and that should continue until a new rate analysis is done.									
Average Number of Customers	N.A.	3,719	3,759	3,799	3,839	3,879	3,919	3,959	3,999	4,039	4,080	4,120	4,160
Customers Added or Lost (-) Each Year	N.A.	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1
Customer Growth or Loss (-) Rate	N.A.	1.08%	1.07%	1.06%	1.04%	1.03%	1.02%	1.01%	1.00%	0.99%	0.98%	0.97%	0.96%
Test Year (Actual) and Projected Future Years' Sales, in Gallons	N.A.	223,076,139	225,480,952	227,885,764	230,290,577	232,695,389	235,100,202	237,505,014	239,909,827	242,314,639	244,719,452	247,124,264	249,529,077
Calculated User Charge Fees, Accounting for New Customers and Future Rate Increases Over the Years													
Actual or Calculated Sales Revenues		$1,113,358	$1,121,846	$1,731,117	$1,819,360	$1,911,893	$2,008,918	$2,110,646	$2,217,297	$2,329,104	$2,446,308	$2,569,161	$2,697,929
Additional Sales Revenues From New Customers			$33	$18,268	$18,999	$19,759	$20,549	$21,371	$22,226	$23,115	$24,039	$25,001	$26,001
Total Calculated Revenues (User Charge Fees)		$1,113,358	$1,121,879	$1,749,385	$1,838,359	$1,931,652	$2,029,467	$2,132,017	$2,239,523	$2,352,219	$2,470,347	$2,594,162	$2,723,930
Operating Incomes													
Water Sales - All (Including Taxes)	N.A.	$1,052,825	$1,054,253	$1,643,933	$1,727,544	$1,815,213	$1,907,132	$2,003,500	$2,104,526	$2,210,429	$2,321,436	$2,437,788	$2,559,733
PENALTY INCOME-WATER	N.A.	$42,382	$42,834	$43,286	$43,738	$44,190	$44,642	$45,094	$45,546	$45,998	$46,450	$46,902	$47,355
METER REPLACEMENT/ INSTALLATIONS-W…	% Above	$32,500	$32,411	$32,411	$32,411	$32,411	$32,411	$32,411	$32,411	$32,411	$32,411	$32,411	$32,411
Adjusted Meter Size-based Plant Investment Fees (Cochran Fees)	% Above	$0	$0	$33,857	$33,857	$33,857	$33,857	$33,857	$33,857	$33,857	$33,857	$33,857	$33,857
Interest Income	N.A.	$37,796	$5,991	$5,843	$5,942	$6,182	$6,500	$6,687	$7,337	$7,334	$7,564	$7,860	$8,261
MISCELLANEOUS INCOME-WATER	N.A.	$7,001	$7,011	$10,932	$11,488	$12,071	$12,682	$13,323	$13,995	$14,699	$15,437	$16,211	$17,022
CONVENIENCE FEE-WATER	N.A.	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752	$19,752
TRANSFER IN-WATER	N.A.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CAPITAL ASSET SALES-WATER	N.A.	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103
Revenue Loss (-) Due to Conservation	5.0%	$0	$0	-$17,942	-$2,544	-$2,668	-$2,797	-$2,932	-$3,074	-$3,222	-$3,378	-$3,540	-$3,710
Total Operating Incomes		**$1,199,359**	**$1,169,355**	**$1,779,176**	**$1,879,292**	**$1,968,113**	**$2,061,283**	**$2,158,795**	**$2,261,454**	**$2,368,361**	**$2,480,633**	**$2,598,344**	**$2,721,783**

Table 4 - Operating Costs and Net Income

Willard, MO, Water Rates Model 2024-3

This table depicts expenses during the test year, this year and for the next 10 years. Some future costs will experience inflation. Those costs that go up as use goes up are increased by the cost inflation factor plus the growth rate in users.

(First year costs and net incomes are actual, subsequent years are projected.)

			Analysis Year	Years Following the Analysis Year (for Which Results Have Been Projected)									
Expense Items	Inflation/ Deflation (–) Factor	Test Year Starting 1/1/23	0 Year Starting 1/1/24	1st Year Starting 1/1/25	2nd Year Starting 1/1/26	3rd Year Starting 1/1/27	4th Year Starting 1/1/28	5th Year Starting 1/1/29	6th Year Starting 1/1/30	7th Year Starting 1/1/31	8th Year Starting 1/1/32	9th Year Starting 1/1/33	10th Year Starting 1/1/34
CHEMICALS-WATER	4.0%	$9,104	$9,570	$10,057	$10,569	$11,105	$11,668	$12,257	$12,875	$13,523	$14,202	$14,914	$15,660
SUPPLIES-WATER	4.0%	$50,757	$52,787	$54,899	$57,095	$59,378	$61,754	$64,224	$66,793	$69,464	$72,243	$75,133	$78,138
LABORATORY FEES-WATER	4.0%	$1,997	$2,077	$2,160	$2,246	$2,336	$2,430	$2,527	$2,628	$2,733	$2,842	$2,956	$3,074
LABORATORY SUPPLIES-WATER	4.0%	$5,233	$5,443	$5,660	$5,887	$6,122	$6,367	$6,622	$6,887	$7,162	$7,448	$7,746	$8,056
PERMIT FEES-WATER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
BUILDING MAINTENANCE-WATER	4.0%	$89	$92	$96	$100	$104	$108	$112	$117	$122	$126	$132	$137
CUSTODIAL SUPPLIES-WATER	4.0%	$172	$179	$186	$194	$202	$210	$218	$227	$236	$245	$255	$265
MISCELLANEOUS EXPENSE-WATER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
OFFICE SUPPLIES-WATER	4.0%	$4,607	$4,791	$4,983	$5,182	$5,389	$5,605	$5,829	$6,062	$6,305	$6,557	$6,819	$7,092
POSTAGE-WATER	4.0%	$11,279	$11,856	$12,460	$13,094	$13,758	$14,455	$15,185	$15,951	$16,754	$17,595	$18,477	$19,401
REPAIRS AND MAINTENANCE-WATER	4.0%	$82,506	$85,807	$89,239	$92,809	$96,521	$100,382	$104,397	$108,573	$112,916	$117,432	$122,130	$127,015
SUPPLIES SMALL EQUIPMENT-WATER	4.0%	$11,080	$11,524	$11,985	$12,464	$12,963	$13,481	$14,020	$14,581	$15,164	$15,771	$16,402	$17,058
METER REPLACEMENT-WATER	4.0%	$13,821	$14,374	$14,949	$15,547	$16,169	$16,815	$17,488	$18,188	$18,915	$19,672	$20,459	$21,277
ADVERTISING-WATER	4.0%	$105	$109	$114	$118	$123	$128	$133	$138	$144	$149	$155	$162
AUDIT EXPENSE-WATER	4.0%	$6,880	$7,155	$7,441	$7,739	$8,049	$8,371	$8,705	$9,054	$9,416	$9,792	$10,184	$10,591
BANK/CREDIT CARD FEES-WATER	4.0%	$22,707	$23,867	$25,084	$26,360	$27,697	$29,100	$30,570	$32,112	$33,728	$35,421	$37,197	$39,058
CONTRACT LABOR--WATER	4.0%	$2,546	$2,648	$2,754	$2,864	$2,978	$3,098	$3,222	$3,350	$3,484	$3,624	$3,769	$3,919
DUES AND SUBSCRIPTIONS-WATER	4.0%	$2,161	$2,248	$2,338	$2,431	$2,529	$2,630	$2,735	$2,844	$2,958	$3,076	$3,199	$3,327
EQUIPMENT RENTAL-WATER	4.0%	$5,895	$6,130	$6,376	$6,631	$6,896	$7,172	$7,459	$7,757	$8,067	$8,390	$8,726	$9,075
INSURANCE-WATER	4.0%	$32,225	$33,514	$34,855	$36,249	$37,699	$39,207	$40,775	$42,406	$44,102	$45,866	$47,701	$49,609
LEGAL-WATER	4.0%	$102	$106	$111	$115	$120	$124	$129	$135	$140	$146	$151	$157
PROFESSIONAL-WATER	4.0%	$21,961	$22,839	$23,753	$24,703	$25,691	$26,719	$27,788	$28,899	$30,055	$31,257	$32,508	$33,808
SAFETY PROGRAM-WATER	4.0%	$581	$604	$628	$653	$680	$707	$735	$764	$795	$827	$860	$894
TRAVEL EXPENSE-WATER	4.0%	$411	$428	$445	$462	$481	$500	$520	$541	$563	$585	$608	$633
TRAINING & EDUCATION-WATER	4.0%	$2,769	$2,880	$2,995	$3,115	$3,239	$3,369	$3,504	$3,644	$3,790	$3,941	$4,099	$4,263
RENT-WATER	4.0%	$1,250	$1,300	$1,352	$1,406	$1,462	$1,521	$1,582	$1,645	$1,711	$1,779	$1,850	$1,924
EQUIPMENT/SOFTWARE CONTRACTS-WATER	4.0%	$19,342	$20,116	$20,920	$21,757	$22,627	$23,533	$24,474	$25,453	$26,471	$27,530	$28,631	$29,776
TELEPHONE WATER	4.0%	$2,217	$2,306	$2,398	$2,494	$2,594	$2,697	$2,805	$2,918	$3,034	$3,156	$3,282	$3,413
INTERNET-WATER	4.0%	$5,846	$6,080	$6,323	$6,576	$6,839	$7,113	$7,397	$7,693	$8,001	$8,321	$8,654	$9,000
UTILITIES ELECTRIC-WATER	4.0%	$109,887	$115,501	$121,389	$127,563	$134,037	$140,824	$147,940	$155,400	$163,220	$171,416	$180,008	$189,012
UTILITIES GAS-WATER	4.0%	$3,788	$3,940	$4,097	$4,261	$4,432	$4,609	$4,793	$4,985	$5,184	$5,392	$5,608	$5,832
UTILITIES OTHER-WATER	4.0%	$2,203	$2,292	$2,383	$2,479	$2,578	$2,681	$2,788	$2,900	$3,015	$3,136	$3,262	$3,392
VEHICLE EXPENSE FUEL-WATER	4.0%	$11,501	$11,961	$12,440	$12,937	$13,455	$13,993	$14,553	$15,135	$15,740	$16,370	$17,025	$17,706
EQUIPMENT FUEL-WATER	4.0%	$1,662	$1,728	$1,797	$1,869	$1,944	$2,022	$2,102	$2,187	$2,274	$2,365	$2,460	$2,558
VEHICLE REPAIR & MAINT-WATER	4.0%	$7,341	$7,634	$7,940	$8,257	$8,588	$8,931	$9,288	$9,660	$10,046	$10,448	$10,866	$11,301
EQUIPMENT REPAIR & MAINT-WATER	4.0%	$3,805	$3,957	$4,115	$4,280	$4,451	$4,629	$4,814	$5,007	$5,207	$5,416	$5,632	$5,857
VEHICLE LEASE-WATER	4.0%	$21,470	$22,329	$23,222	$24,151	$25,117	$26,122	$27,167	$28,253	$29,383	$30,559	$31,781	$33,052

Table 4 - Operating Costs and Net Income

Expense Items	Inflation/ Deflation (–) Factor	Test Year Starting 1/1/23	0 Year Starting 1/1/24	1st Year Starting 1/1/25	2nd Year Starting 1/1/26	3rd Year Starting 1/1/27	4th Year Starting 1/1/28	5th Year Starting 1/1/29	6th Year Starting 1/1/30	7th Year Starting 1/1/31	8th Year Starting 1/1/32	9th Year Starting 1/1/33	10th Year Starting 1/1/34
EQUIPMENT LEASE	4.0%	$3,179	$3,306	$3,439	$3,576	$3,719	$3,868	$4,023	$4,184	$4,351	$4,525	$4,706	$4,894
SALARIES-WATER	4.0%	$444,622	$462,407	$480,904	$500,140	$520,145	$540,951	$562,589	$585,093	$608,496	$632,836	$658,150	$684,476
SALARIES OVERTIME-WATER	4.0%	$11,609	$12,074	$12,557	$13,059	$13,581	$14,124	$14,689	$15,277	$15,888	$16,524	$17,184	$17,872
PAYROLL TAXES-WATER	4.0%	$34,147	$35,513	$36,933	$38,411	$39,947	$41,545	$43,207	$44,935	$46,733	$48,602	$50,546	$52,568
RETIREMENT-WATER	4.0%	$19,342	$20,116	$20,921	$21,758	$22,628	$23,533	$24,474	$25,453	$26,471	$27,530	$28,631	$29,777
PENSION EXPENSE-WATER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
UNIFORMS-WATER	4.0%	$628	$654	$680	$707	$735	$765	$795	$827	$860	$895	$930	$968
GROUP INSURANCE-WATER	4.0%	$88,455	$91,993	$95,673	$99,500	$103,480	$107,619	$111,924	$116,401	$121,057	$125,899	$130,935	$136,173
CAPITAL ASSET EXP-WATER	4.0%	$90,716	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
CAPITAL ASSET EXP EQUIPMENT-WATER	N.A.	$24,721	$29,500	$13,750	$13,000	$13,000	$10,000	$85,000	$13,000	$13,000	$10,000	$10,000	$13,000
PRINCIPAL EXPENSE-WATER	0.0%	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
INTEREST EXPENSE-WATER	0.0%	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
FISCAL AGENT FEES-WATER	4.0%	$1,500	$1,560	$1,622	$1,687	$1,755	$1,825	$1,898	$1,974	$2,053	$2,135	$2,220	$2,309
BAD DEBT EXPENSE-WATER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TRANSFER TO GCG-WATER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Payment to R&R Reserve (Table 7)	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
User Charge Analysis Services	5.0%	$0	$11,395	$0	$0	$12,563	$0	$0	$13,851	$0	$0	$15,270	$0
Total CIP-related Payouts	N.A.	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
Total Operating Costs		**$1,198,225**	**$1,168,690**	**$1,188,422**	**$1,236,494**	**$1,299,905**	**$1,337,301**	**$1,467,457**	**$1,466,753**	**$1,512,732**	**$1,572,043**	**$1,652,210**	**$1,707,529**
Net Income (or Loss)		$1,135	$665	$590,755	$642,798	$668,208	$723,982	$691,338	$794,701	$855,630	$908,590	$946,134	$1,014,254
Working Capital Goal: 50%	In Dollars, That is:	$599,112	$584,345	$594,211	$618,247	$649,953	$668,650	$733,729	$733,377	$756,366	$786,022	$826,105	$853,765

Notes: Most expenses are expected to rise by four percent each year. The green highlighted expenses are expected to do that, plus rise as new customers connect and use more water. Also, principal and interest expenses are related to capital improvements, so those are handled in Table 5. The gold highlighted item has the same name as an expense in the CIP, but this cost is quite minor compared to the CIP costs, so I left this one in the expense table.

Table 5 - Capital Improvement Program (CIP)

Willard, MO, Water Rates Model 2024-3

This table depicts capital improvements and their funding. Costs reflect inflation.

	Test Year Starting	Analysis Year 0 Year Starting	1st Year Starting	2nd Year Starting	3rd Year Starting	4th Year Starting	5th Year Starting	6th Year Starting	7th Year Starting	8th Year Starting	9th Year Starting	10th Year Starting
	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28	1/1/29	1/1/30	1/1/31	1/1/32	1/1/33	1/1/34
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)												
City Well Located Main City	$0	$0	$0	$0	$1,311,272	$0	$0	$0	$0	$0	$0	$0
Water Storage Tower	$0	$0	$0	$0	$0	$2,025,916	$0	$0	$0	$0	$0	$0
Total Debt-paid Portion of Projects	$0	$0	$0	$0	$1,311,272	$2,025,916	$0	$0	$0	$0	$0	$0
Planned Spending, Grant-paid Portion of Projects (CIP costs to be grant-funded are shown here.)												
Total Grant-paid Portion of Projects	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)												
Capital Assets (See City's Capital Improvements Plan for Details)	$0	$353,500	$499,293	$460,431	$310,334	$455,831	$294,456	$254,333	$409,548	$425,635	$242,688	$415,270
Total Cash-paid Portion of Projects	$0	$353,500	$499,293	$460,431	$310,334	$455,831	$294,456	$254,333	$409,548	$425,635	$242,688	$415,270
Total CIP Costs	**$0**	**$353,500**	**$499,293**	**$460,431**	**$1,621,607**	**$2,481,747**	**$294,456**	**$254,333**	**$409,548**	**$425,635**	**$242,688**	**$415,270**
Debt Repayment												
Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)												
Water/Sewer 2014 and 2018 COPs, Water Portion	$98,791	$101,028	$100,644	$100,178	$99,631	$96,544	$0	$0	$0	$0	$0	$0
New Debt Payments (Following are payments for projects to be paid with new debt. It is assumed these will be loan/lease-financed for a term of: 10 years at a 5.0% interest rate.)												
COP for Well						$169,816	$169,816	$169,816	$169,816	$169,816	$169,816	$169,816
COP for Tower							$262,365	$262,365	$262,365	$262,365	$262,365	$262,365
Total Debt Payments	$98,791	$101,028	$100,644	$100,178	$99,631	$266,360	$432,181	$432,181	$432,181	$432,181	$432,181	$432,181
Total CIP-related Payouts	**$98,791**	**$454,528**	**$599,936**	**$560,609**	**$1,721,238**	**$2,748,106**	**$726,637**	**$686,514**	**$841,729**	**$857,816**	**$674,869**	**$847,451**
(This is the total cash required for this CIP and debt payment schedule. These amounts must come from utility income, reserves or outside sources, as shown in the next section.)												
CIP Fund Sources (Following are the sources and amounts of funds expected to pay for the above CIP schedule.)												
Cash Reserves (Internal Funds)												
Debt and CIP Reserves Starting Balance	$0	$861,750	$439,889	$429,640	$496,386	$732,850	$730,601	$644,836	$766,271	$772,508	$809,077	$1,056,440
Working Capital Transferred in	$960,541	$15,432	$580,889	$618,762	$636,502	$705,284	$626,260	$795,053	$832,640	$878,935	$906,051	$986,595
Debt and CIP Reserves Interest Earned (or Paid)	$0	$17,235	$8,798	$8,593	$9,928	$14,657	$14,612	$12,897	$15,325	$15,450	$16,182	$21,129
Total Available Internal Funds	$960,541	$894,418	$1,029,576	$1,056,995	$1,142,816	$1,452,791	$1,371,473	$1,452,785	$1,614,237	$1,666,893	$1,731,309	$2,064,163
Grant and Loan Proceeds (External Funds)												
Grants Assumed in Second Sub-section Above	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
COP for Well					$1,311,272	$0	$0	$0	$0	$0	$0	$0
COP for Tower						$2,025,916	$0	$0	$0	$0	$0	$0
Total Available External Funds	$0	$0	$0	$0	$1,311,272	$2,025,916	$0	$0	$0	$0	$0	$0
Total Available Funds	**$960,541**	**$894,418**	**$1,029,576**	**$1,056,995**	**$2,454,088**	**$3,478,707**	**$1,371,473**	**$1,452,785**	**$1,614,237**	**$1,666,893**	**$1,731,309**	**$2,064,163**
Outcomes (This CIP spending and funding plan will result in the following cash needs and ending balances each year.)												
Total Available Funds	**$960,541**	**$894,418**	**$1,029,576**	**$1,056,995**	**$2,454,088**	**$3,478,707**	**$1,371,473**	**$1,452,785**	**$1,614,237**	**$1,666,893**	**$1,731,309**	**$2,064,163**
Total CIP-related Payouts	**$98,791**	**$454,528**	**$599,936**	**$560,609**	**$1,721,238**	**$2,748,106**	**$726,637**	**$686,514**	**$841,729**	**$857,816**	**$674,869**	**$847,451**
Debt and CIP Reserves Ending Balances	**$861,750**	**$439,889**	**$429,640**	**$496,386**	**$732,850**	**$730,601**	**$644,836**	**$766,271**	**$772,508**	**$809,077**	**$1,056,440**	**$1,216,712**

Notes: The City has a capital improvements plan, from which the above project data came. I assumed the expensive projects not related to equipment repair and replacement will be funded 75% by loans, and 25% by grants. Other projects are generally not eligible for grants and loans, so those are to be funded with utility reserves and incomes.

Table 5B: City's Water Capital Improvements (with edits by GettingGreatRates.com to make transfer to the models easier and clearer)

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2024	Water Imp.-Pipe Replacement	5,000	353,500		-
	Water Meters	60,000			
	5 Yr Water Loss Project	20,000			
	Meadows Water Tower Exterior	115,000			
	Langston water line	12,000			
	Mark Water Line/valve replace	25,000			
	Pole Barn	10,000			
	Public Works Building	75,000			
	Vehicle Lease Equipment	7,000			
	Badger Box	7,500			
	Missions Update	14,000			
	Pipe Cutter Saw	3,000			
2025	Water Imp.-Pipe Replacement	100,000	484,750		-
	Water Meters	60,000			
	Misc - TBD	1,000			
	5 Yr Water Loss Project	20,000			
	Meadows Water Tower Interior	135,000			
	Water Towers Restoration	150,000			
	Equipment	5,000			
	Jack Hammer Attachment (33 water-33% s	3,750			
	Generator	10,000			

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2026	Water Imp.-Pipe Replacement	100,000	434,000		-
	Water Meters	60,000			
	Misc - TBD	1,000			
	School Water Tower Interior	135,000			
	Meadows Stand Storage	75,000			
	Meadows Well Pump	40,000			
	Computer (2)	3,000			
	Equipment	20,000			
2027	Water Imp.-Pipe Replacement	100,000	284,000		1,200,000
	Water Meters	45,000			
	Misc - TBD	1,000			
	School Water Tower Exterior	115,000			
	City Well Located Main City			1,200,000	
	Computer (2)	3,000			
	Equipment	20,000			
2028	Water Imp.-Pipe Replacement	100,000	405,000		1,800,000
	Water Meters	45,000			
	Booster Water Pump	30,000			
	Small Water Tower Interior	135,000			
	Meadows Stand Storage	75,000			
	Water Storage Tower			1,800,000	
	Equipment	20,000			

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2029	Water Imp.-Pipe Replacement	100,000	254,000		-
	Water Meters	45,000			
	Equipment	20,000			
	Backhoe (50% water-50%sewer)	75,000			
	Missions Update	14,000			
2030	Water Imp.-Pipe Replacement	15,000	213,000		-
	Water Meters	45,000			
	Booster Water Pump	30,000			
	Meadows Stand Storage	100,000			
	Computer (2)	3,000			
	Equipment	20,000			
2031	Water Imp.-Pipe Replacement	150,000	333,000		-
	Meadows Water Tower Exterior	115,000			
	Water Meters	45,000			
	Computer (2)	3,000			
	Equipment	20,000			
2032	Water Imp.-Pipe Replacement	1,000	336,000		-
	Water Meters	50,000			
	Meadows Water Tower Interior	135,000			
	Booster Water Pump	30,000			
	Meadows Stand Storage	100,000			
	Equipment	20,000			

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2033	Water Imp.-Pipe Replacement	1,000	186,000		-
	Meadows Water Tower Exterior	115,000			
	Water Meters	50,000			
	Equipment	20,000			
2034	Water Imp.-Pipe Replacement	1,000	309,000		-
	Water Meters	50,000			
	School Water Tower Interior	135,000			
	Meadows Stand Storage	100,000			
	Computer (2)	3,000			
	Equipment	20,000			
			3,592,250		3,000,000

Table 8 - Average Cost Classification

Willard, MO, Water Rates Model 2024-3

This table distributes costs from a representative year (the "average rate structure basis year) to fixed and variable categories (see Definitions) in order to calculate the "cost of service" rate structure for that year.

The average rate structure basis year runs from: 1/1/2028 through 12/31/2028

Cost Items During the Basis Year	Cost During Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
CHEMICALS-WATER	$11,668	0.0%	100.0%	$0	$11,668
SUPPLIES-WATER	$61,754	50.0%	50.0%	$30,877	$30,877
LABORATORY FEES-WATER	$2,430	100.0%	0.0%	$2,430	$0
LABORATORY SUPPLIES-WATER	$6,367	100.0%	0.0%	$6,367	$0
PERMIT FEES-WATER	$0	100.0%	0.0%	$0	$0
BUILDING MAINTENANCE-WATER	$108	100.0%	0.0%	$108	$0
CUSTODIAL SUPPLIES-WATER	$210	100.0%	0.0%	$210	$0
MISCELLANEOUS EXPENSE-WATER	$0	100.0%	0.0%	$0	$0
OFFICE SUPPLIES-WATER	$5,605	100.0%	0.0%	$5,605	$0
POSTAGE-WATER	$14,455	100.0%	0.0%	$14,455	$0
REPAIRS AND MAINTENANCE-WATER	$100,382	50.0%	50.0%	$50,191	$50,191
SUPPLIES SMALL EQUIPMENT-WATER	$13,481	50.0%	50.0%	$6,741	$6,741
METER REPLACEMENT-WATER	$16,815	0.0%	100.0%	$0	$16,815
ADVERTISING-WATER	$128	100.0%	0.0%	$128	$0
AUDIT EXPENSE-WATER	$8,371	100.0%	0.0%	$8,371	$0
BANK/CREDIT CARD FEES-WATER	$29,100	39.1%	60.9%	$11,378	$17,722
CONTRACT LABOR--WATER	$3,098	25.0%	75.0%	$774	$2,323
DUES AND SUBSCRIPTIONS-WATER	$2,630	25.0%	75.0%	$657	$1,972
EQUIPMENT RENTAL-WATER	$7,172	50.0%	50.0%	$3,586	$3,586
INSURANCE-WATER	$39,207	100.0%	0.0%	$39,207	$0
LEGAL-WATER	$124	100.0%	0.0%	$124	$0
PROFESSIONAL-WATER	$26,719	25.0%	75.0%	$6,680	$20,039
SAFETY PROGRAM-WATER	$707	100.0%	0.0%	$707	$0
TRAVEL EXPENSE-WATER	$500	25.0%	75.0%	$125	$375
TRAINING & EDUCATION-WATER	$3,369	25.0%	75.0%	$842	$2,527
RENT-WATER	$1,521	50.0%	50.0%	$760	$760
EQUIPMENT/SOFTWARE CONTRACTS-WATER	$23,533	100.0%	0.0%	$23,533	$0
TELEPHONE WATER	$2,697	100.0%	0.0%	$2,697	$0
INTERNET-WATER	$7,113	100.0%	0.0%	$7,113	$0
UTILITIES ELECTRIC-WATER	$140,824	0.0%	100.0%	$0	$140,824
UTILITIES GAS-WATER	$4,609	100.0%	0.0%	$4,609	$0
UTILITIES OTHER-WATER	$2,681	100.0%	0.0%	$2,681	$0
VEHICLE EXPENSE FUEL-WATER	$13,993	50.0%	50.0%	$6,997	$6,997
EQUIPMENT FUEL-WATER	$2,022	50.0%	50.0%	$1,011	$1,011
VEHICLE REPAIR & MAINT-WATER	$8,931	50.0%	50.0%	$4,466	$4,466
EQUIPMENT REPAIR & MAINT-WATER	$4,629	50.0%	50.0%	$2,315	$2,315
VEHICLE LEASE-WATER	$26,122	50.0%	50.0%	$13,061	$13,061
EQUIPMENT LEASE	$3,868	50.0%	50.0%	$1,934	$1,934

Table 8 - Average Cost Classification

Cost Items During the Basis Year	Cost During Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
SALARIES-WATER	$540,951	25.0%	75.0%	$135,238	$405,713
SALARIES OVERTIME-WATER	$14,124	25.0%	75.0%	$3,531	$10,593
PAYROLL TAXES-WATER	$41,545	25.0%	75.0%	$10,386	$31,159
RETIREMENT-WATER	$23,533	25.0%	75.0%	$5,883	$17,650
PENSION EXPENSE-WATER	$0	25.0%	75.0%	$0	$0
UNIFORMS-WATER	$765	25.0%	75.0%	$191	$573
GROUP INSURANCE-WATER	$107,619	25.0%	75.0%	$26,905	$80,714
CAPITAL ASSET EXP-WATER	$0	50.0%	50.0%	$0	$0
CAPITAL ASSET EXP EQUIPMENT-WATER	$10,000	50.0%	50.0%	$5,000	$5,000
PRINCIPAL EXPENSE-WATER	$0	50.0%	50.0%	$0	$0
INTEREST EXPENSE-WATER	$0	50.0%	50.0%	$0	$0
FISCAL AGENT FEES-WATER	$1,825	50.0%	50.0%	$912	$912
BAD DEBT EXPENSE-WATER	$0	39.1%	60.9%	$0	$0
TRANSFER TO GCG-WATER	$0	25.0%	75.0%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$0	25.0%	75.0%	$0	$0
User Charge Analysis Services	$0	39.1%	60.9%	$0	$0
Total CIP-related Payouts, Less Capacity Charges From Tables 14 & 16 (This value can be negative)	$688,334	50.0%	50.0%	$344,167	$344,167
Grand Total Costs, Weighted Avg Percentages	$2,025,634	39.1%	60.9%	$792,950	$1,232,684
			100%	$2,025,634	

Bases for Cost to Serve Rate Structure	
Number Customers During Basis Year	3,919
Billed Volume, in Gallons, During Basis Year	235,100,202
Average Fixed Cost per User per Month During Basis Year	$16.86
Average Variable Cost to Produce per 1,000 Gallons During Basis Year	$5.24
Gallons per Billing Cycle Used by Average Residential Customer	4,230

Table 9 - Marginal Cost Classification

Willard, MO, Water Rates Model 2024-3

The utility incurs "marginal" costs. These costs are unavoidable. Thus, the utility must collect minimal fees from various customers to "break even" on a marginal cost basis. Costs vary by customer type and volume used.

Below, it is assumed that marginal variable costs are being calculated for: Unaccounted-for Water

(Fixed costs are irrelevant in this case)

The marginal rate structure basis year runs from: 1/1/2028 through 12/31/2028

Cost Items During the Basis Year	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
CHEMICALS-WATER	$0	$11,668	100%	100%	$0	$11,668
SUPPLIES-WATER	$30,877	$30,877	10%	10%	$3,088	$3,088
LABORATORY FEES-WATER	$2,430	$0	100%	100%	$2,430	$0
LABORATORY SUPPLIES-WATER	$6,367	$0	100%	100%	$6,367	$0
PERMIT FEES-WATER	$0	$0	10%	10%	$0	$0
BUILDING MAINTENANCE-WATER	$108	$0	0%	0%	$0	$0
CUSTODIAL SUPPLIES-WATER	$210	$0	0%	0%	$0	$0
MISCELLANEOUS EXPENSE-WATER	$0	$0	100%	100%	$0	$0
OFFICE SUPPLIES-WATER	$5,605	$0	100%	100%	$5,605	$0
POSTAGE-WATER	$14,455	$0	100%	100%	$14,455	$0
REPAIRS AND MAINTENANCE-WATER	$50,191	$50,191	50%	50%	$25,095	$25,095
SUPPLIES SMALL EQUIPMENT-WATER	$6,741	$6,741	10%	10%	$674	$674
METER REPLACEMENT-WATER	$0	$16,815	0%	0%	$0	$0
ADVERTISING-WATER	$128	$0	0%	0%	$0	$0
AUDIT EXPENSE-WATER	$8,371	$0	0%	0%	$0	$0
BANK/CREDIT CARD FEES-WATER	$11,378	$17,722	0%	0%	$0	$0
CONTRACT LABOR--WATER	$774	$2,323	50%	50%	$387	$1,162
DUES AND SUBSCRIPTIONS-WATER	$657	$1,972	10%	10%	$66	$197
EQUIPMENT RENTAL-WATER	$3,586	$3,586	10%	10%	$359	$359
INSURANCE-WATER	$39,207	$0	10%	10%	$3,921	$0
LEGAL-WATER	$124	$0	10%	10%	$12	$0
PROFESSIONAL-WATER	$6,680	$20,039	50%	50%	$3,340	$10,020
SAFETY PROGRAM-WATER	$707	$0	50%	50%	$353	$0
TRAVEL EXPENSE-WATER	$125	$375	10%	10%	$13	$38
TRAINING & EDUCATION-WATER	$842	$2,527	10%	10%	$84	$253
RENT-WATER	$760	$760	10%	10%	$76	$76
EQUIPMENT/SOFTWARE CONTRACTS-WATER	$23,533	$0	10%	10%	$2,353	$0
TELEPHONE WATER	$2,697	$0	10%	10%	$270	$0
INTERNET-WATER	$7,113	$0	10%	10%	$711	$0
UTILITIES ELECTRIC-WATER	$0	$140,824	100%	100%	$0	$140,824
UTILITIES GAS-WATER	$4,609	$0	10%	10%	$461	$0
UTILITIES OTHER-WATER	$2,681	$0	10%	10%	$268	$0

Table 9 - Marginal Cost Classification

Cost Items During the Basis Year	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
VEHICLE EXPENSE FUEL-WATER	$6,997	$6,997	10%	10%	$700	$700
EQUIPMENT FUEL-WATER	$1,011	$1,011	10%	10%	$101	$101
VEHICLE REPAIR & MAINT-WATER	$4,466	$4,466	10%	10%	$447	$447
EQUIPMENT REPAIR & MAINT-WATER	$2,315	$2,315	10%	10%	$231	$231
VEHICLE LEASE-WATER	$13,061	$13,061	10%	10%	$1,306	$1,306
EQUIPMENT LEASE	$1,934	$1,934	10%	10%	$193	$193
SALARIES-WATER	$135,238	$405,713	10%	10%	$13,524	$40,571
SALARIES OVERTIME-WATER	$3,531	$10,593	10%	10%	$353	$1,059
PAYROLL TAXES-WATER	$10,386	$31,159	10%	10%	$1,039	$3,116
RETIREMENT-WATER	$5,883	$17,650	10%	10%	$588	$1,765
PENSION EXPENSE-WATER	$0	$0	10%	10%	$0	$0
UNIFORMS-WATER	$191	$573	10%	10%	$19	$57
GROUP INSURANCE-WATER	$26,905	$80,714	10%	10%	$2,690	$8,071
CAPITAL ASSET EXP-WATER	$0	$0	50%	50%	$0	$0
CAPITAL ASSET EXP EQUIPMENT-WATER	$5,000	$5,000	50%	50%	$2,500	$2,500
PRINCIPAL EXPENSE-WATER	$0	$0	50%	50%	$0	$0
INTEREST EXPENSE-WATER	$0	$0	50%	50%	$0	$0
FISCAL AGENT FEES-WATER	$912	$912	50%	50%	$456	$456
BAD DEBT EXPENSE-WATER	$0	$0	100%	100%	$0	$0
TRANSFER TO GCG-WATER	$0	$0	100%	100%	$0	$0
User Charge Analysis Services	$0	$0	10%	10%	$0	$0
Total CIP-related Payouts, Less Capacity Charges From Tables 14 & 16 (This value can be negative)	$344,167	$344,167	50%	50%	$172,083	$172,083
Grand Total All Costs	$792,950	$1,232,684			$266,619	$426,110
	$2,025,634				$692,729	

Marginal Fixed and Variable Cost Bases
(For the Customer Type(s) Listed Above)

	Monthly Marginal Fixed Cost per Customer	Marginal Variable Cost per 1,000 Gallons
	$5.67	
Marginal Fixed Cost as a Percent of Total Fixed Cost:	34%	$1.81
Marginal Variable Cost as a Percent of Total Variable Cost:		35%

Table 10 - Initial Rate Adjustments and Resulting Revenues

Willard, MO, Water Rates Model 2024-3

This table calculates new user charge rates and the revenues they would generate if adjusted during the "Analysis Year."

After rate adjustments are made, customers will be billed monthly.

Following are Blended Sales Revenues: Sales at the current (Test Year) rates (gray highlighted column) will apply until rates are adjusted. Sales at the modeled rates (yellow highlighted column) would apply after the modeled rates are adopted. Adding both together, the "blended" sales revenues show in the right-most column.

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Basic Minimum Charge	New Usage Allowance in 1,000s	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
In-City Res, Irr, Water Only	0	999	$23,548	$12.57	0.000	$3.91	$341	$23,890
	1,000	1,999	$106,960	$12.57	0.000	$3.91	$363	$107,323
	2,000	2,999	$113,522	$12.57	0.000	$3.91	$359	$113,881
	3,000	3,999	$102,546	$12.57	0.000	$3.91	$311	$102,858
	4,000	4,999	$80,409	$12.57	0.000	$3.91	$239	$80,648
	5,000	5,999	$57,872	$12.57	0.000	$3.91	$171	$58,043
	6,000	6,999	$38,422	$12.57	0.000	$3.91	$114	$38,536
	7,000	7,999	$26,388	$12.57	0.000	$3.91	$79	$26,467
	8,000	8,999	$16,823	$12.57	0.000	$3.91	$52	$16,875
	9,000	9,999	$12,998	$12.57	0.000	$3.91	$40	$13,037
	10,000	19,999	$37,001	$12.57	0.000	$3.91	$119	$37,120
	20,000	29,999	$7,465	$12.57	0.000	$3.91	$26	$7,491
	30,000	39,999	$2,720	$12.57	0.000	$3.91	$10	$2,730
	40,000	49,999	$1,491	$12.57	0.000	$3.91	$6	$1,497
	50,000	59,999	$795	$12.57	0.000	$3.91	$3	$798
	60,000	69,999	$431	$12.57	0.000	$3.91	$2	$433
	70,000	79,999	$322	$12.57	0.000	$3.91	$1	$323
	80,000	89,999	$214	$12.57	0.000	$3.91	$1	$215
	90,000	99,999	$182	$12.57	0.000	$3.91	$1	$182
	100,000	199,999	$609	$12.57	0.000	$3.91	$2	$612
	200,000	299,999	$151	$12.57	0.000	$3.91	$1	$152
	300,000	399,999	$0	$12.57	0.000	$3.91	$0	$0

Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Basic Minimum Charge	New Usage Allowance in 1,000s	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
In-City Commercial, Irr, Water Only	0	999	$9,766	$12.57	0.000	$3.91	$39	$9,805
	1,000	1,999	$7,674	$12.57	0.000	$3.91	$23	$7,697
	2,000	2,999	$4,399	$12.57	0.000	$3.91	$15	$4,414
	3,000	3,999	$3,407	$12.57	0.000	$3.91	$12	$3,419
	4,000	4,999	$2,707	$12.57	0.000	$3.91	$10	$2,716
	5,000	5,999	$2,511	$12.57	0.000	$3.91	$9	$2,519
	6,000	6,999	$2,038	$12.57	0.000	$3.91	$8	$2,046
	7,000	7,999	$1,816	$12.57	0.000	$3.91	$7	$1,823
	8,000	8,999	$1,869	$12.57	0.000	$3.91	$7	$1,876
	9,000	9,999	$1,681	$12.57	0.000	$3.91	$6	$1,687
	10,000	19,999	$12,527	$12.57	0.000	$3.91	$49	$12,575
	20,000	29,999	$9,087	$12.57	0.000	$3.91	$35	$9,122
	30,000	39,999	$6,768	$12.57	0.000	$3.91	$26	$6,795
	40,000	49,999	$5,247	$12.57	0.000	$3.91	$20	$5,267
	50,000	59,999	$3,510	$12.57	0.000	$3.91	$14	$3,524
	60,000	69,999	$2,921	$12.57	0.000	$3.91	$11	$2,933
	70,000	79,999	$2,087	$12.57	0.000	$3.91	$8	$2,095
	80,000	89,999	$1,694	$12.57	0.000	$3.91	$7	$1,701
	90,000	99,999	$1,521	$12.57	0.000	$3.91	$6	$1,527
	100,000	199,999	$7,976	$12.57	0.000	$3.91	$32	$8,008
	200,000	299,999	$3,281	$12.57	0.000	$3.91	$13	$3,294
	300,000	399,999	$1,396	$12.57	0.000	$3.91	$6	$1,402
	400,000	499,999	$510	$12.57	0.000	$3.91	$2	$512
	500,000	599,999	$110	$12.57	0.000	$3.91	$0	$110
	600,000	699,999	$0	$12.57	0.000	$3.91	$0	$0
Rural Residential, Irr, Water Only	0	999	$10,615	$18.86	0.000	$5.87	$250	$10,866
	1,000	1,999	$53,768	$18.86	0.000	$5.87	$260	$54,029
	2,000	2,999	$60,558	$18.86	0.000	$5.87	$270	$60,828
	3,000	3,999	$56,461	$18.86	0.000	$5.87	$241	$56,702
	4,000	4,999	$46,031	$18.86	0.000	$5.87	$192	$46,223
	5,000	5,999	$33,440	$18.86	0.000	$5.87	$140	$33,581
	6,000	6,999	$24,735	$18.86	0.000	$5.87	$104	$24,838
	7,000	7,999	$17,057	$18.86	0.000	$5.87	$73	$17,130
	8,000	8,999	$12,804	$18.86	0.000	$5.87	$55	$12,860
	9,000	9,999	$9,461	$18.86	0.000	$5.87	$42	$9,502
	10,000	19,999	$35,981	$18.86	0.000	$5.87	$168	$36,149
	20,000	29,999	$11,223	$18.86	0.000	$5.87	$55	$11,278
	30,000	39,999	$4,622	$18.86	0.000	$5.87	$23	$4,645
	40,000	49,999	$2,221	$18.86	0.000	$5.87	$11	$2,233
	50,000	59,999	$1,329	$18.86	0.000	$5.87	$7	$1,336
	60,000	69,999	$797	$18.86	0.000	$5.87	$4	$801
	70,000	79,999	$664	$18.86	0.000	$5.87	$4	$667
	80,000	89,999	$434	$18.86	0.000	$5.87	$2	$436
	90,000	99,999	$323	$18.86	0.000	$5.87	$2	$325
	100,000	199,999	$1,201	$18.86	0.000	$5.87	$7	$1,207
	200,000	299,999	$268	$18.86	0.000	$5.87	$1	$270
	300,000	399,999	$0	$18.86	0.000	$5.87	$0	$0

Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Basic Minimum Charge	New Usage Allowance in 1,000s	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
Rural Commercial, Irr, Water Only	0	999	$513	$18.86	0.000	$5.87	$5	$517
	1,000	1,999	$997	$18.86	0.000	$5.87	$4	$1,001
	2,000	2,999	$847	$18.86	0.000	$5.87	$4	$850
	3,000	3,999	$546	$18.86	0.000	$5.87	$2	$548
	4,000	4,999	$266	$18.86	0.000	$5.87	$1	$268
	5,000	5,999	$307	$18.86	0.000	$5.87	$1	$308
	6,000	6,999	$275	$18.86	0.000	$5.87	$1	$276
	7,000	7,999	$270	$18.86	0.000	$5.87	$1	$271
	8,000	8,999	$323	$18.86	0.000	$5.87	$1	$325
	9,000	9,999	$225	$18.86	0.000	$5.87	$1	$226
	10,000	19,999	$880	$18.86	0.000	$5.87	$4	$884
	20,000	29,999	$202	$18.86	0.000	$5.87	$1	$203
	30,000	39,999	$85	$18.86	0.000	$5.87	$0	$85
	40,000	49,999	$64	$18.86	0.000	$5.87	$0	$64
	50,000	59,999	$28	$18.86	0.000	$5.87	$0	$28
	60,000	69,999	$28	$18.86	0.000	$5.87	$0	$28
	70,000	79,999	$28	$18.86	0.000	$5.87	$0	$28
	80,000	89,999	$28	$18.86	0.000	$5.87	$0	$28
	90,000	99,999	$21	$18.86	0.000	$5.87	$0	$21
	100,000	199,999	$0	$18.86	0.000	$5.87	$0	$0
No Charge ("Zero")	0	999	$0	$0.00	0.000	$0.00	$0	$0
	800,000	800,001	$0	$0.00	0.000	$0.00	$0	$0
Total Rate Revenue at Current Rates			$1,117,298	Total Rate Revenue at Modeled Rates			$4,548	
				Total Blended Rate Revenues for the Year				$1,121,846

Table 17 - Financial Capacity Indicators and Reserves

Willard, MO, Water Rates Model 2024-3

This table depicts the affordability of future rates, the financial health of the system and the ending balances in various (assumed) accounts for the test year and the next 10 years.

Capacity Indicators	Test Year Starting 1/1/23	0 Year Starting 1/1/24	1st Year Starting 1/1/25	2nd Year Starting 1/1/26	3rd Year Starting 1/1/27	4th Year Starting 1/1/28	5th Year Starting 1/1/29	6th Year Starting 1/1/30	7th Year Starting 1/1/31	8th Year Starting 1/1/32	9th Year Starting 1/1/33	10th Year Starting 1/1/34
Customary Affordability Index: Monthly Bill for a 5,000 gal per Month, Small Meter Residential Customer	$26.72	$32.12	$33.41	$34.74	$36.13	$37.58	$39.08	$40.65	$42.27	$43.96	$45.72	$47.55
AMHI Within Service Area	$79,951	$83,360	$86,914	$90,621	$94,485	$98,514	$102,714	$107,094	$111,661	$116,422	$121,387	$126,563
Affordability Index: Current Rates First Column, Modeled Rates After That	0.40%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.45%	0.45%	0.45%	0.45%
National Average Affordability Index: Commonly Accepted but Not Statistically Verifiable	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%

Affordability Index (AI) goes to the willingness and ability of customers to pay. AI is the cost of 60,000 gallons of residential service per year (5,000 gallons per month) divided by the Annual Median Household Income (AMHI) in the service area (gleaned from Census data or a survey). Rates near 1.0% are common in the U.S. and are generally considered affordable. Most grant agencies will decline to award grants if the AI is less than 1.5 to 2.0%, unless other eligibility criteria considered along with the AI make an applicant eligible.

Low-income, Low-volume "Affordability Index"												
Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	$18.14	$20.39	$21.21	$22.06	$22.94	$23.86	$24.81	$25.80	$26.84	$27.91	$29.03	$30.19
Income at One-half the AMHI and Rising at One-half the Rate Above	$39,975	$40,828	$41,698	$42,587	$43,495	$44,422	$45,370	$46,337	$47,325	$48,334	$49,364	$50,417
Affordability for Low-income, Low-volume: Current Rates First Column, Modeled Rates After That	0.54%	0.60%	0.61%	0.62%	0.63%	0.64%	0.66%	0.67%	0.68%	0.69%	0.71%	0.72%

This additional indicator of affordability assumes a residential customer with income at one-half the median household income above, that income is growing at one-half the rate of the median household income and the customer uses 2,000 gallons per month. Such a customer is likely either a minimum wage or near-minimum wage worker, or is retired and living only on Social Security benefits. Such customers are more commonly the "slow pays" and "no pays" compared to others, so this indicator goes to the "business sense" of the rates modeled here. In other words, raise this customer's bill too much and they are more likely to pay late or not pay.

Estimated Operating Ratio: Current Rates First Column, Modeled Rates After That	1.00	1.00	1.50	1.52	1.51	1.54	1.47	1.54	1.57	1.58	1.57	1.59

Operating ratio (OR) is a measure of the utility's ability to pay its operating expenses using only current incomes. A 1.0 OR is break even. Below 1.0 indicates operating in the "red." Generally, the OR should be at least 1.15 for large systems, 1.30 or more for medium-sized systems and perhaps as high as 2.0 for small systems. Note: If the utility has or will have reserves (below,) it has more ability to pay its operating costs than this calculation of OR implies.

Estimated Coverage Ratio: Current Rates First Column, Modeled Rates After That	0.00	0.00	0.00	0.25	0.18	0.21	0.00	0.14	0.23	0.28	0.28	0.37

Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments out of current incomes. CR applies only to years with debt service. A "N.A." above indicates there was not, or in a future year there will not be debt during that year. 1.0 is break even - just enough net revenue to pay debt. Generally, the CR should be at least 1.25. Note: If the utility has or will have other available reserves (shown below,) it has more ability to make debt payments than the CR implies. That is covered by the Alternative Coverage Ratio that follows next.

Alternative Coverage Ratio: Current Rates First Column, Modeled Rates After That	15.78	14.46	10.18	10.22	11.19	5.19	3.24	3.19	3.47	3.54	3.69	4.36

This Alternative Coverage Ratio (ACR) is based on the same notion as the classic coverage ratio above, except it includes reserves that are available to pay debt service. With the classic CR, a utility could build reserves early on with current net revenues, but then future rates may not be high enough to show a strong CR. The classic CR could even go negative. But in reality, the utility could have quite strong reserves with which to pay debt. Thus, the Alternative Coverage Ratio can be a better indicator of a utility's true ability to pay debt.

Reserves	Balance Ending on 12/31/22	Balance Ending on 12/31/23	Balance Ending on 12/31/24	Balance Ending on 12/31/25	Balance Ending on 12/31/26	Balance Ending on 12/31/27	Balance Ending on 12/31/28	Balance Ending on 12/31/29	Balance Ending on 12/31/30	Balance Ending on 12/31/31	Balance Ending on 12/31/32	Balance Ending on 12/31/33	Balance Ending on 12/31/34
Cash and Cash Equivalents	$1,558,518	$599,112	$584,345	$594,211	$618,247	$649,953	$668,650	$733,729	$733,377	$756,366	$786,022	$826,105	$853,765
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$1,558,518	$599,112	$584,345	$594,211	$618,247	$649,953	$668,650	$733,729	$733,377	$756,366	$786,022	$826,105	$853,765
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$1,558,518	$599,112	$584,345	$576,384	$581,708	$593,194	$591,951	$630,078	$610,882	$611,131	$616,039	$628,031	$649,058
Repair & Replacement	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt and CIP Reserves	$0	$861,750	$439,889	$429,640	$496,386	$732,850	$730,601	$644,836	$766,271	$772,508	$809,077	$1,056,440	$1,216,712
Sum of All Reserves	$1,558,518	$1,460,862	$1,024,234	$1,023,850	$1,114,633	$1,382,803	$1,399,251	$1,378,564	$1,499,648	$1,528,874	$1,595,098	$1,882,545	$2,070,477

Table 18 - Bills Before and After Rate Adjustments
Willard, MO, Water Rates Model 2024-3

The modeled rates will generate 48.6% more revenue per year than the rates at the end of the test year.

However, due to rate restructuring, individual bills would change as shown in the following table. Note: The actual rates to adopt or consider are included in the narrative report.

Customer, Rate Class or Meter Size	Gallons of Use	Customers Using at Least This Volume But Not the Next	Customers Using This Volume or Less	Bill at Now Current Rates	Bill at Modeled Rates	Modeled Bill Increase or Decrease (-)	Modeled Bill Percentage Increase or Decrease (-)
In-City Res, Irr, Water Only	0	142	142	$15.28	$12.57	-$2.71	-18%
	1,000	283	425	$15.28	$16.48	$1.20	8%
	2,000	397	822	$18.14	$20.39	$2.25	12%
	3,000	408	1,230	$21.00	$24.30	$3.30	16%
	4,000	338	1,567	$23.86	$28.21	$4.35	18%
	5,000	248	1,816	$26.72	$32.12	$5.40	20%
	6,000	162	1,977	$29.58	$36.03	$6.45	22%
	7,000	110	2,087	$32.44	$39.94	$7.50	23%
	8,000	64	2,152	$35.30	$43.85	$8.55	24%
	9,000	51	2,202	$38.16	$47.76	$9.60	25%
	10,000	121	2,323	$41.02	$51.67	$10.65	26%
	20,000	16	2,339	$69.62	$90.77	$21.15	30%
	30,000	5	2,344	$98.22	$129.87	$31.65	32%
	40,000	2	2,346	$126.82	$168.97	$42.15	33%
	50,000	1	2,347	$155.42	$208.07	$52.65	34%
	60,000	0	2,348	$184.02	$247.17	$63.15	34%
	70,000	0	2,348	$212.62	$286.27	$73.65	35%
	80,000	0	2,348	$241.22	$325.37	$84.15	35%
	90,000	0	2,348	$269.82	$364.47	$94.65	35%
	100,000	1	2,349	$298.42	$403.57	$105.15	35%
	200,000	0	2,349	$584.42	$794.57	$210.15	36%
In-City Commercial, Irr, Water Only	0	59	59	$15.28	$12.57	-$2.71	-18%
	1,000	30	89	$15.28	$16.48	$1.20	8%
	2,000	13	102	$18.14	$20.39	$2.25	12%
	3,000	9	111	$21.00	$24.30	$3.30	16%
	4,000	6	117	$23.86	$28.21	$4.35	18%
	5,000	5	122	$26.72	$32.12	$5.40	20%
	6,000	3	125	$29.58	$36.03	$6.45	22%
	7,000	2	127	$32.44	$39.94	$7.50	23%
	8,000	3	131	$35.30	$43.85	$8.55	24%
	9,000	3	133	$38.16	$47.76	$9.60	25%
	10,000	11	144	$41.02	$51.67	$10.65	26%
	20,000	7	152	$69.62	$90.77	$21.15	30%
	30,000	5	157	$98.22	$129.87	$31.65	32%
	40,000	5	162	$126.82	$168.97	$42.15	33%
	50,000	2	164	$155.42	$208.07	$52.65	34%
	60,000	2	167	$184.02	$247.17	$63.15	34%
	70,000	1	168	$212.62	$286.27	$73.65	35%
	80,000	1	169	$241.22	$325.37	$84.15	35%
	90,000	1	170	$269.82	$364.47	$94.65	35%
	100,000	3	172	$298.42	$403.57	$105.15	35%
	200,000	1	173	$584.42	$794.57	$210.15	36%
	300,000	0	173	$870.42	$1,185.57	$315.15	36%

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers Using at Least This Volume But Not the Next	Customers Using This Volume or Less	Bill at Now Current Rates	Bill at Modeled Rates	Modeled Bill Increase or Decrease (-)	Modeled Bill Percentage Increase or Decrease (-)
Rural Residential, Irr, Water Only	0	59	59	$16.63	$18.86	$2.23	13%
	1,000	109	167	$16.63	$24.72	$8.09	49%
	2,000	180	347	$19.75	$30.59	$10.84	55%
	3,000	194	541	$22.87	$36.45	$13.58	59%
	4,000	168	709	$25.99	$42.32	$16.33	63%
	5,000	121	829	$29.11	$48.18	$19.07	66%
	6,000	89	919	$32.23	$54.05	$21.82	68%
	7,000	58	976	$35.35	$59.91	$24.56	69%
	8,000	42	1,019	$38.47	$65.78	$27.31	71%
	9,000	29	1,048	$41.59	$71.64	$30.05	72%
	10,000	87	1,135	$44.71	$77.51	$32.80	73%
	20,000	21	1,156	$75.91	$136.16	$60.25	79%
	30,000	8	1,164	$107.11	$194.81	$87.70	82%
	40,000	3	1,167	$138.31	$253.46	$115.15	83%
	50,000	2	1,168	$169.51	$312.11	$142.60	84%
	60,000	1	1,169	$200.71	$370.76	$170.05	85%
	70,000	1	1,170	$231.91	$429.41	$197.50	85%
	80,000	0	1,170	$263.11	$488.06	$224.95	85%
	90,000	0	1,170	$294.31	$546.71	$252.40	86%
	100,000	1	1,171	$325.51	$605.36	$279.85	86%
	200,000	0	1,171	$637.51	$1,191.86	$554.35	87%
Rural Commercial, Irr, Water Only	0	3	3	$16.63	$18.86	$2.23	13%
	1,000	3	6	$16.63	$24.72	$8.09	49%
	2,000	3	9	$19.75	$30.59	$10.84	55%
	3,000	2	11	$22.87	$36.45	$13.58	59%
	4,000	0	11	$25.99	$42.32	$16.33	63%
	5,000	1	12	$29.11	$48.18	$19.07	66%
	6,000	1	12	$32.23	$54.05	$21.82	68%
	7,000	1	13	$35.35	$59.91	$24.56	69%
	8,000	1	14	$38.47	$65.78	$27.31	71%
	9,000	1	15	$41.59	$71.64	$30.05	72%
	10,000	3	17	$44.71	$77.51	$32.80	73%
	20,000	0	18	$75.91	$136.16	$60.25	79%
No Charge ("Zero")	0	2	2	$0.00	$0.00	$0.00	N.A.
	1,000	1	3	$0.00	$0.00	$0.00	N.A.
	2,000	1	4	$0.00	$0.00	$0.00	N.A.
	3,000	1	5	$0.00	$0.00	$0.00	N.A.
	4,000	0	5	$0.00	$0.00	$0.00	N.A.
	5,000	0	5	$0.00	$0.00	$0.00	N.A.
	6,000	0	5	$0.00	$0.00	$0.00	N.A.
	7,000	0	6	$0.00	$0.00	$0.00	N.A.
	8,000	1	6	$0.00	$0.00	$0.00	N.A.
	9,000	0	6	$0.00	$0.00	$0.00	N.A.
	10,000	1	7	$0.00	$0.00	$0.00	N.A.
	20,000	0	7	$0.00	$0.00	$0.00	N.A.
	30,000	0	8	$0.00	$0.00	$0.00	N.A.
	800,000	0	8	$0.00	$0.00	$0.00	N.A.

Chart 1 - Operating Ratio

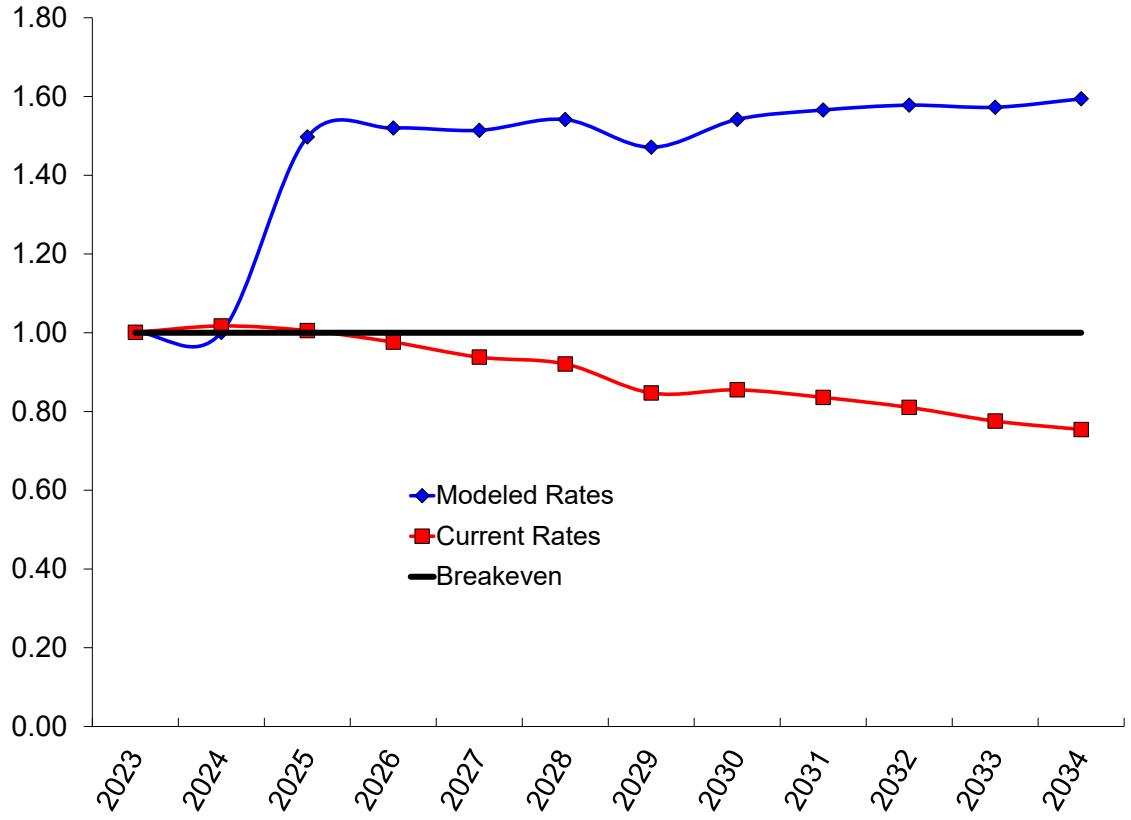


Chart 2 - Coverage Ratio

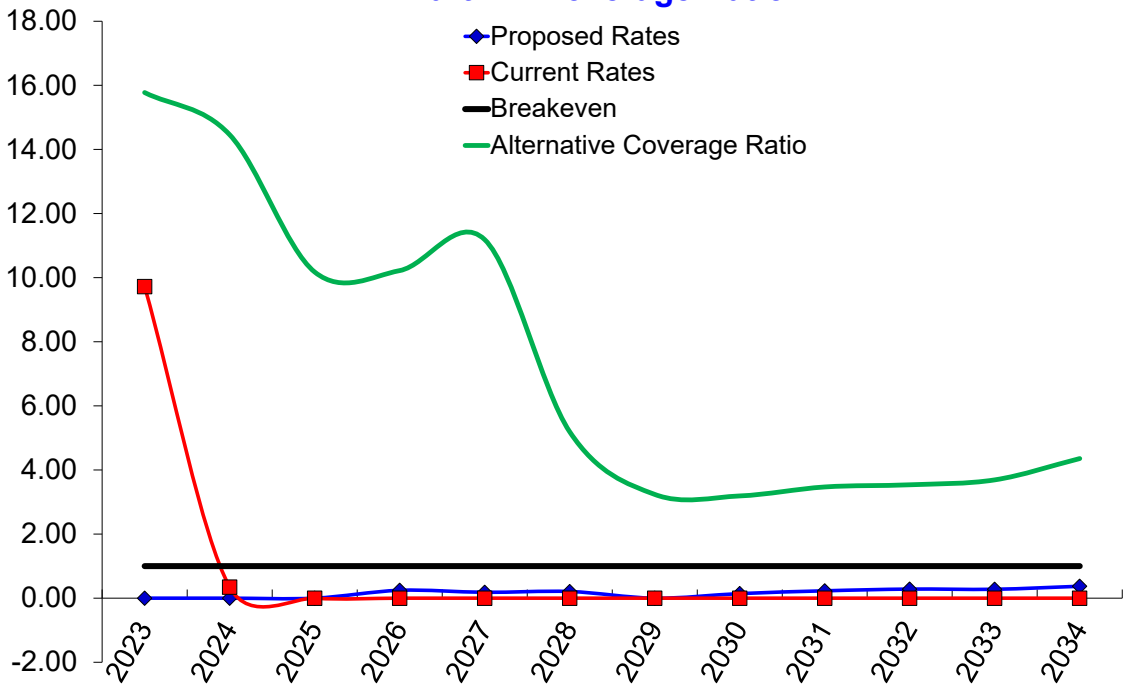


Chart 3 - Residential Users' Bills

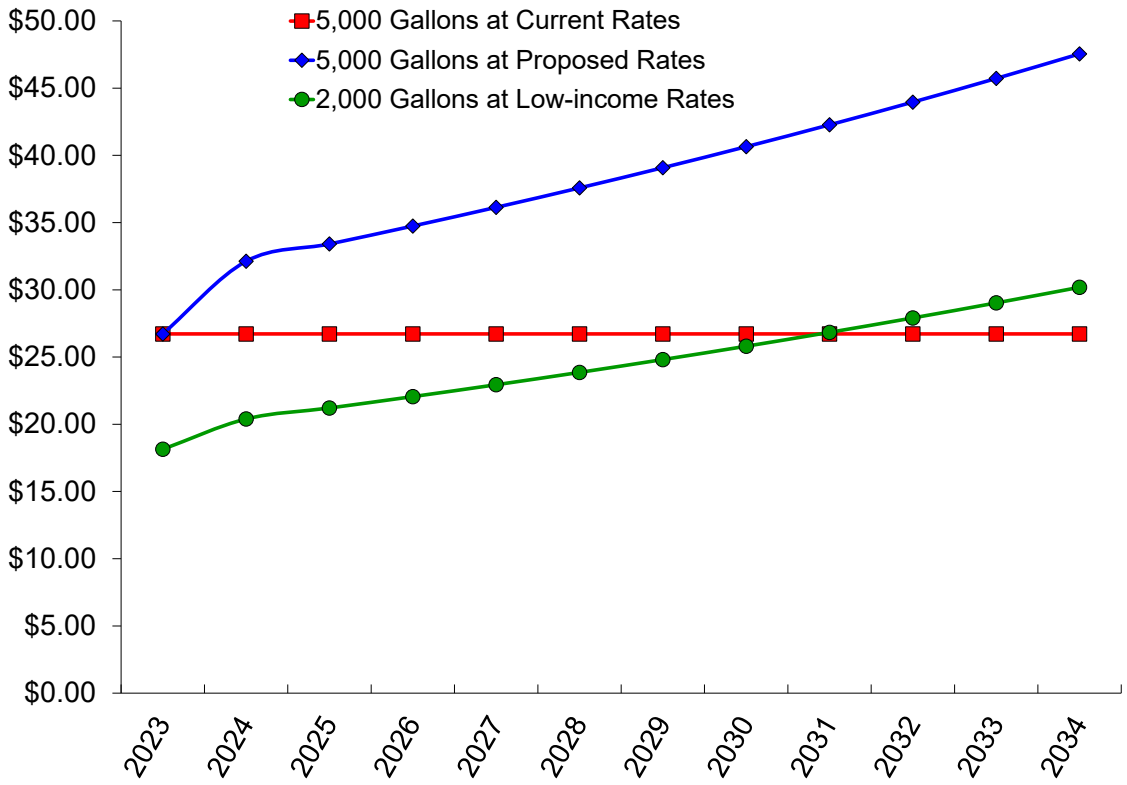


Chart 4 - Affordability

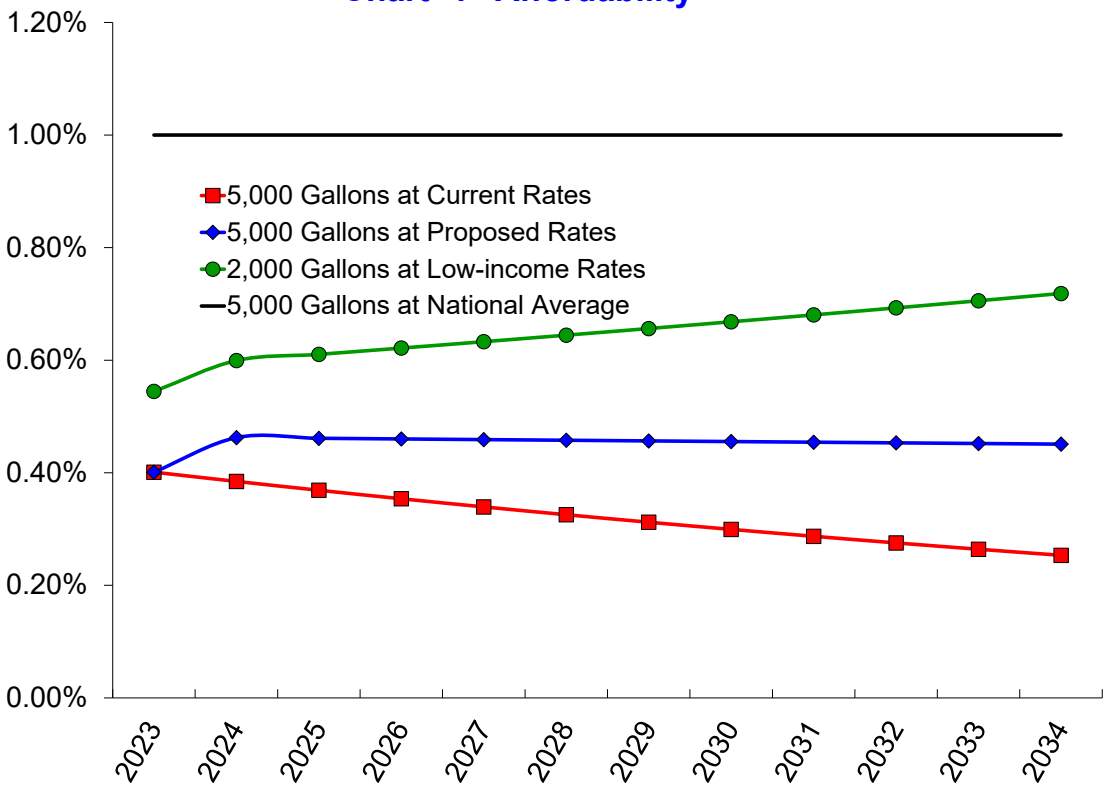


Chart 5 - Working Capital vs Goal

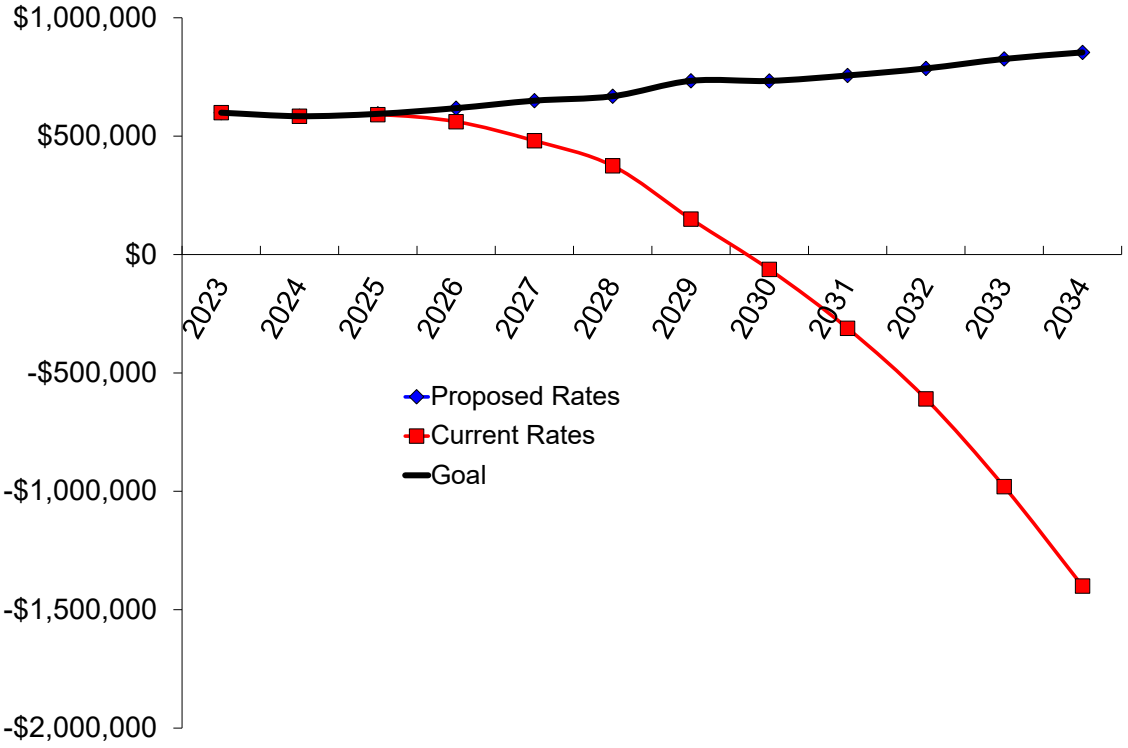


Chart 6 - Value of Cash Assets Before Inflation

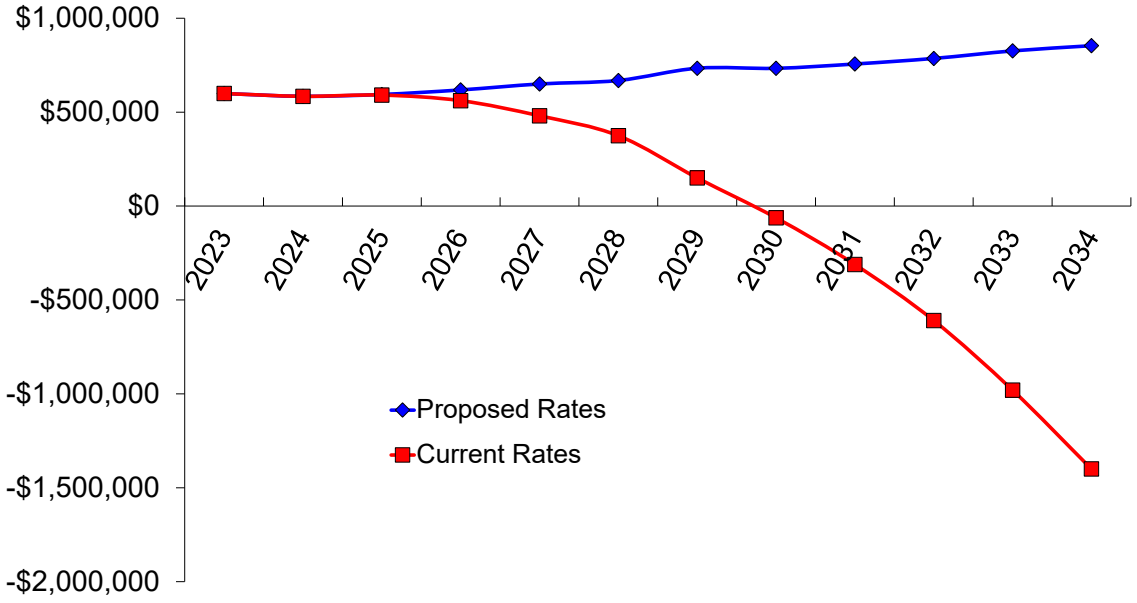


Chart 7 - Value of Cash Assets After Inflation

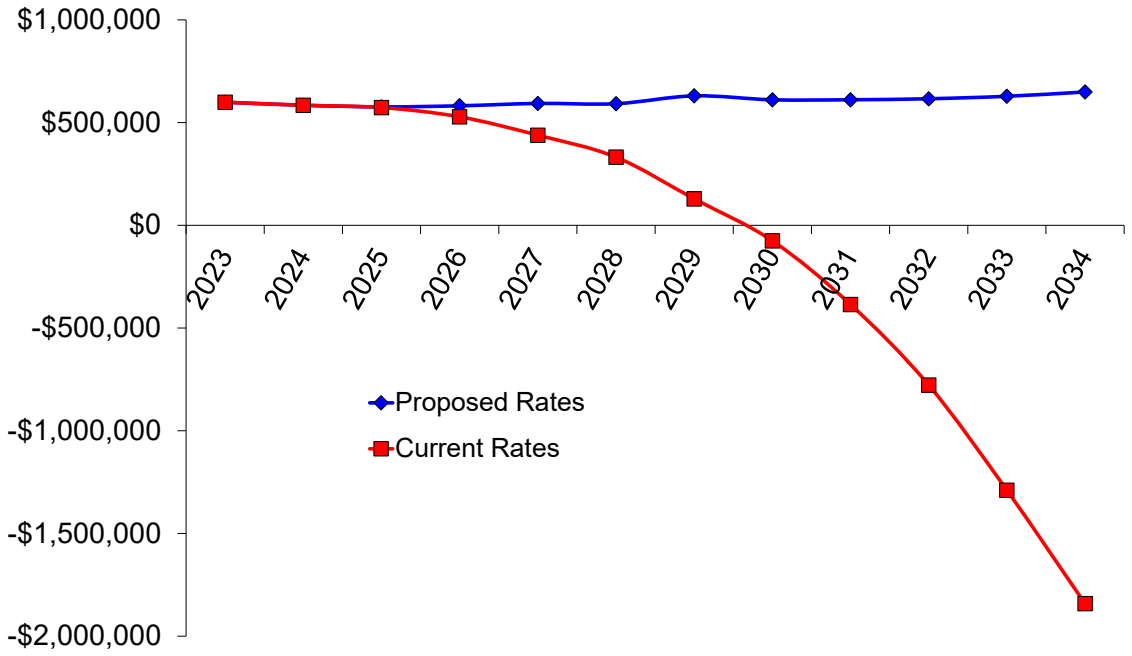
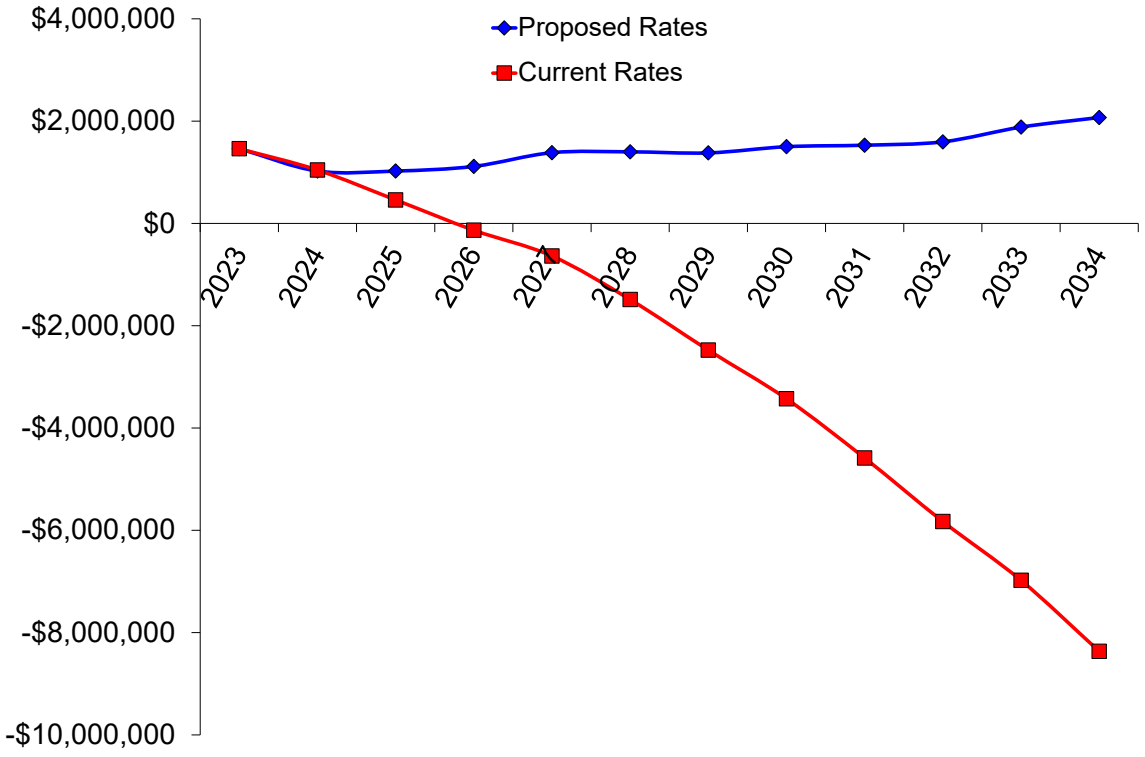


Chart 8 - Sum of All Reserves



Willard, MO, Sewer Rates Model 2024-3

This model calculated cost-to-serve rates, with level minimum and unit charges for in-City customers, and out-of-City rates in the same structure, but higher due to higher costs to serve outside of the City.

September 19, 2024
This rate analysis model was produced by
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Note: This document is a print out of the spreadsheet model used to calculate new user charge and other rates and fees for the next 10 years. These calculations are complex and are based upon many conditions and assumptions. These issues, and others, are described in a narrative report that accompanies this model.

Table 1 - Rates
Willard, MO, Sewer Rates Model 2024-3

If we received the now current rates for the utility, the current rates are in this table. Otherwise, these rates were in effect at the end of the test year. If a volume range was left out of the table, rest assured, it is in the Model. We just hid some volume ranges to make the table and report shorter. In such cases, the unit charge that applies to next lowest volume range also applies to the hidden volume ranges.

Test Year Ending and (Assumed) Current Rates

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use Within Each Range in 1,000 Gallons	Billing Cycle Minimum Charge	Usage Allowance in 1,000s	Unit Charge per 1,000 Gallons
In-City Residential	0	999	0.999	$26.21	0.000	$5.85
	1,000	1,999	0.865	$26.21	0.000	$5.85
	2,000	2,999	0.774	$26.21	0.000	$5.85
	3,000	3,999	0.640	$26.21	0.000	$5.85
	4,000	4,999	0.557	$26.21	0.000	$5.85
	5,000	5,999	0.575	$26.21	0.000	$5.85
	10,000	19,999	2.488	$26.21	0.000	$5.85
	800,000	800,001	0.000	$26.21	0.000	$5.85
In-City Commercial	0	999	0.732	$26.21	0.000	$5.85
	1,000	1,999	0.711	$26.21	0.000	$5.85
	2,000	2,999	0.830	$26.21	0.000	$5.85
	3,000	3,999	0.873	$26.21	0.000	$5.85
	4,000	4,999	0.902	$26.21	0.000	$5.85
	5,000	5,999	0.902	$26.21	0.000	$5.85
	10,000	19,999	8.492	$26.21	0.000	$5.85
	800,000	800,001	0.000	$26.21	0.000	$5.85
Rural Residential	0	999	1.000	$28.52	0.000	$6.36
	1,000	1,999	0.843	$28.52	0.000	$6.36
	2,000	2,999	0.736	$28.52	0.000	$6.36
	3,000	3,999	0.573	$28.52	0.000	$6.36
	4,000	4,999	0.568	$28.52	0.000	$6.36
	5,000	5,999	0.573	$28.52	0.000	$6.36
	10,000	19,999	2.778	$28.52	0.000	$6.36
	800,000	800,001	0.000	$28.52	0.000	$6.36
Rural Commercial	0	999	1.000	$36.47	0.000	$6.36
	1,000	1,999	0.750	$36.47	0.000	$6.36
	2,000	2,999	0.889	$36.47	0.000	$6.36
	3,000	3,999	1.000	$36.47	0.000	$6.36
	4,000	4,999	1.000	$36.47	0.000	$6.36
	5,000	5,999	1.000	$36.47	0.000	$6.36
	10,000	19,999	5.667	$36.47	0.000	$6.36
	800,000	800,000	0.000	$36.47	0.000	$6.36

Table 2 - Test Year Usage

Willard, MO, Sewer Rates Model 2024-3

This table shows usage by all customers during the test year.

Test year = the one-year period being analyzed starts: 1/1/2023

Date this model created: 7/3/2024

Residential meter readings per year: 12

Other customer readings per year: 12

Bills per year: 12

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
In-City Residential	0	999	24,005,005	3	0.1%	0.0%
	1,000	1,999	20,767,000	270	11.1%	2.8%
	2,000	2,999	16,074,259	391	16.1%	8.1%
	3,000	3,999	10,294,000	482	19.8%	14.9%
	4,000	4,999	5,732,000	380	15.7%	15.7%
	5,000	5,999	3,298,000	203	8.4%	10.5%
	6,000	6,999	1,776,000	127	5.2%	7.9%
	7,000	7,999	842,000	78	3.2%	5.6%
	8,000	8,999	501,000	28	1.2%	2.4%
	9,000	9,999	379,000	10	0.4%	0.9%
	10,000	19,999	943,000	30	1.2%	3.8%
	20,000	29,999	34,000	1	0.1%	0.3%
	30,000	39,999	0	0	0.0%	0.0%
			84,645,264	2,003	82.5%	73.0%
In-City Commercial	0	999	1,205,000	37	1.5%	0.0%
	1,000	1,999	857,000	29	1.2%	0.3%
	2,000	2,999	711,000	12	0.5%	0.3%
	3,000	3,999	621,000	8	0.3%	0.2%
	4,000	4,999	560,000	5	0.2%	0.2%
	5,000	5,999	505,000	5	0.2%	0.2%
	6,000	6,999	476,000	2	0.1%	0.2%
	7,000	7,999	450,000	2	0.1%	0.2%
	8,000	8,999	422,000	2	0.1%	0.2%
	9,000	9,999	398,000	2	0.1%	0.2%
	10,000	19,999	3,380,000	10	0.4%	1.4%
	20,000	29,999	2,380,000	7	0.3%	1.8%
	30,000	39,999	1,636,000	5	0.2%	1.9%
	40,000	49,999	1,091,000	5	0.2%	2.3%
	50,000	59,999	659,000	2	0.1%	1.1%
	60,000	69,999	486,000	1	0.1%	0.9%
	70,000	79,999	334,000	1	0.0%	0.6%
	80,000	89,999	303,000	0	0.0%	0.1%
	90,000	99,999	282,000	0	0.0%	0.4%
	100,000	199,999	1,412,000	1	0.1%	2.0%
	200,000	299,999	497,000	0	0.0%	1.0%
			19,009,000	137	5.6%	16.4%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
Rural Residential	0	999	3,321,000	0	0.0%	0.0%
	1,000	1,999	2,798,000	44	1.8%	0.5%
	2,000	2,999	2,059,000	62	2.5%	1.3%
	3,000	3,999	1,180,000	73	3.0%	2.3%
	4,000	4,999	670,000	43	1.8%	1.8%
	5,000	5,999	384,000	24	1.0%	1.2%
	6,000	6,999	196,000	16	0.6%	1.0%
	7,000	7,999	86,000	9	0.4%	0.7%
	8,000	8,999	48,000	3	0.1%	0.3%
	9,000	9,999	36,000	1	0.0%	0.1%
	10,000	19,999	100,000	2	0.1%	0.2%
	20,000	29,999	20,000	1	0.0%	0.2%
	30,000	39,999	0	0	0.0%	0.0%
			10,898,000	277	11.4%	9.4%
Rural Commercial	0	999	36,000	0	0.0%	0.0%
	1,000	1,999	27,000	1	0.0%	0.0%
	2,000	2,999	24,000	0	0.0%	0.0%
	3,000	3,999	24,000	0	0.0%	0.0%
	4,000	4,999	24,000	0	0.0%	0.0%
	5,000	5,999	24,000	0	0.0%	0.0%
	6,000	6,999	22,000	0	0.0%	0.0%
	7,000	7,999	18,000	0	0.0%	0.0%
	8,000	8,999	14,000	0	0.0%	0.0%
	9,000	9,999	12,000	0	0.0%	0.0%
	10,000	19,999	68,000	1	0.0%	0.1%
	20,000	29,999	8,000	0	0.0%	0.0%
	30,000	39,999	0	0	0.0%	0.0%
			301,000	3	0.1%	0.3%
		Grand Totals:	115,974,264	2,428	100%	100%

Table 3 - Operating Incomes and Basic User Data
Willard, MO, Sewer Rates Model 2024-3

This table depicts user statistics, customer growth, and system incomes and across the board "inflationary" style rate increases through the 10th year.

Annual Median Household Income (AMHI)

$76,681	Census Bureau estimate of AMHI for the year 2022
$39,565	Census Bureau estimate of AMHI for the year 2000
$37,116	AMHI growth during this time period
4.26%	Simple annual income growth rate during this time period (used to project future household incomes)

Test Year Growth of Customer Base and Average Tap Fee Paid per Connection

36	Number new Sewer connections made during test year
$1,240	Average Sewer tap or installation fee assessed during the test year

This model is programmed for rates to be reset in the "Analysis Year," also called the "0 Year" column below (heading highlighted blue). Revenues will be collected at the now-current rates for the first part of the analysis year and the modeled rates for the last part of the analysis year. Thus, the revenues shown that column of the table are "blended" revenues; part collected at the old rates and part collected at the new rates. It was then assumed that all rate adjustments made after the initial (major) adjustment will be done annually on approximately the anniversary of the first adjustment. If rates will not be adjusted during the "0 Year," an adjustment (normally a revenue reduction) was calculated below to account for the late start in making the first adjustments.

Basic User (Customer) Data

(First year balances and incomes are actual, subsequent years are projected.)	Inflation/ Deflation (–) Factor	Test Year	Analysis Year 0 Year	Years Following the Analysis Year (for Which Results Have Been Projected) 1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting 1/1/23	Starting 1/1/24	Starting 1/1/25	Starting 1/1/26	Starting 1/1/27	Starting 1/1/28	Starting 1/1/29	Starting 1/1/30	Starting 1/1/31	Starting 1/1/32	Starting 1/1/33	Starting 1/1/34
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
				The row above shows the rate at which user charge fees should be increased for each year beyond the initial rate adjustment year. Unless stated otherwise, these should be across-the-board increases to all rates and fees and that should continue until a new rate analysis is done.									
Average Number of Customers	N.A.	2,428	2,465	2,501	2,537	2,574	2,610	2,646	2,683	2,719	2,756	2,792	2,828
Customers Added or Lost (-) Each Year	N.A.	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4
Customer Growth or Loss (-) Rate	N.A.	1.50%	1.48%	1.45%	1.43%	1.41%	1.39%	1.37%	1.36%	1.34%	1.32%	1.30%	1.29%
Test Year (Actual) and Projected Future Years' Sales, in Gallons	N.A.	115,974,264	117,711,420	119,448,577	121,185,733	122,922,889	124,660,045	126,397,202	128,134,358	129,871,514	131,608,671	133,345,827	135,082,983
Calculated User Charge Fees, Accounting for New Customers and Future Rate Increases Over the Years													
Actual or Calculated Sales Revenues		$1,456,296	$1,458,339	$2,292,235	$2,418,595	$2,551,395	$2,690,950	$2,837,586	$2,991,648	$3,153,495	$3,323,503	$3,502,067	$3,689,597
Additional Sales Revenues From New Customers			$59	$33,336	$34,670	$36,057	$37,499	$38,999	$40,559	$42,181	$43,868	$45,623	$47,448
Total Calculated Revenues (User Charge Fees)		$1,456,296	$1,458,398	$2,325,572	$2,453,264	$2,587,451	$2,728,448	$2,876,585	$3,032,207	$3,195,676	$3,367,372	$3,547,690	$3,737,045
Operating Incomes													
Sewer Sales - All (Including Taxes)	N.A.	$1,481,554	$1,483,692	$2,365,906	$2,495,813	$2,632,327	$2,775,770	$2,926,476	$3,084,797	$3,251,101	$3,425,774	$3,609,220	$3,801,859
PENALTY INCOME-SEWER	N.A.	$27,531	$27,938	$28,344	$28,750	$29,156	$29,563	$29,969	$30,375	$30,782	$31,188	$31,594	$32,001
HOOK UP FEES RECEIVE-SEWER	% Above	$45,100	$44,977	$44,977	$44,977	$44,977	$44,977	$44,977	$44,977	$44,977	$44,977	$44,977	$44,977
Adjusted Meter Size-based Plant Investment Fees (Cochran Fees)	% Above	$0	$0	$40,701	$40,701	$40,701	$40,701	$40,701	$40,701	$40,701	$40,701	$40,701	$40,701
INTEREST INCOME-SEWER	N.A.	$37,738	$3,619	$3,539	$8,329	$8,773	$9,310	$9,732	$10,637	$12,656	$11,929	$12,041	$12,780
MISCELLANEOUS INCOME-SEWER	N.A.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CONVENIENCE FEE-SEWER	N.A.	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764	$19,764
GRANT RECEIPTS-SEWER	N.A.	$58,737	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TRANSFER IN-SEWER	N.A.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CAPITAL ASSET SALES-SEWER	N.A.	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103	$7,103
Total Operating Incomes		**$1,677,528**	**$1,587,094**	**$2,510,335**	**$2,645,438**	**$2,782,803**	**$2,927,188**	**$3,078,723**	**$3,238,355**	**$3,407,085**	**$3,581,437**	**$3,765,401**	**$3,959,186**

Table 4 - Operating Costs and Net Income

Willard, MO, Sewer Rates Model 2024-3

This table depicts expenses during the test year, this year and for the next 10 years. Some future costs will experience inflation. Those costs that go up as use goes up are increased by the cost inflation factor plus the growth rate in users.

(First year costs and net incomes are actual, subsequent years are projected.)			Analysis Year	Years Following the Analysis Year (for Which Results Have Been Projected)									
Expense Items	Inflation/ Deflation (–) Factor	Test Year Starting 1/1/23	0 Year Starting 1/1/24	1st Year Starting 1/1/25	2nd Year Starting 1/1/26	3rd Year Starting 1/1/27	4th Year Starting 1/1/28	5th Year Starting 1/1/29	6th Year Starting 1/1/30	7th Year Starting 1/1/31	8th Year Starting 1/1/32	9th Year Starting 1/1/33	10th Year Starting 1/1/34
SUPPLIES-SEWER	4.0%	$14,910	$15,735	$16,603	$17,514	$18,472	$19,479	$20,536	$21,647	$22,814	$24,040	$25,327	$26,679
PERMIT FEES-SEWER	4.0%	$3,000	$3,120	$3,245	$3,375	$3,510	$3,650	$3,796	$3,948	$4,106	$4,270	$4,441	$4,618
BUILDING MAINTENANCE-SEWER	4.0%	$89	$92	$96	$100	$104	$108	$112	$117	$122	$126	$132	$137
CUSTODIAL SUPPLIES-SEWER	4.0%	$172	$179	$186	$194	$202	$210	$218	$227	$236	$245	$255	$265
MISCELLANEOUS EXPENSE-SEWER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
OFFICE SUPPLIES-SEWER	4.0%	$4,480	$4,728	$4,989	$5,263	$5,551	$5,853	$6,171	$6,505	$6,855	$7,224	$7,611	$8,017
POSTAGE-SEWER	4.0%	$12,491	$13,182	$13,909	$14,672	$15,475	$16,318	$17,204	$18,135	$19,113	$20,139	$21,218	$22,350
REPAIRS AND MAINTENANCE-SEWER	4.0%	$118,585	$123,328	$128,261	$133,392	$138,727	$144,277	$150,048	$156,050	$162,292	$168,783	$175,535	$182,556
SUPPLIES SMALL EQUIPMENT-SEWER	4.0%	$11,232	$11,681	$12,148	$12,634	$13,139	$13,665	$14,212	$14,780	$15,371	$15,986	$16,626	$17,291
HOOK UP EXPENSE-SEWER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
ADVERTISING-SEWER	4.0%	$105	$109	$114	$118	$123	$128	$133	$138	$144	$149	$155	$162
AUDIT EXPENSE-SEWER	4.0%	$7,820	$8,133	$8,458	$8,796	$9,148	$9,514	$9,895	$10,291	$10,702	$11,130	$11,576	$12,039
BANK/CREDIT CARD FEES-SEWER	4.0%	$22,709	$23,966	$25,287	$26,676	$28,135	$29,668	$31,279	$32,971	$34,748	$36,615	$38,576	$40,635
CONTRACT LABOR-SEWER	4.0%	$3,833	$3,986	$4,146	$4,312	$4,484	$4,663	$4,850	$5,044	$5,246	$5,456	$5,674	$5,901
DUES AND SUBSCRIPTIONS-SEWER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
EQUIPMENT RENTAL-SEWER	4.0%	$3,082	$3,253	$3,432	$3,621	$3,819	$4,027	$4,246	$4,475	$4,717	$4,970	$5,236	$5,516
INSURANCE-SEWER	4.0%	$42,976	$44,695	$46,483	$48,342	$50,276	$52,287	$54,378	$56,553	$58,816	$61,168	$63,615	$66,160
LEGAL-SEWER	4.0%	$22,333	$23,227	$24,156	$25,122	$26,127	$27,172	$28,259	$29,389	$30,565	$31,787	$33,059	$34,381
PROFESSIONAL-SEWER	4.0%	$45,915	$47,752	$49,662	$51,648	$53,714	$55,863	$58,097	$60,421	$62,838	$65,351	$67,965	$70,684
SAFETY PROGRAM-SEWER	4.0%	$581	$604	$628	$653	$680	$707	$735	$764	$795	$827	$860	$894
CITIZEN TRASH EXPENSE-SEWER	4.0%	$313,840	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TRAVEL EXPENSE-SEWER	4.0%	$411	$428	$445	$462	$481	$500	$520	$541	$563	$585	$608	$633
TRAINING & EDUCATION-SEWER	4.0%	$1,020	$1,061	$1,104	$1,148	$1,194	$1,241	$1,291	$1,343	$1,396	$1,452	$1,510	$1,571
RECYCLE CENTER EXPENSE	4.0%	$5,505	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RENT-SEWER	4.0%	$1,250	$1,300	$1,352	$1,406	$1,462	$1,521	$1,582	$1,645	$1,711	$1,779	$1,850	$1,924
EQUIPMENT/SOFTWARE CONTRACTS-SEW…	4.0%	$12,381	$12,877	$13,392	$13,927	$14,484	$15,064	$15,666	$16,293	$16,945	$17,622	$18,327	$19,060

Table 4 - Operating Costs and Net Income

Expense Items	Inflation/ Deflation (–) Factor	Test Year Starting 1/1/23	0 Year Starting 1/1/24	1st Year Starting 1/1/25	2nd Year Starting 1/1/26	3rd Year Starting 1/1/27	4th Year Starting 1/1/28	5th Year Starting 1/1/29	6th Year Starting 1/1/30	7th Year Starting 1/1/31	8th Year Starting 1/1/32	9th Year Starting 1/1/33	10th Year Starting 1/1/34
SPRINGFIELD SEWER CHARGES-SEWER with 8% Increases next 2 years, then 6% in years after that	6.0%	$504,554	$544,918	$597,070	$642,099	$690,381	$742,146	$797,637	$857,115	$920,860	$989,168	$1,062,358	$1,140,769
TELEPHONE-SEWER	4.0%	$2,217	$2,306	$2,398	$2,494	$2,594	$2,698	$2,805	$2,918	$3,034	$3,156	$3,282	$3,413
INTERNET-SEWER	4.0%	$5,846	$6,080	$6,323	$6,576	$6,839	$7,113	$7,397	$7,693	$8,001	$8,321	$8,654	$9,000
UTILITIES ELECTRIC-SEWER	4.0%	$82,881	$87,468	$92,290	$97,357	$102,682	$108,278	$114,156	$120,332	$126,819	$133,633	$140,789	$148,304
UTILITIES GAS-SEWER	4.0%	$696	$724	$753	$783	$814	$846	$880	$916	$952	$990	$1,030	$1,071
UTILITIES OTHER-SEWER	4.0%	$2,203	$2,292	$2,383	$2,479	$2,578	$2,681	$2,788	$2,900	$3,016	$3,136	$3,262	$3,392
VEHICLE EXPENSE FUEL-SEWER	4.0%	$11,501	$11,961	$12,440	$12,937	$13,455	$13,993	$14,553	$15,135	$15,740	$16,370	$17,025	$17,706
EQUIPMENT FUEL-SEWER	4.0%	$5,600	$5,824	$6,057	$6,299	$6,551	$6,813	$7,086	$7,369	$7,664	$7,970	$8,289	$8,621
VEHICLE REPAIR & MAINT-SEWER	4.0%	$6,596	$6,860	$7,134	$7,420	$7,717	$8,025	$8,346	$8,680	$9,027	$9,388	$9,764	$10,154
EQUIPMENT REPAIR & MAINT-SEWER	4.0%	$4,747	$4,937	$5,134	$5,339	$5,553	$5,775	$6,006	$6,246	$6,496	$6,756	$7,026	$7,307
VEHICLE LEASE-SEWER	4.0%	$21,470	$22,329	$23,222	$24,151	$25,117	$26,122	$27,167	$28,253	$29,383	$30,559	$31,781	$33,052
EQUIPMENT LEASE	4.0%	$3,179	$3,306	$3,439	$3,576	$3,719	$3,868	$4,023	$4,184	$4,351	$4,525	$4,706	$4,894
SALARIES-SEWER	4.0%	$357,924	$372,241	$387,130	$402,615	$418,720	$435,469	$452,888	$471,003	$489,843	$509,437	$529,814	$551,007
SALARIES OVERTIME-SEWER	4.0%	$10,691	$11,119	$11,563	$12,026	$12,507	$13,007	$13,527	$14,068	$14,631	$15,216	$15,825	$16,458
PAYROLL TAXES-SEWER	4.0%	$27,466	$28,565	$29,708	$30,896	$32,132	$33,417	$34,754	$36,144	$37,590	$39,093	$40,657	$42,283
RETIREMENT-SEWER	4.0%	$16,787	$17,459	$18,157	$18,884	$19,639	$20,425	$21,241	$22,091	$22,975	$23,894	$24,850	$25,844
PENSION EXPENSE-SEWER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
UNIFORMS-SEWER	4.0%	$628	$654	$680	$707	$735	$765	$795	$827	$860	$895	$930	$968
GROUP INSURANCE-SEWER	4.0%	$79,978	$83,178	$86,505	$89,965	$93,563	$97,306	$101,198	$105,246	$109,456	$113,834	$118,388	$123,123
CAPITAL ASSET EXP-SEWER	4.0%	$344,467	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
CAPITAL ASSET EXP EQUIPMENT-SEWER	N.A.	$7,039	$26,500	$13,750	$13,000	$13,000	$10,000	$85,000	$363,000	$113,000	$10,000	$10,000	$13,000
PRINCIPAL EXPENSE-SEWER	0.0%	$192,439	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
INTEREST EXPENSE-SEWER	0.0%	$127,257	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
FISCAL AGENT FEES-SEWER	4.0%	$1,500	$1,560	$1,622	$1,687	$1,755	$1,825	$1,898	$1,974	$2,053	$2,135	$2,220	$2,309
BAD DEBT EXPENSE-SEWER	4.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
User Charge Analysis Services	5.0%	$0	$11,395	$0	$0	$12,563	$0	$0	$13,851	$0	$0	$15,270	$0
Total CIP-related Payouts	N.A.	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
Total Operating Costs		**$2,466,389**	**$1,595,109**	**$1,665,852**	**$1,754,665**	**$1,861,920**	**$1,946,484**	**$2,127,373**	**$2,531,221**	**$2,385,844**	**$2,408,184**	**$2,556,075**	**$2,684,147**
Net Income (or Loss)		-$788,862	-$8,016	$844,483	$890,773	$920,883	$980,704	$951,350	$707,133	$1,021,241	$1,173,254	$1,209,326	$1,275,039
Working Capital Goal: 50%	In Dollars, That is:	$1,233,195	$797,555	$832,926	$877,332	$930,960	$973,242	$1,063,687	$1,265,611	$1,192,922	$1,204,092	$1,278,038	$1,342,074

Notes: The Springfield treatment contract expense, highlighted gold and later green, calls for 8% increases for 2 years. I assumed 6% per year after that. Most expenses are expected to rise by four percent each year. The green highlighted expenses are expected to do that, plus rise as new customers connect and use more water. Also, principal and interest expenses are related to capital improvements, so those are handled in Table 5.

Table 5 - Capital Improvement Program (CIP)

Willard, MO, Sewer Rates Model 2024-3

This table depicts capital improvements and their funding. Costs reflect inflation.

	Test Year Starting	Analysis Year 0 Year Starting	1st Year Starting	2nd Year Starting	3rd Year Starting	4th Year Starting	5th Year Starting	6th Year Starting	7th Year Starting	8th Year Starting	9th Year Starting	10th Year Starting
	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28	1/1/29	1/1/30	1/1/31	1/1/32	1/1/33	1/1/34
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)												
94 Lift Station/Force Main	$0	$0	$800,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Meadows 50% Construction	$0	$0	$400,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Waste Water Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26,878,328
Total Debt-paid Portion of Projects	$0	$0	$1,200,000	$0	$0	$0	$0	$0	$0	$0	$0	$26,878,328
Planned Spending, Grant-paid Portion of Projects (CIP costs to be grant-funded are shown here.)												
94 Lift Station/Force Main (EPA Grant)	$0	$2,756,152	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Meadows 50% Construction (ARPA Grant)	$0	$482,750	$17,250	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Grant-paid Portion of Projects	$0	$3,238,902	$17,250	$0	$0	$0	$0	$0	$0	$0	$0	$0
Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)												
94 Lift Station/Force Main	$0	$222,168	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Assets (See City's Capital Improvements Plan for Details)	$0	$213,500	$276,813	$491,197	$232,751	$236,357	$346,623	$672,251	$384,951	$266,022	$274,002	$286,254
Total Cash-paid Portion of Projects	$0	$435,668	$276,813	$491,197	$232,751	$236,357	$346,623	$672,251	$384,951	$266,022	$274,002	$286,254
Total CIP Costs	**$0**	**$3,674,570**	**$1,494,063**	**$491,197**	**$232,751**	**$236,357**	**$346,623**	**$672,251**	**$384,951**	**$266,022**	**$274,002**	**$27,164,582**
Debt Repayment												
Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)												
Water/Sewer 2014 and 2018 COPs, Sewer Portion	$320,091	$322,853	$323,944	$324,803	$320,506	$318,594	$223,075	$223,863	$224,256	$219,543	$219,719	$219,572
New Debt Payments (Following are payments for projects to be paid with new debt. It is assumed these will be loan/lease-financed for a term of: 10 years at a 5.0% interest rate.)												
COP for 94 Lift Station, Meadows				$155,405	$155,405	$155,405	$155,405	$155,405	$155,405	$155,405	$155,405	$155,405
Total Debt Payments	$320,091	$322,853	$323,944	$480,209	$475,912	$473,999	$378,480	$379,268	$379,661	$374,949	$375,124	$374,977
Total CIP-related Payouts	**$320,091**	**$3,997,423**	**$1,818,006**	**$971,405**	**$708,663**	**$710,356**	**$725,103**	**$1,051,519**	**$764,612**	**$640,970**	**$649,127**	**$27,539,559**
(This is the total cash required for this CIP and debt payment schedule. These amounts must come from utility income, reserves or outside sources, as shown in the next section.)												
CIP Fund Sources (Following are the sources and amounts of funds expected to pay for the above CIP schedule.)												
Cash Reserves (Internal Funds)												
Debt and CIP Reserves Starting Balance	$0	-$320,091	-$1,085,014	-$1,341,998	-$1,493,877	-$1,365,161	-$1,164,398	-$1,051,885	-$1,619,233	-$1,322,299	-$827,632	-$357,931
Working Capital Transferred in	$0	$0	$365,472	$846,367	$867,256	$938,422	$860,905	$505,209	$1,093,930	$1,162,084	$1,135,380	$1,211,002
Debt and CIP Reserves Interest Earned (or Paid)	$0	-$6,402	-$21,700	-$26,840	-$29,878	-$27,303	-$23,288	-$21,038	-$32,385	-$26,446	-$16,553	-$7,159
Total Available Internal Funds	$0	-$326,492	-$741,242	-$522,471	-$656,498	-$454,042	-$326,781	-$567,713	-$557,688	-$186,662	$291,195	$845,913
Grant and Loan Proceeds (External Funds)												
EPA and ARPA Grants for Lift Station and Meadows, Not Determined for WWTP	$0	$3,238,902	$17,250	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 10th Year												$26,878,328
Total Available External Funds	$0	$3,238,902	$1,217,250	$0	$0	$0	$0	$0	$0	$0	$0	$26,878,328
Total Available Funds	**$0**	**$2,912,410**	**$476,008**	**-$522,471**	**-$656,498**	**-$454,042**	**-$326,781**	**-$567,713**	**-$557,688**	**-$186,662**	**$291,195**	**$27,724,240**
Outcomes (This CIP spending and funding plan will result in the following cash needs and ending balances each year.)												
Total Available Funds	**$0**	**$2,912,410**	**$476,008**	**-$522,471**	**-$656,498**	**-$454,042**	**-$326,781**	**-$567,713**	**-$557,688**	**-$186,662**	**$291,195**	**$27,724,240**
Total CIP-related Payouts	**$320,091**	**$3,997,423**	**$1,818,006**	**$971,405**	**$708,663**	**$710,356**	**$725,103**	**$1,051,519**	**$764,612**	**$640,970**	**$649,127**	**$27,539,559**
Debt and CIP Reserves Ending Balances	**-$320,091**	**-$1,085,014**	**-$1,341,998**	**-$1,493,877**	**-$1,365,161**	**-$1,164,398**	**-$1,051,885**	**-$1,619,233**	**-$1,322,299**	**-$827,632**	**-$357,931**	**$184,681**

Notes: The City has a capital improvements plan, from which the above project data came. EPA and ARPA grants have been acquired for the lift station and Meadows projects. I assumed the WWTP project will be funded 75% by SRF loans, and 25% by grants. However, that project, being scheduled for the last year of the modeling period, has no effect on this round of rates. Later rate analyses will pick up the effects of that project and calculate rates accordingly. Other projects are generally not eligible for grants and loans, so those are to be funded with utility reserves and incomes.

Table 5B: City's Sewer Capital Improvements (with edits by GettingGreatRates.com to make transfer to the models easier and clearer)

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2024	I&I	50,000	213,500		760,460
	Sewer Improvements	50,000			
	94 Lift Station/Force Main			277,710	
	Meadows 50% Construction			482,750	
	Pole Barn 40x20	10,000			
	Public Works Building	75,000			
	Vehicle Lease Equipment	7,000			
	Badger Box	7,500			
	Missions Update	14,000			
2025	I&I	50,000	268,750		3,402,230
	Sewer Improvements	100,000			
	B-Lift Station Rewire	40,000			
	94 Lift Station/Force Main			2,984,980	
	Meadows 50% Construction			417,250	
	Replacement Pump-Lift Station	40,000			
	Easements	20,000			
	Equipment	5,000			
	Jack Hammer Attachment (33 water-3	3,750			
	Generator	10,000			
2026	I&I	50,000	463,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	D-Lift Station	250,000			
	Computer (2)	3,000			
	Equipment	20,000			

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2027	I&I	50,000	213,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Computer (2)	3,000			
	Equipment	20,000			
2028	I&I	50,000	210,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Equipment	20,000			
2029	I&I	50,000	299,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Equipment	20,000			
	Backhoe (50% water-50%sewer)	75,000			
	Missions Update	14,000			
2030	I&I	50,000	563,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Computer (2)	3,000			
	Equipment	20,000			
	Jetter/Vac Truck	350,000			
2031	I&I	50,000	313,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Computer (2)	3,000			
	Equipment	20,000			
	Sewer Camera	100,000			

Year	Description	Capital Assets Equip	Annual Sum Cash Paid	Bigger Assets	Annual Sum COP Paid
2032	I&I	50,000	210,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Equipment	20,000			
2033	I&I	50,000	210,000		-
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Equipment	20,000			
2034	I&I	50,000	213,000		20,000,000
	Sewer Improvements	100,000			
	Replacement Pump-Lift Station	40,000			
	Waste Water Treatment Plant			20,000,000	
	Computer (2)	3,000			
	Equipment	20,000			
			3,176,250		24,162,690

Table 8 - Average Cost Classification

Willard, MO, Sewer Rates Model 2024-3

This table distributes costs from a representative year (the "average rate structure basis year) to fixed and variable categories (see Definitions) in order to calculate the "cost of service" rate structure for that year.

The average rate structure basis year runs from: 1/1/2028 through 12/31/2028

Cost Items During the Basis Year	Cost During Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
SUPPLIES-SEWER	$19,479	50.0%	50.0%	$9,739	$9,739
PERMIT FEES-SEWER	$3,650	100.0%	0.0%	$3,650	$0
BUILDING MAINTENANCE-SEWER	$108	100.0%	0.0%	$108	$0
CUSTODIAL SUPPLIES-SEWER	$210	100.0%	0.0%	$210	$0
MISCELLANEOUS EXPENSE-SEWER	$0	100.0%	0.0%	$0	$0
OFFICE SUPPLIES-SEWER	$5,853	100.0%	0.0%	$5,853	$0
POSTAGE-SEWER	$16,318	100.0%	0.0%	$16,318	$0
REPAIRS AND MAINTENANCE-SEWER	$144,277	50.0%	50.0%	$72,138	$72,138
SUPPLIES SMALL EQUIPMENT-SEWER	$13,665	50.0%	50.0%	$6,833	$6,833
HOOK UP EXPENSE-SEWER	$0	36.4%	63.6%	$0	$0
ADVERTISING-SEWER	$128	100.0%	0.0%	$128	$0
AUDIT EXPENSE-SEWER	$9,514	100.0%	0.0%	$9,514	$0
BANK/CREDIT CARD FEES-SEWER	$29,668	36.4%	63.6%	$10,799	$18,869
CONTRACT LABOR-SEWER	$4,663	50.0%	50.0%	$2,332	$2,332
DUES AND SUBSCRIPTIONS-SEWER	$0	50.0%	50.0%	$0	$0
EQUIPMENT RENTAL-SEWER	$4,027	50.0%	50.0%	$2,013	$2,013
INSURANCE-SEWER	$52,287	100.0%	0.0%	$52,287	$0
LEGAL-SEWER	$27,172	100.0%	0.0%	$27,172	$0
PROFESSIONAL-SEWER	$55,863	50.0%	50.0%	$27,931	$27,931
SAFETY PROGRAM-SEWER	$707	50.0%	50.0%	$353	$353
TRAVEL EXPENSE-SEWER	$500	50.0%	50.0%	$250	$250
TRAINING & EDUCATION-SEWER	$1,241	50.0%	50.0%	$621	$621
RENT-SEWER	$1,521	100.0%	0.0%	$1,521	$0
EQUIPMENT/SOFTWARE CONTRACTS-SEW…	$15,064	100.0%	0.0%	$15,064	$0
SPRINGFIELD SEWER CHARGES-SEWER with 8% Increases next 2 years, then 6% in years after that	$742,146	0.0%	100.0%	$0	$742,146
TELEPHONE-SEWER	$2,698	100.0%	0.0%	$2,698	$0
INTERNET-SEWER	$7,113	100.0%	0.0%	$7,113	$0
UTILITIES ELECTRIC-SEWER	$108,278	0.0%	100.0%	$0	$108,278
UTILITIES GAS-SEWER	$846	100.0%	0.0%	$846	$0
UTILITIES OTHER-SEWER	$2,681	100.0%	0.0%	$2,681	$0
VEHICLE EXPENSE FUEL-SEWER	$13,993	50.0%	50.0%	$6,997	$6,997
EQUIPMENT FUEL-SEWER	$6,813	50.0%	50.0%	$3,407	$3,407
VEHICLE REPAIR & MAINT-SEWER	$8,025	50.0%	50.0%	$4,013	$4,013
EQUIPMENT REPAIR & MAINT-SEWER	$5,775	50.0%	50.0%	$2,888	$2,888
VEHICLE LEASE-SEWER	$26,122	50.0%	50.0%	$13,061	$13,061
EQUIPMENT LEASE	$3,868	50.0%	50.0%	$1,934	$1,934
SALARIES-SEWER	$435,469	50.0%	50.0%	$217,734	$217,734
SALARIES OVERTIME-SEWER	$13,007	50.0%	50.0%	$6,504	$6,504

Table 8 - Average Cost Classification

Cost Items During the Basis Year	Cost During Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
PAYROLL TAXES-SEWER	$33,417	50.0%	50.0%	$16,709	$16,709
RETIREMENT-SEWER	$20,425	50.0%	50.0%	$10,212	$10,212
PENSION EXPENSE-SEWER	$0	50.0%	50.0%	$0	$0
UNIFORMS-SEWER	$765	50.0%	50.0%	$382	$382
GROUP INSURANCE-SEWER	$97,306	50.0%	50.0%	$48,653	$48,653
CAPITAL ASSET EXP-SEWER	$0	50.0%	50.0%	$0	$0
CAPITAL ASSET EXP EQUIPMENT-SEWER	$10,000	50.0%	50.0%	$5,000	$5,000
PRINCIPAL EXPENSE-SEWER	$0	50.0%	50.0%	$0	$0
INTEREST EXPENSE-SEWER	$0	50.0%	50.0%	$0	$0
FISCAL AGENT FEES-SEWER	$1,825	50.0%	50.0%	$912	$912
BAD DEBT EXPENSE-SEWER	$0	36.4%	63.6%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$0	50.0%	50.0%	$0	$0
User Charge Analysis Services	$0	36.4%	63.6%	$0	$0
Total CIP-related Payouts, Less Capacity Charges From Tables 14 & 16 (This value can be negative)	$669,655	50.0%	50.0%	$334,827	$334,827
Grand Total Costs, Weighted Avg Percentages	$2,616,139	36.4%	63.6%	$951,404	$1,664,735

Bases for Cost to Serve Rate Structure

Number Customers During Basis Year	2,610
Billed Volume, in Gallons, During Basis Year	124,660,045
Average Fixed Cost per User per Month During Basis Year	$30.38
Average Variable Cost to Produce per 1,000 Gallons During Basis Year	$13.35
Gallons per Billing Cycle Used by Average Residential Customer	3,521

100%	$2,616,139
Inflow and Infiltration for the test year is Estimated at	18%
Inflow and Infiltration is Estimated at This % of Average Cost (Marginal Cost)	66%
At Recommended Unit Charge Rates, Resulting Marginal Cost of Unbilled-for Water	$198,001
Test Year Customer Volume, in Gallons	115,974,264
+ Test Year Inflow and Infiltration, in Gallons	26,124,336
Total Test Year Volume, in Gallons, From Master Meter Readings	142,098,600

Table 9 - Marginal Cost Classification

Willard, MO, Sewer Rates Model 2024-3

The utility incurs "marginal" costs. These costs are unavoidable. Thus, the utility must collect minimal fees from various customers to "break even" on a marginal cost basis. Costs vary by customer type and volume used.

Below, it is assumed that marginal variable costs are being calculated for: Inflow and Infiltration

(Fixed costs are irrelevant in this case)

The marginal rate structure basis year runs from: 1/1/2028 through 12/31/2028

Cost Items During the Basis Year	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
SUPPLIES-SEWER	$9,739	$9,739	100%	100%	$9,739	$9,739
PERMIT FEES-SEWER	$3,650	$0	50%	50%	$1,825	$0
BUILDING MAINTENANCE-SEWER	$108	$0	0%	0%	$0	$0
CUSTODIAL SUPPLIES-SEWER	$210	$0	0%	0%	$0	$0
MISCELLANEOUS EXPENSE-SEWER	$0	$0	100%	100%	$0	$0
OFFICE SUPPLIES-SEWER	$5,853	$0	0%	0%	$0	$0
POSTAGE-SEWER	$16,318	$0	0%	0%	$0	$0
REPAIRS AND MAINTENANCE-SEWER	$72,138	$72,138	50%	50%	$36,069	$36,069
SUPPLIES SMALL EQUIPMENT-SEWER	$6,833	$6,833	50%	50%	$3,416	$3,416
HOOK UP EXPENSE-SEWER	$0	$0	50%	50%	$0	$0
ADVERTISING-SEWER	$128	$0	0%	0%	$0	$0
AUDIT EXPENSE-SEWER	$9,514	$0	0%	0%	$0	$0
BANK/CREDIT CARD FEES-SEWER	$10,799	$18,869	0%	0%	$0	$0
CONTRACT LABOR-SEWER	$2,332	$2,332	50%	50%	$1,166	$1,166
DUES AND SUBSCRIPTIONS-SEWER	$0	$0	0%	0%	$0	$0
EQUIPMENT RENTAL-SEWER	$2,013	$2,013	0%	0%	$0	$0
INSURANCE-SEWER	$52,287	$0	100%	100%	$52,287	$0
LEGAL-SEWER	$27,172	$0	0%	0%	$0	$0
PROFESSIONAL-SEWER	$27,931	$27,931	0%	0%	$0	$0
SAFETY PROGRAM-SEWER	$353	$353	0%	0%	$0	$0
TRAVEL EXPENSE-SEWER	$250	$250	100%	100%	$250	$250
TRAINING & EDUCATION-SEWER	$621	$621	100%	100%	$621	$621
RENT-SEWER	$1,521	$0	0%	0%	$0	$0
EQUIPMENT/SOFTWARE CONTRACTS-SEW…	$15,064	$0	0%	0%	$0	$0
SPRINGFIELD SEWER CHARGES-SEWER with 8% Increases next 2 years, then 6% in years after that	$0	$742,146	100%	100%	$0	$742,146
TELEPHONE-SEWER	$2,698	$0	0%	0%	$0	$0
INTERNET-SEWER	$7,113	$0	0%	0%	$0	$0
UTILITIES ELECTRIC-SEWER	$0	$108,278	100%	100%	$0	$108,278
UTILITIES GAS-SEWER	$846	$0	10%	10%	$85	$0
UTILITIES OTHER-SEWER	$2,681	$0	10%	10%	$268	$0
VEHICLE EXPENSE FUEL-SEWER	$6,997	$6,997	10%	10%	$700	$700
EQUIPMENT FUEL-SEWER	$3,407	$3,407	10%	10%	$341	$341
VEHICLE REPAIR & MAINT-SEWER	$4,013	$4,013	10%	10%	$401	$401
EQUIPMENT REPAIR & MAINT-SEWER	$2,888	$2,888	10%	10%	$289	$289
VEHICLE LEASE-SEWER	$13,061	$13,061	10%	10%	$1,306	$1,306

Table 9 - Marginal Cost Classification

Cost Items During the Basis Year	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
EQUIPMENT LEASE	$1,934	$1,934	10%	10%	$193	$193
SALARIES-SEWER	$217,734	$217,734	10%	10%	$21,773	$21,773
SALARIES OVERTIME-SEWER	$6,504	$6,504	10%	10%	$650	$650
PAYROLL TAXES-SEWER	$16,709	$16,709	10%	10%	$1,671	$1,671
RETIREMENT-SEWER	$10,212	$10,212	10%	10%	$1,021	$1,021
PENSION EXPENSE-SEWER	$0	$0	10%	10%	$0	$0
UNIFORMS-SEWER	$382	$382	10%	10%	$38	$38
GROUP INSURANCE-SEWER	$48,653	$48,653	10%	10%	$4,865	$4,865
CAPITAL ASSET EXP-SEWER	$0	$0	50%	50%	$0	$0
CAPITAL ASSET EXP EQUIPMENT-SEWER	$5,000	$5,000	50%	50%	$2,500	$2,500
PRINCIPAL EXPENSE-SEWER	$0	$0	50%	50%	$0	$0
INTEREST EXPENSE-SEWER	$0	$0	50%	50%	$0	$0
FISCAL AGENT FEES-SEWER	$912	$912	50%	50%	$456	$456
BAD DEBT EXPENSE-SEWER	$0	$0	50%	50%	$0	$0
User Charge Analysis Services	$0	$0	50%	50%	$0	$0
Total CIP-related Payouts, Less Capacity Charges From Tables 14 & 16 (This value can be negative)	$334,827	$334,827	50%	50%	$167,414	$167,414
Grand Total All Costs	$951,404	$1,664,735			$309,345	$1,105,304
	$2,616,139				$1,414,649	

Marginal Fixed and Variable Cost Bases (For the Customer Type(s) Listed Above)	Monthly Marginal Fixed Cost per Customer	Marginal Variable Cost per 1,000 Gallons
	$9.88	
Marginal Fixed Cost as a Percent of Total Fixed Cost:	33%	$8.87
Marginal Variable Cost as a Percent of Total Variable Cost:		66%

Table 10 - Initial Rate Adjustments and Resulting Revenues

Willard, MO, Sewer Rates Model 2024-3

This table calculates new user charge rates and the revenues they would generate if adjusted during the "Analysis Year."

After rate adjustments are made, customers will be billed monthly.

Following are Blended Sales Revenues: Sales at the current (Test Year) rates (gray highlighted column) will apply until rates are adjusted. Sales at the modeled rates (yellow highlighted column) would apply after the modeled rates are adopted. Adding both together, the "blended" sales revenues show in the right-most column.

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Basic Minimum Charge	New Usage Allowance in 1,000s	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
In-City Residential	0	999	$140,987	$26.34	0.000	$11.58	$762	$141,749
	1,000	1,999	$205,791	$26.34	0.000	$11.58	$890	$206,681
	2,000	2,999	$216,497	$26.34	0.000	$11.58	$846	$217,344
	3,000	3,999	$211,083	$26.34	0.000	$11.58	$742	$211,824
	4,000	4,999	$152,684	$26.34	0.000	$11.58	$510	$153,194
	5,000	5,999	$82,861	$26.34	0.000	$11.58	$280	$83,141
	6,000	6,999	$50,144	$26.34	0.000	$11.58	$166	$50,310
	7,000	7,999	$29,325	$26.34	0.000	$11.58	$94	$29,419
	8,000	8,999	$11,836	$26.34	0.000	$11.58	$40	$11,876
	9,000	9,999	$5,400	$26.34	0.000	$11.58	$21	$5,421
	10,000	19,999	$14,964	$26.34	0.000	$11.58	$56	$15,019
	20,000	29,999	$643	$26.34	0.000	$11.58	$2	$645
	30,000	39,999	$0	$26.34	0.000	$11.58	$0	$0
In-City Commercial	0	999	$21,064	$26.34	0.000	$11.58	$70	$21,134
	1,000	1,999	$16,074	$26.34	0.000	$11.58	$52	$16,126
	2,000	2,999	$8,794	$26.34	0.000	$11.58	$33	$8,827
	3,000	3,999	$6,487	$26.34	0.000	$11.58	$26	$6,513
	4,000	4,999	$5,208	$26.34	0.000	$11.58	$22	$5,230
	5,000	5,999	$4,696	$26.34	0.000	$11.58	$20	$4,716
	6,000	6,999	$3,700	$26.34	0.000	$11.58	$17	$3,717
	7,000	7,999	$3,453	$26.34	0.000	$11.58	$16	$3,469
	8,000	8,999	$3,353	$26.34	0.000	$11.58	$15	$3,368
	9,000	9,999	$3,086	$26.34	0.000	$11.58	$14	$3,100
	10,000	19,999	$23,347	$26.34	0.000	$11.58	$115	$23,462
	20,000	29,999	$16,526	$26.34	0.000	$11.58	$81	$16,608
	30,000	39,999	$11,581	$26.34	0.000	$11.58	$56	$11,637
	40,000	49,999	$8,211	$26.34	0.000	$11.58	$39	$8,249
	50,000	59,999	$4,577	$26.34	0.000	$11.58	$23	$4,599
	60,000	69,999	$3,344	$26.34	0.000	$11.58	$17	$3,361
	70,000	79,999	$2,235	$26.34	0.000	$11.58	$11	$2,246
	80,000	89,999	$1,800	$26.34	0.000	$11.58	$10	$1,809
	90,000	99,999	$1,804	$26.34	0.000	$11.58	$9	$1,814
	100,000	199,999	$8,779	$26.34	0.000	$11.58	$46	$8,825
	200,000	299,999	$3,059	$26.34	0.000	$11.58	$16	$3,075
	300,000	399,999	$1,271	$26.34	0.000	$11.58	$7	$1,278
	400,000	499,999	$583	$26.34	0.000	$11.58	$3	$587
	500,000	599,999	$248	$26.34	0.000	$11.58	$1	$249
	600,000	699,999	$0	$26.34	0.000	$11.58	$0	$0

Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Basic Minimum Charge	New Usage Allowance in 1,000s	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
Rural Residential	0	999	$21,074	$39.51	0.000	$17.37	$158	$21,231
	1,000	1,999	$32,629	$39.51	0.000	$17.37	$189	$32,818
	2,000	2,999	$34,083	$39.51	0.000	$17.37	$177	$34,260
	3,000	3,999	$32,487	$39.51	0.000	$17.37	$151	$32,638
	4,000	4,999	$18,756	$39.51	0.000	$17.37	$87	$18,843
	5,000	5,999	$10,571	$39.51	0.000	$17.37	$49	$10,620
	6,000	6,999	$6,590	$39.51	0.000	$17.37	$30	$6,620
	7,000	7,999	$3,674	$39.51	0.000	$17.37	$16	$3,690
	8,000	8,999	$1,385	$39.51	0.000	$17.37	$6	$1,392
	9,000	9,999	$570	$39.51	0.000	$17.37	$3	$573
	10,000	19,999	$1,374	$39.51	0.000	$17.37	$8	$1,382
	20,000	29,999	$411	$39.51	0.000	$17.37	$2	$413
	30,000	39,999	$0	$39.51	0.000	$17.37	$0	$0
Rural Commercial	0	999	$228	$39.51	0.000	$17.37	$2	$230
	1,000	1,999	$499	$39.51	0.000	$17.37	$2	$501
	2,000	2,999	$261	$39.51	0.000	$17.37	$1	$263
	3,000	3,999	$152	$39.51	0.000	$17.37	$1	$153
	4,000	4,999	$152	$39.51	0.000	$17.37	$1	$153
	5,000	5,999	$152	$39.51	0.000	$17.37	$1	$153
	6,000	6,999	$212	$39.51	0.000	$17.37	$1	$214
	7,000	7,999	$260	$39.51	0.000	$17.37	$1	$261
	8,000	8,999	$234	$39.51	0.000	$17.37	$1	$235
	9,000	9,999	$149	$39.51	0.000	$17.37	$1	$150
	10,000	19,999	$795	$39.51	0.000	$17.37	$4	$800
	20,000	29,999	$124	$39.51	0.000	$17.37	$1	$124
	30,000	39,999	$0	$39.51	0.000	$17.37	$0	$0
Total Rate Revenue at Current Rates			$1,452,317	Total Rate Revenue at Modeled Rates			$6,022	
				Total Blended Rate Revenues for the Year				$1,458,339

Table 17 - Financial Capacity Indicators and Reserves

Willard, MO, Sewer Rates Model 2024-3

This table depicts the affordability of future rates, the financial health of the system and the ending balances in various (assumed) accounts for the test year and the next 10 years.

Capacity Indicators	Test Year Starting 1/1/23	0 Year Starting 1/1/24	1st Year Starting 1/1/25	2nd Year Starting 1/1/26	3rd Year Starting 1/1/27	4th Year Starting 1/1/28	5th Year Starting 1/1/29	6th Year Starting 1/1/30	7th Year Starting 1/1/31	8th Year Starting 1/1/32	9th Year Starting 1/1/33	10th Year Starting 1/1/34
Customary Affordability Index: Monthly Bill for a 5,000 gal per Month, Small Meter Residential Customer	$55.46	$84.24	$87.61	$91.11	$94.76	$98.55	$102.49	$106.59	$110.85	$115.29	$119.90	$124.70
AMHI Within Service Area	$79,951	$83,360	$86,914	$90,621	$94,485	$98,514	$102,714	$107,094	$111,661	$116,422	$121,387	$126,563
Affordability Index: Current Rates First Column, Modeled Rates After That	0.83%	1.21%	1.21%	1.21%	1.20%	1.20%	1.20%	1.19%	1.19%	1.19%	1.19%	1.18%
National Average Affordability Index: Commonly Accepted but Not Statistically Verifiable	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%

Affordability Index (AI) goes to the willingness and ability of customers to pay. AI is the cost of 60,000 gallons of residential service per year (5,000 gallons per month) divided by the Annual Median Household Income (AMHI) in the service area (gleaned from Census data or a survey). Rates near 1.0% are common in the U.S. and are generally considered affordable. Most grant agencies will decline to award grants if the AI is less than 1.5 to 2.0%, unless other eligibility criteria considered along with the AI make an applicant eligible.

Low-income, Low-volume "Affordability Index"												
Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	$37.91	$49.50	$51.48	$53.54	$55.68	$57.91	$60.22	$62.63	$65.14	$67.74	$70.45	$73.27
Income at One-half the AMHI and Rising at One-half the Rate Above	$39,975	$40,828	$41,698	$42,587	$43,495	$44,422	$45,370	$46,337	$47,325	$48,334	$49,364	$50,417
Affordability for Low-income, Low-volume: Current Rates First Column, Modeled Rates After That	1.14%	1.45%	1.48%	1.51%	1.54%	1.56%	1.59%	1.62%	1.65%	1.68%	1.71%	1.74%

This additional indicator of affordability assumes a residential customer with income at one-half the median household income above, that income is growing at one-half the rate of the median household income and the customer uses 2,000 gallons per month. Such a customer is likely either a minimum wage or near-minimum wage worker, or is retired and living only on Social Security benefits. Such customers are more commonly the "slow pays" and "no pays" compared to others, so this indicator goes to the "business sense" of the rates modeled here. In other words, raise this customer's bill too much and they are more likely to pay late or not pay.

Estimated Operating Ratio: Current Rates First Column, Modeled Rates After That	0.68	0.99	1.51	1.51	1.49	1.50	1.45	1.28	1.43	1.49	1.47	1.48

Operating ratio (OR) is a measure of the utility's ability to pay its operating expenses using only current incomes. A 1.0 OR is break even. Below 1.0 indicates operating in the "red." Generally, the OR should be at least 1.15 for large systems, 1.30 or more for medium-sized systems and perhaps as high as 2.0 for small systems. Note: If the utility has or will have reserves (below,) it has more ability to pay its operating costs than this calculation of OR implies.

Estimated Coverage Ratio: Current Rates First Column, Modeled Rates After That	0.00	0.00	0.04	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments out of current incomes. CR applies only to years with debt service. A "N.A." above indicates there was not, or in a future year there will not be debt during that year. 1.0 is break even - just enough net revenue to pay debt. Generally, the CR should be at least 1.25. Note: If the utility has or will have other available reserves (shown below,) it has more ability to make debt payments than the CR implies. That is covered by the Alternative Coverage Ratio that follows next.

Alternative Coverage Ratio: Current Rates First Column, Modeled Rates After That	3.60	0.13	-2.26	-1.06	-1.30	-0.92	-0.51	0.03	-0.93	-0.35	1.00	2.45

This Alternative Coverage Ratio (ACR) is based on the same notion as the classic coverage ratio above, except it includes reserves that are available to pay debt service. With the classic CR, a utility could build reserves early on with current net revenues, but then future rates may not be high enough to show a strong CR. The classic CR could even go negative. But in reality, the utility could have quite strong reserves with which to pay debt. Thus, the Alternative Coverage Ratio can be a better indicator of a utility's true ability to pay debt.

Reserves	Balance Ending on 12/31/22	Balance Ending on 12/31/23	Balance Ending on 12/31/24	Balance Ending on 12/31/25	Balance Ending on 12/31/26	Balance Ending on 12/31/27	Balance Ending on 12/31/28	Balance Ending on 12/31/29	Balance Ending on 12/31/30	Balance Ending on 12/31/31	Balance Ending on 12/31/32	Balance Ending on 12/31/33	Balance Ending on 12/31/34
Cash and Cash Equivalents	$1,150,793	$361,931	$353,915	$832,926	$877,332	$930,960	$973,242	$1,063,687	$1,265,611	$1,192,922	$1,204,092	$1,278,038	$1,342,074
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$1,150,793	$361,931	$353,915	$832,926	$877,332	$930,960	$973,242	$1,063,687	$1,265,611	$1,192,922	$1,204,092	$1,278,038	$1,342,074
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$1,150,793	$361,931	$353,915	$807,938	$825,482	$849,662	$861,604	$913,424	$1,054,218	$963,861	$943,699	$971,604	$1,020,286
Repair & Replacement	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt and CIP Reserves	$0	-$320,091	-$1,085,014	-$1,341,998	-$1,493,877	-$1,365,161	-$1,164,398	-$1,051,885	-$1,619,233	-$1,322,299	-$827,632	-$357,931	$184,681
Sum of All Reserves	$1,150,793	$41,840	**-$731,098**	**-$509,072**	**-$616,544**	**-$434,201**	**-$191,156**	**$11,802**	**-$353,622**	**-$129,377**	$376,460	$920,106	$1,526,755

Table 18 - Bills Before and After Rate Adjustments

Willard, MO, Sewer Rates Model 2024-3

The modeled rates will generate 51.3% more revenue per year than the rates at the end of the test year.

However, due to rate restructuring, individual bills would change as shown in the following table. Note: The actual rates to adopt or consider are included in the narrative report.

Customer, Rate Class or Meter Size	Gallons of Use	Customers Using at Least This Volume But Not the Next	Customers Using This Volume or Less	Customers Using This Volume or More	Bill at Now Current Rates	Bill at Modeled Rates	Modeled Bill Increase or Decrease (-)	Modeled Bill Percentage Increase or Decrease (-)
In-City Residential	0	3	3	2,003	$26.21	$26.34	$0.13	0%
	1,000	270	273	2,000	$32.06	$37.92	$5.86	18%
	2,000	391	664	1,731	$37.91	$49.50	$11.59	31%
	3,000	482	1,146	1,339	$43.76	$61.08	$17.32	40%
	4,000	380	1,526	858	$49.61	$72.66	$23.05	46%
	5,000	203	1,729	478	$55.46	$84.24	$28.78	52%
	6,000	127	1,855	275	$61.31	$95.82	$34.51	56%
	7,000	78	1,933	148	$67.16	$107.40	$40.24	60%
	8,000	28	1,962	70	$73.01	$118.98	$45.97	63%
	9,000	10	1,972	42	$78.86	$130.56	$51.70	66%
	10,000	30	2,002	32	$84.71	$142.14	$57.43	68%
	20,000	1	2,003	1	$143.21	$257.94	$114.73	80%
	30,000	0	2,003	0	$201.71	$373.74	$172.03	85%
In-City Commercial	0	37	37	137	$26.21	$26.34	$0.13	0%
	1,000	29	66	100	$32.06	$37.92	$5.86	18%
	2,000	12	78	71	$37.91	$49.50	$11.59	31%
	3,000	8	85	59	$43.76	$61.08	$17.32	40%
	4,000	5	91	52	$49.61	$72.66	$23.05	46%
	5,000	5	95	47	$55.46	$84.24	$28.78	52%
	6,000	2	98	42	$61.31	$95.82	$34.51	56%
	7,000	2	100	40	$67.16	$107.40	$40.24	60%
	8,000	2	102	38	$73.01	$118.98	$45.97	63%
	9,000	2	104	35	$78.86	$130.56	$51.70	66%
	10,000	10	114	33	$84.71	$142.14	$57.43	68%
	20,000	7	120	24	$143.21	$257.94	$114.73	80%
	30,000	5	126	17	$201.71	$373.74	$172.03	85%
	40,000	5	131	11	$260.21	$489.54	$229.33	88%
	50,000	2	133	7	$318.71	$605.34	$286.63	90%
	60,000	1	134	5	$377.21	$721.14	$343.93	91%
	70,000	1	135	3	$435.71	$836.94	$401.23	92%
	80,000	0	135	3	$494.21	$952.74	$458.53	93%
	90,000	0	135	3	$552.71	$1,068.54	$515.83	93%
	100,000	1	137	2	$611.21	$1,184.34	$573.13	94%
	200,000	0	137	1	$1,196.21	$2,342.34	$1,146.13	96%
	300,000	0	137	0	$1,781.21	$3,500.34	$1,719.13	97%

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers Using at Least This Volume But Not the Next	Customers Using This Volume or Less	Customers Using This Volume or More	Bill at Now Current Rates	Bill at Modeled Rates	Modeled Bill Increase or Decrease (-)	Modeled Bill Percentage Increase or Decrease (-)
Rural Residential	0	0	0	277	$28.52	$39.51	$10.99	39%
	1,000	44	44	277	$34.88	$56.88	$22.00	63%
	2,000	62	105	233	$41.24	$74.25	$33.01	80%
	3,000	73	178	172	$47.61	$91.62	$44.01	92%
	4,000	43	221	98	$53.97	$108.99	$55.02	102%
	5,000	24	245	56	$60.33	$126.36	$66.03	109%
	6,000	16	260	32	$66.70	$143.73	$77.03	116%
	7,000	9	270	16	$73.06	$161.10	$88.04	121%
	8,000	3	273	7	$79.42	$178.47	$99.05	125%
	9,000	1	274	4	$85.79	$195.84	$110.05	128%
	10,000	2	276	3	$92.15	$213.21	$121.06	131%
	20,000	1	277	1	$155.78	$386.91	$231.13	148%
	30,000	0	277	0	$219.41	$560.61	$341.20	156%
Rural Commercial	0	0	0	3	$36.47	$39.51	$3.04	8%
	1,000	1	1	3	$42.83	$56.88	$14.05	33%
	2,000	0	1	2	$49.20	$74.25	$25.05	51%
	3,000	0	1	2	$55.56	$91.62	$36.06	65%
	4,000	0	1	2	$61.92	$108.99	$47.07	76%
	5,000	0	1	2	$68.29	$126.36	$58.07	85%
	6,000	0	1	2	$74.65	$143.73	$69.08	93%
	7,000	0	2	2	$81.01	$161.10	$80.09	99%
	8,000	0	2	2	$87.37	$178.47	$91.10	104%
	9,000	0	2	1	$93.74	$195.84	$102.10	109%
	10,000	1	3	1	$100.10	$213.21	$113.11	113%
	20,000	0	3	0	$163.73	$386.91	$223.18	136%
No Charge ("Zero")	0	2	2	8	$0.00	$0.00	$0.00	N.A.
	1,000	1	3	6	$0.00	$0.00	$0.00	N.A.
	2,000	1	4	5	$0.00	$0.00	$0.00	N.A.
	3,000	1	5	4	$0.00	$0.00	$0.00	N.A.
	4,000	0	5	3	$0.00	$0.00	$0.00	N.A.
	5,000	0	5	3	$0.00	$0.00	$0.00	N.A.
	6,000	0	5	3	$0.00	$0.00	$0.00	N.A.
	7,000	0	6	3	$0.00	$0.00	$0.00	N.A.
	8,000	1	6	2	$0.00	$0.00	$0.00	N.A.
	9,000	0	6	2	$0.00	$0.00	$0.00	N.A.
	10,000	1	7	2	$0.00	$0.00	$0.00	N.A.
	20,000	0	7	1	$0.00	$0.00	$0.00	N.A.
	30,000	0	8	1	$0.00	$0.00	$0.00	N.A.
	40,000	0	8	0	$0.00	$0.00	$0.00	N.A.

Chart 1 - Operating Ratio

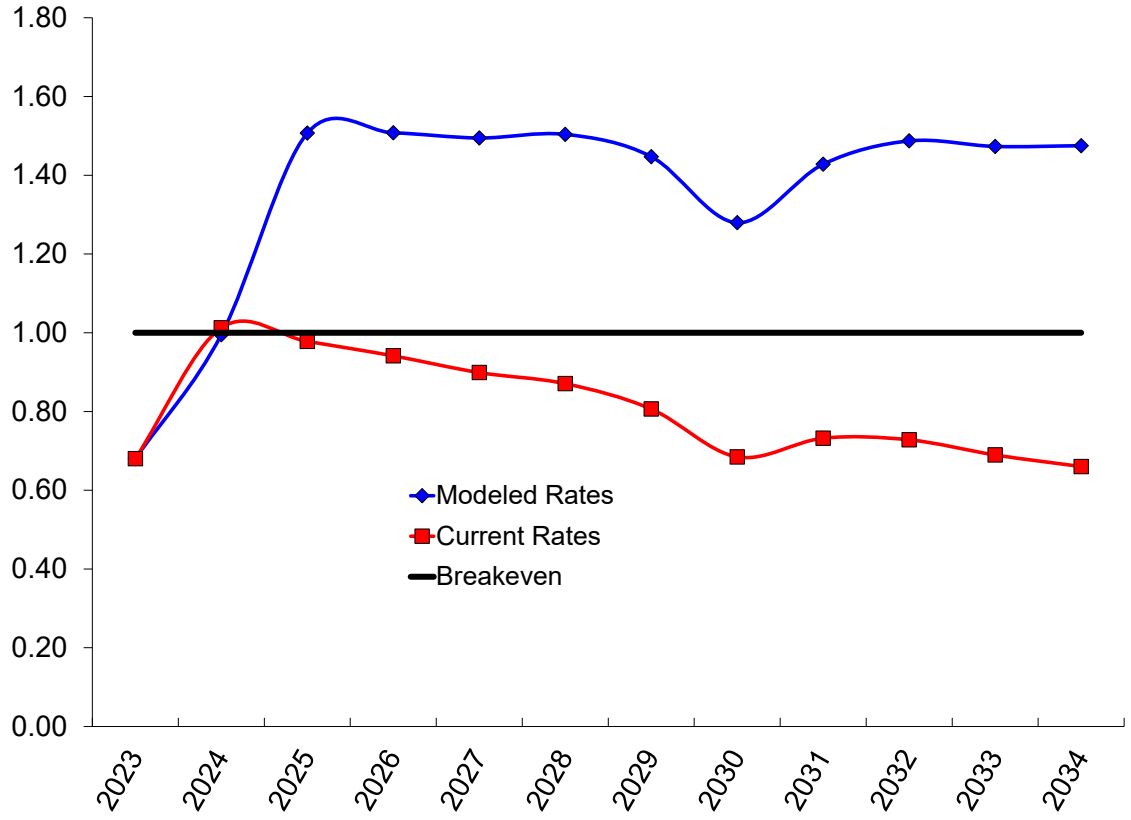

Chart 2 - Coverage Ratio

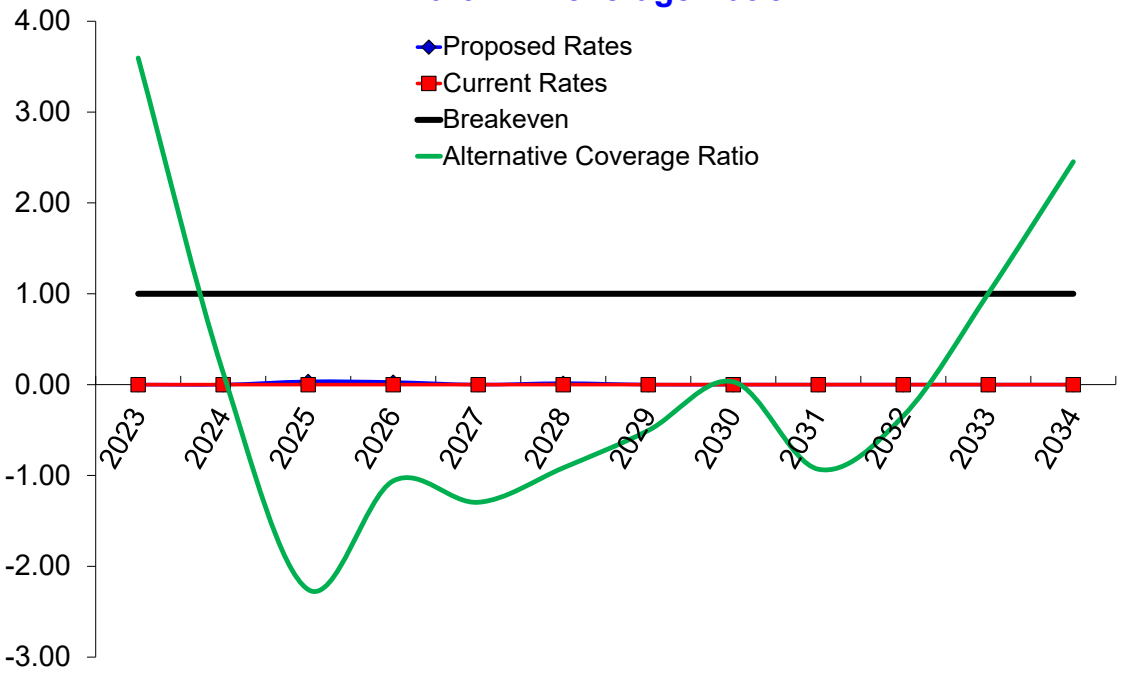

Chart 3 - Residential Users' Bills

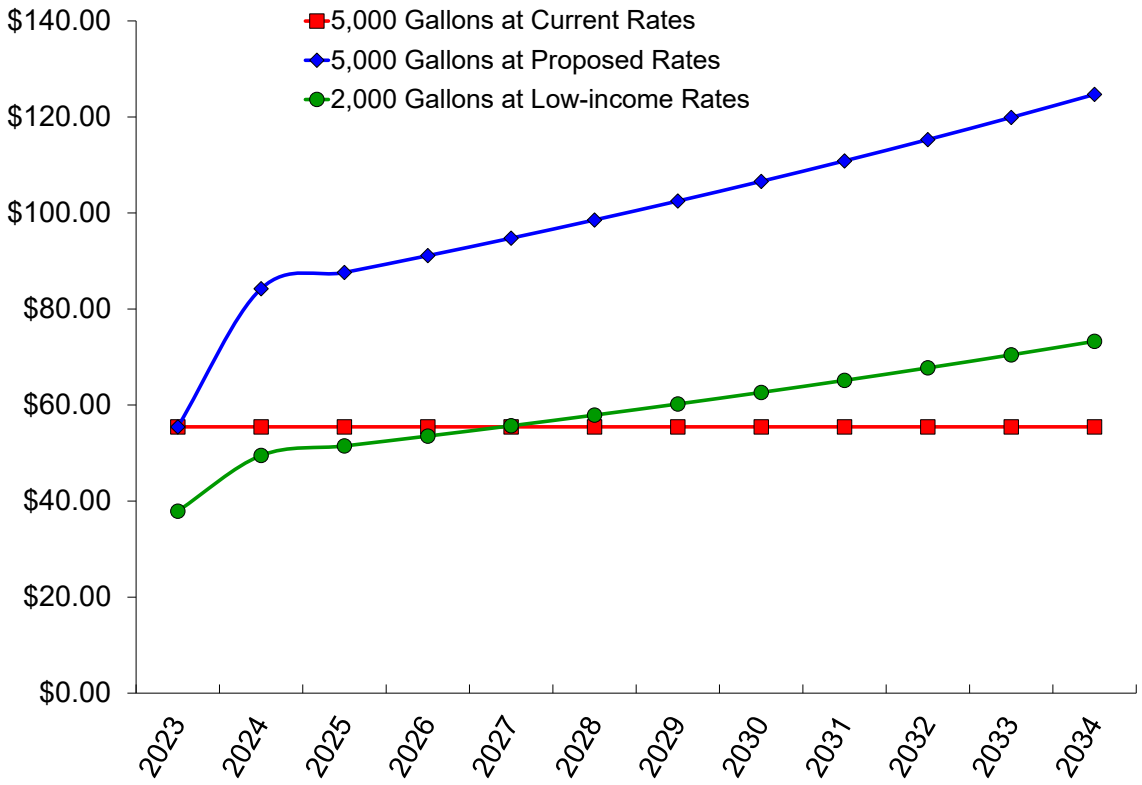

Chart 4 - Affordability

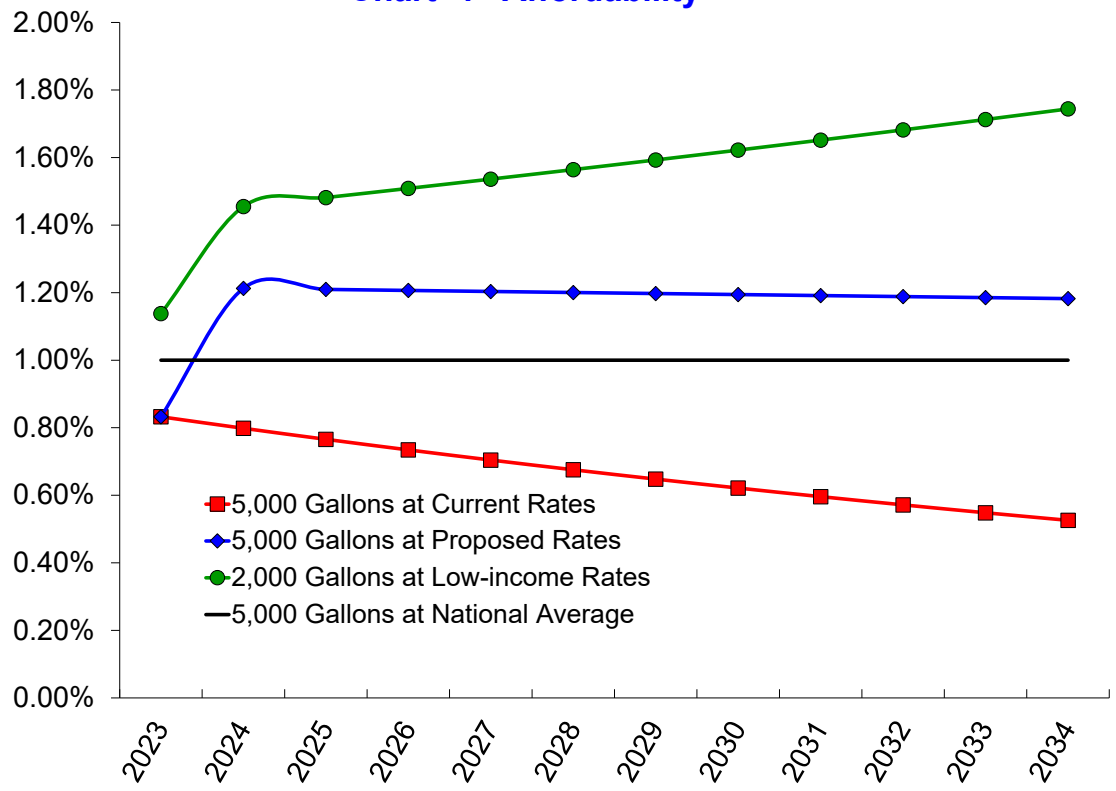

Chart 5 - Working Capital vs Goal

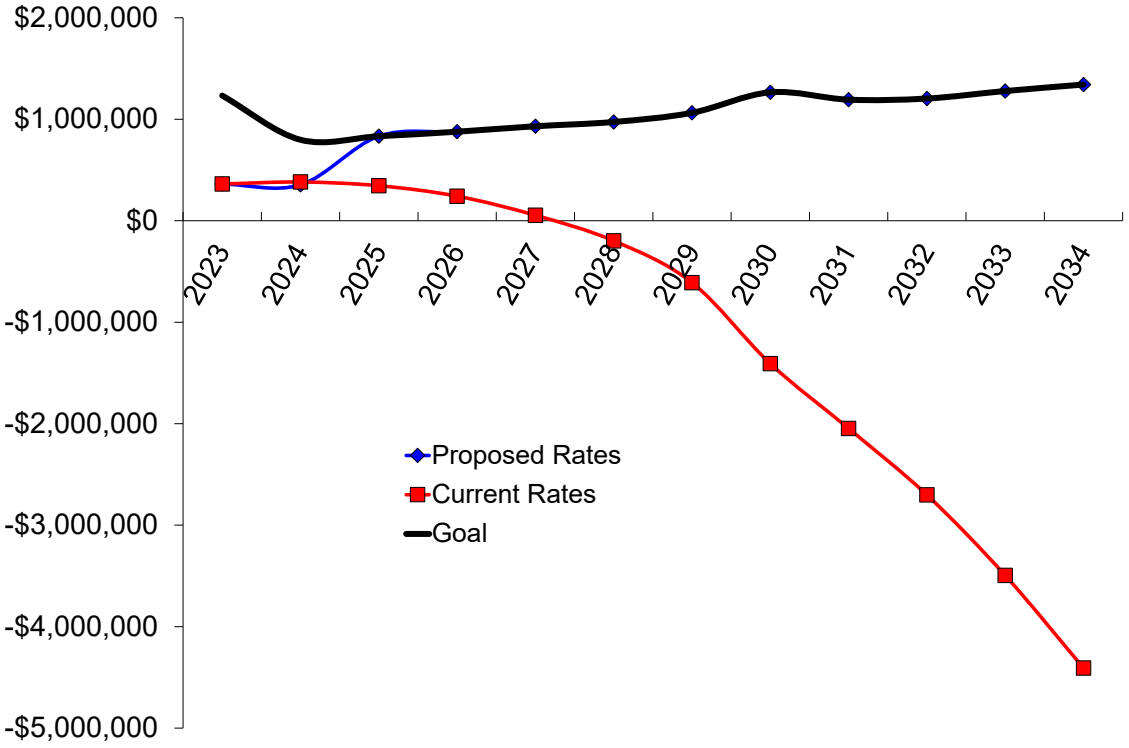

Chart 6 - Value of Cash Assets Before Inflation

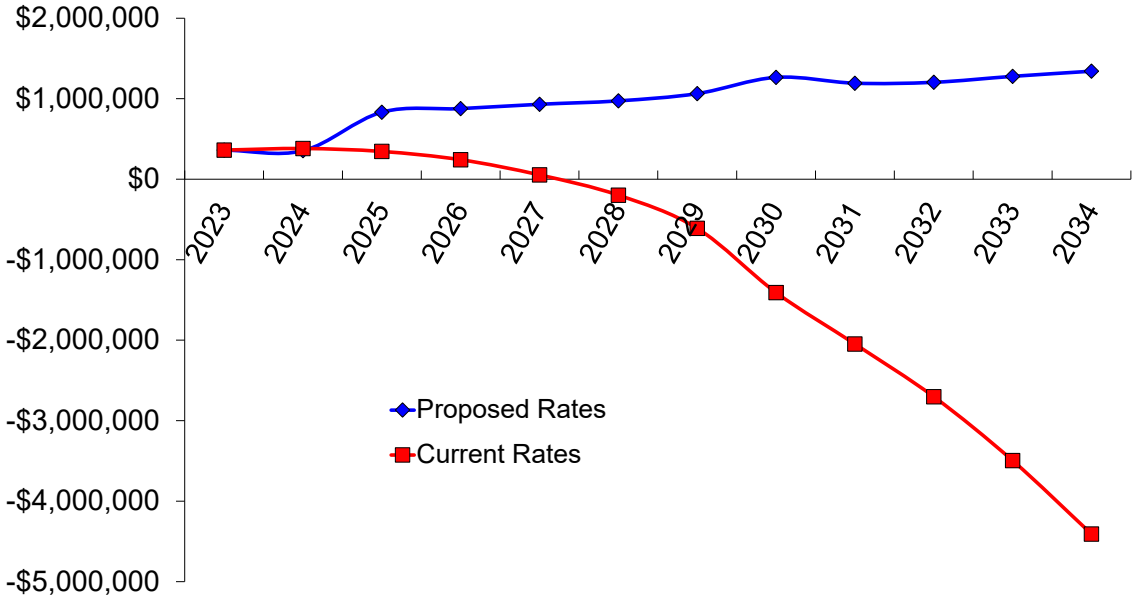

Chart 7 - Value of Cash Assets After Inflation

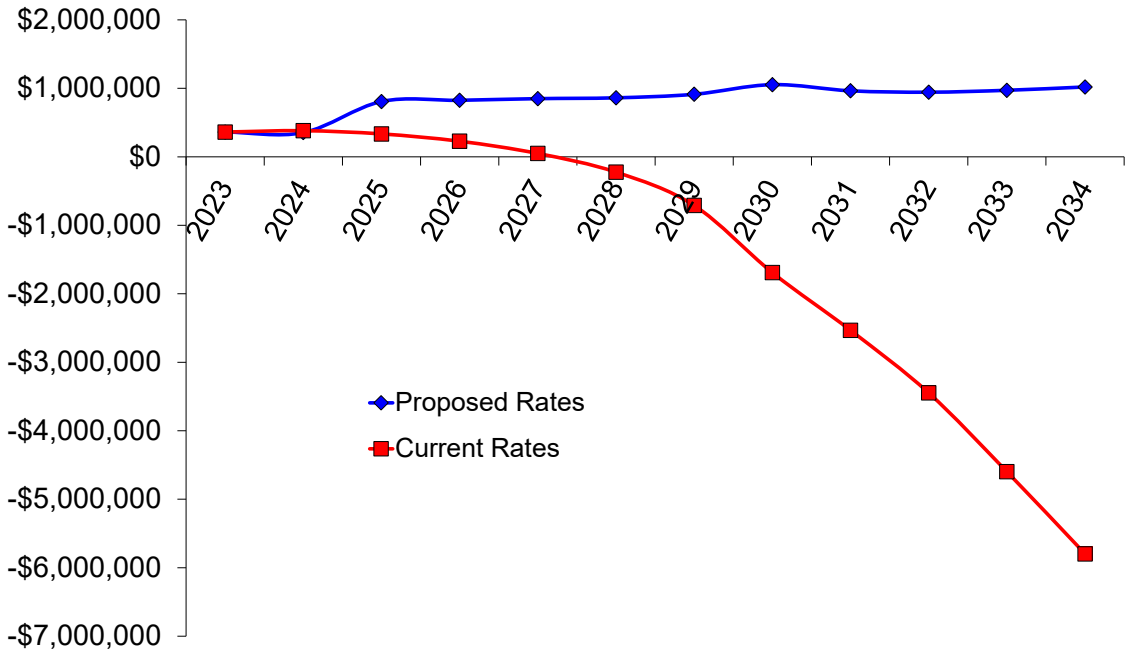

Chart 8 - Sum of All Reserves