Proposal for Water and Sewer Rate Analyses
City of Hillsboro, Missouri

Purpose and Need

This proposal describes the need, responsibilities, timing, investment and other issues for rate analyses (later referred to as "analyses") of the water and sewer utilities (later referred to as the "utilities"), for the City of Hillsboro, Missouri (later referred to as "you"). These analyses will be performed by GettingGreatRates.com (later referred to as "I"). To adequately fund operation of your utilities, build and maintain reserves, fund capital improvements and related debt service and establish rates that are fairly structured for ratepayers, you need to analyze your rates and fees, set them appropriately and periodically reset them.

Disclosure: I analyzed your water and sewer rates in 2006 and again in 2011.

Expected Results

With completion of the analyses:

1. You will discover at what level your utilities need to be funded to accomplish needed system development, refurbishment, repair, maintenance and operation.
2. You will have the "proof" you need to convince board members, ratepayers and property owners why rates and fees should be set as modeled.
3. You will have the "proof" you need to show funding agencies and the lending market why your systems deserve the grants, loans and loan terms you desire.
4. You will successfully comply with your permit to dispense water, NPDES permit and other requirements from the regulatory agencies.

I recognize that the desired outcomes may change as the project proceeds – as I analyze, the City will learn things that may cause it to adjust its goals. That is all part of the process and my service.

Firm Revenues, Qualifications and References

One hundred percent of the firm's revenues come from rate analysis and related work. Visit gettinggreatrates.com/ggr/freebies/ReferenceList.pdf and see the attached for detailed qualifications and references. The list includes all rate analysis clients since 2014. GettingGreatRates.com has one office in Jefferson City, Missouri but we operate nation-wide.

Carl Brown, President, will perform all analysis work for this project. He has been doing rate analysis work since 1993. For most of that time he has also been teaching practitioners all over the U.S. on rate analysis and rate setting, writing the rate setting book called, "How to Get Great Rates" and designing rate analysis software.

Jacki Hicks, the firm's Vice-president, will assist in these analyses by doing data testing and data input. Ms. Hicks prepares analysis models, especially those for analyses that require databases. Ms. Hicks has approximately 24 years of experience in accounting, financial assurance and complex spreadsheet and database design. Eight of those years have been devoted to utility rate analysis.

You may expect your analysis results package to look much like the rate analysis report package attached and others that can be found at the bottom of this Webpage https://gettinggreatrates.com/freebies/freebies.shtml.

Form of Agreement

This proposal and your acceptance (probably by e-mail message) of one or more service packages is all the agreement I need. Nearly all my clients acquire my services this way. However, if you prefer to attach a cover "letter of agreement" or signature page to this proposal, you are welcome to do so.

Guarantee

If you are not satisfied with our work, don't pay us.

Details: If you are unsatisfied with our work, simply tell me about it. I will do my best to make it right by you. If I still am not able to satisfy you, notify me by mail or e-mail. I will cease the services in question at that point, you will owe me nothing for those services and I will refund any payments you may have already made for those services.

This has been my guarantee policy from the day the company was formed. No client has invoked this guarantee to date, and I don't plan to have you be the first.

Insurance

The firm carries the following insurance:

- Professional liability, $2,000,000 limit, United States Liability Insurance Company (USLI)
- General liability, $1,000,000 limit, United States Liability Insurance Company (USLI)
- Auto liability, $1,000,000 limit, American Family Insurance Company

Scope of Services That You May Select or Decline, at Your Option

The following service packages are intended to satisfy your rate analysis and rate setting needs.

- Service package 1 is analysis of your water utility's user charge and other fee adjustment needs. Analysis will include output from modeling of your current financial situation in up to three modeled rate scenarios that depict rate structures and other variables you may want to consider. (I will examine many scenarios or alternatives in the process of arriving at the set of rates I will recommend. A "scenario" will get counted toward one of the three in this service package if I write a cover report for it and send that report, and the scenario model to you.)
- Service package 2 is the same as service package 1, except it is for the sewer utility.

- Service package 3 is for on-site visits. Each visit will be one instance of this service package. (I generally recommend one on-site visit to present the completed analyses and recommendations and to answer questions at a public board meeting. That is especially useful when I analyze more than one utility, or the analyses and rate adjustments are complex.)
- Service package 4 is an hourly rate for scenarios beyond the first three for each utility, or for any work you desire that does not fit into the other service package descriptions above. It appears three scenarios for each utility will satisfy your scenario or alternative modeling needs, and you will need no other kind of service from me, either.

You may add or drop service packages at any time.

Approach and Timeline

For most of my clients, rate analysis and eventual rate adjustments take about six months from start to finish. That is mainly because clients must gather data for the analysis, make some interim decisions as the project proceeds and proof analysis models and draft reports. That takes time. Completion time will be somewhat affected by my workload. But if we start soon and you gather data quickly, we can have your analyses and report done in the late winter of 2020.

Most analyses include the same basic elements, but they do not necessarily get completed in the same order. And, each situation calls for special considerations and treatments. However, your project will likely proceed approximately as follows:

1. I will call your contact person, probably the day I am notified that I will be doing the analyses, to discuss data needs and get the contact started on initial data retrieval.
2. Your staff will assemble and send to me data and information, most of which is described in the "Data Needs Sheet," attached. I will guide your staff through the entire process. Where data is missing, I will create estimates or help you to create estimates. Initial data retrieval will be accomplished early on, preferably within a few weeks. But some data will be acquired throughout the project.
3. I will analyze this data and information and build your rate analysis models.
    a. Coordinating with your contact, I will target a set of goals ten years in the future. These will include, at least, covering all costs, including capital improvements over that time period, and building appropriate reserves.
    b. I will model rates on a "cost-to-serve" basis to satisfy those goals. You may request other structures and I will model those, as well.
    c. Key model building will probably be completed about three months into the project, if you collect data quickly. Some modeling will continue through nearly the end of the project.

   d. Once models have been built, "what-if" scenarios will be run to find the optimum mix of rate and fee levels and structures, capital improvement funding options, reserve levels, etc. to suit the needs of your utilities.

4. During the last half of the project I will examine as many scenarios of your possible future as it makes sense. If I simply discuss a scenario with or send by e-mail information about a scenario, but do not prepare a written report about that scenario, that is simply work required to perfect your models. If you desire modeling of more than the three scenarios in each service package, I will do that work and bill you the hourly rate under service package 4 for that work. It is unlikely you will need such work.
5. You will likely choose to consider adopting rates and funding levels from the one or two most promising scenarios for each utility.
6. Final output will include a cover letter, a narrative report of my findings and recommendations and copies of the analysis scenarios that interest you.
   a. The project is "complete" when you say it is. Until then, I will reanalyze and issue supplemental or new reports until you are satisfied. To be clear, supplemental reports having to do with the first three scenarios are covered by service packages 1 and 2. Such work is not billable under service package 4.
7. If you choose the on-site visit service package, I will present my final analysis results and recommendations to your board in person. While there I would also like to meet with staff to discuss how to make needed changes to billing, equipment replacement scheduling and any other administration or operational issues that are discovered.
8. As you draft proposed amendments to your ordinances and budgets to make the rate, fee and other changes, at your request I will review those changes to assure that they will accomplish what you intend to accomplish.
9. The board will pass ordinance amendments to set new rates and fees and make budget revisions and other changes. From this point forward, your utilities will be headed to a better financial future.

Work Coordination and Contacts

Generally, I will only communicate with your designated contact(s) about the analyses. There are degrees of exceptions:

1. It is rarely, but sometimes, beneficial for me to contact funding or permitting agencies, and similar entities, about funding options and such. But I would discuss that with your contact first.

2. On occasion, a ratepayer, developer or someone else who would be affected by new rates will call or e-mail me direct. In those situations, I speak courteously with people and give them general information about how I perform analysis and the like. But I do not divulge important specific information about the client's analyses. I leave that up to the client. I apply this policy to board members, staff and other people who are not designated contacts but who are concerned about the rate analysis or they want to "guide" the analysis even though they are not one of my contacts. To put it bluntly, I guard against a board member "going rogue."

Early on you will probably designate your city administrator/clerk and public works director or delegated staff to be my contacts. This stage is primarily a data gathering and modeling function. When we progress to the reporting out stage you may want to also designate a policy-related staff person or governing member as I prepare rate, fee and proposed policy action recommendations.

I sum up my contacts policy like this. You are my client. I work for you. When I give my work product to your designated contact, it becomes your property and no one else's until you make it public.

Use of Electronic Technology

I do almost all analysis work electronically and remotely, receiving and sharing data and information by e-mail attachment. I prefer to receive numerical data in a spreadsheet format and textual material in a word processor format, but we can work with other formats, too. When I return material to you that you need to manipulate further, such as a revised ordinance, I will return it electronically in a format you can conveniently use. You will receive my analysis reports, the analyses and my recommendations electronically as PDF documents.

Investment

Following are your complete investments for my services, materials and travel costs, based upon the service descriptions above:

- **Service package 1**, water rate analysis – full fee of **$7,374**
- **Service package 2**, sewer rate analysis – full fee of $7,374, less our multi-study discount of $737 yields a **net fee of $6,637**
- **Service package 3**, on-site visits – full fee of **$663 per visit**
- **Service package 4**, hourly rate of **$147.48 per hour**

If you choose service packages 1, 2 and one visit from package 3, the group of services you most likely need, the total investment will be $14,675.

Once the project gets started you may add or drop service packages as your needs become clearer.

Proposal Acceptance

This proposal is effective through December 31, 2020, if you choose at least one service package by October 1, 2019. Once you tell me what service packages you desire, and you provide data to work with, I will immediately start to produce the analyses.

Promptly given the data I need, there is no good reason why I cannot complete the project by the spring of 2020.

Action item: If you accept this proposal call me to tell me what services you desire. Or, give me the same information in writing by e-mail message.

Payment

I will first invoice you for one-half of the project dollar amount after 90 days from proposal acceptance and the balance when I submit the final report package. If you request hourly work, I will invoice you no more frequently than monthly for that work. You shall promptly pay the full amounts of those invoices. If you request and pay for services but later cancel those services, I will refund those fees to you. If I cancel any services in this proposal (I have yet to do such a thing), you will owe me no fees for those services, and I will refund any fees you have already paid for those services.

In Closing

I am looking forward to the opportunity to conduct the next round of your rate analyses, so you can get your utility rates, finances and services set on an excellent course, again.

Best regards,
GettingGreatRates.com

Carl E. Brown
President

January 17, 2020

Buddy Russell, Mayor
City of Hillsboro
P O Box 19
Hillsboro, Missouri 63050

Subject: Water and Sewer User Charge Rate Analysis Report

Dear Mr. Russell:

Attached is the rate analysis report for the City's water and sewer utilities. Before I address the report, I have some observations for you.

Rate analysis requires a lot of data. I gathered little of that data myself. Jesse Wallis, your City Administrator, did most of that work. Mr. Wallis was wonderful to work with. I do not remember anyone else sending me usage data so quickly, correctly and in a usable and such an easy to use format on the first try as did Mr. Wallis. He sent the rest of the data I needed very quickly, too. He was always helpful, friendly and very good at this work. Mr. Wallis understands and appreciates the priority of getting the rates right. I think you and the other members of the Board and citizens of the City are lucky to have him serving you.

Now, on to the report.

I have analyzed the City's rates two times before. The City has been working its way toward "cost-to-serve" rates. That means fair and adequate for a reasonable amount of time. You are not all the way there, but don't worry about that. Cost-to-serve rates are always a work in progress.

The current analyses show that you need higher revenues for both utilities. That does not mean your rates have been inadequate. It appears they have been adequate to meet the needs you were facing. But your conditions have changed, and they are going to change some more, so this rates tune-up should get you on track for the new needs. As was the case before, capital improvements and new debt are the main drivers of the need for more revenue now, too.

Once the initial rate adjustments are in place, you should monitor cash flow and reserve accumulation carefully. Over the next several years, if revenues and costs – especially capital improvement costs – and reserves come in as projected, great. Do the inflationary increases I recommend in the report. If reserves fall short of their targets and it appears that will not be a temporary situation, have Mr. Wallis give me a call to discuss the situation. If you need to make further adjustments to get reserves back on track, I can probably help you do that quickly and for no additional fee. Having models of your new conditions makes it easy to change a factor and re-run the rates to cover the change.

The City engaged me to make an on-site visit to present my report and results to the Board and answer questions. I look forward to that meeting, so I can explain things that are difficult to grasp in a long report and complex models.

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

Best regards,
GettingGreatRates.com

Carl E. Brown
President

Enclosure

Water and Sewer Rate Analysis Report

Hillsboro, Missouri

Prepared January 17, 2020

Carl Brown, President
GettingGreatRates.com, LLC

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Executive Summary

These analyses calculate cost-to-serve water and sewer rates for the City. The current rate structures are more complex than necessary. The recommended structures are not as simple as they could be, but they are simpler than the current structures. The initial water rate adjustments will result in an overall revenue increase of 25.2 percent, primarily needed to fund capital improvements that are underway now and others that will soon be needed. The water bill for a 5,000 gallon per month residential customer will rise from $31.40 per month to $38.49.

The initial sewer rate adjustments will result in an overall revenue increase of 33.1 percent, also primarily due to increasing debt service for capital improvements. The sewer bill for a 5,000 gallon per month residential customer will rise from $43.39 per month to $60.80.

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The Meaning of This Report, in a Nutshell

The City of Hillsboro, later called "the City" or "you," hired GettingGreatRates.com, later called "me," "we" or "I," to perform rate analysis of its water and sewer utilities, produce a report of my findings and recommendations and provide guidance on rate setting.

This report is detailed. The math behind the report is complex. These things make 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 idea the rate calculations in this report are based on is 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. The recommended rates move the City closer to cost-to-serve rates, but not all the way there. I stopped short of full cost-to-serve rates to reduce the degree of bill changes some customers would experience.

Customers will naturally compare the bills that result from the recommended rates with their current bills to see "What will happen to me?" When their bills go up, many will think the recommended rates are not fair. In fact, those customers are currently being subsidized by others who will see their bills go down, or not go up as much. Thus, everyone needs to change their benchmark for deciding what is fair and what is not. The benchmark should not be the current rates. It should be the costs incurred to serve them.

Introduction

"Test year" is the one-year period from which data was used as the starting place for the analysis.

Overall, water and sewer rate revenues are too low. Both need to go up significantly to fund needed system improvements. After making the recommended rate adjustments, the Affordability of the water rates will be a bit less than the national average and the sewer rates will be a bit higher.

Having adequate rates is rate setting job one. But, having fairly structured rates is very important, too. Cost-to-serve rates are the clearest way to achieve both goals. I recommend such rates. Therefore, I recommend eliminating the 2,000 gallon per month usage allowance in the water and sewer rates, because usage allowances skew the fairness of rate structures. Cost classification also revealed that the balance between minimum charges and unit charges should be adjusted for both utilities' rates.

This report is the culmination of a process where I submitted information and data requests to Mr. Wallis. He replied, quite promptly and thoroughly, I must say. We went through this step several times. I know that Mr. Wallis has also consulted with other staff when he needed certain technical information. As I received information and data, I modeled the City's finances and rates and submitted drafts for review and feedback. Mr. Wallis reviewed those drafts to assure accuracy, and in some instances, he corrected data.

With that feedback, I prepared and submitted a draft final report. Again, Mr. Wallis reviewed and gave me feedback, from which I revised the full report to arrive at this, hopefully, the final report.

The report is in two parts. The first is this narrative report that tells readers what should be done to the utility's rates and why and interprets much of the mathematical modeling. The second is a printout of the modeling spreadsheets, called:

- "Hillsboro, MO; Water Rates, Model 2019-1," later called, "the Water Model;" and
- "Hillsboro, MO, Sewer Rates, Model 2019-2," later called, "the Sewer Model."

The models are sets of integrated calculations that mathematically depict the utilities' situations to arrive at an appropriate set of rates for each utility. I analyze rates using a spreadsheet template containing numbered tables. In both of your models, I used Table 9 only to calculate the approximate cost of water loss (water) and inflow and infiltration (sewer).

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 then make well-informed decisions about actions to take. And the report and models are not legal recommendations. For legal issues consult your attorney.

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. In the past, I wrote about such issues in each rate analysis report. Now, I cover such issues in separate guides, all available for FREE download at https://gettinggreatrates.com/freebies/freebies.shtml. Following is a listing of a few those guides and resources:

1. How to Get Great Rates© (e-book)
2. Rate Setting Issues Guide©
3. Replacement Scheduler©
4. CIP Scheduler©

How to Get Great Rates focuses closely on rate setting for smaller systems. The Rate Setting Issues Guide expands upon the book to cover affordability, sustainability, bill assistance programs, meter size-based system development fees and minimum charges, and more.

The last two items in the list above are spreadsheet applications that enable users to build their own equipment repair and replacement and capital improvement schedules, calculate their costs and calculate revenues needed to pay those costs. In fact, these spreadsheets were extracted from my model template and made a bit more user-friendly for do-it-yourselfers. I encourage the City to use these two sheets so you can make repair and replacement and capital improvement plans more formal, more forward-looking and less reactive.

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

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. Your situation is simple enough that I did not need to use all the methods I normally employ for calculating fair and adequate rates.

When I analyze rates for a government-owned water-based utility, 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 Association'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. The cost-needs approach is a static (one year) rate calculation. I enhance that approach by projecting costs and revenues into the future.

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 time period, usually in the near future, are classified as "fixed," "variable," "capacity-to-serve," or some combination of the three. Fixed costs are converted to a 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 minimum charge.

The first step is to classify operating costs, which is done in Table 8. The "Average Fixed Cost/User/Month" from Table 8 is used for calculating the base minimum charge. Also, from Table 8, the "Average Variable Cost to Produce/1,000 gallons (or other units)" is the basis for calculating unit charges.

The second step is to arrive at capacity costs. In your case, capacity costs are quite important because you have many capital improvements to make. The peak flow portion of those costs should be recovered, as much as possible, by meter size-based system development fees (new connection fees) and surcharges to the minimum charge. That was done. The remainder of such costs not recovered by system development fees and surcharges is then recovered through regular user charge fees in the proportions classified in Table 8.

The third step is to project costs ten years into the future. Generally, this is done by applying an expected inflationary factor to each cost. Some expenses, like postage, treatment chemicals and electricity, rise with inflation plus growth in the customer base or use. Those were increased in future years by both factors.

The fourth step is to set reserve goals 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.

The fifth step is to arrive at the full suite of rates needed to fully fund the utility. This is a dynamic set of calculations, too complex to completely explain here. I will leave out some details. The "Cliff's Notes" version is this:

- 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 overall revenues to a target, each revenue stream is increased 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 need is established, the base minimum charge is "back calculated" from the adjusted minimum charge revenue amount. The unit charge is "back calculated" from the adjusted unit charge revenue amount. The resulting rates are the starting rates, what you will (hopefully) adopt initially. In later years, you will increase these starter rates and fees across-the-board by an inflationary factor, to keep them tracking with rising costs.

- Of course, system development fees, minimum charge surcharges, investment earnings, penalties collected, and other income sources generate revenues, which are added to rate revenues. And, I assumed future inflationary rate increases, so those revenues are added over the years, as well. Without explaining the details, you should have a sense that, while the math is complex, the rates are calculated to be proportionate to the costs each customer causes and the revenues will be adequate to cover all costs for the next ten years.

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.

Cost-to-serve rates are considered by many, including me, to be the most mathematically fair and defensible rate structure. However, there are often good reasons to adopt rates that are at least somewhat different from true cost-to-serve rates.

Your utilities should have meter size-based minimum charges composed of two parts:

- One is the basic cost to make any level of service available to any customer. These are the so-called, "fixed costs" that come from the classification exercise. Billing, general administration and similar costs that are the same for all customers, regardless of "size," make up the base minimum charge. To make it easier to understand this concept, and related concepts, I use catch phrases. For this type of cost, the phrase is: ***Fixed costs are related to the fact that you have customers.*** For every customer, you incur one increment of this type of cost. **In your case, all fixed costs were considered to be equally shared by all customers.**
- The other part of the minimum charge is 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 (as determined by American Water Works Association studies). This peak flow capacity relates well to the cost of building infrastructure "big enough" to handle peak flows. ***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.*** The surcharges are added to the base minimum charge to arrive at the surcharged, or full minimum charge for each meter size.

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. You currently have conservation rates, which is a good practice, but you have more rate blocks than necessary. I recommend simplifying the blocks, as you will see.
- 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. I like to tell most of my clients that if they 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 water, and almost all sewer service is assessed using 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 make good sense. Declining

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 90 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.

rates are most appropriate in areas that have a high concentration of high water using industry or in an area where folks want to attract such users.

To complicate the aforesaid just a bit, rate setting is first about recovering costs. Job one of utility rates is to pay the utility's costs. 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 models adjust 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.

Coincidentally, such a dynamic model makes it easy to calculate rate and other changes over the next two or three years, too. 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 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 at $500 – $1,000. Some of my clients find that to be a very accurate and cost-effective way to maintain good rates.

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. 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.

- You will get complaints about customers' bills going up. 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. The degree by which some customers' bills change highlights the fact that rates are unfairly structured right now.

Please keep the above summary of cost-based rate calculations in mind as you read on.

Principles

I use several guiding principles when I help systems set their utility rates, fees and policies. As you read the report and models, keep in mind that my recommendations have been weighed against these principles:

1. Water, sewer and all other utilities are businesses, regardless of who owns them. Businesses must cash flow properly. Otherwise, they go out of business and your customers do not want that.
2. In addition to functioning in a business-like manner, a utility has a responsibility to its customers to strive to guarantee its long-term prosperity for their benefit. The customers expect the service to be there whenever they want to use it. Thus, a utility must err on the conservative side by building and maintaining strong reserves that will enable it to weather financial storms.
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 by paying commensurate system development fees. Likewise, service users should pay for what they use. Each user or class of users should pay their fair share of service costs.
4. Sometimes contradicting point number 3 above, if adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, or discourage development that the community desires, consider the necessity of the change carefully before making 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. 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, they can be impractical for some utilities. Consider this: a large city with thousands of customers served by a wide range of meter sizes and a wide range of use by its customers, needs rates that are cost-based and, necessarily, complicated. Such rate complexity is worthwhile because the utility's situation is complicated. But a small town serving only a few meter sizes and few, if any, customers that use high volumes would not be well-served with complicated rates. Simpler is better for them.

General Issues

Concerning construction of the models, they were built to match the systems' financial statements and other data as much as possible. However, the intent of rate modeling is to see to it that the resulting rates are adequate to pay all system expenses for the next ten years, build and maintain responsible reserves and collect fees from customers on a fair basis. 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 your 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 fund, etc. Therefore, the models account for funds in a more simplified way than you probably will. When it comes to segregating funds, staff knows best how to do that, so the models do little in this regard and 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 **recommended** 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 of both analysis models.

I will say it simply, like this. 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 decide to keep your current rates. If either line is headed down toward zero, that is a very bad thing that needs to change by reducing costs, if you prudently can, or increasing rates.

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 don't like that. But the utility will be better funded as a result of those higher rates and that benefits ratepayers because it makes their utility more resilient and able to make improvements that will serve them better.

One thing you will notice in viewing the charts in the models is this. Sometimes, only one of the lines shows up. When that occurs, it means that all the lines are taking the same path (one line is covering up the others). For example, sometimes Chart 5 shows only one line – the working capital goal amount. When that happens both the current rates and the modeled rates' net revenues are adequate to satisfy the goal, so those two lines are hidden by the line for 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. When that happens, rest assured, the other two lines are underneath the goal line and that is a good thing.

Charts 6 and 7 can do the same thing, making it seem like the current rates are "just as good as" the modeled rates. But, Chart 8 will spell the difference between the two sets of rates. The modeled rates will generate more revenue and, thus, produce stronger total reserves. Since the working capital reserve gets truncated at a certain level, the differences in the total reserves show up in the CIP and Debt Service fund balances. These balances appear near the bottom of Table 6 of each model, and they are included in the Chart 8 amounts of each model, too.

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.

Action Recommendations for Policy and General Issues

Use the following as a checklist of "to-do" tasks. Many if not all these things you are already doing but they bear repeating:

1. Periodically determine how long, on average, it takes to perform the various services you provide in the field, such as after-hours service, meter disconnects and reconnects, special meter readings, etc. Be sure to include all the time you actually pay staff for performing these services. Then determine how much it costs the utility per hour, on average, to have staff perform these services. This includes benefits, taxes, use of utility vehicles, tools and minor equipment, etc. It should also include a fair amount to cover the time that office staff devotes to working on these services to track them, bill for them, etc. This should be the hourly rate or a set fee you will charge for these services. In addition, set a minimum that you will charge for showing up, whether the service takes an hour to perform or 10 minutes. 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 functions is important, do not make the process burdensome. For many functions you likely can just estimate your time occasionally and charge fees based upon those estimates.
2. Retain required funds in interest bearing debt service and debt reserve accounts when required by your lender(s).
3. Have me conduct a full rate analysis again when the actual financial performance and my projection of future performance diverge significantly. Conditions should dictate rate analysis frequency, but you will likely need it again in about five years.

4. Fully adopt management strategies that are included in what is most 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 to do capital improvement and equipment repair and replacement scheduling, costing and annuity calculations – the core of asset management.
5. Track volume usage, incomes and expenses on a regular basis so the data and information you generate will support future rate analyses.
6. As a reminder, check with your attorney for language and legality of all charges and issues discussed.

The remainder of this report directly addresses the analysis findings and my recommendations, first for water and later for sewer. Several issues affect both water and sewer rates. Thus, to keep the report shorter and simpler, I will cover such issues in the water subsection. In the sewer subsection, I will just refer readers back to the water subsection for those issues.

Water Rates Discussion

Recommended Rate Structures

Your current water rate structure is too simple for minimum charges but too complex for unit charges. I recommend structures to fix those things. That will improve rate structure fairness. Such rates need to include:

- System development fees that graduate with meter size, based on the cost of capacity to serve different meter sizes,
- A minimum charge that is also based on meter size for the same reason,
- No usage allowance,
- A unit charge structure that is like your current structure, but which has one fewer rate block (four blocks instead of five), and
- Rates for out-of-City customers where the capacity cost component is set 50 percent higher for each meter size, and the unit charges for all volumes of use set 50 percent higher than the same rates for in-City customers. It costs more to provide service out of the City, and you are at greater risk of upsets with out of City customers, so you should assess a premium for such service.

Most of these things are easy to understand but I will expound upon meter size-based rates a bit more in the next subsection.

Meter Size-based Rates

I almost always recommend meter size-based system development fees (connection fees) and minimum charges for both water and sewer utilities. Both of your utilities are large enough, and customers should be diverse enough to warrant them, so I recommend both for you, too.

As to new connection fees, they include two parts:

- One part is the cost of equipment; like water meters, meter pits and pipe; and the cost of permitting new connections, "signing up" new customers, inspecting connections and other labor-related things. In Table 11, page 58, I estimated such costs would average $150 per new connection, but you should recover whatever these costs actually are.
- The other part of a new connection fee is usually called a system development fee. These costs are calculated in Tables 11 and 13.

In the last column of Table 13, page 60, I showed the resulting cost to recover for each meter size, which includes the estimated $150 per new connection for equipment, supplies and labor required by the City to facilitate new connections.

The cost-to-serve notion and the mathematics of calculating system development fees that recover the cost of capacity apply just as well to minimum charges. The basic difference is this. System development fees recover that cost all at once and minimum charges recover that cost over time. Thus, the minimum charges I recommend also graduate by the same relative amounts as do the system development fees.

There is more to such calculations than you may care to understand. But if you want to research this further, please read Chapter 12 of the "Rate Setting Issues Guide" cited in the subsection called, "Rate Setting Resources Beyond This Report" on page 6.

Volume Usage

Table 2, page 35, shows the volumes used by each rate class of customers. Note that for some of the rate classes, not all the volume ranges show. That is because there was no usage in those ranges, so I hid them just to save space in the Model's output. In later tables, you will see that I used this space-saving technique there, too.

Expected Incomes

Table 3, page 42, shows past income and future incomes to expect under the recommended rates and fees, as well as several other things related to revenues.

In Table 3, near the top, on the line called, "Rate Increases Projected for Future Years," note that I show a three-percent annual across-the-board rate increase in future years. That means, in years after the initial rate adjustments, you will need to raise all important rates and fees by three percent each year to enable incomes to keep up with inflation, pay for improvements and build the reserves to the target level.

Expected Operating Costs

Table 4, page 43, shows expected operating costs. With just a few exceptions, all the costs are expected to rise by 3.0 percent each year. However, the yellow highlighted costs are expected to rise by that percentage, plus grow as the customer count or usage grows, too. Those costs were increased by both factors.

Capital Improvements

First, I want to cover the possible alternative funding options for capital improvements.

There are several criteria grant agencies use to determine if an applicant is eligible for a grant and the amount of that grant. A key one is the Affordability Index. The Affordability Index is discussed later but, based on the Index, it is very unlikely the City would qualify for grants.

I then considered the option of a market rate loan from USDA Rural Development. That would be a 35-year loan, likely at an interest rate of around 4.5 percent. That funding would result in an overall rate increase of 8.9 percent. With an Affordability Index of 0.67 percent, you would not be grant-eligible on a needs-basis.

Finally, I modeled funding like what I understand you have been doing in the past; a 17-year loan, probably at a rate of around 3.5 percent. That funding would result in an overall rate increase of 25.2 percent and those rates would still be far from grant eligible. While that funding package requires higher rates, the debt service would be 18 years shorter. I have not done the math on the overall savings, but the shorter term would save a large amount of cash and I consider it to be the better option, so the rest of my modeling, including sewer rates modeling, is based on that option.

Capital improvements and debt needed to cover those costs are calculated in Table 5, page 44. The water utility needs many improvements. As you can see in the bottom half of this table, you will take on significant debt. Your debt payments will go from almost nothing now to $552,000 per year in ten years. That is a large change in costs, and it is the main driver of higher overall rates. As long as capital improvements happen close to how they are modeled in Table 5, the recommended rates will be sufficient to cover debt payments along with all other expected costs.

I also modeled the possibility that the most expensive project, the new well and tower, would cost $1,000,000 more than expected. In that case, the overall rates would need to go up 36.2 percent, or 11 percentage points more than if the project cost what it is currently estimated at. Even that scenario has rates that are far from being grant eligible.

Repair and Replacement Costs

Table 6 and 7, starting on page 46, show expected operating costs. Like other costs, repair and replacement (R&R) costs will also inflate over time. However, inflation was considered in calculating the "Annual Payment to R&R Reserve," so the R&R annuity will remain constant until a cost or timing in the schedule changes or when in future years, you update the schedule.

R&R costs were entered into Table 6. Mr. Wallis sent me a combined water and sewer replacement account, so in the water version of Table 6, I show all replacement items. But I only included the water related costs, plus those that are shared by water and sewer, in that table. In Table 6 of the Sewer Model, I did the opposite and "zeroed out" the water-only expenses.

Back to the Water Model, the annual annuity was calculated in Table 7, page 48, and that amount shows up near the bottom of Table 4 as an annual operating cost.

As mentioned before, I discuss R&R extensively in the "Rate Setting Issues Guide" and the spreadsheet called, "ReplacementScheduler©" can be used to schedule R&R and calculate the annuity (annual savings amount) needed to pay for it. In fact, Mr. Wallis entered your R&R costs into this spreadsheet, sent it to me and I entered those costs into the models.

Unbilled-for and Lost Water

According to the difference between your master metered water volume and the volumes billed to customers, water loss plus water used for line flushing and other system maintenance (unbilled-for water) came in at 25 percent. Lost and unbilled-for water costs money, so keeping the loss rate low saves your customers money in the form of lower rates.

The estimated cost of lost water is shown in the bottom right corner of Table 8, page 49. At a cost of approximately $48,000 per year, this cost is significant for your system.

Target Reserve Levels

Your current total reserves are right on target, based on your current operating and other costs. However, debt service will grow over the years, so I targeted total reserves ten-years out to meet the new, higher reserves goal, which will be just shy of $1,200,000.

The following spells out in more detail reserves I targeted:

1. Unobligated cash and cash equivalent reserves equal to at least 35 percent of the annual operating costs, not including debt service and general administration costs. *Your utility is on the smaller side, so I would recommend 50 percent;*
2. A 20-year repair and replacement (R&R) schedule reserve, in the 20th year equal to at least one average year's cost of R&R. *You do not have such a schedule, so I estimated such R&R costs at 10 percent of operating costs, not including CIP, debt and administration costs and I targeted R&R reserves 20 years out at double the average annual R&R cost,* and
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. *In your case, I would recommend the same.*

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.

The lines on the bottom of Table 17, page 66, and several of the charts at the end of the Model show the reserve balances to expect for the next ten years. The last line of Table 17, the "Sum of All Reserves," is the critical one.

As shown by the blue line in Chart 8, page 82, total reserves will grow over the next ten years. The red line depicts reserves if you did not increase rates for ten years, but you still incurred the modeled costs.

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.

Rate Affordability

Rate affordability, often measured by the Affordability Index, is an important indicator to which you should pay attention.

In Table 17, near the top, I show the estimated Affordability Index. The Affordability Index is also shown graphically in Chart 4, page 80.

In the table, the Affordability Index calculation for the test year was at 0.64 percent. That means, such a customer paid 0.64 percent of their monthly household income to pay their monthly water bill. The national average is around 1.0 percent and that is consider affordable, so your current rates are more affordable than average.

Under the recommended rates, this customer's bill would go up significantly but still result in an Affordability Index below the average, at 0.77 percent. That is important because most grant programs that have an Affordability Index eligibility criterion try to keep rates, after a capital improvement is completed and debt is in place, below 1.5 to 2.0 percent. Your rates are far from satisfying such a criterion and in the future, they are expected to remain steady. But do not dismiss grants entirely for future projects. Grant agencies have other eligibility criteria, so you might get a grant based one of those.

The affordability index is useful, but it does not depict how new rates will affect customer types or those using different volumes. Table 18, page 67, shows how customers' bills at different volumes of use will be affected by the recommended rates. Table 18 gives ratepayers useful information. It is one of the few tables from the Model that I recommend you copy and bring to the board meeting where we will discuss rates. Because most customers are concerned about what will happen to their bills, you should give this table to everyone who wants a copy.

What everyone should get from Table 18 is, bills need to go up the most for higher volume customers.

Recommendations for Adjusting Water Rates

The Model contains all my rates-related recommendations and shows what they are built upon. I have discussed many recommendations earlier in this narrative report, too. In the following, I summarized most of those recommendations. In the tables that follow, I list the rates and fees you should adopt:

1. Adopt the rates and fees shown in Tables A and B that follow this list.
2. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates starting in May of this year. I recommend you try to adjust rates sooner, so you can start building reserves sooner.
3. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date.

4. Approximately one full year after the initial rate adjustments, examine the costs and incomes the utility experienced during that year, plus the balances that have accrued. Compare those items to the same items in Tables 3, 4, 5 and 17, of the Model.

   a) If all accrued close to the values in the Model, raise all rates by 3.0 percent, as shown near the top of Table 3, page 42.

   b) If balances did not accrue as shown at the bottom of Table 17, but they are not egregiously too low, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly.

   c) If balances were too low by an amount that is troubling to you, 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.

5. Repeat recommendation Number 4 each following year until you have raised rates and fees by a cumulative 20 percent, which should occur in about seven years from now. At that time, have me or another rate analyst of your choice perform a new rate analysis, so rate structure and adequacy can be adjusted again. If you need capital improvements or repair and replacements that are quite different from those assumed, you will need a new rate analysis sooner than that.

   a) You have an expensive well and tower project coming up next fiscal year. To give you an idea of how cost variation of improvement projects could affect the rates you need to set, I ran a separate scenario of the Model that assumes the cost of that project will be $1,000,000 higher than expected. If that happened, you would need to set user charge rates 11 percentage points higher than those in Tables A and B that follow. Thus, any portion of a $1,000,000 increase would take that portion of an 11 percent increase to the recommended rates to cover the additional loan-paid cost.

   b) If the project came in $1,000,000 less than expected, rates could be set 11 percentage points lower than those in Tables A and B. However, you have more improvements to make in following years, so if costs came in lower it may be prudent to not set rates lower and instead accelerate future projects or fund them more with reserves and less with debt.

Table A: Recommended Water Rates Within the City

Table A: Hillsboro, Missouri Water Modeled In-city System Development Fees, Minimum Charges and Unit Charges With Zero Usage Allowance

				Rates per 1,000 Gallons in These Volume Ranges			
Water Meter Size in Inches	Meter Type	System Development Fee	Monthly Minimum Charge	0 - 4,999	5,000 - 9,999	10,000 - 19,999	20,000 +
0.625	Displacement	$1,150	$18.14	$4.05	$4.56	$5.13	$5.77
0.750	Displacement	$1,150	$18.14	$4.05	$4.56	$5.13	$5.77
1.000	Displacement	$2,649	$26.64	$4.05	$4.56	$5.13	$5.77
1.500	Displacement	$5,148	$40.82	$4.05	$4.56	$5.13	$5.77
2.000	Displacement	$8,147	$57.82	$4.05	$4.56	$5.13	$5.77
2.500	Displacement	$12,646	$83.34	$4.05	$4.56	$5.13	$5.77
3.000	Singlet	$16,145	$103.18	$4.05	$4.56	$5.13	$5.77
3.000	Compound, Class I	$16,145	$103.18	$4.05	$4.56	$5.13	$5.77
3.000	Turbine, Class I	$17,644	$111.68	$4.05	$4.56	$5.13	$5.77
4.000	Singlet	$25,142	$154.20	$4.05	$4.56	$5.13	$5.77
4.000	Compound, Class I	$25,142	$154.20	$4.05	$4.56	$5.13	$5.77
4.000	Turbine, Class I	$31,140	$188.22	$4.05	$4.56	$5.13	$5.77
6.000	Singlet	$50,133	$295.93	$4.05	$4.56	$5.13	$5.77
6.000	Compound, Class I	$50,133	$295.93	$4.05	$4.56	$5.13	$5.77
6.000	Turbine, Class I	$65,128	$380.97	$4.05	$4.56	$5.13	$5.77
8.000	Compound, Class I	$80,123	$466.01	$4.05	$4.56	$5.13	$5.77
8.000	Turbine, Class I	$140,104	$806.17	$4.05	$4.56	$5.13	$5.77

Table B: Recommended Water Rates Outside of the City

Table B: Hillsboro, Missouri Water Modeled Out-of-city System Development Fees, Minimum Charges and Unit Charges With Zero Usage Allowance							
				Rates per 1,000 Gallons in These Volume Ranges			
Water Meter Size in Inches	Meter Type	System Development Fee	Monthly Minimum Charge	0 - 4,999	5,000 - 9,999	10,000 - 19,999	20,000 +
0.625	Displacement	$1,650	$20.97	$6.08	$6.83	$7.69	$8.65
0.750	Displacement	$1,650	$20.97	$6.08	$6.83	$7.69	$8.65
1.000	Displacement	$3,899	$33.73	$6.08	$6.83	$7.69	$8.65
1.500	Displacement	$7,648	$54.99	$6.08	$6.83	$7.69	$8.65
2.000	Displacement	$12,146	$80.50	$6.08	$6.83	$7.69	$8.65
2.500	Displacement	$18,894	$118.77	$6.08	$6.83	$7.69	$8.65
3.000	Singlet	$24,142	$148.53	$6.08	$6.83	$7.69	$8.65
3.000	Compound, Class I	$24,142	$148.53	$6.08	$6.83	$7.69	$8.65
3.000	Turbine, Class I	$26,391	$161.29	$6.08	$6.83	$7.69	$8.65
4.000	Singlet	$37,638	$225.07	$6.08	$6.83	$7.69	$8.65
4.000	Compound, Class I	$37,638	$225.07	$6.08	$6.83	$7.69	$8.65
4.000	Turbine, Class I	$46,635	$276.09	$6.08	$6.83	$7.69	$8.65
6.000	Singlet	$75,125	$437.67	$6.08	$6.83	$7.69	$8.65
6.000	Compound, Class I	$75,125	$437.67	$6.08	$6.83	$7.69	$8.65
6.000	Turbine, Class I	$97,618	$565.23	$6.08	$6.83	$7.69	$8.65
8.000	Compound, Class I	$120,110	$692.78	$6.08	$6.83	$7.69	$8.65
8.000	Turbine, Class I	$210,080	$1,203.02	$6.08	$6.83	$7.69	$8.65

Closing

I recommend you adopt the rates calculated in the Model and discussed in several subsections above. The recommended rates are shown in Tables A and B immediately above. These rates are in a cost-to-serve structure, as close as is practical in your situation. These rates will fully fund the utility over the long term. It is important that you examine accumulation of balances each year to assure the rates are bringing in adequate revenue. And 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.

This combination of adjustments will result in a significant overall increase in water rate revenues and about the same increase to the average residential customer's water bill. Future inflationary increases will raise all bills by 3.0 percent per year.

Sewer Rates Discussion

As mentioned before, almost everything that applies to water rates applies to sewer rates, too. Therefore, in this section I will only cover those things that are different.

There are differences between the situations of the water and sewer utilities. One is that the sewer utility is a bit more expensive to own and operate that the water utility. Another is that the current sewer rates are less adequate to fund the system than are the water rates. Your sewer rates would come a bit closer than the water rates in qualifying the utility, on a rates affordability basis, for grants. Thus, it is possible your rates could be set lower than those I modeled, future increases could be slowed down or a few other positive outcomes could come about if the utility was deemed to be grant eligible.

Recommended Rate Structures

The sewer rates will be in the same basic structure as the water rates, with two exceptions:

1. Current and recommended water rates are in a conservation rates structure. However, sewer rates are almost never structured in that way. Instead, they are usually set up on a level unit charge basis. That is your current sewer rates structure, and I recommend you keep that structure. Thus, that is not a change, but it is a difference between the two sets of rates that I recommend you keep.
2. The current sewer rates structure includes a 2,000-gallon per month usage allowance. A usage allowance skews the fairness of rate structures. To give you a sense of scale, the three-quarter inch meter customers use 3,971 gallons per month, on average. With the usage allowance, that means they only pay for 1,971 gallons. It also means that a low-income, low-volume customer who uses less than 2,000 gallons per month must pay the same bill amount as a customer who uses just below the volume it would take to "roll over" into the 3,000-gallon range. Or considered in another way, the allowance makes it so that only about half of the total flow is billable. I recommend you eliminate the usage allowance to improve rate structure fairness.

You do not currently assess residential sewer rates based upon winter-averaged use and I have not modeled such rates for you. However, I recommend you transition to winter-averaged residential sewer rates soon. It is a much fairer structure for residential customers. Income from such a rate structure is also more predictable. You should read about how to set up such rates in the "Rate Setting Issues Guide."

Meter Size-based Rates

This structure applies to sewer customers, too. However, there are a few sewer customers that do not have metered water service. The City has a method for billing such customers. The way I calculated rates for such customers was simply to increase their current bill by the same percentage by which a one-inch meter customer's minimum charge would increase.

There is one other customer that does not pay a minimum charge based on meter size. That is All Weather Sewer Service, Inc. (All Weather), a septic tank pumping and hauling service company. The contract with All Weather recently expired, but the City could renew that contract. To give the City an idea of revenues it might expect from a renewed contract, I calculated All Weather fees for minimum charges and unit charges by increasing the past contracted rates by the same percentages that other customers' minimum and unit charges would rise. In addition, I assumed the same usage allowance the past contract included. You may well negotiate different rates, but this should give you a good idea of what to expect from a new All Weather contract.

Inflow and Infiltration (I&I)

I&I is the wastewater equivalent of water loss in a water system. I&I costs money to collect and treat. The amount and percentage of I&I is calculated in the same way as is water loss. I did not have master-metered flow data with which to calculate I&I volume, but your marginal cost rate for I&I came in at 22 percent of the average variable cost. Thus, I&I should be a relatively low to the utility.

Capital Improvements

I went through the same modeling exercise for sewer capital improvements as I did for water and the results were similar.

It is very unlikely the City would qualify for grants.

A market rate loan for 35 years at 4.5 percent would result in an overall rate increase of 28.6 percent.

A 17-year loan at 3.5 percent would result in an overall rate increase of 33.1 percent. Even those rates would be far from being grant eligible, and you generally must take an agency's loan to get its grant. As with the water capital improvements, I opted for the 17-year loan option.

Capital improvements and debt needed to cover those costs are calculated in Table 5, page 91. The sewer utility needs many improvements. As you can see in the bottom half of this table, you will take on significant debt. Your debt payments will go from approximately $300,000 now to $457,000 per year in ten years. That is significant debt when compared to your operating costs, so it is an important driver of higher overall rates. As long as capital improvements happen close to how they are modeled in Table 5, the recommended rates will be sufficient to cover debt payments along with all other expected costs.

Target Reserve Levels

Current total sewer reserves are somewhat below what I recommend. I modeled initial rates and future inflationary increases that would grow reserves slightly up to the target amount by the tenth year. Lines on the bottom of Table 17, page 111, and several of the charts at the end of the Model show the reserve balances to expect for the next ten years. The last line of Table 17, the "Sum of All Reserves," is the critical one.

Rate Affordability

In Table 17, near the top, I show the estimated Affordability Index. The Affordability Index is also shown graphically in Chart 4, page 121.

The Affordability Index calculation for the test year was at 0.89 percent. Under the recommended rates, the Affordability Index for this volume would rise to 1.21 percent.

Table 18, page 112, shows how new rates will affect other customers, as well.

Recommendations for Adjusting Sewer Rates

The format of these recommendations is the same as for water rates. The only difference is the actual rates you should adopt. Thus, you should do the following:

1. Adopt the rates and fees shown in Tables C and D that follow this list.
2. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates starting in May of this year. I recommend you try to adjust rates sooner, so you can start building reserves sooner.
3. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date.
4. Approximately one full year after the initial rate adjustments, examine the costs and incomes the utility experienced during that year, plus the balances that have accrued. Compare those items to the same items in Tables 3, 4, 5 and 17, of the Model.
    a) If all accrued close to the values in the Model, raise all rates by 3.0 percent, as shown near the top of Table 3, page 89.
    b) If balances did not accrue as shown at the bottom of Table 17, but they are not egregiously too low, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly.
    c) If balances were too low by an amount that is troubling to you, 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.

5. Repeat recommendation Number 4 each following year until you have raised rates and fees by a cumulative 20 percent, which should occur in about seven years from now. At that time, have me or another rate analyst of your choice perform a new rate analysis, so rate structure and adequacy can be adjusted again. If you need capital improvements or repair and replacements that are quite different from those assumed, you will need a new rate analysis sooner than that.

Table C: Recommended Sewer Rates Within the City

Table C: Hillsboro, Missouri Sewer Modeled In-city System Development Fees, Minimum Charges and Unit Charges With No Usage Allowance Except All Weather...

Water Meter Size in Inches	Meter Type	System Development Fee	Monthly Minimum Charge	Usage Allowance in Gallons	Rate per 1,000 Gallons
0.625	Displacement	$1,150	$21.45	0	$7.87
0.750	Displacement	$1,150	$21.45	0	$7.87
1.000	Displacement	$2,650	$21.85	0	$7.87
1.500	Displacement	$5,150	$22.52	0	$7.87
2.000	Displacement	$8,151	$23.32	0	$7.87
2.500	Displacement	$12,651	$24.53	0	$7.87
3.000	Singlet	$16,151	$25.46	0	$7.87
3.000	Compound, Class I	$16,151	$25.46	0	$7.87
3.000	Turbine, Class I	$17,651	$25.87	0	$7.87
4.000	Singlet	$25,152	$27.88	0	$7.87
4.000	Compound, Class I	$25,152	$27.88	0	$7.87
4.000	Turbine, Class I	$31,152	$29.48	0	$7.87
6.000	Singlet	$50,153	$34.57	0	$7.87
6.000	Compound, Class I	$50,153	$34.57	0	$7.87
6.000	Turbine, Class I	$65,154	$38.59	0	$7.87
8.000	Compound, Class I	$80,155	$42.61	0	$7.87
8.000	Turbine, Class I	$140,159	$58.68	0	$7.87
All Weather Sewer Service, Inc.		N.A.	$458.06	24	$24.82

Table D: Recommended Sewer Rates Outside of the City

Table D: Hillsboro, Missouri Sewer Modeled Out-of-city System Development Fees, Minimum Charges and Unit Charges With Zero Usage Allowance

Water Meter Size in Inches	Meter Type	System Development Fee	Monthly Minimum Charge	Usage Allowance in Gallons	Rate per 1,000 Gallons
0.625	Displacement	$1,650	$21.58	0	$11.81
0.750	Displacement	$1,650	$21.58	0	$11.81
1.000	Displacement	$3,900	$22.18	0	$11.81
1.500	Displacement	$7,650	$23.19	0	$11.81
2.000	Displacement	$12,151	$24.39	0	$11.81
2.500	Displacement	$18,901	$26.20	0	$11.81
3.000	Singlet	$24,152	$27.61	0	$11.81
3.000	Compound, Class I	$24,152	$27.61	0	$11.81
3.000	Turbine, Class I	$26,402	$28.21	0	$11.81
4.000	Singlet	$37,652	$31.22	0	$11.81
4.000	Compound, Class I	$37,652	$31.22	0	$11.81
4.000	Turbine, Class I	$46,653	$33.63	0	$11.81
6.000	Singlet	$75,155	$41.27	0	$11.81
6.000	Compound, Class I	$75,155	$41.27	0	$11.81
6.000	Turbine, Class I	$97,656	$47.30	0	$11.81
8.000	Compound, Class I	$120,158	$53.32	0	$11.81
8.000	Turbine, Class I	$210,164	$77.43	0	$11.81

Closing

I recommend you adopt the rates calculated in the Model and discussed in several subsections above. The recommended rates are shown in Tables C and D immediately above. These rates are in a cost-to-serve structure that will fully fund the utility over the long term. I assumed you would not qualify for grants, but you still should investigate that possibility. Grant could impact how high you need to set rates.

The recommended adjustments will result in a large overall increase in sewer rates and revenues, but if you are to make the needed improvements, it must happen. Do not forget that future inflationary increases, projected at 3.0 percent per year, will be needed to offset the effects of inflation.

Conclusion

"Conclusion" is a misnomer here. This report provides information upon which the City can 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 recommended 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 and sewer 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 these analyses. To satisfy those information needs, the City can publicize the current and recommended 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 media, so everyone can see for themselves what the report says. That way, no one would have to print out a long document, unless they wanted to. 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 pay one visit to the board to discuss my findings and recommendations. I look forward to meeting with the board, answering everyone's questions and helping you get on your way to the next generation of great rates.

Hillsboro, Missouri, 2020 Water Rates Model 1

This model assumes adequate rates that are as close to "cost-to-serve" as is reasonable at this time.

January 17, 2020

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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 assumtions. These issues, and others, are described in a narrative report that accompanies this model.

Table and Chart Descriptions

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 left out to prevent confusion.

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	Detailed schedule of equipment replacements for next 20 years, if applicable
Table 7 - Equipment Replacement Annuity Calculation	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
Table 9 - Marginal Cost Classification	Calculation of costs incurred to serve a specified type of customer, if applicable
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 - Capacity Costs	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 12 - AWWA Safe Operating Capacities by Meter Size	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.
Table 13 - System Development Fees	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 14 - Revenues From System Development Fees	Calculation of total fee revenues that would be generated during one full year at the fees in Table 13.
Table 15 - Minimum Charge Fees, Including Capacity Surcharges	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 16 - Revenues From Minimum Surcharges	Calculation of total fee revenues that would be generated during one full year at the fees in Table 15.
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	For volume ranges within each rate class, 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*

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."
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 Chart 19.
Cost to Serve Rates	Rates where fixed and variable costs generated by each user class are paid by that class with minimum and unit charges, respectively. Similar to and sometimes the same as "proportional to use" rates.
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. Most systems should have a CR of 1.25 or higher.
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 is a good measure of overall financial health.
Declining Rates	Rates where unit charges go down as the volume used goes up
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)	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 EDU. All other types of customers are then compared on this measuring basis and the EDUs are calculated. Generally the purpose of this exercise is to calculate fees that each EDU must pay.
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 to meet reserve targets. Rate structure fairness is a small issue, if it is an issue at all. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in follow up 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.

Definitions

Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of 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.
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.
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 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 to return that investment through increased user and other fees
Potential Demand	The volume of service that a user could demand for a short period of time at full volume use. The potential demand limiting factor is usually the size of the customer's meter or service line.
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, 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.
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, to many thousands of dollars for a large industrial customer with capacity costs included. 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, which is usually the last completed fiscal year. See related "analysis year."
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. Does not system development charges, late payment penalties or other types of charges.
Water Loss	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.
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 of $0 is "break even." Related to "current position."
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 1 - Rates

Hillsboro, Missouri, 2020 Water Rates Model 1

Unless rates were recently changed, these are the current rates. At the least, these rates were in effect at the end of the test year. If a volume range was left out of the table, in order to make it shorter, the unit charge that shows for the next lowest volume range also applies to the hidden volume range.

Rates in Effect After August, 2019 Adjustments

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Billing Cycle Minimum Charge	Usage Allowance in 1,000 Gallons	Unit Charge per 1,000 Gallons
3/4" Meter In City	0	$19.13	2.000	$4.50
	6,000	$19.13	2.000	$4.84
	15,000	$19.13	2.000	$5.21
	20,000	$19.13	2.000	$5.57
	30,000	$19.13	2.000	$5.93
1" Meter In City	0	$19.13	0.000	$4.50
	6,000	$19.13	0.000	$4.84
	15,000	$19.13	0.000	$5.21
	20,000	$19.13	0.000	$5.57
	30,000	$19.13	0.000	$5.93
1 1/2" Meter In City	0	$19.13	0.000	$4.50
	6,000	$19.13	0.000	$4.84
	15,000	$19.13	0.000	$5.21
	20,000	$19.13	0.000	$5.57
	30,000	$19.13	0.000	$5.93
2" Meter In City	0	$19.13	0.000	$4.50
	6,000	$19.13	0.000	$4.84
	15,000	$19.13	0.000	$5.21
	20,000	$19.13	0.000	$5.57
	30,000	$19.13	0.000	$5.93

Table 1 - Rates

Rates in Effect After August, 2019 Adjustments

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Billing Cycle Minimum Charge	Usage Allowance in 1,000 Gallons	Unit Charge per 1,000 Gallons
3" Meter In City	0	$19.13	0.000	$4.50
	6,000	$19.13	0.000	$4.84
	15,000	$19.13	0.000	$5.21
	20,000	$19.13	0.000	$5.57
	30,000	$19.13	0.000	$5.93
4" Meter In City	0	$19.13	0.000	$4.50
	6,000	$19.13	0.000	$4.84
	15,000	$19.13	0.000	$5.21
	20,000	$19.13	0.000	$5.57
	30,000	$19.13	0.000	$5.93
3/4" Meter Out of City	0	$28.69	2.000	$6.00
	6,000	$28.69	2.000	$6.00
	15,000	$28.69	2.000	$6.00
	20,000	$28.69	2.000	$6.00
	30,000	$28.69	2.000	$6.00
1" Meter Out of City	0	$28.69	2.000	$6.00
	6,000	$28.69	2.000	$6.00
	15,000	$28.69	2.000	$6.00
	20,000	$28.69	2.000	$6.00
	30,000	$28.69	2.000	$6.00

Table 2 - Test Year Usage

Hillsboro, Missouri, 2020 Water Rates Model 1

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

Residential meter readings per year: 12

Test year = the one-year period being analyzed starts: 7/1/2018

Other customer readings per year: 12

Date this model created: 9/16/2019

Bills per year: 12

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
3/4" Meter In City	-15,000	-1	5	-41,000	0	-41,000	0	0.0%	0.0%
	0	999	13,337	12,380,700	4	1,700	0	0.0%	0.0%
	1,000	1,999	12,379	10,557,000	1,822	1,822,000	152	12.6%	2.1%
	2,000	2,999	10,557	8,253,000	2,304	4,608,000	192	15.9%	5.2%
	3,000	3,999	8,253	5,881,000	2,372	7,116,000	198	16.4%	8.0%
	4,000	4,999	5,881	3,844,000	2,037	8,148,000	170	14.1%	9.2%
	5,000	5,999	3,844	2,400,000	1,444	7,220,000	120	10.0%	8.1%
	6,000	6,999	2,400	1,504,000	896	5,376,000	75	6.2%	6.1%
	7,000	7,999	1,504	984,000	520	3,640,000	43	3.6%	4.1%
	8,000	8,999	984	671,000	313	2,504,000	26	2.2%	2.8%
	9,000	9,999	671	507,000	164	1,476,000	14	1.1%	1.7%
	10,000	14,999	507	1,255,000	336	3,760,000	28	2.3%	4.2%
	15,000	19,999	171	611,000	78	1,316,000	7	0.5%	1.5%
	20,000	24,999	93	310,000	45	970,000	4	0.3%	1.1%
	25,000	29,999	48	167,000	23	617,000	2	0.2%	0.7%
	30,000	39,999	25	118,000	20	668,000	2	0.1%	0.8%
	40,000	49,999	5	37,000	2	87,000	0	0.0%	0.1%
	50,000	59,999	3	19,000	2	109,000	0	0.0%	0.1%
	60,000	69,999	1	9,000	1	69,000	0	0.0%	0.1%
			60,668	49,466,700	12,383	49,466,700	1,032	85.5%	55.7%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
	0	999	378	319,000	59	0	5	0.4%	0.0%
	1,000	1,999	319	265,000	54	54,000	5	0.4%	0.1%
	2,000	2,999	265	235,000	30	60,000	3	0.2%	0.1%
	3,000	3,999	235	199,000	36	108,000	3	0.2%	0.1%
	4,000	4,999	199	156,000	43	172,000	4	0.3%	0.2%
	5,000	5,999	156	138,000	18	90,000	2	0.1%	0.1%
	6,000	6,999	138	121,000	17	102,000	1	0.1%	0.1%
	7,000	7,999	121	112,000	9	63,000	1	0.1%	0.1%
	8,000	8,999	112	100,000	12	96,000	1	0.1%	0.1%
	9,000	9,999	100	92,000	8	72,000	1	0.1%	0.1%
	10,000	14,999	92	379,000	20	219,000	2	0.1%	0.2%
	15,000	19,999	72	323,000	13	223,000	1	0.1%	0.3%
1" Meter In City	20,000	24,999	59	211,000	25	541,000	2	0.2%	0.6%
	25,000	29,999	34	134,000	10	264,000	1	0.1%	0.3%
	30,000	34,999	24	79,000	11	344,000	1	0.1%	0.4%
	35,000	44,999	13	59,000	11	424,000	1	0.1%	0.5%
	45,000	54,999	2	20,000	0	0	0	0.0%	0.0%
	55,000	64,999	2	13,000	1	58,000	0	0.0%	0.1%
	65,000	74,999	1	10,000	0	0	0	0.0%	0.0%
	75,000	84,999	1	10,000	0	0	0	0.0%	0.0%
	85,000	94,999	1	10,000	0	0	0	0.0%	0.0%
	95,000	104,999	1	10,000	0	0	0	0.0%	0.0%
	105,000	114,999	1	10,000	0	0	0	0.0%	0.0%
	115,000	124,999	1	6,000	1	121,000	0	0.0%	0.1%
			2,327	3,011,000	378	3,011,000	32	2.6%	3.4%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
1 1/2" Meter In City	0	999	355	323,000	32	0	3	0.2%	0.0%
	1,000	1,999	323	319,000	4	4,000	0	0.0%	0.0%
	2,000	2,999	319	315,000	4	8,000	0	0.0%	0.0%
	3,000	3,999	315	314,000	1	3,000	0	0.0%	0.0%
	4,000	4,999	314	310,000	4	16,000	0	0.0%	0.0%
	5,000	5,999	310	298,000	12	60,000	1	0.1%	0.1%
	6,000	6,999	298	288,000	10	60,000	1	0.1%	0.1%
	7,000	7,999	288	273,000	15	105,000	1	0.1%	0.1%
	8,000	8,999	273	262,000	11	88,000	1	0.1%	0.1%
	9,000	9,999	262	244,000	18	162,000	2	0.1%	0.2%
	10,000	14,999	244	985,000	68	785,000	6	0.5%	0.9%
	15,000	19,999	176	724,000	49	824,000	4	0.3%	0.9%
	20,000	24,999	127	512,000	40	877,000	3	0.3%	1.0%
	25,000	29,999	87	364,000	21	559,000	2	0.1%	0.6%
	30,000	34,999	66	270,000	16	500,000	1	0.1%	0.6%
	35,000	44,999	50	367,000	22	857,000	2	0.2%	1.0%
	45,000	54,999	28	259,000	5	254,000	0	0.0%	0.3%
	55,000	64,999	23	206,000	4	236,000	0	0.0%	0.3%
	65,000	74,999	19	152,000	5	337,000	0	0.0%	0.4%
	75,000	84,999	14	111,000	4	311,000	0	0.0%	0.4%
	85,000	94,999	10	90,000	2	180,000	0	0.0%	0.2%
	95,000	104,999	8	61,000	3	296,000	0	0.0%	0.3%
	105,000	114,999	5	37,000	2	217,000	0	0.0%	0.2%
	115,000	124,999	3	29,000	1	124,000	0	0.0%	0.1%
	125,000	134,999	2	20,000	0	0	0	0.0%	0.0%
	135,000	144,999	2	20,000	0	0	0	0.0%	0.0%
	145,000	430,000	2	320,000	2	610,000	0	0.0%	0.7%
			3,923	7,473,000	355	7,473,000	30	2.5%	8.4%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
2" Meter In City	0	999	401	323,000	78	0	7	0.5%	0.0%
	1,000	1,999	323	304,000	19	19,000	2	0.1%	0.0%
	2,000	2,999	304	288,000	16	32,000	1	0.1%	0.0%
	3,000	3,999	288	271,000	17	51,000	1	0.1%	0.1%
	4,000	4,999	271	259,000	12	48,000	1	0.1%	0.1%
	5,000	5,999	259	254,000	5	25,000	0	0.0%	0.0%
	6,000	6,999	254	244,000	10	60,000	1	0.1%	0.1%
	7,000	7,999	244	232,000	12	84,000	1	0.1%	0.1%
	8,000	8,999	232	223,000	9	72,000	1	0.1%	0.1%
	9,000	9,999	223	219,000	4	36,000	0	0.0%	0.0%
	10,000	14,999	219	1,047,000	12	132,000	1	0.1%	0.1%
	15,000	19,999	207	979,000	18	304,000	2	0.1%	0.3%
	20,000	24,999	189	848,000	33	728,000	3	0.2%	0.8%
	25,000	29,999	156	729,000	18	489,000	2	0.1%	0.6%
	30,000	34,999	138	575,000	34	1,075,000	3	0.2%	1.2%
	35,000	44,999	104	753,000	44	1,693,000	4	0.3%	1.9%
	45,000	54,999	60	440,000	24	1,160,000	2	0.2%	1.3%
	55,000	64,999	36	333,000	5	298,000	0	0.0%	0.3%
	65,000	74,999	31	276,000	6	416,000	1	0.0%	0.5%
	75,000	84,999	25	229,000	3	234,000	0	0.0%	0.3%
	85,000	94,999	22	175,000	7	620,000	1	0.0%	0.7%
	95,000	104,999	15	121,000	4	391,000	0	0.0%	0.4%
	105,000	114,999	11	104,000	1	109,000	0	0.0%	0.1%
	115,000	124,999	10	57,000	5	582,000	0	0.0%	0.7%
	125,000	134,999	5	47,000	1	132,000	0	0.0%	0.1%
	135,000	144,999	4	40,000	0	0	0	0.0%	0.0%
	145,000	202,000	4	146,000	4	726,000	0	0.0%	0.8%
			4,035	9,516,000	401	9,516,000	33	2.8%	10.7%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
3" Meter In City	0	999	48	39,500	9	500	1	0.1%	0.0%
	1,000	1,999	39	31,000	8	8,000	1	0.1%	0.0%
	2,000	2,999	31	28,000	3	6,000	0	0.0%	0.0%
	3,000	3,999	28	28,000	0	0	0	0.0%	0.0%
	4,000	4,999	28	28,000	0	0	0	0.0%	0.0%
	5,000	5,999	28	28,000	0	0	0	0.0%	0.0%
	6,000	6,999	28	28,000	0	0	0	0.0%	0.0%
	7,000	7,999	28	28,000	0	0	0	0.0%	0.0%
	8,000	8,999	28	28,000	0	0	0	0.0%	0.0%
	9,000	9,999	28	28,000	0	0	0	0.0%	0.0%
	10,000	14,999	28	140,000	0	0	0	0.0%	0.0%
	15,000	19,999	28	129,000	4	69,000	0	0.0%	0.1%
	20,000	24,999	24	120,000	0	0	0	0.0%	0.0%
	25,000	29,999	24	115,000	2	55,000	0	0.0%	0.1%
	30,000	34,999	22	110,000	0	0	0	0.0%	0.0%
	35,000	44,999	22	182,000	7	277,000	1	0.0%	0.3%
	45,000	54,999	15	136,000	2	96,000	0	0.0%	0.1%
	55,000	64,999	13	107,000	4	237,000	0	0.0%	0.3%
	65,000	74,999	9	88,000	1	73,000	0	0.0%	0.1%
	75,000	84,999	8	80,000	0	0	0	0.0%	0.0%
	85,000	94,999	8	63,000	4	363,000	0	0.0%	0.4%
	95,000	104,999	4	37,000	1	102,000	0	0.0%	0.1%
	105,000	114,999	3	30,000	0	0	0	0.0%	0.0%
	115,000	124,999	3	30,000	0	0	0	0.0%	0.0%
	125,000	134,999	3	30,000	0	0	0	0.0%	0.0%
	135,000	144,999	3	30,000	0	0	0	0.0%	0.0%
	145,000	220,000	3	141,000	3	576,000	0	0.0%	0.6%
			534	1,862,500	48	1,862,500	4	0.3%	2.1%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
4" Meter In City	0	999	84	72,800	13	1,800	1	0.1%	0.0%
	1,000	1,999	71	68,000	3	3,000	0	0.0%	0.0%
	2,000	2,999	68	58,000	10	20,000	1	0.1%	0.0%
	3,000	3,999	58	52,000	6	18,000	1	0.0%	0.0%
	4,000	4,999	52	46,000	6	24,000	1	0.0%	0.0%
	5,000	5,999	46	41,000	5	25,000	0	0.0%	0.0%
	6,000	6,999	41	39,000	2	12,000	0	0.0%	0.0%
	7,000	7,999	39	38,000	1	7,000	0	0.0%	0.0%
	8,000	8,999	38	36,000	2	16,000	0	0.0%	0.0%
	9,000	9,999	36	36,000	0	0	0	0.0%	0.0%
	10,000	14,999	36	179,000	1	14,000	0	0.0%	0.0%
	15,000	19,999	35	171,000	1	16,000	0	0.0%	0.0%
	20,000	24,999	34	160,000	4	90,000	0	0.0%	0.1%
	25,000	29,999	30	150,000	0	0	0	0.0%	0.0%
	30,000	34,999	30	147,000	1	32,000	0	0.0%	0.0%
	35,000	44,999	29	277,000	3	122,000	0	0.0%	0.1%
	45,000	54,999	26	244,000	2	94,000	0	0.0%	0.1%
	55,000	64,999	24	240,000	0	0	0	0.0%	0.0%
	65,000	74,999	24	240,000	0	0	0	0.0%	0.0%
	75,000	84,999	24	240,000	0	0	0	0.0%	0.0%
	85,000	94,999	24	240,000	0	0	0	0.0%	0.0%
	95,000	104,999	24	240,000	0	0	0	0.0%	0.0%
	105,000	114,999	24	240,000	0	0	0	0.0%	0.0%
	115,000	124,999	24	236,000	1	121,000	0	0.0%	0.1%
	125,000	134,999	23	230,000	0	0	0	0.0%	0.0%
	135,000	144,999	23	230,000	0	0	0	0.0%	0.0%
	145,000	947,000	23	9,886,000	23	13,221,000	2	0.2%	14.9%
			990	13,836,800	84	13,836,800	7	0.6%	15.6%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
3/4" Meter Out of City	0	999	819	807,000	12	0	1	0.1%	0.0%
	1,000	1,999	807	759,000	48	48,000	4	0.3%	0.1%
	2,000	2,999	759	611,000	148	296,000	12	1.0%	0.3%
	3,000	3,999	611	415,000	196	588,000	16	1.4%	0.7%
	4,000	4,999	415	287,000	128	512,000	11	0.9%	0.6%
	5,000	5,999	287	212,000	75	375,000	6	0.5%	0.4%
	6,000	6,999	212	136,000	76	456,000	6	0.5%	0.5%
	7,000	7,999	136	83,000	53	371,000	4	0.4%	0.4%
	8,000	8,999	83	47,000	36	288,000	3	0.2%	0.3%
	9,000	9,999	47	26,000	21	189,000	2	0.1%	0.2%
	10,000	14,999	26	51,000	20	221,000	2	0.1%	0.2%
	15,000	19,999	6	11,000	6	101,000	1	0.0%	0.1%
			4,208	3,445,000	819	3,445,000	68	5.7%	3.9%
1" Meter Out of City	0	999	12	12,000	0	0	0	0.0%	0.0%
	1,000	1,999	12	12,000	0	0	0	0.0%	0.0%
	2,000	2,999	12	12,000	0	0	0	0.0%	0.0%
	3,000	3,999	12	12,000	0	0	0	0.0%	0.0%
	4,000	4,999	12	12,000	0	0	0	0.0%	0.0%
	5,000	5,999	12	12,000	0	0	0	0.0%	0.0%
	6,000	6,999	12	12,000	0	0	0	0.0%	0.0%
	7,000	7,999	12	11,000	1	7,000	0	0.0%	0.0%
	8,000	8,999	11	11,000	0	0	0	0.0%	0.0%
	9,000	9,999	11	10,000	1	9,000	0	0.0%	0.0%
	10,000	14,999	10	27,000	7	82,000	1	0.0%	0.1%
	15,000	19,999	3	13,000	2	38,000	0	0.0%	0.0%
	20,000	24,999	1	1,000	1	21,000	0	0.0%	0.0%
			132	157,000	12	157,000	1	0.1%	0.2%
	Grand Totals:		76,817	88,768,000	14,480	88,768,000	1,207	100%	100%

Table 3 - Operating Incomes and Basic User Data

Hillsboro, Missouri, 2020 Water Rates Model 1

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)

$55,093	Census Bureau estimate of AMHI for the year	2016
$36,850	Census Bureau estimate of AMHI for the year	2000
$18,243	AMHI growth during this time period	
3.09%	Simple annual income growth rate during this time period (used to project incomes into the future)	

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

10	Number of new connections made during the test year
$1,600	Average 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 in the last column of that 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	Years Following the Analysis Year (for Which Results Have Been Projected)									
		Starting 7/1/18	0 Year Starting 7/1/19	1st Year Starting 7/1/20	2nd Year Starting 7/1/21	3rd Year Starting 7/1/22	4th Year Starting 7/1/23	5th Year Starting 7/1/24	6th Year Starting 7/1/25	7th Year Starting 7/1/26	8th Year Starting 7/1/27	9th Year Starting 7/1/28	10th Year Starting 7/1/29
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
				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 for the Year	N.A.	1,207	1,217	1,227	1,237	1,247	1,257	1,267	1,277	1,287	1,297	1,307	1,317
Customers Added or Lost (-) During the Year	N.A.	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Customer Growth or Loss (-) Rate	N.A.	0.83%	0.82%	0.82%	0.82%	0.80%	0.80%	0.79%	0.78%	0.78%	0.77%	0.77%	0.76%
Actual (Test Year) and Projected Volumes, in Gallons	N.A.	88,768,000	89,503,646	90,239,293	90,974,939	91,710,586	92,446,232	93,181,878	93,917,525	94,653,171	95,388,818	96,124,464	96,860,110
How User Charge Fees Were Calculated, Accounting for New Customers and Future Rate Increases													
Actual or Calculated Sales Revenues		$550,215	$581,295	$741,562	$770,035	$799,602	$830,196	$861,907	$894,773	$928,835	$964,135	$1,000,718	$1,038,628
Additional Sales Revenues From New Customers			$13	$6,045	$6,277	$6,414	$6,606	$6,805	$7,009	$7,219	$7,435	$7,659	$7,888
Total Calculated Revenues (User Charge Fees)		$550,215	$581,308	$747,607	$776,313	$806,016	$836,803	$868,711	$901,781	$936,054	$971,571	$1,008,376	$1,046,516
Operating Incomes													
User Charge Fees	N.A.	$622,616	$657,801	$845,982	$878,465	$912,077	$946,914	$983,022	$1,020,443	$1,059,226	$1,099,416	$1,141,065	$1,184,223
Late Payment Charge	N.A.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New Taps or Connections (Current Rate Structure)	% Above	$16,000	$15,956	$0	$0	$0	$0	$0	$0	$0	$0	$1	$2
Meter Size-based System Development Fees (Table 14)	% Above	$6,950	$46	$17,511	$18,036	$18,577	$19,134	$19,709	$20,300	$20,909	$21,536	$22,182	$22,848
Interest Income	N.A.	$4,086	$2,134	$2,344	$2,831	$2,952	$3,071	$3,107	$3,188	$3,318	$3,357	$3,446	$3,590
WATER RECONNECTION FEE	N.A.	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222	$1,222
WATER DEPOSITS	N.A.	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628	$20,628
WATER - MISC INCOME	N.A.	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502	$8,502
Revenue Reduction to Account for Timing of August, 2019 Rate Increases	N.A.	$0	-$51,885	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Revenue Loss (-) Due to Conservation	5.0%	$0	-$1,759	-$9,409	-$1,624	-$1,681	-$1,742	-$1,805	-$1,871	-$1,939	-$2,010	-$2,082	-$2,158
Total Operating Incomes		**$680,004**	**$652,645**	**$886,779**	**$928,059**	**$962,277**	**$997,729**	**$1,034,383**	**$1,072,411**	**$1,111,865**	**$1,152,652**	**$1,194,964**	**$1,238,856**

Table 4 - Operating Costs and Net Income

Hillsboro, Missouri, 2020 Water Rates Model 1

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.)	Inflation/ Deflation (–) Factor	Test Year Starting 7/1/18	Analysis Year 0 Year Starting 7/1/19	Years Following the Analysis Year (for Which Results Have Been Projected) 1st Year Starting 7/1/20	2nd Year Starting 7/1/21	3rd Year Starting 7/1/22	4th Year Starting 7/1/23	5th Year Starting 7/1/24	6th Year Starting 7/1/25	7th Year Starting 7/1/26	8th Year Starting 7/1/27	9th Year Starting 7/1/28	10th Year Starting 7/1/29
SALARIES W	3.0%	$80,345	$82,755	$85,238	$87,795	$90,429	$93,141	$95,936	$98,814	$101,778	$104,832	$107,976	$111,216
PROFESSIONAL SERVICES ACCTG	3.0%	$7,698	$7,929	$8,167	$8,412	$8,664	$8,924	$9,192	$9,468	$9,752	$10,044	$10,346	$10,656
PROFESSIONAL SVCS LEGAL W	3.0%	$256	$264	$272	$280	$288	$297	$306	$315	$325	$334	$344	$355
EMPLOYEE INSURANCE - W	3.0%	$16,707	$17,208	$17,725	$18,256	$18,804	$19,368	$19,949	$20,548	$21,164	$21,799	$22,453	$23,127
RETIREMENT WATER	3.0%	$801	$825	$850	$875	$901	$929	$956	$985	$1,015	$1,045	$1,076	$1,109
WORKER'S COMP WATER	3.0%	$3,397	$3,499	$3,604	$3,712	$3,823	$3,938	$4,056	$4,178	$4,303	$4,432	$4,565	$4,702
PAYROLL TAX WATER	3.0%	$6,026	$6,206	$6,393	$6,584	$6,782	$6,985	$7,195	$7,411	$7,633	$7,862	$8,098	$8,341
WATER SYSTEM REPAIRS	3.0%	$72,881	$75,067	$77,319	$79,639	$82,028	$84,489	$87,024	$89,634	$92,323	$95,093	$97,946	$100,884
WATER SYSTEM EQUIPMENT	3.0%	$14,623	$15,062	$15,514	$15,979	$16,459	$16,952	$17,461	$17,985	$18,524	$19,080	$19,653	$20,242
MISSOURI PRIMACY FEE WATER	1.0%	$5,566	$5,668	$5,771	$5,876	$5,982	$6,090	$6,200	$6,311	$6,424	$6,538	$6,654	$6,771
DUES & SUBSCRIPTIONS WATER	3.0%	$1,353	$1,394	$1,436	$1,479	$1,523	$1,569	$1,616	$1,665	$1,715	$1,766	$1,819	$1,874
FUEL/OIL- W	3.0%	$7,063	$7,275	$7,493	$7,718	$7,950	$8,188	$8,434	$8,687	$8,947	$9,216	$9,492	$9,777
INSURANCE WATER	3.0%	$16,933	$17,441	$17,964	$18,503	$19,058	$19,630	$20,219	$20,825	$21,450	$22,094	$22,756	$23,439
MISCW	3.0%	$3,261	$3,359	$3,460	$3,563	$3,670	$3,780	$3,894	$4,011	$4,131	$4,255	$4,383	$4,514
DEPOSIT REFUNDS W	3.0%	$3,352	$3,452	$3,556	$3,662	$3,772	$3,885	$4,002	$4,122	$4,246	$4,373	$4,504	$4,639
POSTAGE - WATER	3.0%	$2,190	$2,274	$2,361	$2,452	$2,546	$2,643	$2,744	$2,848	$2,957	$3,069	$3,185	$3,306
MATERIALS & SUPPLIES OPS W	3.0%	$71,213	$73,350	$75,550	$77,817	$80,151	$82,556	$85,032	$87,583	$90,211	$92,917	$95,705	$98,576
REPAIRS-VEHICLES WATER	3.0%	$24,699	$25,440	$26,203	$26,989	$27,798	$28,632	$29,491	$30,376	$31,287	$32,226	$33,193	$34,189
REPAIRS-EQUIP W	3.0%	$478	$493	$508	$523	$538	$555	$571	$588	$606	$624	$643	$662
SALESTAXW	0.0%	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913	$18,913
SUPPLIES-OFFICE WATER	3.0%	$897	$924	$952	$980	$1,010	$1,040	$1,071	$1,103	$1,136	$1,170	$1,205	$1,242
MATERIALS & SUPPLIES MAINT W	3.0%	$2,886	$2,972	$3,062	$3,153	$3,248	$3,346	$3,446	$3,549	$3,656	$3,765	$3,878	$3,995
TELEPHONE WATER	3.0%	$2,521	$2,597	$2,675	$2,755	$2,838	$2,923	$3,011	$3,101	$3,194	$3,290	$3,389	$3,490
UTILITIES WATER	3.0%	$45,668	$47,425	$49,246	$51,137	$53,094	$55,122	$57,223	$59,402	$61,659	$63,999	$66,423	$68,936
UNIFORMS WATER	3.0%	$1,896	$1,953	$2,012	$2,072	$2,134	$2,198	$2,264	$2,332	$2,402	$2,474	$2,548	$2,625
UTILITY PILOT (6% of Sales)	0.0%	$15,081	$37,357	$39,468	$50,759	$52,708	$54,725	$56,815	$58,981	$61,227	$63,554	$65,965	$68,464
One-time Reduction of R&R Annuity	0.0%	-$90,491	-$90,491	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Payment to R&R Reserve (Table 7)	0.0%	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491	$90,491
User Charge Analysis Services	5.0%	$0	$7,706	$0	$0	$8,496	$0	$0	$9,367	$0	$0	$10,327	$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		**$426,705**	**$468,808**	**$566,200**	**$590,376**	**$614,100**	**$621,310**	**$637,513**	**$663,593**	**$671,469**	**$689,256**	**$717,931**	**$726,533**
Net Income (or Loss)		$253,299	$183,837	$320,579	$337,683	$348,177	$376,419	$396,871	$408,818	$440,396	$463,396	$477,032	$512,323
Working Capital Goal: 50%	In Dollars, That is:	$213,352	$234,404	$283,100	$295,188	$307,050	$310,655	$318,756	$331,797	$335,734	$344,628	$358,966	$363,266

Notes: The facilities are economical to operate. The main cost issue is construction of new and upgraded facilities, covered in Table 5.

Table 5 - Capital Improvement Program (CIP)

Hillsboro, Missouri, 2020 Water Rates Model 1

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

		Analysis Year	Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected)									
	Test Year Starting	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
	7/1/18	7/1/19	7/1/20	7/1/21	7/1/22	7/1/23	7/1/24	7/1/25	7/1/26	7/1/27	7/1/28	7/1/29
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)												
New Well and Tower	$0	$0	$3,399,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Replace One Mile of Line per Year, Starting in 2020	$0	$0	$103,000	$106,090	$109,273	$112,551	$115,927	$119,405	$122,987	$126,677	$130,477	$134,392
SCADA	$0	$150,000	$25,750	$0	$0	$14,069	$14,491	$14,926	$15,373	$0	$0	$0
Tank Maintenance	$0	$0	$0	$212,180	$0	$0	$0	$0	$61,494	$0	$0	$0
Horse Show Tank and Booster Station de-commission	$0	$0	$154,500	$0	$0	$0	$0	$0	$0	$0	$0	$0
Well 4 altatude valv/booster pump	$0	$0	$103,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Horse Show Tank and Booster Station de-commission	$0	$0	$27,318	$0	$120,200	$0	$0	$0	$0	$0	$0	$0
Water line loops	$0	$0	$14,069	$0	$35,881	$56,275	$173,891	$29,851	$0	$0	$0	$0
Water line replacement	$0	$0	$103,000	$106,090	$109,273	$112,551	$115,927	$119,405	$122,987	$126,677	$130,477	$134,392
Meter reading upgrade	$0	$0	$0	$0	$27,318	$3,377	$3,478	$3,582	$3,690	$3,800	$3,914	$4,032
Fire Hydrant replacement/ repair	$0	$0	$0	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$0	$0	$0
Decomission well 2	$0	$0	$0	$0	$0	$6,753	$0	$0	$0	$0	$0	$0
Loan Closing Costs, Estimated at: 2.5%	$0	$3,750	$101,188	$11,396	$11,130	$8,757	$12,448	$8,751	$10,229	$8,144	$8,640	$9,166
Total Debt-paid Portion of Projects	$0	$153,750	$4,030,825	$441,060	$418,538	$319,960	$441,959	$301,890	$342,910	$265,298	$273,509	$281,981
Debt Repayment												
Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)												
None	$0	$0	$0	$0	$0	$0	$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: 17 years at a 3.5% interest rate.)												
Loan Originated in Analysis (This) Year			$12,153	$12,153	$12,153	$12,153	$12,153	$12,153	$12,153	$12,153	$12,153	$12,153
Loan Originated in 1st Year				$318,609	$318,609	$318,609	$318,609	$318,609	$318,609	$318,609	$318,609	$318,609
Loan Originated in 2nd Year					$34,863	$34,863	$34,863	$34,863	$34,863	$34,863	$34,863	$34,863
Loan Originated in 3rd Year						$33,083	$33,083	$33,083	$33,083	$33,083	$33,083	$33,083
Loan Originated in 4th Year							$25,291	$25,291	$25,291	$25,291	$25,291	$25,291
Loan Originated in 5th Year								$34,934	$34,934	$34,934	$34,934	$34,934
Loan Originated in 6th Year									$23,862	$23,862	$23,862	$23,862
Loan Originated in 7th Year										$27,105	$27,105	$27,105
Loan Originated in 8th Year											$20,970	$20,970
Loan Originated in 9th Year												$21,619
Total Debt Payments	$0	$0	$12,153	$330,762	$365,625	$398,707	$423,998	$458,932	$482,794	$509,899	$530,869	$552,488
Total CIP-related Payouts	**$0**	**$153,750**	**$4,042,978**	**$771,822**	**$784,163**	**$718,667**	**$865,957**	**$760,822**	**$825,704**	**$775,197**	**$804,378**	**$834,469**
(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.)												

Table 5 - Capital Improvement Program (CIP)

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

	Test Year	Analysis Year	Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected)									
	Starting	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
	7/1/18	7/1/19	7/1/20	7/1/21	7/1/22	7/1/23	7/1/24	7/1/25	7/1/26	7/1/27	7/1/28	7/1/29
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	$501,313	$674,124	$947,337	$961,117	$951,029	$944,156	$927,811	$883,213	$854,542	$816,237	$764,387
Working Capital Transferred in	$501,313	$162,785	$271,883	$325,595	$336,315	$372,814	$388,770	$395,778	$436,458	$454,503	$462,695	$508,023
Debt and CIP Reserves Interest Earned (or Paid)	$0	$10,026	$13,482	$18,947	$19,222	$19,021	$18,883	$18,556	$17,664	$17,091	$16,325	$15,288
Total Available Internal Funds	$501,313	$674,124	$959,490	$1,291,879	$1,316,654	$1,342,863	$1,351,809	$1,342,145	$1,337,336	$1,326,135	$1,295,256	$1,287,697
Grant and Loan Proceeds (External Funds)												
Loan Originated in Analysis (This) Year		$153,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 1st Year			$4,030,825	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 2nd Year				$441,060	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 3rd Year					$418,538	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 4th Year						$319,960	$0	$0	$0	$0	$0	$0
Loan Originated in 5th Year							$441,959	$0	$0	$0	$0	$0
Loan Originated in 6th Year								$301,890	$0	$0	$0	$0
Loan Originated in 7th Year									$342,910	$0	$0	$0
Loan Originated in 8th Year										$265,298	$0	$0
Loan Originated in 9th Year											$273,509	$0
Loan Originated in 10th Year												$281,981
Total Available External Funds	$0	$153,750	$4,030,825	$441,060	$418,538	$319,960	$441,959	$301,890	$342,910	$265,298	$273,509	$281,981
Total Available Funds	**$501,313**	**$827,874**	**$4,990,315**	**$1,732,939**	**$1,735,192**	**$1,662,823**	**$1,793,768**	**$1,644,035**	**$1,680,246**	**$1,591,434**	**$1,568,765**	**$1,569,679**

Outcomes (This CIP spending and funding plan will result in the following cash needs and ending balances each year.)

Total Available Funds	**$501,313**	**$827,874**	**$4,990,315**	**$1,732,939**	**$1,735,192**	**$1,662,823**	**$1,793,768**	**$1,644,035**	**$1,680,246**	**$1,591,434**	**$1,568,765**	**$1,569,679**
Total CIP-related Payouts	**$0**	**$153,750**	**$4,042,978**	**$771,822**	**$784,163**	**$718,667**	**$865,957**	**$760,822**	**$825,704**	**$775,197**	**$804,378**	**$834,469**
Debt and CIP Reserves Ending Balances	**$501,313**	**$674,124**	**$947,337**	**$961,117**	**$951,029**	**$944,156**	**$927,811**	**$883,213**	**$854,542**	**$816,237**	**$764,387**	**$735,210**

Notes: Many system improvements are needed and planned. Some will be expensive. In several years, debt payments will rise to nearly $400,000 per year, requiring significant rate increases to cover.

Table 6 - Equipment Replacement Schedule - Detailed

Hillsboro, Missouri, 2020 Water Rates Model 1

Year Beginning	Unspecified, Low-dollar, Annual R&R Items	UV Bulbs	water meter replacement	Shared Lawn Mower, 50% Water, 50% Sewer	Sewer Camera	Lift Station Pumps	Sewer Plant Grinder Pumps	2011 F-350, 50% Water, 50% Sewer	2013 F-150 50% Water, 50% Sewer	2020 F-250 Utility Truck 50% Sewer 50% Water NEW in 2020	2018 Chevy C100 50% Water, 50% Sewer	2013 F-150 Street 50%, Water 25%, Sewer 25%	2007 Ford Crown Victoria 50% Street, 25% Water, 25% Sewer
			Water only				Sewer only						
7/1/19	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/20	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$22,500	$0	$0	$0
7/1/21	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/22	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$0
7/1/23	$20,000	$0	$5,000	$0	$0	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/24	$20,000	$0	$5,000	$10,000	$0	$0	$0	$0	$15,000	$0	$0	$0	$0
7/1/25	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/26	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$17,500	$0	$0
7/1/27	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,250
7/1/28	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$22,500	$0	$0	$0
7/1/29	$20,000	$0	$5,000	$10,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/30	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$0
7/1/31	$20,000	$0	$5,000	$0	$0	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/32	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$15,000	$0	$0	$0	$0
7/1/33	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/34	$20,000	$0	$5,000	$10,000	$0	$0	$0	$0	$0	$0	$17,500	$0	$0
7/1/35	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,250
7/1/36	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$22,500	$0	$0	$0
7/1/37	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/38	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$0
7/1/39	$20,000	$0	$5,000	$10,000	$0	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/40	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$15,000	$0	$0	$0	$0
7/1/41	$20,000	$0	$5,000	$0	$0	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/42	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$17,500	$0	$0
7/1/43	$20,000	$0	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,250

Table 6 - Equipment Replacement Schedule - Detailed

Hillsboro, Missouri, 2020 Water Rates Model 1

Year Beginning	2021 F-150 100% Sewer NEW in 2021	1995 F-800 Dump 50,% Tractor, 25% Water, 25% Sewer	2006 F750 Dump 50%, Water 25%, Sewer 25%	2016 F-550 Dump 50%, Water 25%, Sewer 25%	2005 F-450 Dump 50%, Water 25%, Sewer 25%	2003 F-550 Bucket 50% Street, 25% Water, 25% Sewer	Shared Backhoe/ Loader, 25% Water, 25% Sewer, 50% Streets	Water Tower 1 Recoat	Water Tower 2 Recoat	Shared Dump Truck, 25% Water, 25% Sewer, 50% Other			Total Annual Replacement Costs
7/1/19	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$25,000
7/1/20	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$47,500
7/1/21	$0	$0	$0	$0	$0	$0	$6,250	$0	$0	$0	$0	$0	$31,250
7/1/22	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$6,250	$0	$0	$57,500
7/1/23	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$61,250
7/1/24	$0	$0	$0	$0	$0	$0	$0	$150,000	$0	$0	$0	$0	$200,000
7/1/25	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$25,000
7/1/26	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$61,250
7/1/27	$0	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$50,000
7/1/28	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$47,500
7/1/29	$0	$0	$0	$0	$0	$18,750	$0	$0	$200,000	$0	$0	$0	$253,750
7/1/30	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$32,500
7/1/31	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$42,500
7/1/32	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$58,750
7/1/33	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$43,750
7/1/34	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$52,500
7/1/35	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$31,250
7/1/36	$0	$0	$0	$18,750	$0	$0	$6,250	$0	$0	$0	$0	$0	$72,500
7/1/37	$0	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$43,750
7/1/38	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$32,500
7/1/39	$0	$0	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$71,250
7/1/40	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$40,000
7/1/41	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$42,500
7/1/42	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$6,250	$0	$0	$67,500
7/1/43	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$50,000

Table 7 - Equipment Replacement Annuity Calculation

Hillsboro, Missouri, 2020 Water Rates Model 1

This table calculates the annual annuity (savings deposit) needed to build replacement (R&R) reserves. This annuity amount should actually be deposited in a savings account. The annuity amount, called the "Required Annual Deposit (Annuity) to Replacement Account" below, should be included in the utility's general budget as a cost. As a result, all replacement and refurbishment scheduled in Table 6, the detailed replacement schedule, would be paid for out of R&R reserves and not out of the utility's general budget.

In simple terms, the annuity at the bottom of this table should be deposited into an account each year and R&R projects should be paid for out of that account.

3.00%	Average Inflation Rate for the Following Water System Equipment for the Term of This Replacement Schedule
2.00%	Average Interest Rate on Balances Invested for the Term of This Replacement Schedule
2.00%	Average Interest Rate on Amounts Borrowed for the Term of This Replacement Schedule

Year Beginning	Schedule Year	This Year's Costs in Current Dollars	Future Annual Inflated Net Costs	Interest Earned on Prior Balance	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
7/1/19	Analysis Year	$25,000	$25,000	$827	$17,163	$62,250
7/1/20	1st Year	$47,500	$48,925	$343	$59,072	$64,118
7/1/21	2nd Year	$31,250	$33,153	$1,181	$117,592	$66,041
7/1/22	3rd Year	$57,500	$62,832	$2,352	$147,603	$68,022
7/1/23	4th Year	$61,250	$68,937	$2,952	$172,109	$70,063
7/1/24	5th Year	$200,000	$231,855	$3,442	$34,188	$72,165
7/1/25	6th Year	$25,000	$29,851	$684	$95,511	$74,330
7/1/26	7th Year	$61,250	$75,330	$1,910	$112,583	$76,560
7/1/27	8th Year	$50,000	$63,339	$2,252	$141,987	$78,856
7/1/28	9th Year	$47,500	$61,977	$2,840	$173,342	$81,222
7/1/29	10th Year	$253,750	$341,019	$3,467	-$73,719	$83,659
7/1/30	11th Year	$32,500	$44,988	-$1,474	-$29,690	$86,169
7/1/31	12th Year	$42,500	$60,595	-$594	-$387	$88,754
7/1/32	13th Year	$58,750	$86,276	-$8	$3,820	$91,416
7/1/33	14th Year	$43,750	$66,176	$76	$28,212	$94,159
7/1/34	15th Year	$52,500	$81,793	$564	$37,474	$96,983
7/1/35	16th Year	$31,250	$50,147	$749	$78,568	$99,893
7/1/36	17th Year	$72,500	$119,831	$1,571	$50,799	$102,890
7/1/37	18th Year	$43,750	$74,481	$1,016	$67,824	$105,976
7/1/38	19th Year	$32,500	$56,989	$1,356	$102,683	$109,156

Notes: There is currently no R&R schedule. Average R&R costs were instead estimated. A Discretionary Annuity amount was added so that at the end of the 20-year modeling period, the balance will equal the average of the annual replacement cost amounts, less interest paid for borrowing during the negative balance years.

Starting Account Balance	$41,336	$62,250
Minimum Annual Annuity	$86,048	Minimum Desired Balance in Today's Dollars
Discretionary Annuity	$4,443	

Required Annual Deposit (Annuity) to Replacement Account **$90,491**

(This amount is included in Table 4 as an operating cost.)

Table 8 - Average Cost Classification

Hillsboro, Missouri, 2020 Water Rates Model 1

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: 7/1/2023 through 6/30/2024

Cost Items	Cost During Rate Structure Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
SALARIES W	$93,141	25.0%	75.0%	$23,285	$69,856
PROFESSIONAL SERVICES ACCTG	$8,924	100.0%	0.0%	$8,924	$0
PROFESSIONAL SVCS LEGAL W	$297	100.0%	0.0%	$297	$0
EMPLOYEE INSURANCE - W	$19,368	25.0%	75.0%	$4,842	$14,526
RETIREMENT WATER	$929	25.0%	75.0%	$232	$696
WORKER'S COMP WATER	$3,938	25.0%	75.0%	$984	$2,953
PAYROLL TAX WATER	$6,985	25.0%	75.0%	$1,746	$5,239
WATER SYSTEM REPAIRS	$84,489	25.0%	75.0%	$21,122	$63,367
WATER SYSTEM EQUIPMENT	$16,952	25.0%	75.0%	$4,238	$12,714
MISSOURI PRIMACY FEE WATER	$6,090	100.0%	0.0%	$6,090	$0
DUES & SUBSCRIPTIONS WATER	$1,569	25.0%	75.0%	$392	$1,177
FUEL/OIL- W	$8,188	25.0%	75.0%	$2,047	$6,141
INSURANCE WATER	$19,630	100.0%	0.0%	$19,630	$0
MISCW	$3,780	42.1%	57.9%	$1,592	$2,189
DEPOSIT REFUNDS W	$3,885	42.1%	57.9%	$1,636	$2,250
POSTAGE - WATER	$2,643	100.0%	0.0%	$2,643	$0
MATERIALS & SUPPLIES OPS W	$82,556	25.0%	75.0%	$20,639	$61,917
REPAIRS-VEHICLES WATER	$28,632	25.0%	75.0%	$7,158	$21,474
REPAIRS-EQUIP W	$555	25.0%	75.0%	$139	$416
SALESTAXW	$18,913	42.1%	57.9%	$7,962	$10,951
SUPPLIES-OFFICE WATER	$1,040	100.0%	0.0%	$1,040	$0
MATERIALS & SUPPLIES MAINT W	$3,346	25.0%	75.0%	$836	$2,509
TELEPHONE WATER	$2,923	100.0%	0.0%	$2,923	$0
UTILITIES WATER	$55,122	0.0%	100.0%	$0	$55,122
UNIFORMS WATER	$2,198	25.0%	75.0%	$550	$1,649
UTILITY PILOT (6% of Sales)	$37,357	42.1%	57.9%	$15,727	$21,630
Annual Payment to R&R Reserve (Table 7)	$90,491	50.0%	50.0%	$45,246	$45,246
User Charge Analysis Services	$0	42.1%	57.9%	$0	$0
Grand Total Costs, Weighted Avg Percentages	$603,943	33.4%	66.6%	$201,922	$402,021

Bases for Cost to Serve Rate Structure			
		100%	$603,943
Number Customers During Year Defined Above	1,257	Unbilled-for Water is Estimated at	25%
Billed Volume, in Gallons, During Year Defined Above	92,446,232	Unbilled-for Water is Estimated at This Percentage of Average Cost	36%
Average Fixed Cost per User per Month During Year Defined Above	$13.39	Resulting Cost of Unbilled-for Water	$47,486
Average Variable Cost to Produce per 1,000 Gallons During Year Defined Above	$4.35	Test Year Customer Metered Volume, in Gallons	88,768,000
Gallons per Billing Cycle Used by Average Residential Customer	3,995	+ Test Year Unbilled-for Water, in Gallons	29,111,839
		Total Test Year Volume, in Gallons, From Master Meter Readings	117,879,839

Table 9 - Marginal Cost Classification

Hillsboro, Missouri, 2020 Water Rates Model 1

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 fixed costs are being calculated for: No Applicable

Below, it is assumed that marginal varible costs are being calculated for: Water Loss

The marginal rate structure basis year runs from: 7/1/2023 through 6/30/2024

Cost Items	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
SALARIES W	$23,285	$69,856	25%	25%	$5,821	$17,464
PROFESSIONAL SERVICES ACCTG	$8,924	$0	100%	100%	$8,924	$0
PROFESSIONAL SVCS LEGAL W	$297	$0	100%	100%	$297	$0
EMPLOYEE INSURANCE - W	$4,842	$14,526	25%	25%	$1,211	$3,632
RETIREMENT WATER	$232	$696	25%	25%	$58	$174
WORKER'S COMP WATER	$984	$2,953	25%	25%	$246	$738
PAYROLL TAX WATER	$1,746	$5,239	25%	25%	$437	$1,310
WATER SYSTEM REPAIRS	$21,122	$63,367	25%	25%	$5,281	$15,842
WATER SYSTEM EQUIPMENT	$4,238	$12,714	100%	100%	$4,238	$12,714
MISSOURI PRIMACY FEE WATER	$6,090	$0	100%	100%	$6,090	$0
DUES & SUBSCRIPTIONS WATER	$392	$1,177	100%	100%	$392	$1,177
FUEL/OIL- W	$2,047	$6,141	25%	25%	$512	$1,535
INSURANCE WATER	$19,630	$0	100%	100%	$19,630	$0
MISCW	$1,592	$2,189	25%	25%	$398	$547
DEPOSIT REFUNDS W	$1,636	$2,250	0%	0%	$0	$0
POSTAGE - WATER	$2,643	$0	100%	100%	$2,643	$0
MATERIALS & SUPPLIES OPS W	$20,639	$61,917	25%	25%	$5,160	$15,479
REPAIRS-VEHICLES WATER	$7,158	$21,474	25%	25%	$1,790	$5,369
REPAIRS-EQUIP W	$139	$416	25%	25%	$35	$104
SALESTAXW	$7,962	$10,951	0%	0%	$0	$0
SUPPLIES-OFFICE WATER	$1,040	$0	100%	100%	$1,040	$0
MATERIALS & SUPPLIES MAINT W	$836	$2,509	25%	25%	$209	$627
TELEPHONE WATER	$2,923	$0	100%	100%	$2,923	$0
UTILITIES WATER	$0	$55,122	0%	100%	$0	$55,122
UNIFORMS WATER	$550	$1,649	100%	100%	$550	$1,649
UTILITY PILOT (6% of Sales)	$15,727	$21,630	0%	0%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$45,246	$45,246	25%	25%	$11,311	$11,311
User Charge Analysis Services	$0	$0	100%	100%	$0	$0
Grand Total All Costs	$201,922	$402,021			$79,195	$144,794
	$603,943				$223,988	

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
	$5.25	
Marginal Fixed Cost as a Percent of Total Fixed Cost:	39%	$1.57
Marginal Variable Cost as a Percent of Total Variable Cost:		36%

Table 10 - Initial Rate Adjustments and Resulting Revenues

Hillsboro, Missouri, 2020 Water Rates Model 1

This table calculates a new set of user charge rates and the revenues they would generate.

Out of City Multiplier	150%	Conservation Rate Block Multiplier	112.5%	Other Multiplier	100%

6/30/20 Date when fees will first be collected at adjusted rates. Actual adjustment should occur one billing cycle earlier.

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

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. 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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
3/4" Meter In City	-15,000	-1	-$184	$17.99	0.000	$4.00	$0	-$184
	0	999	$76	$17.99	0.000	$4.00	$136	$212
	1,000	1,999	$34,760	$17.99	0.000	$4.00	$205	$34,965
	2,000	2,999	$77,618	$17.99	0.000	$4.00	$203	$77,821
	3,000	3,999	$69,240	$17.99	0.000	$4.00	$181	$69,421
	4,000	4,999	$54,540	$17.99	0.000	$4.00	$142	$54,682
	5,000	5,999	$37,337	$17.99	0.000	$4.50	$100	$37,438
	6,000	6,999	$24,353	$17.99	0.000	$4.50	$63	$24,416
	7,000	7,999	$14,238	$17.99	0.000	$4.50	$38	$14,276
	8,000	8,999	$8,916	$17.99	0.000	$4.50	$24	$8,939
	9,000	9,999	$5,353	$17.99	0.000	$4.50	$14	$5,368
	10,000	14,999	$11,917	$17.99	0.000	$5.06	$34	$11,951
	15,000	19,999	$4,663	$17.99	0.000	$5.06	$12	$4,675
	20,000	24,999	$2,580	$17.99	0.000	$5.70	$7	$2,588
	25,000	29,999	$1,281	$17.99	0.000	$5.70	$4	$1,285
	30,000	39,999	$1,079	$17.99	0.000	$5.70	$3	$1,082
	40,000	49,999	$237	$17.99	0.000	$5.70	$1	$238
	50,000	59,999	$140	$17.99	0.000	$5.70	$0	$141
	60,000	69,999	$67	$17.99	0.000	$5.70	$0	$68

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
1" Meter In City	0	999	$1,126	$26.49	0.000	$4.00	$8	$1,133
	1,000	1,999	$1,030	$26.49	0.000	$4.00	$7	$1,037
	2,000	2,999	$1,531	$26.49	0.000	$4.00	$5	$1,536
	3,000	3,999	$1,498	$26.49	0.000	$4.00	$5	$1,503
	4,000	4,999	$1,457	$26.49	0.000	$4.00	$5	$1,461
	5,000	5,999	$906	$26.49	0.000	$4.50	$3	$909
	6,000	6,999	$908	$26.49	0.000	$4.50	$3	$911
	7,000	7,999	$663	$26.49	0.000	$4.50	$2	$665
	8,000	8,999	$668	$26.49	0.000	$4.50	$2	$670
	9,000	9,999	$556	$26.49	0.000	$4.50	$2	$558
	10,000	14,999	$2,045	$26.49	0.000	$5.06	$7	$2,051
	15,000	19,999	$1,926	$26.49	0.000	$5.06	$5	$1,932
	20,000	24,999	$1,649	$26.49	0.000	$5.70	$5	$1,654
	25,000	29,999	$867	$26.49	0.000	$5.70	$3	$870
	30,000	34,999	$677	$26.49	0.000	$5.70	$2	$679
	35,000	44,999	$527	$26.49	0.000	$5.70	$2	$529
	45,000	54,999	$108	$26.49	0.000	$5.70	$0	$108
	55,000	64,999	$89	$26.49	0.000	$5.70	$0	$89
	65,000	74,999	$54	$26.49	0.000	$5.70	$0	$54
	75,000	84,999	$54	$26.49	0.000	$5.70	$0	$54
	85,000	94,999	$54	$26.49	0.000	$5.70	$0	$54
	95,000	104,999	$54	$26.49	0.000	$5.70	$0	$54
	105,000	114,999	$54	$26.49	0.000	$5.70	$0	$54
	115,000	124,999	$51	$26.49	0.000	$5.70	$0	$51

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
1 1/2" Meter In City	0	999	$610	$40.66	0.000	$4.00	$7	$618
	1,000	1,999	$76	$40.66	0.000	$4.00	$4	$80
	2,000	2,999	$1,361	$40.66	0.000	$4.00	$4	$1,365
	3,000	3,999	$1,300	$40.66	0.000	$4.00	$4	$1,303
	4,000	4,999	$1,341	$40.66	0.000	$4.00	$4	$1,345
	5,000	5,999	$1,444	$40.66	0.000	$4.50	$5	$1,449
	6,000	6,999	$1,581	$40.66	0.000	$4.50	$5	$1,586
	7,000	7,999	$1,484	$40.66	0.000	$4.50	$5	$1,489
	8,000	8,999	$1,360	$40.66	0.000	$4.50	$4	$1,364
	9,000	9,999	$1,414	$40.66	0.000	$4.50	$5	$1,419
	10,000	14,999	$5,619	$40.66	0.000	$5.06	$21	$5,641
	15,000	19,999	$4,697	$40.66	0.000	$5.06	$15	$4,712
	20,000	24,999	$3,607	$40.66	0.000	$5.70	$12	$3,620
	25,000	29,999	$2,237	$40.66	0.000	$5.70	$8	$2,245
	30,000	34,999	$1,902	$40.66	0.000	$5.70	$6	$1,908
	35,000	44,999	$2,354	$40.66	0.000	$5.70	$8	$2,362
	45,000	54,999	$1,479	$40.66	0.000	$5.70	$5	$1,483
	55,000	64,999	$1,177	$40.66	0.000	$5.70	$4	$1,180
	65,000	74,999	$904	$40.66	0.000	$5.70	$3	$907
	75,000	84,999	$666	$40.66	0.000	$5.70	$2	$668
	85,000	94,999	$518	$40.66	0.000	$5.70	$2	$520
	95,000	104,999	$380	$40.66	0.000	$5.70	$1	$381
	105,000	114,999	$234	$40.66	0.000	$5.70	$1	$234
	115,000	124,999	$173	$40.66	0.000	$5.70	$1	$174
	125,000	134,999	$108	$40.66	0.000	$5.70	$0	$108
	135,000	144,999	$108	$40.66	0.000	$5.70	$0	$108
	145,000	430,000	$1,755	$40.66	0.000	$5.70	$5	$1,760

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
2" Meter In City	0	999	$1,488	$57.67	0.000	$4.00	$16	$1,504
	1,000	1,999	$362	$57.67	0.000	$4.00	$6	$369
	2,000	2,999	$1,480	$57.67	0.000	$4.00	$6	$1,486
	3,000	3,999	$1,430	$57.67	0.000	$4.00	$6	$1,435
	4,000	4,999	$1,285	$57.67	0.000	$4.00	$5	$1,290
	5,000	5,999	$1,131	$57.67	0.000	$4.50	$4	$1,135
	6,000	6,999	$1,369	$57.67	0.000	$4.50	$5	$1,373
	7,000	7,999	$1,247	$57.67	0.000	$4.50	$5	$1,252
	8,000	8,999	$1,150	$57.67	0.000	$4.50	$4	$1,154
	9,000	9,999	$1,037	$57.67	0.000	$4.50	$3	$1,041
	10,000	14,999	$4,823	$57.67	0.000	$5.06	$16	$4,840
	15,000	19,999	$5,430	$57.67	0.000	$5.06	$16	$5,446
	20,000	24,999	$5,340	$57.67	0.000	$5.70	$18	$5,358
	25,000	29,999	$4,022	$57.67	0.000	$5.70	$14	$4,036
	30,000	34,999	$4,049	$57.67	0.000	$5.70	$14	$4,063
	35,000	44,999	$4,811	$57.67	0.000	$5.70	$19	$4,829
	45,000	54,999	$2,781	$57.67	0.000	$5.70	$11	$2,792
	55,000	64,999	$1,877	$57.67	0.000	$5.70	$6	$1,883
	65,000	74,999	$1,588	$57.67	0.000	$5.70	$5	$1,593
	75,000	84,999	$1,283	$57.67	0.000	$5.70	$4	$1,287
	85,000	94,999	$1,062	$57.67	0.000	$5.70	$4	$1,066
	95,000	104,999	$720	$57.67	0.000	$5.70	$3	$722
	105,000	114,999	$576	$57.67	0.000	$5.70	$2	$578
	115,000	124,999	$393	$57.67	0.000	$5.70	$2	$395
	125,000	134,999	$270	$57.67	0.000	$5.70	$1	$271
	135,000	144,999	$215	$57.67	0.000	$5.70	$1	$216
	145,000	202,000	$854	$57.67	0.000	$5.70	$3	$857

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
3" Meter In City	0	999	$172	$103.02	0.000	$4.00	$3	$175
	1,000	1,999	$153	$103.02	0.000	$4.00	$3	$155
	2,000	2,999	$171	$103.02	0.000	$4.00	$1	$173
	3,000	3,999	$114	$103.02	0.000	$4.00	$0	$115
	4,000	4,999	$114	$103.02	0.000	$4.00	$0	$115
	5,000	5,999	$114	$103.02	0.000	$4.50	$0	$115
	6,000	6,999	$135	$103.02	0.000	$4.50	$0	$135
	7,000	7,999	$123	$103.02	0.000	$4.50	$0	$123
	8,000	8,999	$123	$103.02	0.000	$4.50	$0	$123
	9,000	9,999	$123	$103.02	0.000	$4.50	$0	$123
	10,000	14,999	$614	$103.02	0.000	$5.06	$2	$616
	15,000	19,999	$747	$103.02	0.000	$5.06	$3	$749
	20,000	24,999	$667	$103.02	0.000	$5.70	$2	$668
	25,000	29,999	$618	$103.02	0.000	$5.70	$2	$621
	30,000	34,999	$651	$103.02	0.000	$5.70	$2	$652
	35,000	44,999	$1,100	$103.02	0.000	$5.70	$5	$1,104
	45,000	54,999	$766	$103.02	0.000	$5.70	$3	$768
	55,000	64,999	$645	$103.02	0.000	$5.70	$3	$647
	65,000	74,999	$490	$103.02	0.000	$5.70	$2	$492
	75,000	84,999	$430	$103.02	0.000	$5.70	$1	$431
	85,000	94,999	$408	$103.02	0.000	$5.70	$2	$410
	95,000	104,999	$216	$103.02	0.000	$5.70	$1	$217
	105,000	114,999	$161	$103.02	0.000	$5.70	$0	$162
	115,000	124,999	$161	$103.02	0.000	$5.70	$0	$162
	125,000	134,999	$161	$103.02	0.000	$5.70	$0	$162
	135,000	144,999	$161	$103.02	0.000	$5.70	$0	$162
	145,000	220,000	$810	$103.02	0.000	$5.70	$3	$813

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
4" Meter In City	0	999	$248	$154.05	0.000	$4.00	$6	$254
	1,000	1,999	$57	$154.05	0.000	$4.00	$2	$59
	2,000	2,999	$427	$154.05	0.000	$4.00	$5	$432
	3,000	3,999	$327	$154.05	0.000	$4.00	$3	$330
	4,000	4,999	$302	$154.05	0.000	$4.00	$3	$305
	5,000	5,999	$263	$154.05	0.000	$4.50	$3	$265
	6,000	6,999	$226	$154.05	0.000	$4.50	$1	$228
	7,000	7,999	$186	$154.05	0.000	$4.50	$1	$187
	8,000	8,999	$196	$154.05	0.000	$4.50	$1	$197
	9,000	9,999	$158	$154.05	0.000	$4.50	$0	$158
	10,000	14,999	$805	$154.05	0.000	$5.06	$3	$807
	15,000	19,999	$908	$154.05	0.000	$5.06	$3	$910
	20,000	24,999	$965	$154.05	0.000	$5.70	$4	$969
	25,000	29,999	$757	$154.05	0.000	$5.70	$2	$759
	30,000	34,999	$888	$154.05	0.000	$5.70	$3	$891
	35,000	44,999	$1,541	$154.05	0.000	$5.70	$6	$1,547
	45,000	54,999	$1,346	$154.05	0.000	$5.70	$5	$1,351
	55,000	64,999	$1,290	$154.05	0.000	$5.70	$4	$1,294
	65,000	74,999	$1,290	$154.05	0.000	$5.70	$4	$1,294
	75,000	84,999	$1,290	$154.05	0.000	$5.70	$4	$1,294
	85,000	94,999	$1,290	$154.05	0.000	$5.70	$4	$1,294
	95,000	104,999	$1,290	$154.05	0.000	$5.70	$4	$1,294
	105,000	114,999	$1,290	$154.05	0.000	$5.70	$4	$1,294
	115,000	124,999	$1,286	$154.05	0.000	$5.70	$4	$1,290
	125,000	134,999	$1,236	$154.05	0.000	$5.70	$4	$1,240
	135,000	144,999	$1,236	$154.05	0.000	$5.70	$4	$1,240
	145,000	947,000	$53,539	$154.05	0.000	$5.70	$164	$53,702

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
3/4" Meter Out of City	0	999	$343	$20.82	0.000	$6.00	$14	$357
	1,000	1,999	$1,373	$20.82	0.000	$6.00	$15	$1,389
	2,000	2,999	$7,891	$20.82	0.000	$6.00	$18	$7,909
	3,000	3,999	$8,091	$20.82	0.000	$6.00	$18	$8,109
	4,000	4,999	$5,380	$20.82	0.000	$6.00	$12	$5,392
	5,000	5,999	$3,414	$20.82	0.000	$6.75	$8	$3,423
	6,000	6,999	$2,988	$20.82	0.000	$6.75	$7	$2,995
	7,000	7,999	$2,013	$20.82	0.000	$6.75	$5	$2,018
	8,000	8,999	$1,311	$20.82	0.000	$6.75	$3	$1,314
	9,000	9,999	$756	$20.82	0.000	$6.75	$2	$758
	10,000	14,999	$877	$20.82	0.000	$7.59	$2	$880
	15,000	19,999	$237	$20.82	0.000	$7.59	$1	$238
	20,000	24,999	$0	$20.82	0.000	$8.54	$0	$0
1" Meter Out of City	0	999	$0	$33.58	0.000	$6.00	$0	$0
	1,000	1,999	$0	$33.58	0.000	$6.00	$0	$0
	2,000	2,999	$72	$33.58	0.000	$6.00	$0	$72
	3,000	3,999	$72	$33.58	0.000	$6.00	$0	$72
	4,000	4,999	$72	$33.58	0.000	$6.00	$0	$72
	5,000	5,999	$72	$33.58	0.000	$6.75	$0	$72
	6,000	6,999	$72	$33.58	0.000	$6.75	$0	$72
	7,000	7,999	$94	$33.58	0.000	$6.75	$0	$95
	8,000	8,999	$66	$33.58	0.000	$6.75	$0	$66
	9,000	9,999	$88	$33.58	0.000	$6.75	$0	$89
	10,000	14,999	$362	$33.58	0.000	$7.59	$1	$363
	15,000	19,999	$135	$33.58	0.000	$7.59	$0	$135
	20,000	24,999	$35	$33.58	0.000	$8.54	$0	$35

Total Rate Revenue at Current Rates	$579,328	Total Rate Revenue at Modeled Rates	$1,967	
			Total Blended Rate Revenues for the Year	$581,295

Note: New Minimum Charge Base Rates: If meter size-based minimum charges are to be used, and the user classes modeled above include meter or connection sizes, the amounts shown in this column include meter size surcharges as calculated in Table 16. Either way, the narrative report includes the rates and surcharges to assess.

12.0	months at the old user charge rates	and	0.0	months at the new user charge rates.

Table 11 - Capacity Costs

Hillsboro, Missouri, 2020 Water Rates Model 1

System capacity and connection costs WILL be recovered in one way by default, or a combination of ways by design. That could be through regular user fees, in which case existing customers pay the costs to bring on new customers. It could be through system development or connection fees, in which case new customers pay "up front" for the capacity they are granted. It could be through on-going capacity surcharges added to minimum charges, preferably based on meter or connection size, in which case each customer pays for the capacity they are granted over time. Or, it could be by a combination of these. This table shows capacity costs to expect. From these costs, system development fees and surcharges were developed in Tables 13 through 16.

Peak and Base Flow Capacity Costs

	Fixed Assets Original Value (Capacity Cost)	% of Value Attributable to Peak Flow Capacity	Peak Flow Capacity Cost	Annual Peak Flow Capacity Cost (40-year Depreciation)	% of Value Attributable to Base Flow Capacity	Base Flow Capacity Cost	Annual Base Flow Capacity Cost (40-year Depreciation)
	$10,705,625	50.0%	$5,352,813	$311,952	50.0%	$5,352,813	$311,952
Totals	$10,705,625		$5,352,813	$311,952		$5,352,813	$311,952

How Capacity Costs Will Be Recovered

These costs are modeled to be recovered from system development fees in Table 14

Peak Flow Capacity Costs to be Recovered by System Development Fees

4.875% Target Percentage of Costs to Recover

$15,208 Target Portion of Costs to Recover

$1,000 Cost per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by System Development Fees

0.0% Target Percentage of Costs to Recover

$0 Target Portion of Costs to Recover

$0 Base Capacity Cost per New Customer Connected

In addition to calculation of the capacity cost for each new connection based on the unit cost above, the system development fee for each new connection should also include recovery of the following costs:

$100	Average Field Cost per New Connection
$50	Average Administration Cost per New Connection
$150	Field and Admin Cost per New Connection
$150	Base Cost to Recover per New Connection

These costs are modeled to be recovered from minimum charge surcharges in Table 16

Peak Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

40.0% Target Percentage of Costs to Recover

$124,781 Target Portion of Costs to Recover in One Full Year

$10,398 Target Portion of Costs to Recover in Monthly Surcharges

$5.67 Monthly Surcharge per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

0.0% Target Percentage of Costs to Recover

$0 Target Portion of Costs to Recover in One Full Year

$0 Target Portion of Costs to Recover in Monthly Surcharges

$0.00 Monthly Base Flow Surcharge per Bill

Note: Non-capital costs, such as field costs for inspection of connections and administration costs, should be recovered by fees charged for providing the services involved. These costs are in addition to peak flow capacity costs. If your system's basic costs to sign up and connect new customers is different than assumed above, adjust your final fees accordingly.

Table 12 - AWWA Safe Operating Capacities by Meter Size

Hillsboro, Missouri, 2020 Water Rates Model 1

Data source: Table VII.2-5, page 338, AWWA Manual M1 Principles of Water Rates, Fees and Charges, Seventh Edition

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.

Meter Size, in Inches	Meter Type	Maximum-Rated Safe Operating Flow, in gallons per minute	Meter Equivalent Ratio (Capacity Shares)
Five Eighths	Displacement	20	1.0
Three Quarters	Displacement	30	1.5
One Inch	Displacement	50	2.5
One & a Half Inch	Displacement	100	5.0
Two Inch	Displacement	160	8.0
Three	Singlet	320	16.0
Three	Compound, Class I	320	16.0
Three	Turbine, Class I	350	17.5
Four	Singlet	500	25.0
Four	Compound, Class I	500	25.0
Four	Turbine, Class I	630	31.0
Six	Singlet	1,000	50.0
Six	Compound, Class I	1,000	50.0
Six	Turbine, Class I	1,300	65.0
Eight	Compound, Class I	1,600	80.0
Eight	Turbine, Class I	2,800	140.0
Ten	Turbine, Class II	4,200	210.0
Twelve	Turbine, Class II	5,300	265.0

Table 13 - System Development Fees
Hillsboro, Missouri, 2020 Water Rates Model 1

This table calculates system development fees to charge each meter size.

Note: Larger meter sizes are available in two or more types, each having different flow capacities. To be conservative when projecting revenues, it was assumed all meters in use are of the lowest capacity types. However, when setting fees, they should be based upon the type of meter in use at each location.

In-City

Meter Size	Meter Type	AWWA Capacity "Share" Factor, Compared to 5/8 Inch Meter	Foot Notes	Cost per Peak Flow Capacity Share From Table 11	Out of City Multiplier From Table 10	Adjusted Peak Capacity Cost Each Meter Size	Peak Plus Base Capacity Cost	Field and Admin Cost per New Connection	System Development Fee
Five Eighths	Displacement	1.0		$1,000	100%	$1,000	$1,000	$150	$1,150
Three Quarters	Displacement	1.0	1	$1,000	100%	$1,000	$1,000	$150	$1,150
One Inch	Displacement	2.5		$1,000	100%	$2,499	$2,499	$150	$2,649
One & a Half Inch	Displacement	5.0		$1,000	100%	$4,998	$4,998	$150	$5,148
Two Inch	Displacement	8.0		$1,000	100%	$7,997	$7,997	$150	$8,147
Two & a Half Inch	Displacement	12.5	2	$1,000	100%	$12,496	$12,496	$150	$12,646
Three Inch	Singlet	16.0		$1,000	100%	$15,995	$15,995	$150	$16,145
Three Inch	Compound, Class I	16.0		$1,000	100%	$15,995	$15,995	$150	$16,145
Three Inch	Turbine, Class I	17.5		$1,000	100%	$17,494	$17,494	$150	$17,644
Four Inch	Singlet	25.0		$1,000	100%	$24,992	$24,992	$150	$25,142
Four Inch	Compound, Class I	25.0		$1,000	100%	$24,992	$24,992	$150	$25,142
Four Inch	Turbine, Class I	31.0		$1,000	100%	$30,990	$30,990	$150	$31,140
Six Inch	Singlet	50.0		$1,000	100%	$49,983	$49,983	$150	$50,133
Six Inch	Compound, Class I	50.0		$1,000	100%	$49,983	$49,983	$150	$50,133
Six Inch	Turbine, Class I	65.0		$1,000	100%	$64,978	$64,978	$150	$65,128
Eight Inch	Compound, Class I	80.0		$1,000	100%	$79,973	$79,973	$150	$80,123
Eight Inch	Turbine, Class I	140.0		$1,000	100%	$139,954	$139,954	$150	$140,104

Table 13 - System Development Fees

Hillsboro, Missouri, 2020 Water Rates Model 1

Out-of-City

Meter Size	Meter Type	AWWA Capacity "Share" Factor, Compared to 5/8 Inch Meter	Foot Notes	Cost per Peak Flow Capacity Share From Table 11	Out of City Multiplier From Table 10	Adjusted Peak Capacity Cost Each Meter Size	Peak Plus Base Capacity Cost	Field and Admin Cost per New Connection	System Development Fee
Five Eighths	Displacement	1.0		$1,000	150%	$1,500	$1,500	$150	$1,650
Three Quarters	Displacement	1.0	1	$1,000	150%	$1,500	$1,500	$150	$1,650
One Inch	Displacement	2.5		$1,000	150%	$3,749	$3,749	$150	$3,899
One & a Half Inch	Displacement	5.0		$1,000	150%	$7,498	$7,498	$150	$7,648
Two Inch	Displacement	8.0		$1,000	150%	$11,996	$11,996	$150	$12,146
Two & a Half Inch	Displacement	12.5	2	$1,000	150%	$18,744	$18,744	$150	$18,894
Three Inch	Singlet	16.0		$1,000	150%	$23,992	$23,992	$150	$24,142
Three Inch	Compound, Class I	16.0		$1,000	150%	$23,992	$23,992	$150	$24,142
Three Inch	Turbine, Class I	17.5		$1,000	150%	$26,241	$26,241	$150	$26,391
Four Inch	Singlet	25.0		$1,000	150%	$37,488	$37,488	$150	$37,638
Four Inch	Compound, Class I	25.0		$1,000	150%	$37,488	$37,488	$150	$37,638
Four Inch	Turbine, Class I	31.0		$1,000	150%	$46,485	$46,485	$150	$46,635
Six Inch	Singlet	50.0		$1,000	150%	$74,975	$74,975	$150	$75,125
Six Inch	Compound, Class I	50.0		$1,000	150%	$74,975	$74,975	$150	$75,125
Six Inch	Turbine, Class I	65.0		$1,000	150%	$97,468	$97,468	$150	$97,618
Eight Inch	Compound, Class I	80.0		$1,000	150%	$119,960	$119,960	$150	$120,110
Eight Inch	Turbine, Class I	140.0		$1,000	150%	$209,930	$209,930	$150	$210,080

Foot Notes, which apply to Tables 14, 15 and 16, as well:

[1] The Three-Quarter-Inch meter capacity share factor is 1.5. However, it was set equal to the Five-eighths-Inch meter because most such meters are used for residential connections. This enables a uniform system development fee for almost all residential customers.

[2] These meter sizes were not included in AWWA study results, so these values are estimates.

Economy of Scale Adjustments: As meter size rises, capacity to pass peak flow rises. However, costs to build that capacity do not rise as rapidly. Therefore, peak flow capacity shares were adjusted downward by an estimated cost savings factor to account for that savings. Economy of scale savings do not apply to base costs because all connections are afforded the same level of base flow capacity.

Table 14 - Revenues From System Development Fees

Hillsboro, Missouri, 2020 Water Rates Model 1

This table calculates total fee revenues that would be generated during one full year at the fees in Table 13.

In-City

Meter Size	Meter Type	Mix of New Taps in a Typical Year	Capacity Shares After Economy of Scale Adj	Adjusted Annual Growth in Capacity Shares	Adjusted Peak Capacity Fees, One Full Year	Adjusted Admin and Field Fees, One Full Year	**System Development Fee Revenues, One Full Year**
Five Eighths	Displacement	0.0	1.0	0.0	$0	$0	**$0**
Three Quarters	Displacement	8.6	1.0	8.6	$8,549	$1,283	**$9,832**
One Inch	Displacement	0.3	2.5	0.7	$652	$39	**$692**
One & a Half Inch	Displacement	0.2	5.0	1.2	$1,225	$37	**$1,262**
Two Inch	Displacement	0.3	8.0	2.2	$2,215	$42	**$2,256**
Two & a Half Inch	Displacement	0.0	12.5	0.0	$0	$0	**$0**
Three Inch	Singlet	0.0	16.0	0.5	$530	$5	**$535**
Three Inch	Compound, Class I	0.0	16.0	0.0	$0	$0	**$0**
Three Inch	Turbine, Class I	0.0	17.5	0.0	$0	$0	**$0**
Four Inch	Singlet	0.1	25.0	1.5	$1,450	$9	**$1,458**
Four Inch	Compound, Class I	0.0	25.0	0.0	$0	$0	**$0**
Four Inch	Turbine, Class I	0.0	31.0	0.0	$0	$0	**$0**
Six Inch	Singlet	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Compound, Class I	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Turbine, Class I	0.0	65.0	0.0	$0	$0	**$0**
Eight Inch	Compound, Class I	0.0	80.0	0.0	$0	$0	**$0**
Eight Inch	Turbine, Class I	0.0	140.0	0.0	$0	$0	**$0**
	Subtotal:	9.4		14.6	$14,622	$1,414	**$16,035**

Out-of-City

Five Eighths	Displacement	0.0	1.0	0.0	$0	$0	**$0**
Three Quarters	Displacement	0.6	1.0	0.6	$848	$85	**$933**
One Inch	Displacement	0.0	2.5	0.0	$31	$1	**$32**
One & a Half Inch	Displacement	0.0	5.0	0.0	$0	$0	**$0**
Two Inch	Displacement	0.0	8.0	0.0	$0	$0	**$0**
Two & a Half Inch	Displacement	0.0	12.5	0.0	$0	$0	**$0**
Three Inch	Singlet	0.0	16.0	0.0	$0	$0	**$0**
Three Inch	Compound, Class I	0.0	16.0	0.0	$0	$0	**$0**
Three Inch	Turbine, Class I	0.0	17.5	0.0	$0	$0	**$0**
Four Inch	Singlet	0.0	25.0	0.0	$0	$0	**$0**
Four Inch	Compound, Class I	0.0	25.0	0.0	$0	$0	**$0**
Four Inch	Turbine, Class I	0.0	31.0	0.0	$0	$0	**$0**
Six Inch	Singlet	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Compound, Class I	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Turbine, Class I	0.0	65.0	0.0	$0	$0	**$0**
Eight Inch	Compound, Class I	0.0	80.0	0.0	$0	$0	**$0**
Eight Inch	Turbine, Class I	0.0	140.0	0.0	$0	$0	**$0**
	Subtotal:	0.6		0.6	$879	$86	**$965**
	Total:	10.0		15.2	$15,501	$1,500	**$17,001**

This is the amount used to calculate the "Meter Size-based System Development Fees" income in Table 3.

Table 15 - Minimum Charge Fees, Including Capacity Surcharges

Hillsboro, Missouri, 2020 Water Rates Model 1

This table does, essentially, the same thing as Table 13, except costs are recovered over time as minimum charge surcharges.

In-City

Meter Size	Meter Type	Monthly Peak Capacity-only Cost per Capacity Share	Uniform Adj to Peak Capacity Cost	Peak Plus Base Capacity Cost	Adjusted Peak Capacity-only Surcharge Revenues	Cost to Serve Minimum From Table 10	Monthly Minimum Charge
Five Eighths	Displacement	$5.67	$0.00	$5.67	$0	$12.32	$17.99
Three Quarters	Displacement	$5.67	$0.00	$5.67	$70,203	$12.32	$17.99
One Inch	Displacement	$14.17	$0.00	$14.17	$5,357	$12.32	$26.49
One & a Half Inch	Displacement	$28.35	$0.00	$28.35	$10,063	$12.32	$40.66
Two Inch	Displacement	$45.35	$0.00	$45.35	$18,187	$12.32	$57.67
Two & a Half Inch	Displacement	$70.87	$0.00	$70.87	$0	$12.32	$83.18
Three Inch	Singlet	$90.71	$0.00	$90.71	$4,354	$12.32	$103.02
Three Inch	Compound, Class I	$90.71	$0.00	$90.71	$0	$12.32	$103.02
Three Inch	Turbine, Class I	$99.21	$0.00	$99.21	$0	$12.32	$111.53
Four Inch	Singlet	$141.73	$0.00	$141.73	$11,905	$12.32	$154.05
Four Inch	Compound, Class I	$141.73	$0.00	$141.73	$0	$12.32	$154.05
Four Inch	Turbine, Class I	$175.75	$0.00	$175.75	$0	$12.32	$188.06
Six Inch	Singlet	$283.46	$0.00	$283.46	$0	$12.32	$295.78
Six Inch	Compound, Class I	$283.46	$0.00	$283.46	$0	$12.32	$295.78
Six Inch	Turbine, Class I	$368.50	$0.00	$368.50	$0	$12.32	$380.82
Eight Inch	Compound, Class I	$453.54	$0.00	$453.54	$0	$12.32	$465.86
Eight Inch	Turbine, Class I	$793.70	$0.00	$793.70	$0	$12.32	$806.02

Out-of-City

Five Eighths	Displacement	$8.50	$0.00	$8.50	$0	$12.32	$20.82
Three Quarters	Displacement	$8.50	$0.00	$8.50	$6,965	$12.32	$20.82
One Inch	Displacement	$21.26	$0.00	$21.26	$255	$12.32	$33.58
One & a Half Inch	Displacement	$42.52	$0.00	$42.52	$0	$12.32	$54.84
Two Inch	Displacement	$68.03	$0.00	$68.03	$0	$12.32	$80.35
Two & a Half Inch	Displacement	$106.30	$0.00	$106.30	$0	$12.32	$118.62
Three Inch	Singlet	$136.06	$0.00	$136.06	$0	$12.32	$148.38
Three Inch	Compound, Class I	$136.06	$0.00	$136.06	$0	$12.32	$148.38
Three Inch	Turbine, Class I	$148.82	$0.00	$148.82	$0	$12.32	$161.13
Four Inch	Singlet	$212.60	$0.00	$212.60	$0	$12.32	$224.91
Four Inch	Compound, Class I	$212.60	$0.00	$212.60	$0	$12.32	$224.91
Four Inch	Turbine, Class I	$263.62	$0.00	$263.62	$0	$12.32	$275.94
Six Inch	Singlet	$425.20	$0.00	$425.20	$0	$12.32	$437.51
Six Inch	Compound, Class I	$425.20	$0.00	$425.20	$0	$12.32	$437.51
Six Inch	Turbine, Class I	$552.75	$0.00	$552.75	$0	$12.32	$565.07
Eight Inch	Compound, Class I	$680.31	$0.00	$680.31	$0	$12.32	$692.63
Eight Inch	Turbine, Class I	$1,190.55	$0.00	$1,190.55	$0	$12.32	$1,202.86

Table 16 - Revenues From Minimum Charges

Hillsboro, Missouri, 2020 Water Rates Model 1

This table calculates total minimum charge surcharge revenues that would be generated during one full year at the fees in Table 15.

Meter Size	Meter Type	Capacity Shares After Economy of Scale Adj	Current Number Meters This Size	Total Adjusted Capacity Shares	Adjusted Peak Capacity-only Surcharge Revenues	Base Capacity-only Surcharge Revenues	Capacity Surcharges for One Full Year
In-City							
Five Eighths	Displacement	1.0	0	0	$0	$0	$0
Three Quarters	Displacement	1.0	1,032	1,032	$70,203	$0	$70,203
One Inch	Displacement	2.5	32	79	$5,357	$0	$5,357
One & a Half Inch	Displacement	5.0	30	148	$10,063	$0	$10,063
Two Inch	Displacement	8.0	33	267	$18,187	$0	$18,187
Two & a Half Inch	Displacement	12.5	0	0	$0	$0	$0
Three Inch	Singlet	16.0	4	64	$4,354	$0	$4,354
Three Inch	Compound, Class I	16.0	0	0	$0	$0	$0
Three Inch	Turbine, Class I	17.5	0	0	$0	$0	$0
Four Inch	Singlet	25.0	7	175	$11,905	$0	$11,905
Four Inch	Compound, Class I	25.0	0	0	$0	$0	$0
Four Inch	Turbine, Class I	31.0	0	0	$0	$0	$0
Six Inch	Singlet	50.0	0	0	$0	$0	$0
Six Inch	Compound, Class I	50.0	0	0	$0	$0	$0
Six Inch	Turbine, Class I	65.0	0	0	$0	$0	$0
Eight Inch	Compound, Class I	80.0	0	0	$0	$0	$0
Eight Inch	Turbine, Class I	140.0	0	0	$0	$0	$0
		Subtotal:	1,137	1,765	$120,070	$0	$120,070
Out-of-City							
Five Eighths	Displacement	1.0	0	0	$0	$0	$0
Three Quarters	Displacement	1.0	68	68	$6,965	$0	$6,965
One Inch	Displacement	2.5	1	1	$255	$0	$255
One & a Half Inch	Displacement	5.0	0	0	$0	$0	$0
Two Inch	Displacement	8.0	0	0	$0	$0	$0
Two & a Half Inch	Displacement	12.5	0	0	$0	$0	$0
Three Inch	Singlet	16.0	0	0	$0	$0	$0
Three Inch	Compound, Class I	16.0	0	0	$0	$0	$0
Three Inch	Turbine, Class I	17.5	0	0	$0	$0	$0
Four Inch	Singlet	25.0	0	0	$0	$0	$0
Four Inch	Compound, Class I	25.0	0	0	$0	$0	$0
Four Inch	Turbine, Class I	31.0	0	0	$0	$0	$0
Six Inch	Singlet	50.0	0	0	$0	$0	$0
Six Inch	Compound, Class I	50.0	0	0	$0	$0	$0
Six Inch	Turbine, Class I	65.0	0	0	$0	$0	$0
Eight Inch	Compound, Class I	80.0	0	0	$0	$0	$0
Eight Inch	Turbine, Class I	140.0	0	0	$0	$0	$0
		Subtotal:	69	69	$7,220	$0	$7,220
		Total:	1,207	1,834	$127,289	$0	$127,289

Table 17 - Financial Capacity Indicators and Reserves

Hillsboro, Missouri, 2020 Water Rates Model 1

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 7/1/18	0 Year Starting 7/1/19	1st Year Starting 7/1/20	2nd Year Starting 7/1/21	3rd Year Starting 7/1/22	4th Year Starting 7/1/23	5th Year Starting 7/1/24	6th Year Starting 7/1/25	7th Year Starting 7/1/26	8th Year Starting 7/1/27	9th Year Starting 7/1/28	10th Year Starting 7/1/29
Customary Affordability Index												
Monthly Bill for a 5,000 gal per Month, Small Meter Residential Customer	$31.40	$38.49	$39.64	$40.83	$42.05	$43.32	$44.62	$45.95	$47.33	$48.75	$50.22	$51.72
AMHI Within Service Area	$58,555	$60,367	$62,235	$64,160	$66,145	$68,192	$70,302	$72,477	$74,720	$77,032	$79,415	$81,872
Affordability Index: Current Rates First Column, Modeled Rates After That	0.64%	0.77%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%	0.76%

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 not consider awarding grants if this indicator is less than 1.5 to 2.0%.

Low-income, Low-volume Affordability Index												
Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	$19.13	$25.99	$26.77	$27.57	$28.40	$29.25	$30.12	$31.03	$31.96	$32.92	$33.91	$34.92
Income at One-half the AMHI and Rising at One-half the Rate Above	$29,278	$29,730	$30,190	$30,657	$31,132	$31,613	$32,102	$32,599	$33,103	$33,616	$34,136	$34,664
Affordability for Low-income, Low-volume: Current Rates First Column, Modeled Rates After That	0.78%	1.05%	1.06%	1.08%	1.09%	1.11%	1.13%	1.14%	1.16%	1.18%	1.19%	1.21%

This additional indicator of affordability assumes a residential customer with income at one-half of 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.

Estimated Operating Ratio: Current Rates First Column, Modeled Rates After That	1.59	1.39	1.57	1.57	1.57	1.61	1.62	1.62	1.66	1.67	1.66	1.71

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 the OR implies.

Estimated Coverage Ratio: Current Rates First Column, Modeled Rates After That	N.A.	N.A.	22.37	0.98	0.92	0.94	0.92	0.86	0.90	0.89	0.87	0.92

Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments out of current incomes. OR applies only to years with debt service. 1.0 is break even. Generally, the CR should be at least 1.25. Note: If the utility has or will have reserves (shown below,) it has more ability to make debt payments than the CR implies.

Reserves	Balance Ending on 6/30/19	Balance Ending on 6/30/20	Balance Ending on 6/30/21	Balance Ending on 6/30/22	Balance Ending on 6/30/23	Balance Ending on 6/30/24	Balance Ending on 6/30/25	Balance Ending on 6/30/26	Balance Ending on 6/30/27	Balance Ending on 6/30/28	Balance Ending on 6/30/29	Balance Ending on 6/30/30
Cash and Cash Equivalents	$213,352	$234,404	$283,100	$295,188	$307,050	$310,655	$318,756	$331,797	$335,734	$344,628	$358,966	$363,266
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$213,352	$234,404	$283,100	$295,188	$307,050	$310,655	$318,756	$331,797	$335,734	$344,628	$358,966	$363,266
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$213,352	$234,404	$274,607	$277,742	$280,236	$275,021	$273,727	$276,377	$271,268	$270,100	$272,897	$276,166
Repair & Replacement	$17,163	$59,072	$117,592	$147,603	$172,109	$34,188	$95,511	$112,583	$141,987	$173,342	-$73,719	-$29,690
Debt and CIP Reserves	$501,313	$674,124	$947,337	$961,117	$951,029	$944,156	$927,811	$883,213	$854,542	$816,237	$764,387	$735,210
Sum of All Reserves	$731,828	$967,600	$1,348,029	$1,403,908	$1,430,188	$1,288,999	$1,342,079	$1,327,593	$1,332,264	$1,334,206	$1,049,634	$1,068,786

Table 18 - Bills Before and After Rate Adjustments

Hillsboro, Missouri, 2020 Water Rates Model 1

Revenue increase to be generated by the modeled rates 23.9%

If applicable, the revenue increase above includes meter size-based minimum charges calculated in Table 15. If rate classes shown below do not include meter size, the modeled bills below do not include those surcharges.

To reduce confusion, this table shows only example customer bills.

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
	0	0	0	$19.13	$17.99	-$1.14
	1,000	152	152	$19.13	$21.99	$2.86
	2,000	192	344	$19.13	$25.99	$6.86
	3,000	198	542	$23.22	$29.99	$6.77
	4,000	170	712	$27.31	$33.99	$6.68
	5,000	120	832	$31.40	$38.49	$7.09
	6,000	75	907	$36.24	$42.99	$6.75
3/4" Meter In City	7,000	43	950	$40.64	$47.49	$6.85
	8,000	26	976	$45.04	$51.99	$6.95
	9,000	14	990	$49.44	$56.49	$7.05
	10,000	28	1,018	$53.84	$61.55	$7.71
	15,000	7	1,024	$79.89	$86.86	$6.97
	20,000	4	1,028	$107.74	$115.34	$7.60
	25,000	2	1,030	$133.04	$143.81	$10.77
	30,000	2	1,032	$162.69	$172.29	$9.60
	0	5	5	$19.13	$26.49	$7.36
	1,000	5	9	$23.22	$30.49	$7.27
	2,000	3	12	$27.31	$34.49	$7.18
	3,000	3	15	$31.40	$38.49	$7.09
	4,000	4	19	$35.49	$42.49	$7.00
	5,000	2	20	$39.58	$46.99	$7.41
	6,000	1	21	$44.42	$51.49	$7.07
	7,000	1	22	$48.82	$55.99	$7.17
1" Meter In City	8,000	1	23	$53.22	$60.49	$7.27
	9,000	1	24	$57.62	$64.99	$7.37
	10,000	2	26	$62.02	$70.05	$8.03
	15,000	1	27	$88.07	$95.36	$7.29
	20,000	2	29	$115.92	$123.84	$7.92
	25,000	1	30	$141.22	$152.32	$11.10
	30,000	1	30	$170.87	$180.79	$9.92
	35,000	1	31	$197.82	$209.27	$11.45

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
1 1/2" Meter In City	0	3	3	$19.13	$40.66	$21.53
	1,000	0	3	$23.22	$44.66	$21.44
	2,000	0	3	$27.31	$48.66	$21.35
	3,000	0	3	$31.40	$52.66	$21.26
	4,000	0	4	$35.49	$56.66	$21.17
	5,000	1	5	$39.58	$61.16	$21.58
	6,000	1	6	$44.42	$65.66	$21.24
	7,000	1	7	$48.82	$70.16	$21.34
	8,000	1	8	$53.22	$74.66	$21.44
	9,000	2	9	$57.62	$79.16	$21.54
	10,000	6	15	$62.02	$84.23	$22.21
	15,000	4	19	$88.07	$109.54	$21.47
	20,000	3	22	$115.92	$138.01	$22.09
	25,000	2	24	$141.22	$166.49	$25.27
	30,000	1	25	$170.87	$194.97	$24.10
	35,000	2	27	$187.04	$223.44	$36.40
	45,000	0	28	$240.94	$280.40	$39.46
	105,000	0	29	$564.34	$622.12	$57.78
	145,000	0	30	$779.94	$849.93	$69.99
2" Meter In City	0	7	7	$19.13	$57.67	$38.54
	1,000	2	8	$23.22	$61.67	$38.45
	2,000	1	9	$27.31	$65.67	$38.36
	3,000	1	11	$31.40	$69.67	$38.27
	4,000	1	12	$35.49	$73.67	$38.18
	5,000	0	12	$39.58	$78.17	$38.59
	6,000	1	13	$44.42	$82.67	$38.25
	7,000	1	14	$48.82	$87.17	$38.35
	8,000	1	15	$53.22	$91.67	$38.45
	9,000	0	15	$57.62	$96.17	$38.55
	10,000	1	16	$62.02	$101.23	$39.21
	15,000	2	18	$88.07	$126.55	$38.48
	20,000	3	20	$115.92	$155.02	$39.10
	25,000	2	22	$141.22	$183.50	$42.28
	30,000	3	25	$170.87	$211.98	$41.11
	35,000	4	28	$187.04	$240.45	$53.41
	45,000	2	30	$240.94	$297.40	$56.46
	55,000	0	31	$294.84	$354.36	$59.52
	65,000	1	31	$348.74	$411.31	$62.57
	75,000	0	32	$402.64	$468.26	$65.62
	85,000	1	32	$456.54	$525.22	$68.68

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
	0	1	1	$19.13	$103.02	$83.89
	1,000	1	1	$23.22	$107.02	$83.80
	2,000	0	2	$27.31	$111.02	$83.71
	3,000	0	2	$31.40	$115.02	$83.62
	4,000	0	2	$35.49	$119.02	$83.53
	5,000	0	2	$39.58	$123.52	$83.94
	6,000	0	2	$44.42	$128.02	$83.60
	7,000	0	2	$48.82	$132.52	$83.70
	8,000	0	2	$53.22	$137.02	$83.80
	9,000	0	2	$57.62	$141.52	$83.90
3" Meter In City	10,000	0	2	$62.02	$146.59	$84.57
	15,000	0	2	$88.07	$171.90	$83.83
	20,000	0	2	$115.92	$200.38	$84.46
	25,000	0	2	$141.22	$228.85	$87.63
	30,000	0	2	$170.87	$257.33	$86.46
	35,000	1	3	$187.04	$285.81	$98.77
	45,000	0	3	$240.94	$342.76	$101.82
	55,000	0	3	$294.84	$399.71	$104.87
	65,000	0	3	$348.74	$456.67	$107.93
	75,000	0	3	$402.64	$513.62	$110.98
	85,000	0	4	$456.54	$570.57	$114.03

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
	0	1	1	$19.13	$154.05	$134.92
	1,000	0	1	$23.22	$158.05	$134.83
	2,000	1	2	$27.31	$162.05	$134.74
	3,000	1	3	$31.40	$166.05	$134.65
	4,000	1	3	$35.49	$170.05	$134.56
	5,000	0	4	$39.58	$174.55	$134.97
	6,000	0	4	$44.42	$179.05	$134.63
	7,000	0	4	$48.82	$183.55	$134.73
	8,000	0	4	$53.22	$188.05	$134.83
	9,000	0	4	$57.62	$192.55	$134.93
	10,000	0	4	$62.02	$197.61	$135.59
	15,000	0	4	$88.07	$222.92	$134.85
	20,000	0	5	$115.92	$251.40	$135.48
4" Meter In City	25,000	0	5	$141.22	$279.88	$138.66
	30,000	0	5	$170.87	$308.35	$137.48
	35,000	0	5	$187.04	$336.83	$149.79
	45,000	0	5	$240.94	$393.78	$152.84
	55,000	0	5	$294.84	$450.74	$155.90
	65,000	0	5	$348.74	$507.69	$158.95
	75,000	0	5	$402.64	$564.64	$162.00
	85,000	0	5	$456.54	$621.60	$165.06
	95,000	0	5	$510.44	$678.55	$168.11
	105,000	0	5	$564.34	$735.50	$171.16
	115,000	0	5	$618.24	$792.45	$174.21
	125,000	0	5	$672.14	$849.41	$177.27
	135,000	0	5	$726.04	$906.36	$180.32
	145,000	2	7	$779.94	$963.31	$183.37

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
3/4" Meter Out of City	0	1	1	$28.69	$20.82	-$7.87
	1,000	4	5	$28.69	$26.82	-$1.87
	2,000	12	17	$28.69	$32.82	$4.13
	3,000	16	34	$34.69	$38.82	$4.13
	4,000	11	44	$40.69	$44.82	$4.13
	5,000	6	51	$46.69	$51.57	$4.88
	6,000	6	57	$52.69	$58.32	$5.63
	7,000	4	61	$58.69	$65.07	$6.38
	8,000	3	64	$64.69	$71.82	$7.13
	9,000	2	66	$70.69	$78.57	$7.88
	10,000	2	68	$76.69	$86.16	$9.47
	15,000	1	68	$106.69	$124.13	$17.44
	20,000	0	68	$136.69	$166.85	$30.16
	25,000	0	68	$166.69	$209.56	$42.87
1" Meter Out of City	0	0	0	$28.69	$33.58	$4.89
	1,000	0	0	$28.69	$39.58	$10.89
	2,000	0	0	$28.69	$45.58	$16.89
	3,000	0	0	$34.69	$51.58	$16.89
	4,000	0	0	$40.69	$57.58	$16.89
	5,000	0	0	$46.69	$64.33	$17.64
	6,000	0	0	$52.69	$71.08	$18.39
	7,000	0	0	$58.69	$77.83	$19.14
	8,000	0	0	$64.69	$84.58	$19.89
	9,000	0	0	$70.69	$91.33	$20.64
	10,000	1	1	$76.69	$98.92	$22.23
	15,000	0	1	$106.69	$136.89	$30.20

Table 19 - User Statistics
Hillsboro, Missouri, 2020 Water Rates Model 1

This table shows measures of equitability, or "fairness," of the rates as modeled in Table 10. If debt, capacity or other surcharges were also calculated but not included in Table 10, this table does not take those fees into account.

If your rates were based only on volume of service, your % of Usage and % of Revenues figures would be the same within all the classes. While rates are not set up that way, it is still useful to make comparisons on that basis. This table does that, among other things.

Normally, the % of usage figure will be lower than the % of revenue for the lower volumes of use. That will switch for the higher volumes of use. Even for declining rate structures, this switch should occur near the volume of the average residential user, typically near 5,000 gallons/month (668 cu ft).

In urban and suburban areas the average monthly use for residential or general customers can be twice that used by their rural and "old town" counterparts. Use is largely dependent upon who lives in a community. Older people living in longer established neighborhoods tend to use less volume than younger people living in more recently developed areas. As you make comparisons between different customers and customer classes, keep that, and the following statistics about your rates in mind:

3,995	Gallons: This is the average residential customer's usage per Monthly billing cycle.

Usage allowance is the volume "given away" with the minimum charge. The higher the allowance, the less volume the utility can sell to generate income.

88,768,000	Gallons: The volume metered through customer meters that was available to be sold during the test year.
26,592,000	Gallons: The volume given away as a usage allowance during the test year.
$110,941	Revenue Loss: At the unit charge rate in effect during the test year, revenue lost due to the usage allowance.
$0	Revenue Loss: At the modeled unit charge rates and usage allowance (if any), revenue lost due to the usage allowance.

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
3/4" Meter In City	0	999	1,700	0.3	-0.1%	100.1%	0.0%	0.0%	0.0%	6.9%
	1,000	1,999	1,822,000	151.8	3.6%	100.1%	12.6%	2.1%	6.0%	10.4%
	2,000	2,999	4,608,000	192.0	12.9%	96.4%	15.9%	5.2%	13.4%	10.3%
	3,000	3,999	7,116,000	197.7	27.3%	87.1%	16.4%	8.0%	12.0%	9.2%
	4,000	4,999	8,148,000	169.8	43.8%	72.7%	14.1%	9.2%	9.4%	7.2%
	5,000	5,999	7,220,000	120.3	58.4%	56.2%	10.0%	8.1%	6.4%	5.1%
	6,000	6,999	5,376,000	74.7	69.2%	41.6%	6.2%	6.1%	4.2%	3.2%
	7,000	7,999	3,640,000	43.3	76.6%	30.8%	3.6%	4.1%	2.5%	1.9%
	8,000	8,999	2,504,000	26.1	81.7%	23.4%	2.2%	2.8%	1.5%	1.2%
	9,000	9,999	1,476,000	13.7	84.6%	18.3%	1.1%	1.7%	0.9%	0.7%
	10,000	14,999	3,760,000	28.0	92.2%	15.4%	2.3%	4.2%	2.1%	1.7%
	15,000	19,999	1,316,000	6.5	94.9%	7.8%	0.5%	1.5%	0.8%	0.6%
	20,000	24,999	970,000	3.8	96.9%	5.1%	0.3%	1.1%	0.4%	0.4%
	25,000	29,999	617,000	1.9	98.1%	3.1%	0.2%	0.7%	0.2%	0.2%
	30,000	39,999	668,000	1.7	99.5%	1.9%	0.1%	0.8%	0.2%	0.1%
	40,000	49,999	87,000	0.2	99.6%	0.5%	0.0%	0.1%	0.0%	0.0%
	50,000	59,999	109,000	0.2	99.9%	0.4%	0.0%	0.1%	0.0%	0.0%
	60,000	69,999	69,000	0.1	100.0%	0.1%	0.0%	0.1%	0.0%	0.0%
	Totals for Class		49,466,700	1,031.9			85.5%	55.7%	60.1%	59.3%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
	0	999	0	4.9	0.0%	100.0%	0.4%	0.0%	0.2%	0.4%
	1,000	1,999	54,000	4.5	1.8%	100.0%	0.4%	0.1%	0.2%	0.3%
	2,000	2,999	60,000	2.5	3.8%	98.2%	0.2%	0.1%	0.3%	0.2%
	3,000	3,999	108,000	3.0	7.4%	96.2%	0.2%	0.1%	0.3%	0.2%
	4,000	4,999	172,000	3.6	13.1%	92.6%	0.3%	0.2%	0.3%	0.2%
	5,000	5,999	90,000	1.5	16.1%	86.9%	0.1%	0.1%	0.2%	0.2%
	6,000	6,999	102,000	1.4	19.5%	83.9%	0.1%	0.1%	0.2%	0.1%
	7,000	7,999	63,000	0.8	21.6%	80.5%	0.1%	0.1%	0.1%	0.1%
	8,000	8,999	96,000	1.0	24.7%	78.4%	0.1%	0.1%	0.1%	0.1%
	9,000	9,999	72,000	0.7	27.1%	75.3%	0.1%	0.1%	0.1%	0.1%
	10,000	14,999	219,000	1.7	34.4%	72.9%	0.1%	0.2%	0.4%	0.3%
1" Meter In City	15,000	19,999	223,000	1.1	41.8%	65.6%	0.1%	0.3%	0.3%	0.3%
	20,000	24,999	541,000	2.1	59.8%	58.2%	0.2%	0.6%	0.3%	0.3%
	25,000	29,999	264,000	0.8	68.5%	40.2%	0.1%	0.3%	0.1%	0.1%
	30,000	34,999	344,000	0.9	80.0%	31.5%	0.1%	0.4%	0.1%	0.1%
	35,000	44,999	424,000	0.9	94.1%	20.0%	0.1%	0.5%	0.1%	0.1%
	45,000	54,999	0	0.0	94.1%	5.9%	0.0%	0.0%	0.0%	0.0%
	55,000	64,999	58,000	0.1	96.0%	5.9%	0.0%	0.1%	0.0%	0.0%
	65,000	74,999	0	0.0	96.0%	4.0%	0.0%	0.0%	0.0%	0.0%
	75,000	84,999	0	0.0	96.0%	4.0%	0.0%	0.0%	0.0%	0.0%
	85,000	94,999	0	0.0	96.0%	4.0%	0.0%	0.0%	0.0%	0.0%
	95,000	104,999	0	0.0	96.0%	4.0%	0.0%	0.0%	0.0%	0.0%
	105,000	114,999	0	0.0	96.0%	4.0%	0.0%	0.0%	0.0%	0.0%
	115,000	124,999	121,000	0.1	100.0%	4.0%	0.0%	0.1%	0.0%	0.0%
		Totals for Class	3,011,000	31.5			2.6%	3.4%	3.2%	3.3%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
	0	999	0	2.7	0.0%	100.0%	0.2%	0.0%	0.1%	0.4%
	1,000	1,999	4,000	0.3	0.1%	100.0%	0.0%	0.0%	0.0%	0.2%
	2,000	2,999	8,000	0.3	0.2%	99.9%	0.0%	0.0%	0.2%	0.2%
	3,000	3,999	3,000	0.1	0.2%	99.8%	0.0%	0.0%	0.2%	0.2%
	4,000	4,999	16,000	0.3	0.4%	99.8%	0.0%	0.0%	0.2%	0.2%
	5,000	5,999	60,000	1.0	1.2%	99.6%	0.1%	0.1%	0.2%	0.3%
	6,000	6,999	60,000	0.8	2.0%	98.8%	0.1%	0.1%	0.3%	0.2%
	7,000	7,999	105,000	1.3	3.4%	98.0%	0.1%	0.1%	0.3%	0.3%
	8,000	8,999	88,000	0.9	4.6%	96.6%	0.1%	0.1%	0.2%	0.2%
	9,000	9,999	162,000	1.5	6.8%	95.4%	0.1%	0.2%	0.2%	0.3%
1 1/2" Meter In City	10,000	14,999	785,000	5.7	17.3%	93.2%	0.5%	0.9%	1.0%	1.1%
	15,000	19,999	824,000	4.1	28.3%	82.7%	0.3%	0.9%	0.8%	0.8%
	20,000	24,999	877,000	3.3	40.0%	71.7%	0.3%	1.0%	0.6%	0.6%
	25,000	29,999	559,000	1.8	47.5%	60.0%	0.1%	0.6%	0.4%	0.4%
	30,000	34,999	500,000	1.3	54.2%	52.5%	0.1%	0.6%	0.3%	0.3%
	35,000	44,999	857,000	1.8	65.7%	45.8%	0.2%	1.0%	0.4%	0.4%
	45,000	54,999	254,000	0.4	69.1%	34.3%	0.0%	0.3%	0.3%	0.2%
	55,000	64,999	236,000	0.3	72.2%	30.9%	0.0%	0.3%	0.2%	0.2%
	65,000	74,999	337,000	0.4	76.7%	27.8%	0.0%	0.4%	0.2%	0.1%
	75,000	84,999	311,000	0.3	80.9%	23.3%	0.0%	0.4%	0.1%	0.1%
	85,000	94,999	180,000	0.2	83.3%	19.1%	0.0%	0.2%	0.1%	0.1%
	95,000	104,999	296,000	0.3	87.3%	16.7%	0.0%	0.3%	0.1%	0.1%
	105,000	114,999	217,000	0.2	90.2%	12.7%	0.0%	0.2%	0.0%	0.0%
	115,000	124,999	124,000	0.1	91.8%	9.8%	0.0%	0.1%	0.0%	0.0%
	125,000	134,999	0	0.0	91.8%	8.2%	0.0%	0.0%	0.0%	0.0%
	135,000	144,999	0	0.0	91.8%	8.2%	0.0%	0.0%	0.0%	0.0%
	145,000	430,000	610,000	0.2	100.0%	8.2%	0.0%	0.7%	0.3%	0.3%
		Totals for Class	7,473,000	29.6			2.5%	8.4%	6.9%	7.2%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
2" Meter In City	0	999	0	6.5	0.0%	100.0%	0.5%	0.0%	0.3%	0.8%
	1,000	1,999	19,000	1.6	0.2%	100.0%	0.1%	0.0%	0.1%	0.3%
	2,000	2,999	32,000	1.3	0.5%	99.8%	0.1%	0.0%	0.3%	0.3%
	3,000	3,999	51,000	1.4	1.1%	99.5%	0.1%	0.1%	0.2%	0.3%
	4,000	4,999	48,000	1.0	1.6%	98.9%	0.1%	0.1%	0.2%	0.2%
	5,000	5,999	25,000	0.4	1.8%	98.4%	0.0%	0.0%	0.2%	0.2%
	6,000	6,999	60,000	0.8	2.5%	98.2%	0.1%	0.1%	0.2%	0.2%
	7,000	7,999	84,000	1.0	3.4%	97.5%	0.1%	0.1%	0.2%	0.2%
	8,000	8,999	72,000	0.8	4.1%	96.6%	0.1%	0.1%	0.2%	0.2%
	9,000	9,999	36,000	0.3	4.5%	95.9%	0.0%	0.0%	0.2%	0.2%
	10,000	14,999	132,000	1.0	5.9%	95.5%	0.1%	0.1%	0.8%	0.8%
	15,000	19,999	304,000	1.5	9.1%	94.1%	0.1%	0.3%	0.9%	0.8%
	20,000	24,999	728,000	2.8	16.7%	90.9%	0.2%	0.8%	0.9%	0.9%
	25,000	29,999	489,000	1.5	21.9%	83.3%	0.1%	0.6%	0.7%	0.7%
	30,000	34,999	1,075,000	2.8	33.2%	78.1%	0.2%	1.2%	0.7%	0.7%
	35,000	44,999	1,693,000	3.7	50.9%	66.8%	0.3%	1.9%	0.8%	0.9%
	45,000	54,999	1,160,000	2.0	63.1%	49.1%	0.2%	1.3%	0.5%	0.5%
	55,000	64,999	298,000	0.4	66.3%	36.9%	0.0%	0.3%	0.3%	0.3%
	65,000	74,999	416,000	0.5	70.6%	33.7%	0.0%	0.5%	0.3%	0.3%
	75,000	84,999	234,000	0.3	73.1%	29.4%	0.0%	0.3%	0.2%	0.2%
	85,000	94,999	620,000	0.6	79.6%	26.9%	0.0%	0.7%	0.2%	0.2%
	95,000	104,999	391,000	0.3	83.7%	20.4%	0.0%	0.4%	0.1%	0.1%
	105,000	114,999	109,000	0.1	84.9%	16.3%	0.0%	0.1%	0.1%	0.1%
	115,000	124,999	582,000	0.4	91.0%	15.1%	0.0%	0.7%	0.1%	0.1%
	125,000	134,999	132,000	0.1	92.4%	9.0%	0.0%	0.1%	0.0%	0.0%
	135,000	144,999	0	0.0	92.4%	7.6%	0.0%	0.0%	0.0%	0.0%
	145,000	202,000	726,000	0.3	100.0%	7.6%	0.0%	0.8%	0.1%	0.1%
	Totals for Class		9,516,000	33.4			2.8%	10.7%	9.0%	10.0%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
	0	999	500	0.8	0.0%	100.0%	0.1%	0.0%	0.0%	0.2%
	1,000	1,999	8,000	0.7	0.5%	100.0%	0.1%	0.0%	0.0%	0.1%
	2,000	2,999	6,000	0.3	0.8%	99.5%	0.0%	0.0%	0.0%	0.1%
	3,000	3,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	4,000	4,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	5,000	5,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	6,000	6,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	7,000	7,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	8,000	8,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	9,000	9,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	10,000	14,999	0	0.0	0.8%	99.2%	0.0%	0.0%	0.1%	0.1%
	15,000	19,999	69,000	0.3	4.5%	99.2%	0.0%	0.1%	0.1%	0.1%
	20,000	24,999	0	0.0	4.5%	95.5%	0.0%	0.0%	0.1%	0.1%
3" Meter In City	25,000	29,999	55,000	0.2	7.4%	95.5%	0.0%	0.1%	0.1%	0.1%
	30,000	34,999	0	0.0	7.4%	92.6%	0.0%	0.0%	0.1%	0.1%
	35,000	44,999	277,000	0.6	22.3%	92.6%	0.0%	0.3%	0.2%	0.2%
	45,000	54,999	96,000	0.2	27.5%	77.7%	0.0%	0.1%	0.1%	0.1%
	55,000	64,999	237,000	0.3	40.2%	72.5%	0.0%	0.3%	0.1%	0.1%
	65,000	74,999	73,000	0.1	44.1%	59.8%	0.0%	0.1%	0.1%	0.1%
	75,000	84,999	0	0.0	44.1%	55.9%	0.0%	0.0%	0.1%	0.1%
	85,000	94,999	363,000	0.3	63.6%	55.9%	0.0%	0.4%	0.1%	0.1%
	95,000	104,999	102,000	0.1	69.1%	36.4%	0.0%	0.1%	0.0%	0.0%
	105,000	114,999	0	0.0	69.1%	30.9%	0.0%	0.0%	0.0%	0.0%
	115,000	124,999	0	0.0	69.1%	30.9%	0.0%	0.0%	0.0%	0.0%
	125,000	134,999	0	0.0	69.1%	30.9%	0.0%	0.0%	0.0%	0.0%
	135,000	144,999	0	0.0	69.1%	30.9%	0.0%	0.0%	0.0%	0.0%
	145,000	220,000	576,000	0.3	100.0%	30.9%	0.0%	0.6%	0.1%	0.2%
		Totals for Class	1,862,500	4.0			0.3%	2.1%	1.8%	2.1%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
4" Meter In City	0	999	1,800	1.1	0.0%	100.0%	0.1%	0.0%	0.0%	0.3%
	1,000	1,999	3,000	0.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.1%
	2,000	2,999	20,000	0.8	0.2%	100.0%	0.1%	0.0%	0.1%	0.2%
	3,000	3,999	18,000	0.5	0.3%	99.8%	0.0%	0.0%	0.1%	0.2%
	4,000	4,999	24,000	0.5	0.5%	99.7%	0.0%	0.0%	0.1%	0.2%
	5,000	5,999	25,000	0.4	0.7%	99.5%	0.0%	0.0%	0.0%	0.1%
	6,000	6,999	12,000	0.2	0.8%	99.3%	0.0%	0.0%	0.0%	0.1%
	7,000	7,999	7,000	0.1	0.8%	99.2%	0.0%	0.0%	0.0%	0.0%
	8,000	8,999	16,000	0.2	0.9%	99.2%	0.0%	0.0%	0.0%	0.1%
	9,000	9,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	10,000	14,999	14,000	0.1	1.0%	99.1%	0.0%	0.0%	0.1%	0.1%
	15,000	19,999	16,000	0.1	1.1%	99.0%	0.0%	0.0%	0.2%	0.1%
	20,000	24,999	90,000	0.3	1.8%	98.9%	0.0%	0.1%	0.2%	0.2%
	25,000	29,999	0	0.0	1.8%	98.2%	0.0%	0.0%	0.1%	0.1%
	30,000	34,999	32,000	0.1	2.0%	98.2%	0.0%	0.0%	0.2%	0.1%
	35,000	44,999	122,000	0.3	2.9%	98.0%	0.0%	0.1%	0.3%	0.3%
	45,000	54,999	94,000	0.2	3.6%	97.1%	0.0%	0.1%	0.2%	0.2%
	55,000	64,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	65,000	74,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	75,000	84,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	85,000	94,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	95,000	104,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	105,000	114,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	115,000	124,999	121,000	0.1	4.5%	96.4%	0.0%	0.1%	0.2%	0.2%
	125,000	134,999	0	0.0	4.5%	95.5%	0.0%	0.0%	0.2%	0.2%
	135,000	144,999	0	0.0	4.5%	95.5%	0.0%	0.0%	0.2%	0.2%
	145,000	947,000	13,221,000	1.9	100.0%	95.5%	0.2%	14.9%	9.2%	8.3%
	Totals for Class		13,836,800	7.0			0.6%	15.6%	12.9%	12.6%
3/4" Meter Out of City	0	999	0	1.0	0.0%	100.0%	0.1%	0.0%	0.1%	0.7%
	1,000	1,999	48,000	4.0	1.4%	100.0%	0.3%	0.1%	0.2%	0.8%
	2,000	2,999	296,000	12.3	10.0%	98.6%	1.0%	0.3%	1.4%	0.9%
	3,000	3,999	588,000	16.3	27.1%	90.0%	1.4%	0.7%	1.4%	0.9%
	4,000	4,999	512,000	10.7	41.9%	72.9%	0.9%	0.6%	0.9%	0.6%
	5,000	5,999	375,000	6.3	52.8%	58.1%	0.5%	0.4%	0.6%	0.4%
	6,000	6,999	456,000	6.3	66.0%	47.2%	0.5%	0.5%	0.5%	0.3%
	7,000	7,999	371,000	4.4	76.8%	34.0%	0.4%	0.4%	0.3%	0.2%
	8,000	8,999	288,000	3.0	85.2%	23.2%	0.2%	0.3%	0.2%	0.1%
	9,000	9,999	189,000	1.8	90.7%	14.8%	0.1%	0.2%	0.1%	0.1%
	10,000	14,999	221,000	1.7	97.1%	9.3%	0.1%	0.2%	0.2%	0.1%
	15,000	19,999	101,000	0.5	100.0%	2.9%	0.0%	0.1%	0.0%	0.0%
	Totals for Class		3,445,000	68.3			5.7%	3.9%	6.0%	5.3%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
1" Meter Out of City	0	999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	1,000	1,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	2,000	2,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	3,000	3,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	4,000	4,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	5,000	5,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	6,000	6,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	7,000	7,999	7,000	0.1	4.5%	100.0%	0.0%	0.0%	0.0%	0.0%
	8,000	8,999	0	0.0	4.5%	95.5%	0.0%	0.0%	0.0%	0.0%
	9,000	9,999	9,000	0.1	10.2%	95.5%	0.0%	0.0%	0.0%	0.0%
	10,000	14,999	82,000	0.6	62.4%	89.8%	0.0%	0.1%	0.1%	0.1%
	15,000	19,999	38,000	0.2	86.6%	37.6%	0.0%	0.0%	0.0%	0.0%
	20,000	24,999	21,000	0.1	100.0%	13.4%	0.0%	0.0%	0.0%	0.0%
	Totals for Class		157,000	1.0			0.1%	0.2%	0.2%	0.2%
	Grand Totals		88,768,000				100.00%	100.00%	100.00%	100.00%

Chart 1 - Operating Ratio

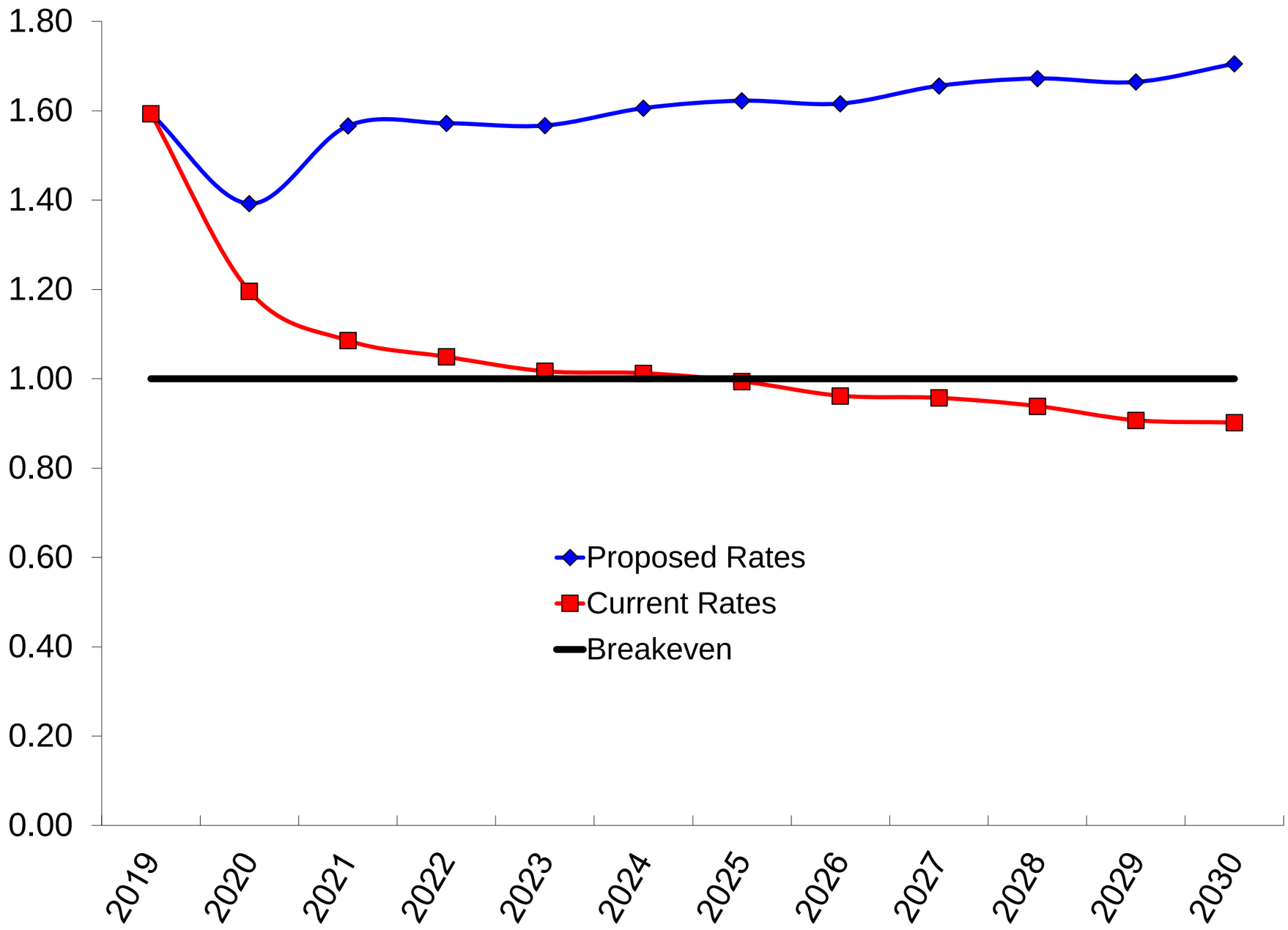


Chart 2 - Coverage Ratio

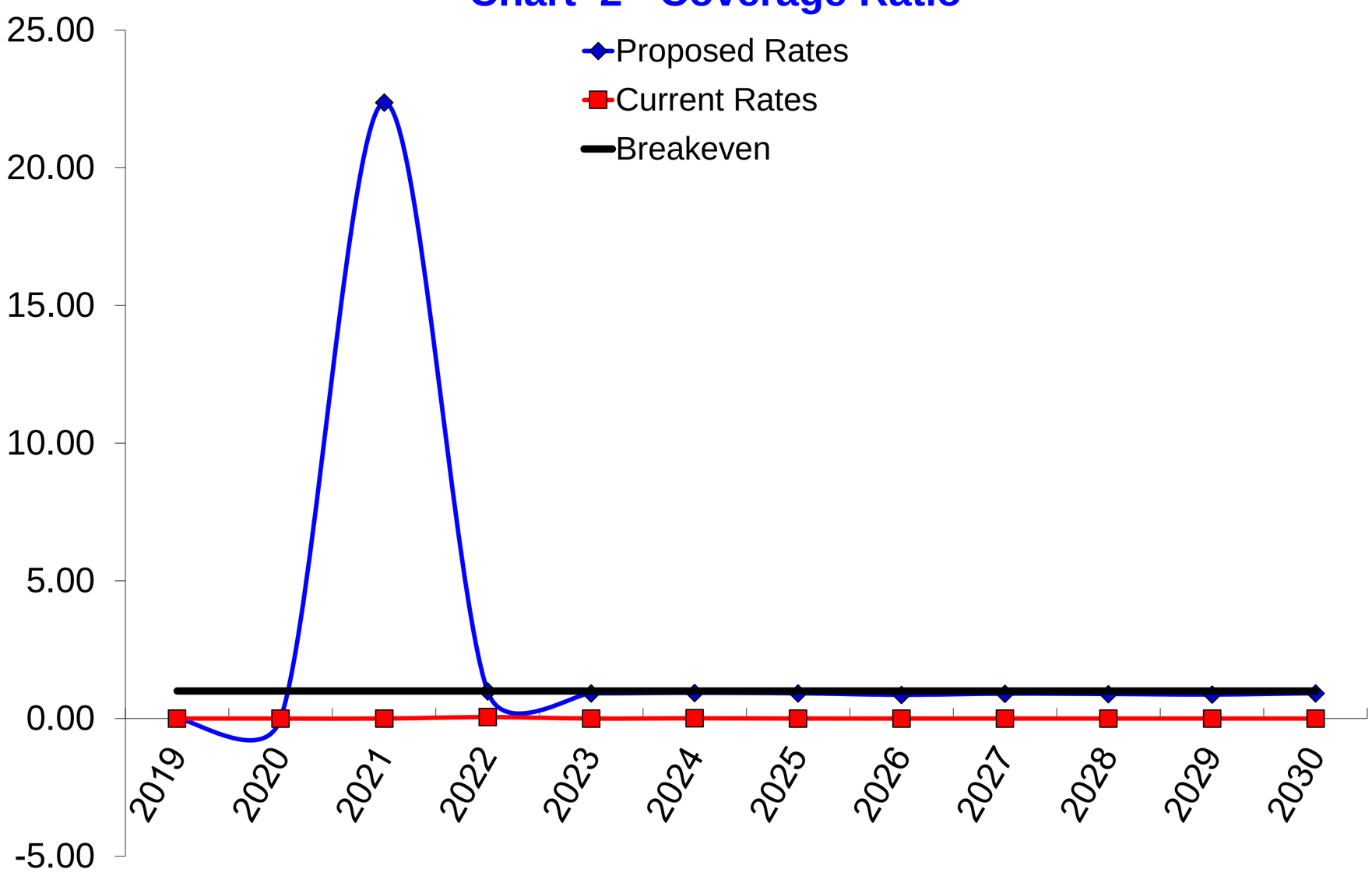


Chart 3 - Residential Users' Bills

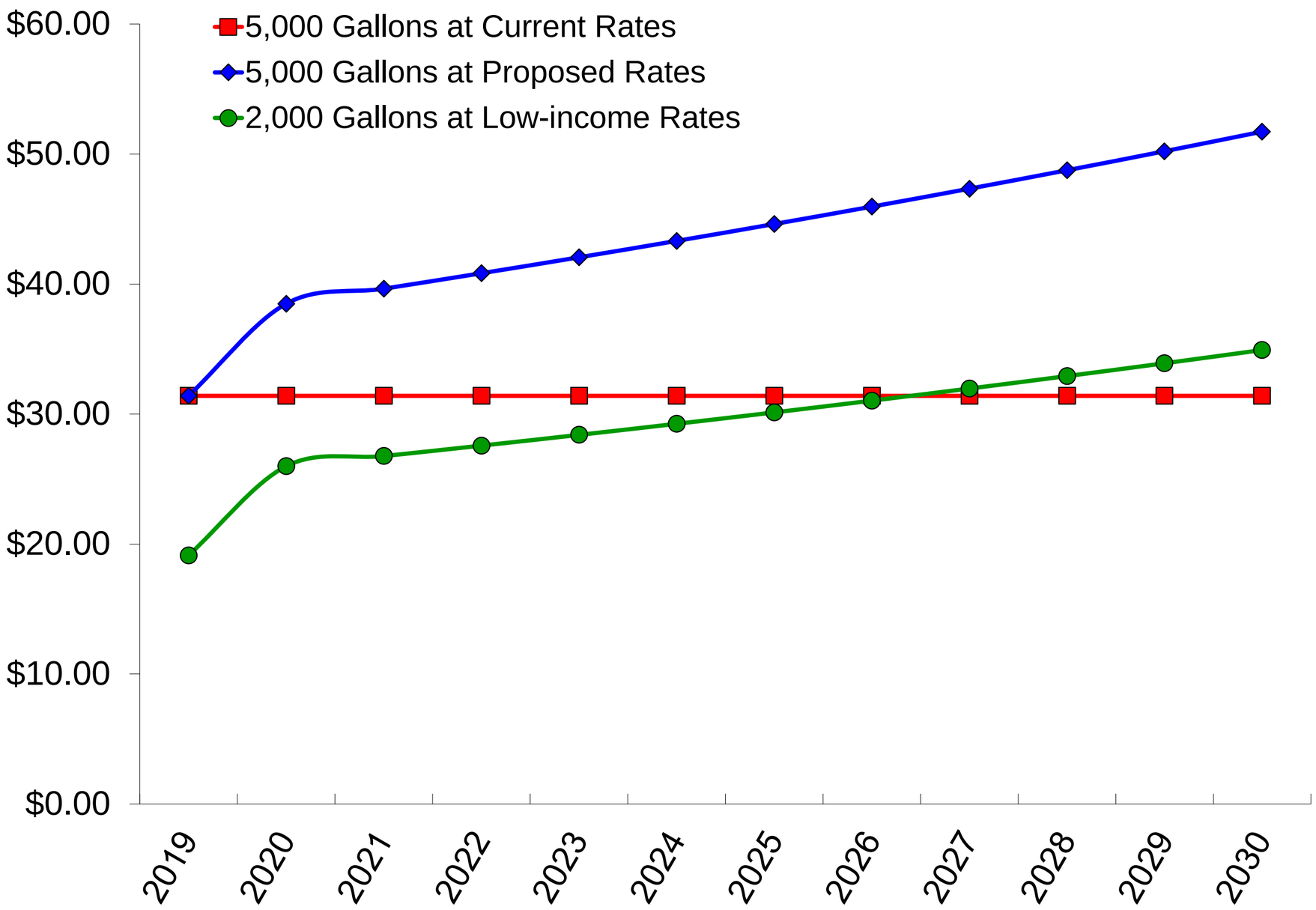


Chart 4 - Affordability

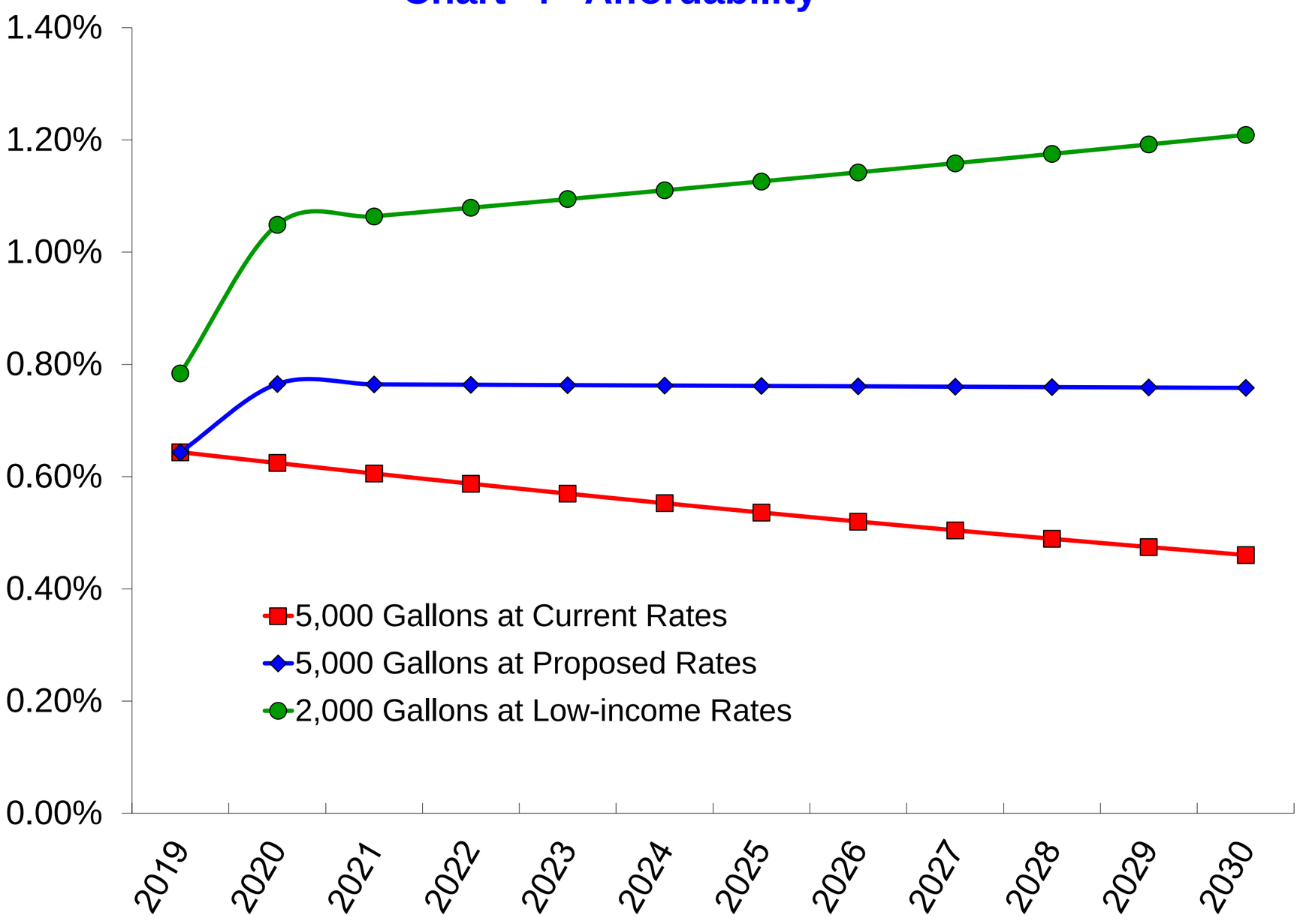


Chart 5 - Working Capital vs Goal

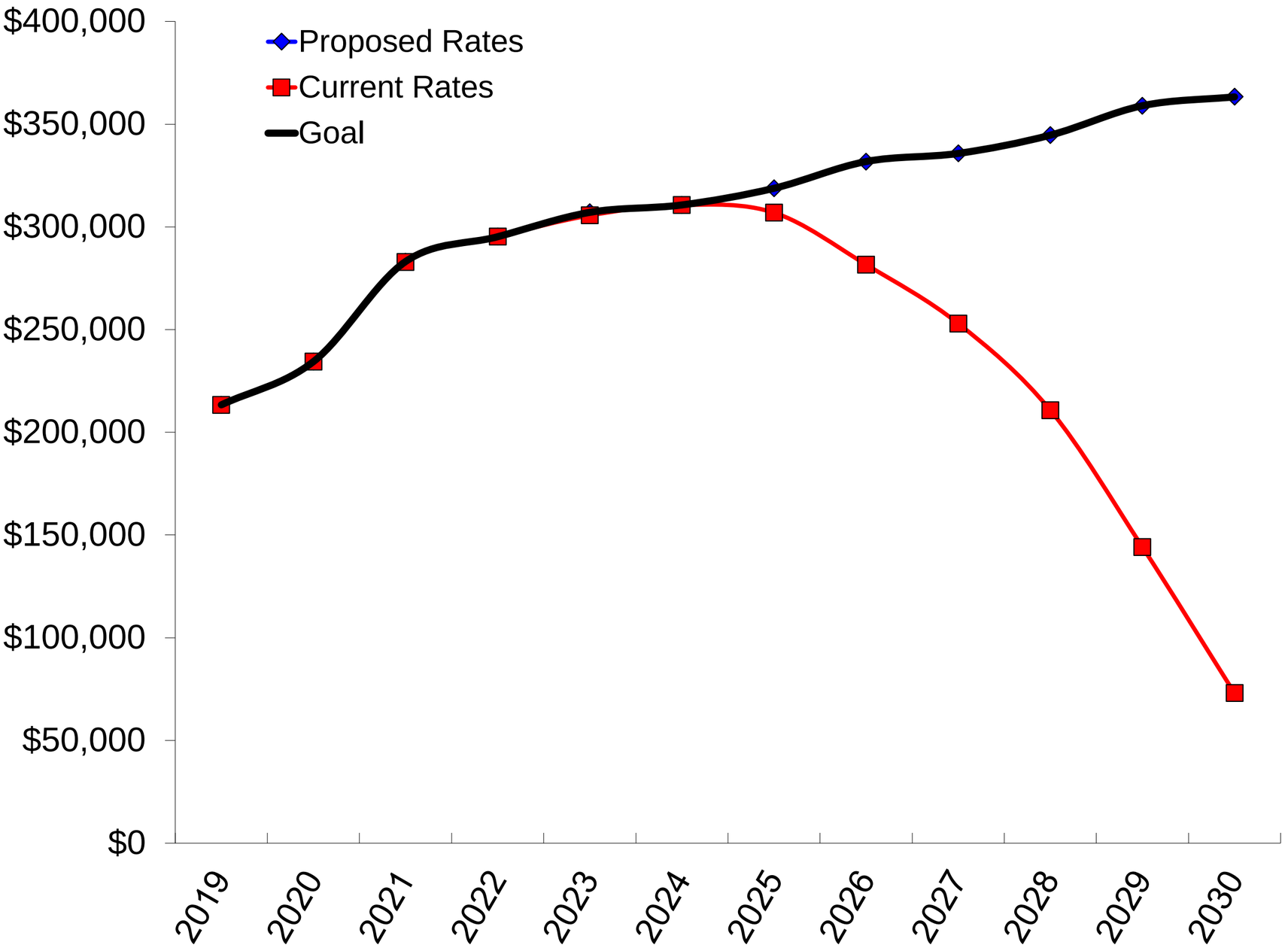


Chart 6 - Value of Cash Assets Before Inflation

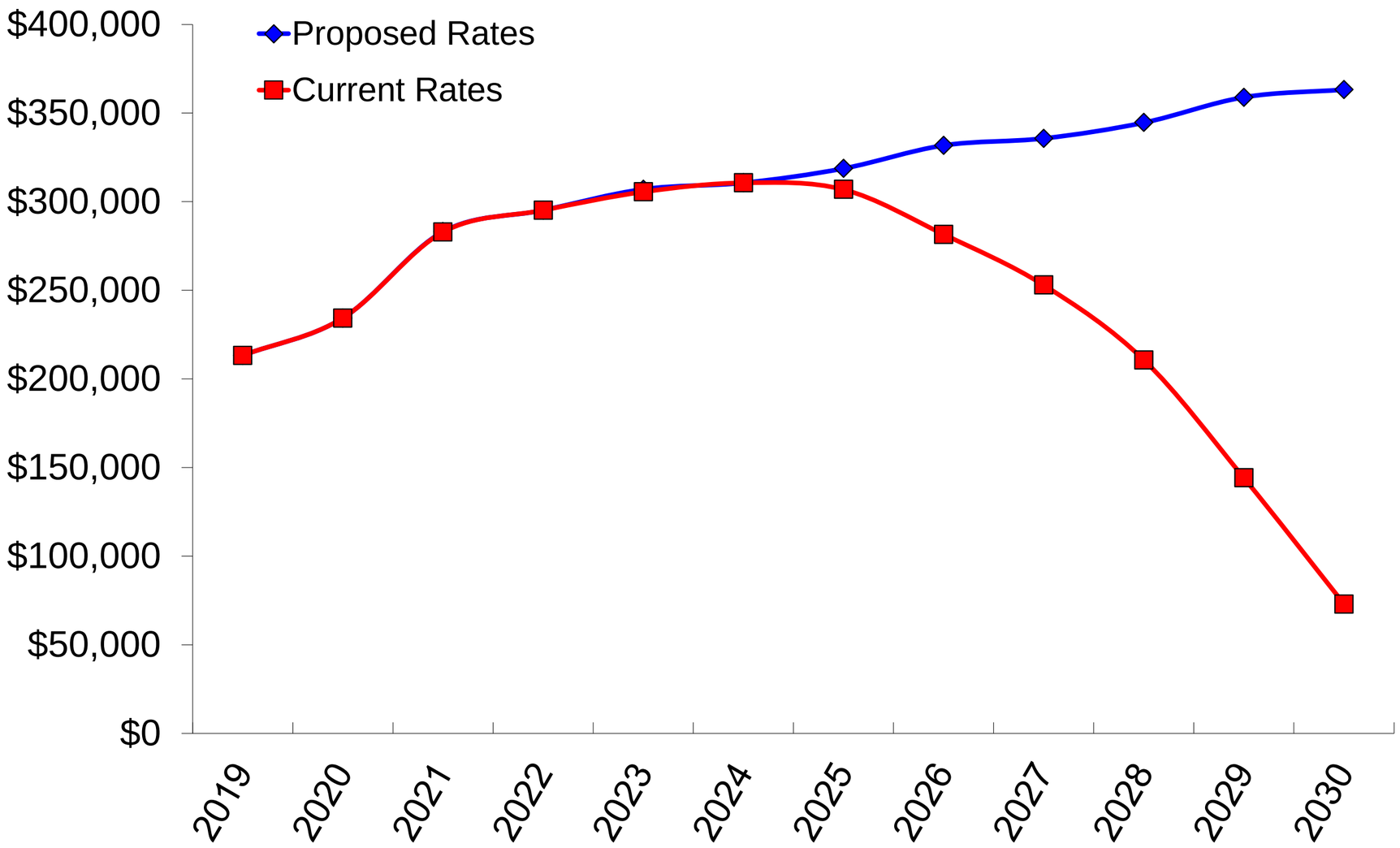


Chart 7 - Value of Cash Assets After Inflation

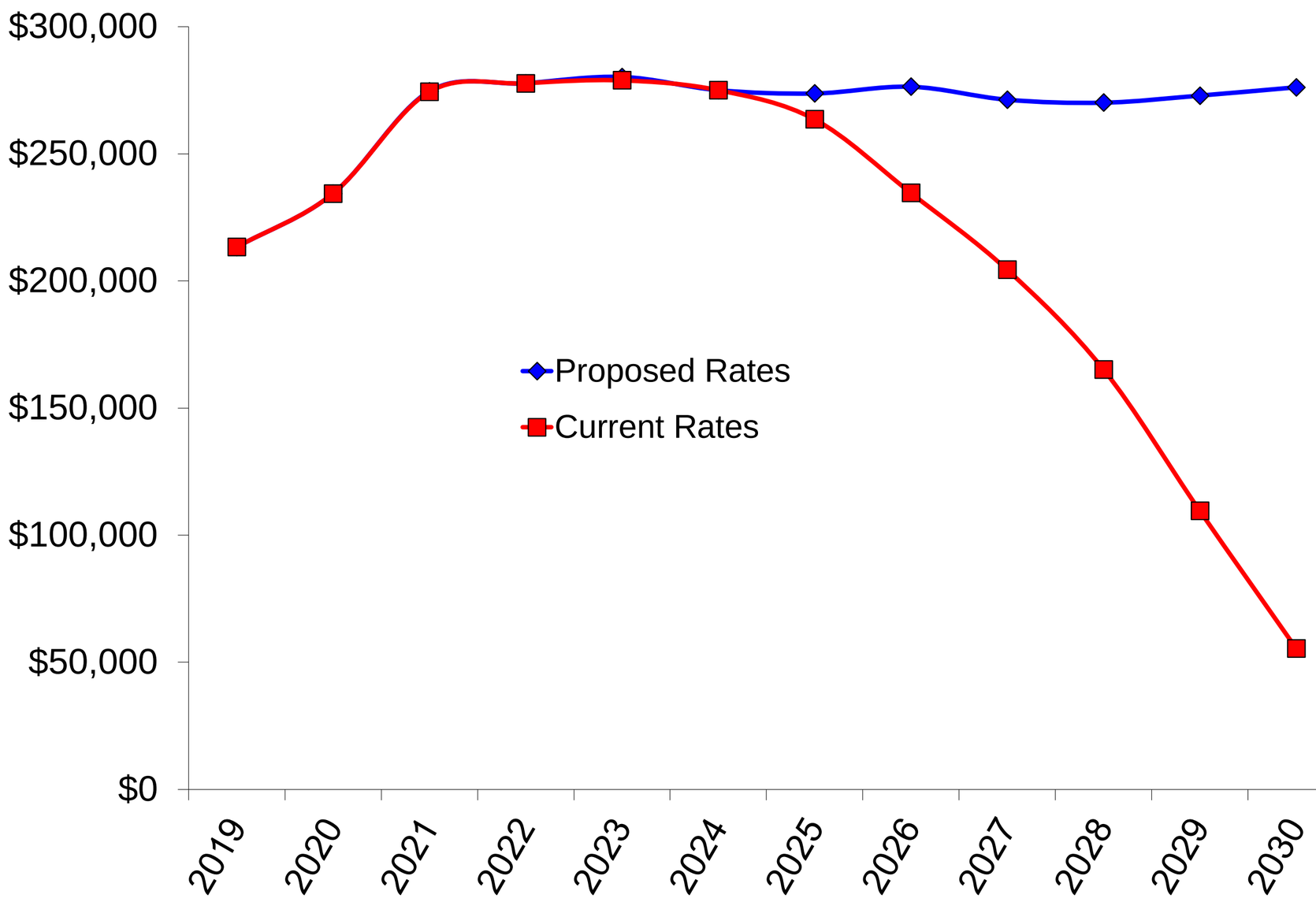
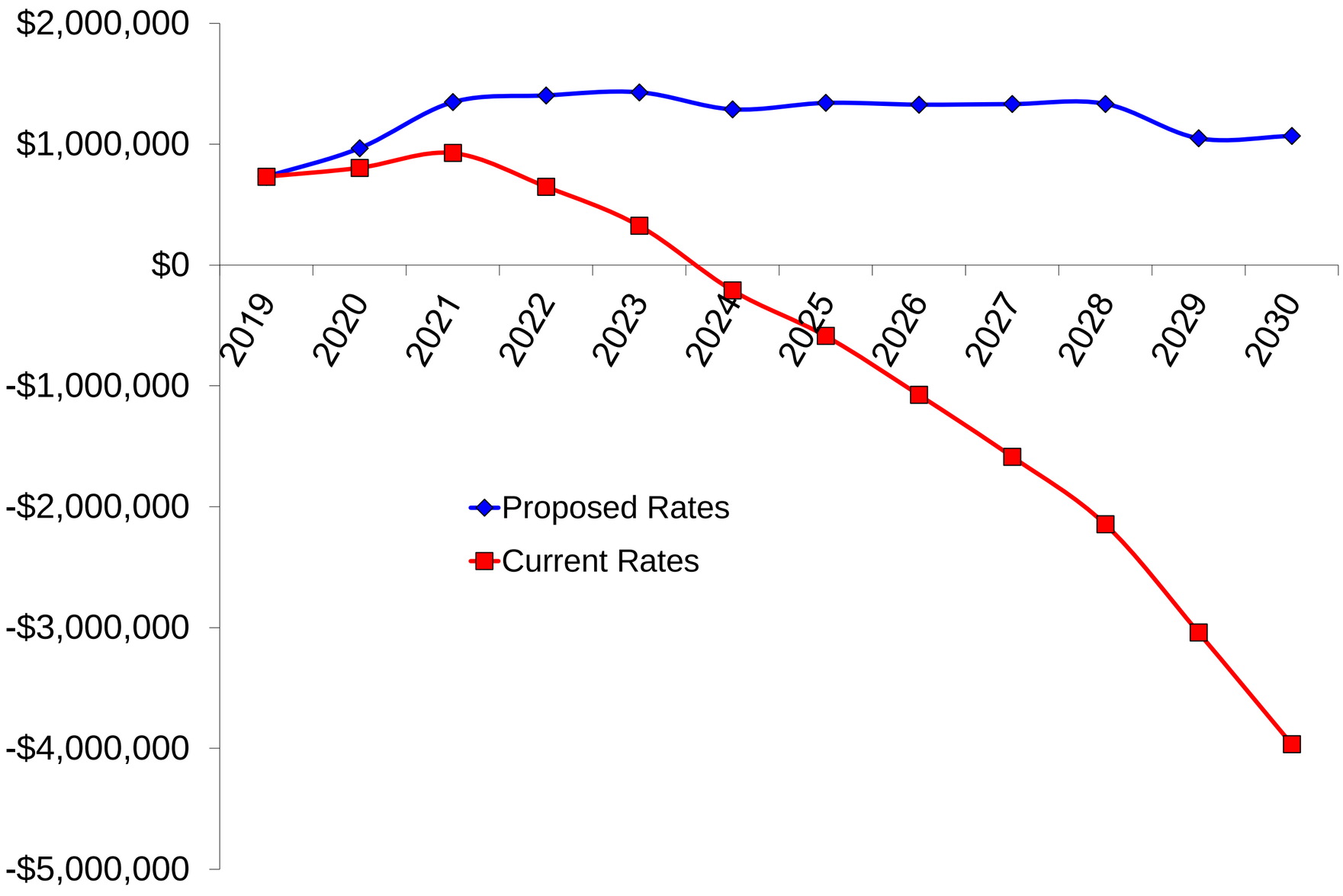


Chart 8 - Sum of All Reserves



Hillsboro, Missouri, 2020 Sewer Rates Model 2

This model assumes adequate rates that are as close to "cost-to-serve" as is reasonable at this time.

January 17, 2020

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 assumtions. These issues, and others, are described in a narrative report that accompanies this model.

Table 1 - Rates

Hillsboro, Missouri, 2020 Sewer Rates Model 2

Unless rates were recently changed, these are the current rates. At the least, these rates were in effect at the end of the test year. If a volume range was left out of the table, in order to make it shorter, the unit charge that shows for the next lowest volume range also applies to the hidden volume range.

Rates in Effect after August 2019 Adjustments

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Billing Cycle Minimum Charge	Usage Allowance in 1,000 Gallons	Unit Charge per 1,000 Gallons
3/4" Meter In City	0	$23.41	2.000	$6.66
	1,000	$23.41	2.000	$6.66
	140,000	$23.41	2.000	$6.66
1" Meter In City	0	$23.41	2.000	$6.66
	1,000	$23.41	2.000	$6.66
	145,000	$23.41	2.000	$6.66
1 1/2" Meter In City	0	$23.41	2.000	$6.66
	1,000	$23.41	2.000	$6.66
	145,000	$23.41	2.000	$6.66
2" Meter In City	0	$23.41	2.000	$6.66
	1,000	$23.41	2.000	$6.66
	145,000	$23.41	2.000	$6.66
3" Meter In City	0	$23.41	2.000	$6.66
	1,000	$23.41	2.000	$6.66
4" Meter In City	0	$23.41	2.000	$6.66
	1,000	$23.41	2.000	$6.66
	145,000	$23.41	2.000	$6.66
No Meter in City (Assume 1")	0	$55.12	2.000	$0.00
	1,000	$55.12	2.000	$0.00
	145,000	$55.12	2.000	$0.00
No Meter Out of City (Assume 1")	0	$55.12	0.000	$0.00
	1,000	$55.12	0.000	$0.00
	2,000	$55.12	0.000	$0.00
	145,000	$55.12	0.000	$0.00
All Weather Sewer Service, Inc.	0	$500.00	23.810	$21.00
	1,000	$500.00	23.810	$21.00
	870,000	$500.00	23.810	$21.00

Table 2 - Test Year Usage
Hillsboro, Missouri, 2020 Sewer Rates Model 2

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

Residential meter readings per year: 12

Test year = the one-year period being analyzed starts: 7/1/2018

Other customer readings per year: 12

Date this model created: 9/16/2019

Bills per year: 12

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
3/4" Meter In City	-15,000	-1	1	-15,000	0	-15,000	0	0.0%	0.0%
	0	999	48,015	12,029,000	0	0	0	0.0%	0.0%
	1,000	1,999	12,029	10,230,000	1,799	1,799,000	150	13.5%	2.2%
	2,000	2,999	10,230	7,991,000	2,239	4,478,000	187	16.9%	5.4%
	3,000	3,999	7,991	5,669,000	2,322	6,966,000	194	17.5%	8.5%
	4,000	4,999	5,669	3,699,000	1,970	7,880,000	164	14.8%	9.6%
	5,000	5,999	3,699	2,302,000	1,397	6,985,000	116	10.5%	8.5%
	6,000	6,999	2,302	1,443,000	859	5,154,000	72	6.5%	6.3%
	7,000	7,999	1,443	942,000	501	3,507,000	42	3.8%	4.3%
	8,000	8,999	942	640,000	302	2,416,000	25	2.3%	2.9%
	9,000	9,999	640	483,000	157	1,413,000	13	1.2%	1.7%
	10,000	14,999	483	1,189,000	320	3,574,000	27	2.4%	4.3%
	15,000	19,999	163	578,000	76	1,283,000	6	0.6%	1.6%
	20,000	24,999	87	286,000	43	926,000	4	0.3%	1.1%
	25,000	29,999	44	146,000	23	616,000	2	0.2%	0.7%
	30,000	39,999	21	103,000	17	573,000	1	0.1%	0.7%
	40,000	49,999	4	27,000	2	87,000	0	0.0%	0.1%
	50,000	59,999	2	11,000	1	51,000	0	0.0%	0.1%
	60,000	69,999	1	9,000	1	69,000	0	0.0%	0.1%
	70,000	79,999	0	0	0	0	0	0.0%	0.0%
	80,000	89,999	0	0	0	0	0	0.0%	0.0%
	90,000	99,999	0	0	0	0	0	0.0%	0.0%
	100,000	109,999	0	0	0	0	0	0.0%	0.0%
	110,000	119,999	0	0	0	0	0	0.0%	0.0%
	120,000	129,999	0	0	0	0	0	0.0%	0.0%
	130,000	139,999	0	0	0	0	0	0.0%	0.0%
	140,000	69,000	0	0	0	0	0	0.0%	0.0%
			93,766	47,762,000	12,029	47,762,000	1,002	90.6%	58.1%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
1" Meter In City	0	999	350	302,000	48	0	4	0.4%	0.0%
	1,000	1,999	302	254,000	48	48,000	4	0.4%	0.1%
	2,000	2,999	254	225,000	29	58,000	2	0.2%	0.1%
	3,000	3,999	225	190,000	35	105,000	3	0.3%	0.1%
	4,000	4,999	190	147,000	43	172,000	4	0.3%	0.2%
	5,000	5,999	147	129,000	18	90,000	2	0.1%	0.1%
	6,000	6,999	129	114,000	15	90,000	1	0.1%	0.1%
	7,000	7,999	114	105,000	9	63,000	1	0.1%	0.1%
	8,000	8,999	105	94,000	11	88,000	1	0.1%	0.1%
	9,000	9,999	94	87,000	7	63,000	1	0.1%	0.1%
	10,000	14,999	87	376,000	15	166,000	1	0.1%	0.2%
	15,000	19,999	72	323,000	13	223,000	1	0.1%	0.3%
	20,000	24,999	59	211,000	25	541,000	2	0.2%	0.7%
	25,000	29,999	34	134,000	10	264,000	1	0.1%	0.3%
	30,000	34,999	24	79,000	11	344,000	1	0.1%	0.4%
	35,000	44,999	13	59,000	11	424,000	1	0.1%	0.5%
	45,000	54,999	2	20,000	0	0	0	0.0%	0.0%
	55,000	64,999	2	13,000	1	58,000	0	0.0%	0.1%
	65,000	74,999	1	10,000	0	0	0	0.0%	0.0%
	75,000	84,999	1	10,000	0	0	0	0.0%	0.0%
	85,000	94,999	1	10,000	0	0	0	0.0%	0.0%
	95,000	104,999	1	10,000	0	0	0	0.0%	0.0%
	105,000	114,999	1	10,000	0	0	0	0.0%	0.0%
	115,000	124,999	1	6,000	1	121,000	0	0.0%	0.1%
	125,000	134,999	0	0	0	0	0	0.0%	0.0%
	135,000	144,999	0	0	0	0	0	0.0%	0.0%
	145,000	121,000	0	0	0	0	0	0.0%	0.0%
			2,209	2,918,000	350	2,918,000	29	2.6%	3.6%
1 1/2" Meter In City	0	999	276	276,000	0	0	0	0.0%	0.0%
	1,000	1,999	276	275,000	1	1,000	0	0.0%	0.0%
	2,000	2,999	275	275,000	0	0	0	0.0%	0.0%
	3,000	3,999	275	274,000	1	3,000	0	0.0%	0.0%
	4,000	4,999	274	271,000	3	12,000	0	0.0%	0.0%
	5,000	5,999	271	266,000	5	25,000	0	0.0%	0.0%
	6,000	6,999	266	260,000	6	36,000	1	0.0%	0.0%
	7,000	7,999	260	251,000	9	63,000	1	0.1%	0.1%
	8,000	8,999	251	243,000	8	64,000	1	0.1%	0.1%
	9,000	9,999	243	229,000	14	126,000	1	0.1%	0.2%
	10,000	14,999	229	939,000	61	709,000	5	0.5%	0.9%
	15,000	19,999	168	684,000	49	824,000	4	0.4%	1.0%
	20,000	24,999	119	472,000	40	877,000	3	0.3%	1.1%
	25,000	29,999	79	327,000	20	532,000	2	0.2%	0.6%
	30,000	34,999	59	240,000	15	470,000	1	0.1%	0.6%
	35,000	44,999	44	307,000	22	857,000	2	0.2%	1.0%
	45,000	54,999	22	199,000	5	254,000	0	0.0%	0.3%
	55,000	64,999	17	152,000	3	177,000	0	0.0%	0.2%
	65,000	74,999	14	102,000	5	337,000	0	0.0%	0.4%
	75,000	84,999	9	62,000	3	227,000	0	0.0%	0.3%
	85,000	94,999	6	50,000	2	180,000	0	0.0%	0.2%
	95,000	104,999	4	21,000	3	296,000	0	0.0%	0.4%
	105,000	114,999	1	2,000	1	107,000	0	0.0%	0.1%
	115,000	124,999	0	0	0	0	0	0.0%	0.0%
	125,000	134,999	0	0	0	0	0	0.0%	0.0%
	135,000	144,999	0	0	0	0	0	0.0%	0.0%
	145,000	107,000	0	0	0	0	0	0.0%	0.0%
			3,438	6,177,000	276	6,177,000	23	2.1%	7.5%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
2" Meter In City	0	999	387	316,000	71	0	6	0.5%	0.0%
	1,000	1,999	316	297,000	19	19,000	2	0.1%	0.0%
	2,000	2,999	297	281,000	16	32,000	1	0.1%	0.0%
	3,000	3,999	281	264,000	17	51,000	1	0.1%	0.1%
	4,000	4,999	264	252,000	12	48,000	1	0.1%	0.1%
	5,000	5,999	252	248,000	4	20,000	0	0.0%	0.0%
	6,000	6,999	248	239,000	9	54,000	1	0.1%	0.1%
	7,000	7,999	239	228,000	11	77,000	1	0.1%	0.1%
	8,000	8,999	228	219,000	9	72,000	1	0.1%	0.1%
	9,000	9,999	219	215,000	4	36,000	0	0.0%	0.0%
	10,000	14,999	215	1,027,000	12	132,000	1	0.1%	0.2%
	15,000	19,999	203	959,000	18	304,000	2	0.1%	0.4%
	20,000	24,999	185	828,000	33	728,000	3	0.2%	0.9%
	25,000	29,999	152	714,000	16	434,000	1	0.1%	0.5%
	30,000	34,999	136	567,000	33	1,042,000	3	0.2%	1.3%
	35,000	44,999	103	743,000	44	1,693,000	4	0.3%	2.1%
	45,000	54,999	59	430,000	24	1,160,000	2	0.2%	1.4%
	55,000	64,999	35	328,000	4	238,000	0	0.0%	0.3%
	65,000	74,999	31	276,000	6	416,000	1	0.0%	0.5%
	75,000	84,999	25	229,000	3	234,000	0	0.0%	0.3%
	85,000	94,999	22	175,000	7	620,000	1	0.1%	0.8%
	95,000	104,999	15	121,000	4	391,000	0	0.0%	0.5%
	105,000	114,999	11	104,000	1	109,000	0	0.0%	0.1%
	115,000	124,999	10	57,000	5	582,000	0	0.0%	0.7%
	125,000	134,999	5	47,000	1	132,000	0	0.0%	0.2%
	135,000	144,999	4	40,000	0	0	0	0.0%	0.0%
	145,000	202,000	4	146,000	4	726,000	0	0.0%	0.9%
			3,946	9,350,000	387	9,350,000	32	2.9%	11.4%
3" Meter In City	0	999	36	33,500	3	500	0	0.0%	0.0%
	1,000	1,999	33	27,000	6	6,000	1	0.0%	0.0%
	2,000	2,999	27	24,000	3	6,000	0	0.0%	0.0%
	3,000	3,999	24	24,000	0	0	0	0.0%	0.0%
	4,000	4,999	24	24,000	0	0	0	0.0%	0.0%
	5,000	5,999	24	24,000	0	0	0	0.0%	0.0%
	6,000	6,999	24	24,000	0	0	0	0.0%	0.0%
	7,000	7,999	24	24,000	0	0	0	0.0%	0.0%
	8,000	8,999	24	24,000	0	0	0	0.0%	0.0%
	9,000	9,999	24	24,000	0	0	0	0.0%	0.0%
	10,000	14,999	24	120,000	0	0	0	0.0%	0.0%
	15,000	19,999	24	109,000	4	69,000	0	0.0%	0.1%
	20,000	24,999	20	100,000	0	0	0	0.0%	0.0%
	25,000	29,999	20	98,000	1	28,000	0	0.0%	0.0%
	30,000	34,999	19	95,000	0	0	0	0.0%	0.0%
	35,000	44,999	19	152,000	7	277,000	1	0.1%	0.3%
	45,000	54,999	12	106,000	2	96,000	0	0.0%	0.1%
	55,000	64,999	10	77,000	4	237,000	0	0.0%	0.3%
	65,000	74,999	6	58,000	1	73,000	0	0.0%	0.1%
	75,000	84,999	5	50,000	0	0	0	0.0%	0.0%
	85,000	94,999	5	34,000	3	269,000	0	0.0%	0.3%
	95,000	104,999	2	17,000	1	102,000	0	0.0%	0.1%
	105,000	114,999	1	10,000	0	0	0	0.0%	0.0%
	115,000	124,999	1	10,000	0	0	0	0.0%	0.0%
	125,000	134,999	1	10,000	0	0	0	0.0%	0.0%
	135,000	144,999	1	10,000	0	0	0	0.0%	0.0%
	145,000	179,000	1	34,000	1	179,000	0	0.0%	0.2%
			435	1,342,500	36	1,342,500	3	0.3%	1.6%

Table 2 - Test Year Usage

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Count of Bills With ANY Use in Each Range	Use in Each Range in Gallons	Count of Bills That "Maxed Out" in Each Range	Volume of Bills That "Maxed Out" in Each Range	# of Customers That "Maxed Out" in Each Range	% of Customers That "Maxed Out" in Each Range	% of Total Use in Each Range
4" Meter In City	0	999	84	71,000	13	0	1	0.1%	0.0%
	1,000	1,999	71	68,000	3	3,000	0	0.0%	0.0%
	2,000	2,999	68	58,000	10	20,000	1	0.1%	0.0%
	3,000	3,999	58	52,000	6	18,000	1	0.0%	0.0%
	4,000	4,999	52	46,000	6	24,000	1	0.0%	0.0%
	5,000	5,999	46	41,000	5	25,000	0	0.0%	0.0%
	6,000	6,999	41	39,000	2	12,000	0	0.0%	0.0%
	7,000	7,999	39	38,000	1	7,000	0	0.0%	0.0%
	8,000	8,999	38	36,000	2	16,000	0	0.0%	0.0%
	9,000	9,999	36	36,000	0	0	0	0.0%	0.0%
	10,000	14,999	36	179,000	1	14,000	0	0.0%	0.0%
	15,000	19,999	35	171,000	1	16,000	0	0.0%	0.0%
	20,000	24,999	34	160,000	4	90,000	0	0.0%	0.1%
	25,000	29,999	30	150,000	0	0	0	0.0%	0.0%
	30,000	34,999	30	147,000	1	32,000	0	0.0%	0.0%
	35,000	44,999	29	277,000	3	122,000	0	0.0%	0.1%
	45,000	54,999	26	244,000	2	94,000	0	0.0%	0.1%
	55,000	64,999	24	240,000	0	0	0	0.0%	0.0%
	65,000	74,999	24	240,000	0	0	0	0.0%	0.0%
	75,000	84,999	24	240,000	0	0	0	0.0%	0.0%
	85,000	94,999	24	240,000	0	0	0	0.0%	0.0%
	95,000	104,999	24	240,000	0	0	0	0.0%	0.0%
	105,000	114,999	24	240,000	0	0	0	0.0%	0.0%
	115,000	124,999	24	236,000	1	121,000	0	0.0%	0.1%
	125,000	134,999	23	230,000	0	0	0	0.0%	0.0%
	135,000	144,999	23	230,000	0	0	0	0.0%	0.0%
	145,000	947,000	23	9,886,000	23	13,221,000	2	0.2%	16.1%
			990	13,835,000	84	13,835,000	7	0.6%	16.8%
No Meter in City (Assume 1")	0	999	57	0	57	0	5	0.4%	0.0%
			57	0	57	0	5	0.4%	0.0%
No Meter Out of City (Assume 1")	0	999	48	0	48	0	4	0.4%	0.0%
			48	0	48	0	4	0.4%	0.0%
All Weather Sewer Service, Inc.	0	999	12	11,988	0	0	0	0.0%	0.0%
	1,000	1,999	12	11,988	0	0	0	0.0%	0.0%
	2,000	2,999	12	11,988	0	0	0	0.0%	0.0%
	3,000	3,999	12	11,988	0	0	0	0.0%	0.0%
	4,000	4,999	12	11,988	0	0	0	0.0%	0.0%
	5,000	5,999	12	11,988	0	0	0	0.0%	0.0%
	6,000	6,999	12	11,988	0	0	0	0.0%	0.0%
	7,000	7,999	12	11,988	0	0	0	0.0%	0.0%
	8,000	8,999	12	11,988	0	0	0	0.0%	0.0%
	9,000	9,999	12	11,988	0	0	0	0.0%	0.0%
	10,000	14,999	12	59,988	0	0	0	0.0%	0.0%
	15,000	19,999	12	59,988	0	0	0	0.0%	0.0%
	20,000	29,999	12	119,988	0	0	0	0.0%	0.0%
	30,000	39,999	12	119,988	0	0	0	0.0%	0.0%
	40,000	49,999	12	119,988	0	0	0	0.0%	0.0%
	50,000	59,999	12	119,988	0	0	0	0.0%	0.0%
	60,000	69,999	12	80,192	12	800,000	1	0.1%	1.0%
			204	800,000	12	800,000	1	0.1%	1.0%
	Grand Totals:		105,093	82,184,500	13,279	82,184,500	1,107	100%	100%

Table 3 - Operating Incomes and Basic User Data

Hillsboro, Missouri, 2020 Sewer Rates Model 2

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)

$55,093	Census Bureau estimate of AMHI for the year	2016
$36,850	Census Bureau estimate of AMHI for the year	2000
$18,243	AMHI growth during this time period	
3.09%	Simple annual income growth rate during this time period (used to project incomes into the future)	

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

10	Number of new connections made during the test year
$1,240	Average 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 in the last column of that 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	Years Following the Analysis Year (for Which Results Have Been Projected)									
		Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
		7/1/18	7/1/19	7/1/20	7/1/21	7/1/22	7/1/23	7/1/24	7/1/25	7/1/26	7/1/27	7/1/28	7/1/29
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
				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 for the Year	N.A.	1,107	1,117	1,127	1,137	1,147	1,157	1,167	1,177	1,187	1,197	1,207	1,217
Customers Added or Lost (-) During the Year	N.A.	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Customer Growth or Loss (-) Rate	N.A.	0.90%	0.90%	0.89%	0.89%	0.87%	0.86%	0.86%	0.85%	0.84%	0.84%	0.83%	0.82%
Actual (Test Year) and Projected Volumes, in Gallons	N.A.	82,184,500	82,927,187	83,669,874	84,412,561	85,155,248	85,897,935	86,640,622	87,383,309	88,125,996	88,868,683	89,611,369	90,354,056
How User Charge Fees Were Calculated, Accounting for New Customers and Future Rate Increases													
Actual or Calculated Sales Revenues		$654,448	$718,351	$983,928	$1,022,441	$1,062,462	$1,103,881	$1,146,828	$1,191,358	$1,237,528	$1,285,396	$1,335,023	$1,386,470
Additional Sales Revenues From New Customers			$18	$8,734	$9,076	$9,266	$9,544	$9,831	$10,126	$10,429	$10,742	$11,064	$11,396
Total Calculated Revenues (User Charge Fees)		$654,448	$718,369	$992,662	$1,031,517	$1,071,729	$1,113,425	$1,156,658	$1,201,484	$1,247,958	$1,296,139	$1,346,087	$1,397,866
Operating Incomes													
User Charge Fees	N.A.	$681,610	$748,183	$1,033,859	$1,074,327	$1,116,208	$1,159,635	$1,204,663	$1,251,348	$1,299,751	$1,349,931	$1,401,953	$1,455,881
Late Payment Charge	N.A.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New Taps or Connections (Current Rate Structure)	% Above	$12,400	$12,366	$0	$0	$0	$0	$0	$0	$0	$0	$1	$2
Meter Size-based System Development Fees (Table 14)	% Above	-$48	$46	$17,367	$17,888	$18,425	$18,978	$19,547	$20,133	$20,737	$21,359	$22,000	$22,660
Interest Income	N.A.	7,134.35	$2,445	$2,676	$3,152	$3,317	$3,449	$3,508	$3,608	$3,754	$3,819	$3,929	$4,090
SEWER - ALL WEATHER USE	N.A.	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700	$15,700
SEWER - MISC INCOME	N.A.	-$379	-$379	-$379	-$379	-$379	-$379	-$379	-$379	-$379	-$379	-$379	-$379
Revenue Reduction to Account for Timing of August, 2019 Rate Increases	N.A.	$0	-$56,801	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Operating Incomes		**$709,283**	**$721,560**	**$1,069,224**	**$1,110,689**	**$1,153,271**	**$1,197,383**	**$1,243,039**	**$1,290,412**	**$1,339,564**	**$1,390,431**	**$1,443,205**	**$1,497,955**

Table 4 - Operating Costs and Net Income

Hillsboro, Missouri, 2020 Sewer Rates Model 2

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.)	Inflation/ Deflation (–) Factor	Test Year Starting 7/1/18	Analysis Year 0 Year Starting 7/1/19	Years Following the Analysis Year (for Which Results Have Been Projected) 1st Year Starting 7/1/20	2nd Year Starting 7/1/21	3rd Year Starting 7/1/22	4th Year Starting 7/1/23	5th Year Starting 7/1/24	6th Year Starting 7/1/25	7th Year Starting 7/1/26	8th Year Starting 7/1/27	9th Year Starting 7/1/28	10th Year Starting 7/1/29
SALARIES S	3.0%	$123,853	$127,569	$131,396	$135,338	$139,398	$143,580	$147,888	$152,324	$156,894	$161,601	$166,449	$171,442
PROFESSIONAL SERVICES ACCTG	3.0%	$7,698	$7,929	$8,167	$8,412	$8,664	$8,924	$9,192	$9,468	$9,752	$10,044	$10,346	$10,656
PROFESSIONAL SVCS LEGALS	3.0%	$239	$247	$254	$262	$269	$278	$286	$294	$303	$312	$322	$331
EMPLOYEEINSURANCE-S	3.0%	$40,785	$42,009	$43,269	$44,567	$45,904	$47,281	$48,699	$50,160	$51,665	$53,215	$54,812	$56,456
RETIREMENT-SEWER	3.0%	$1,823	$1,877	$1,934	$1,992	$2,052	$2,113	$2,176	$2,242	$2,309	$2,378	$2,450	$2,523
WORKER'S COMP SEWER	3.0%	$2,548	$2,624	$2,703	$2,784	$2,867	$2,953	$3,042	$3,133	$3,227	$3,324	$3,424	$3,526
PAYROLL TAX SEWER	3.0%	$9,289	$9,567	$9,854	$10,150	$10,455	$10,768	$11,091	$11,424	$11,767	$12,120	$12,483	$12,858
SEWER SYSTEM REPAIRS	3.0%	$66,697	$68,698	$70,759	$72,882	$75,068	$77,320	$79,640	$82,029	$84,490	$87,024	$89,635	$92,324
SEWER SYSTEM EQUIPMENT	3.0%	$6,075	$6,257	$6,445	$6,638	$6,837	$7,043	$7,254	$7,471	$7,696	$7,926	$8,164	$8,409
SEWER CONNECTION FEE	1.0%	$1,873	$1,909	$1,945	$1,982	$2,019	$2,057	$2,095	$2,134	$2,174	$2,214	$2,255	$2,296
DUES & SUBSCRIPTIONS SEWER	3.0%	$312	$322	$332	$341	$352	$362	$373	$384	$396	$408	$420	$433
FUEL/OIL- S	3.0%	$7,063	$7,275	$7,493	$7,718	$7,950	$8,188	$8,434	$8,687	$8,947	$9,216	$9,492	$9,777
INSURANCE SEWER	3.0%	$16,933	$17,441	$17,964	$18,503	$19,058	$19,630	$20,219	$20,825	$21,450	$22,094	$22,756	$23,439
COMPUTER/TECHNOLOGY EXPENS	3.0%	$3,600	$3,708	$3,819	$3,934	$4,052	$4,173	$4,299	$4,428	$4,560	$4,697	$4,838	$4,983
MISC S	3.0%	$6,412	$6,605	$6,803	$7,007	$7,217	$7,434	$7,657	$7,886	$8,123	$8,367	$8,618	$8,876
POSTAGE - SEWER	3.0%	$2,173	$2,258	$2,347	$2,438	$2,533	$2,632	$2,734	$2,840	$2,950	$3,064	$3,182	$3,304
MATERIALS & SUPPLIES OPS S	3.0%	$45,149	$46,503	$47,898	$49,335	$50,815	$52,340	$53,910	$55,527	$57,193	$58,909	$60,676	$62,496
REPAIRS-VEHICLES SEWER	3.0%	$26,335	$27,125	$27,938	$28,776	$29,640	$30,529	$31,445	$32,388	$33,360	$34,361	$35,391	$36,453
REPAIRS-EQUIP S	3.0%	$3,258	$3,355	$3,456	$3,560	$3,666	$3,776	$3,890	$4,006	$4,127	$4,250	$4,378	$4,509
SLUDGE REMOVAL	3.0%	$9,945	$10,335	$10,739	$11,160	$11,595	$12,046	$12,513	$12,998	$13,501	$14,022	$14,563	$15,123
SUPPLIES-OFFICE SEWER	3.0%	$1,149	$1,183	$1,219	$1,255	$1,293	$1,332	$1,372	$1,413	$1,455	$1,499	$1,544	$1,590
MATERIALS & SUPPLIES MAINT S	3.0%	$7,935	$8,173	$8,419	$8,671	$8,931	$9,199	$9,475	$9,759	$10,052	$10,354	$10,664	$10,984
TELEPHONE SEWER	3.0%	$1,855	$1,910	$1,968	$2,027	$2,088	$2,150	$2,215	$2,281	$2,350	$2,420	$2,493	$2,568
UTILITIES SEWER	3.0%	$73,765	$76,658	$79,659	$82,777	$86,003	$89,349	$92,819	$96,416	$100,145	$104,012	$108,020	$112,175
UNIFORivIS SEWER	3.0%	$5,583	$5,750	$5,923	$6,101	$6,284	$6,472	$6,666	$6,866	$7,072	$7,285	$7,503	$7,728
UTILITY PILOT (6% of Sales)	0.0%	$16,582	$40,897	$44,891	$62,032	$64,460	$66,972	$69,578	$72,280	$75,081	$77,985	$80,996	$84,117
2012 BOND PAYMENT	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
200 I COP Adm in Fees	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
2012 BOND ADMIN FEES	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
COST OF ISSUANCE	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
H&S TO 19 NORTH WWTP EXPANSI	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
One-time Reduction of R&R Annuity	0.0%	-$82,724	-$82,724	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Payment to R&R Reserve (Table 7)	0.0%	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724	$82,724
User Charge Analysis Services	5.0%	$0	$6,969	$0	$0	$7,683	$0	$0	$8,471	$0	$0	$9,339	$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		**$488,928**	**$535,153**	**$630,316**	**$663,364**	**$689,877**	**$701,626**	**$721,685**	**$750,861**	**$763,763**	**$785,824**	**$817,935**	**$832,102**
Net Income (or Loss)		$220,355	$186,407	$438,908	$447,325	$463,394	$495,757	$521,354	$539,551	$575,801	$604,607	$625,270	$665,852
Working Capital Goal: 50%	In Dollars, That is:	$244,464	$267,577	$315,158	$331,682	$344,939	$350,813	$360,842	$375,430	$381,881	$392,912	$408,968	$416,051

Notes: The facilities are economical to operate. The main cost issue is existing debt service and cost of construction of new and upgraded facilities, covered in Table 5.

Table 5 - Capital Improvement Program (CIP)

Hillsboro, Missouri, 2020 Sewer Rates Model 2

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

	Test Year	Analysis Year	Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected)									
	Starting	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
	7/1/18	7/1/19	7/1/20	7/1/21	7/1/22	7/1/23	7/1/24	7/1/25	7/1/26	7/1/27	7/1/28	7/1/29
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)												
BB Sewer plant upgrade	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SCADA	$0	$112,500	$19,313	$0	$0	$10,552	$10,868	$11,194	$11,530	$0	$0	$0
Brickyard Sewer Plant Upgrade	$0	$0	$0	$0	$0	$422,066	$0	$0	$0	$0	$0	$0
Jamestown Sewer Plant Upgrade	$0	$0	$0	$39,784	$0	$0	$0	$0	$0	$0	$0	$0
North Plant Sewer Upgrade	$0	$0	$0	$39,784	$0	$0	$0	$0	$0	$0	$0	$0
Lift Station Flow monitoring and level monitoring	$0	$0	$0	$0	$0	$21,103	$21,736	$22,388	$23,060	$0	$0	$0
Lift Station 5 de-commission	$0	$0	$0	$0	$163,909	$0	$0	$0	$0	$0	$0	$0
Lift Station 7 Upgrade	$0	$0	$0	$99,459	$0	$0	$0	$0	$0	$0	$0	$0
Lift Station 8 Upgrade	$0	$0	$0	$0	$40,977	$0	$0	$0	$0	$0	$0	$0
Public Works Building	$0	$0	$0	$159,135	$0	$0	$0	$0	$0	$0	$0	$0
Replace Pearl Drive Clay sewer line	$0	$0	$0	$119,351	$0	$0	$0	$0	$0	$0	$0	$0
H&S TO 19 NORTH WWTP EXPANSI	$593,558	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Closing Costs, Estimated at: 2.5%	$14,839	$2,813	$497	$12,134	$5,597	$12,767	$945	$1,002	$1,064	$0	$0	$0
Total Debt-paid Portion of Projects	$608,397	$115,313	$19,810	$469,648	$210,483	$466,487	$33,550	$34,585	$35,654	$0	$0	$0
Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)												
BB Sewer plant upgrade	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SCADA	$0	$37,500	$6,438	$0	$0	$3,517	$3,623	$3,731	$3,843	$0	$0	$0
Brickyard Sewer Plant Upgrade	$0	$0	$0	$0	$0	$140,689	$0	$0	$0	$0	$0	$0
Jamestown Sewer Plant Upgrade	$0	$0	$0	$13,261	$0	$0	$0	$0	$0	$0	$0	$0
North Plant Sewer Upgrade	$0	$0	$0	$13,261	$0	$0	$0	$0	$0	$0	$0	$0
Lift Station Flow monitoring and level monitoring	$0	$0	$0	$0	$0	$7,034	$7,245	$7,463	$7,687	$0	$0	$0
Lift Station 5 de-commission	$0	$0	$0	$0	$54,636	$0	$0	$0	$0	$0	$0	$0
Lift Station 7 Upgrade	$0	$0	$0	$33,153	$0	$0	$0	$0	$0	$0	$0	$0
Lift Station 8 Upgrade	$0	$0	$0	$0	$13,659	$0	$0	$0	$0	$0	$0	$0
Public Works Building	$0	$0	$0	$53,045	$0	$0	$0	$0	$0	$0	$0	$0
Replace Pearl Drive Clay sewer line	$0	$0	$0	$39,784	$0	$0	$0	$0	$0	$0	$0	$0
H&S TO 19 NORTH WWTP EXPANSI	$197,853	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Cash-paid Portion of Projects	$197,853	$37,500	$6,438	$152,504	$68,295	$151,240	$10,868	$11,194	$11,530	$0	$0	$0
Total CIP Costs	**$806,249**	**$152,813**	**$26,247**	**$622,152**	**$278,779**	**$617,728**	**$44,418**	**$45,779**	**$47,184**	**$0**	**$0**	**$0**

Table 5 - Capital Improvement Program (CIP)

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

	Test Year	Analysis Year	Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected)									
	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
	7/1/18	7/1/19	7/1/20	7/1/21	7/1/22	7/1/23	7/1/24	7/1/25	7/1/26	7/1/27	7/1/28	7/1/29
Debt Repayment												
Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)												
CWSS 2012 Bonds (for Sewer Projects)	$193,548	$195,098	$196,498	$197,998	$199,098	$204,845	$205,060	$204,885	$209,305	$213,200	$211,200	$214,000
CWSS 2018 Bonds (for Sewer Projects)	$0	$58,099	$103,448	$97,155	$95,980	$94,630	$93,280	$91,930	$90,330	$88,730	$82,130	$85,690
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: 17 years at a 3.5% interest rate.)												
Loan Originated in Analysis (This) Year			$9,115	$9,115	$9,115	$9,115	$9,115	$9,115	$9,115	$9,115	$9,115	$9,115
Loan Originated in 1st Year				$1,566	$1,566	$1,566	$1,566	$1,566	$1,566	$1,566	$1,566	$1,566
Loan Originated in 2nd Year					$37,122	$37,122	$37,122	$37,122	$37,122	$37,122	$37,122	$37,122
Loan Originated in 3rd Year						$16,637	$16,637	$16,637	$16,637	$16,637	$16,637	$16,637
Loan Originated in 4th Year							$36,873	$36,873	$36,873	$36,873	$36,873	$36,873
Loan Originated in 5th Year								$2,652	$2,652	$2,652	$2,652	$2,652
Loan Originated in 6th Year									$2,734	$2,734	$2,734	$2,734
Loan Originated in 7th Year										$2,818	$2,818	$2,818
Total Debt Payments	$193,548	$301,286	$357,149	$353,923	$390,970	$412,005	$447,742	$448,869	$454,423	$459,536	$450,936	$457,296
Total CIP-related Payouts	**$999,797**	**$454,098**	**$383,397**	**$976,074**	**$669,749**	**$1,029,732**	**$492,160**	**$494,649**	**$501,607**	**$459,536**	**$450,936**	**$457,296**
(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	$65,722	-$108,455	-$82,884	-$160,167	-$172,499	-$249,311	-$201,582	-$140,715	-$40,131	$93,106	$253,246
Working Capital Transferred in	$457,122	$163,294	$391,327	$430,801	$450,138	$489,883	$511,325	$524,963	$569,351	$593,577	$609,214	$658,769
Debt and CIP Reserves Interest Earned (or Paid)	$0	$1,314	-$2,169	-$1,658	-$3,203	-$3,450	-$4,986	-$4,032	-$2,814	-$803	$1,862	$5,065
Total Available Internal Funds	$457,122	$230,331	$280,703	$346,260	$286,767	$313,934	$257,028	$319,349	$425,822	$552,643	$704,182	$917,080
Grant and Loan Proceeds (External Funds)												
Loan Originated in Analysis (This) Year		$115,313	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 1st Year			$19,810	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 2nd Year				$469,648	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 3rd Year					$210,483	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 4th Year						$466,487	$0	$0	$0	$0	$0	$0
Loan Originated in 5th Year							$33,550	$0	$0	$0	$0	$0
Loan Originated in 6th Year								$34,585	$0	$0	$0	$0
Loan Originated in 7th Year									$35,654	$0	$0	$0
Total Available External Funds	$608,397	$115,313	$19,810	$469,648	$210,483	$466,487	$33,550	$34,585	$35,654	$0	$0	$0
Total Available Funds	**$1,065,519**	**$345,644**	**$300,513**	**$815,907**	**$497,250**	**$780,422**	**$290,578**	**$353,934**	**$461,475**	**$552,643**	**$704,182**	**$917,080**
Outcomes (This CIP spending and funding plan will result in the following cash needs and ending balances each year.)												
Total Available Funds	**$1,065,519**	**$345,644**	**$300,513**	**$815,907**	**$497,250**	**$780,422**	**$290,578**	**$353,934**	**$461,475**	**$552,643**	**$704,182**	**$917,080**
Total CIP-related Payouts	**$999,797**	**$454,098**	**$383,397**	**$976,074**	**$669,749**	**$1,029,732**	**$492,160**	**$494,649**	**$501,607**	**$459,536**	**$450,936**	**$457,296**
Debt and CIP Reserves Ending Balances	**$65,722**	**-$108,455**	**-$82,884**	**-$160,167**	**-$172,499**	**-$249,311**	**-$201,582**	**-$140,715**	**-$40,131**	**$93,106**	**$253,246**	**$459,784**

Notes: In a few years, system improvements will drive debt payments higher by approximately $450,000 per year.

Table 6 - Equipment Replacement Schedule - Detailed

Hillsboro, Missouri, 2020 Sewer Rates Model 2

			Water only				Sewer only						
Year Beginning	Unspecified, Low-dollar, Annual R&R Items	UV Bulbs	water meter replacement	Shared Lawn Mower, 50% Water, 50% Sewer	Sewer Camera	Lift Station Pumps	Sewer Plant Grinder Pumps	2011 F-350, 50% Water, 50% Sewer	2013 F-150 50% Water, 50% Sewer	2020 F-250 Utility Truck 50% Sewer 50% Water NEW in 2020	2018 Chevy C100 50% Water, 50% Sewer	2013 F-150 Street 50%, Water 25%, Sewer 25%	2007 Ford Crown Victoria 50% Street, 25% Water, 25% Sewer
7/1/19	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/20	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$22,500	$0	$0	$0
7/1/21	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/22	$20,000	$5,000	$0	$0	$0	$10,000	$0	$0	$0	$0	$0	$7,500	$0
7/1/23	$20,000	$5,000	$0	$0	$0	$0	$15,000	$17,500	$0	$0	$0	$0	$0
7/1/24	$20,000	$5,000	$0	$10,000	$10,000	$0	$0	$0	$15,000	$0	$0	$0	$0
7/1/25	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7/1/26	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$17,500	$0	$0
7/1/27	$20,000	$5,000	$0	$0	$0	$10,000	$0	$0	$0	$0	$0	$0	$6,250
7/1/28	$20,000	$5,000	$0	$0	$0	$0	$15,000	$0	$0	$22,500	$0	$0	$0
7/1/29	$20,000	$5,000	$0	$10,000	$10,000	$0	$0	$0	$0	$0	$0	$0	$0
7/1/30	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$0
7/1/31	$20,000	$5,000	$0	$0	$0	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/32	$20,000	$5,000	$0	$0	$0	$10,000	$0	$0	$15,000	$0	$0	$0	$0
7/1/33	$20,000	$5,000	$0	$0	$0	$0	$15,000	$0	$0	$0	$0	$0	$0
7/1/34	$20,000	$5,000	$0	$10,000	$10,000	$0	$0	$0	$0	$0	$17,500	$0	$0
7/1/35	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$6,250
7/1/36	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$22,500	$0	$0	$0
7/1/37	$20,000	$5,000	$0	$0	$0	$10,000	$0	$0	$0	$0	$0	$0	$0
7/1/38	$20,000	$5,000	$0	$0	$0	$0	$15,000	$0	$0	$0	$0	$7,500	$0
7/1/39	$20,000	$5,000	$0	$10,000	$10,000	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/40	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$15,000	$0	$0	$0	$0
7/1/41	$20,000	$5,000	$0	$0	$0	$0	$0	$17,500	$0	$0	$0	$0	$0
7/1/42	$20,000	$5,000	$0	$0	$0	$10,000	$0	$0	$0	$0	$17,500	$0	$0
7/1/43	$20,000	$5,000	$0	$0	$0	$0	$15,000	$0	$0	$0	$0	$0	$6,250

Table 6 - Equipment Replacement Schedule - Detailed

Hillsboro, Missouri, 2020 Sewer Rates Model 2

Year Beginning	2021 F-150 100% Sewer NEW in 2021	1995 F-800 Dump 50,% Tractor, 25% Water, 25% Sewer	2006 F750 Dump 50%, Water 25%, Sewer 25%	2016 F-550 Dump 50%, Water 25%, Sewer 25%	2005 F-450 Dump 50%, Water 25%, Sewer 25%	2003 F-550 Bucket 50% Street, 25% Water, 25% Sewer	Shared Backhoe/ Loader, 25% Water, 25% Sewer, 50% Streets	Water Tower 1 Recoat	Water Tower 2 Recoat	Shared Dump Truck, 25% Water, 25% Sewer, 50% Other			Total Annual Replacement Costs
7/1/19	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$25,000
7/1/20	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$47,500
7/1/21	$30,000	$0	$0	$0	$0	$0	$12,500	$0	$0	$0	$0	$0	$67,500
7/1/22	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$12,500	$0	$0	$73,750
7/1/23	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$76,250
7/1/24	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60,000
7/1/25	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$25,000
7/1/26	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$61,250
7/1/27	$0	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$60,000
7/1/28	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$62,500
7/1/29	$30,000	$0	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$93,750
7/1/30	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$32,500
7/1/31	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$42,500
7/1/32	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$68,750
7/1/33	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$58,750
7/1/34	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$62,500
7/1/35	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$31,250
7/1/36	$0	$0	$0	$18,750	$0	$0	$12,500	$0	$0	$0	$0	$0	$78,750
7/1/37	$30,000	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$83,750
7/1/38	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$47,500
7/1/39	$0	$0	$0	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$81,250
7/1/40	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$40,000
7/1/41	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$42,500
7/1/42	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$12,500	$0	$0	$83,750
7/1/43	$0	$0	$18,750	$0	$0	$0	$0	$0	$0	$0	$0	$0	$65,000

Table 7 - Equipment Replacement Annuity Calculation

Hillsboro, Missouri, 2020 Sewer Rates Model 2

This table calculates the annual annuity (savings deposit) needed to build replacement (R&R) reserves. This annuity amount should actually be deposited in a savings account. The annuity amount, called the "Required Annual Deposit (Annuity) to Replacement Account" below, should be included in the utility's general budget as a cost. As a result, all replacement and refurbishment scheduled in Table 6, the detailed replacement schedule, would be paid for out of R&R reserves and not out of the utility's general budget.

In simple terms, the annuity at the bottom of this table should be deposited into an account each year and R&R projects should be paid for out of that account.

3.00%	Average Inflation Rate for the Following Sewer System Equipment for the Term of This Replacement Schedule
2.00%	Average Interest Rate on Balances Invested for the Term of This Replacement Schedule
2.00%	Average Interest Rate on Amounts Borrowed for the Term of This Replacement Schedule

Year Beginning	Schedule Year	This Year's Costs in Current Dollars	Future Annual Inflated Net Costs	Interest Earned on Prior Balance	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
7/1/19	Analysis Year	$25,000	$25,000	$862	$18,978	$56,688
7/1/20	1st Year	$47,500	$48,925	$380	$53,156	$58,388
7/1/21	2nd Year	$67,500	$71,611	$1,063	$65,332	$60,140
7/1/22	3rd Year	$73,750	$80,589	$1,307	$68,774	$61,944
7/1/23	4th Year	$76,250	$85,820	$1,375	$67,053	$63,802
7/1/24	5th Year	$60,000	$69,556	$1,341	$81,561	$65,716
7/1/25	6th Year	$25,000	$29,851	$1,631	$136,064	$67,688
7/1/26	7th Year	$61,250	$75,330	$2,721	$146,179	$69,718
7/1/27	8th Year	$60,000	$76,006	$2,924	$155,820	$71,810
7/1/28	9th Year	$62,500	$81,548	$3,116	$160,112	$73,964
7/1/29	10th Year	$93,750	$125,992	$3,202	$120,046	$76,183
7/1/30	11th Year	$32,500	$44,988	$2,401	$160,183	$78,469
7/1/31	12th Year	$42,500	$60,595	$3,204	$185,515	$80,823
7/1/32	13th Year	$68,750	$100,962	$3,710	$170,987	$83,248
7/1/33	14th Year	$58,750	$88,865	$3,420	$168,266	$85,745
7/1/34	15th Year	$62,500	$97,373	$3,365	$156,982	$88,317
7/1/35	16th Year	$31,250	$50,147	$3,140	$192,698	$90,967
7/1/36	17th Year	$78,750	$130,162	$3,854	$149,113	$93,696
7/1/37	18th Year	$83,750	$142,579	$2,982	$92,240	$96,507
7/1/38	19th Year	$47,500	$83,292	$1,845	$93,517	$99,402

Notes: There is currently no R&R schedule. Average R&R costs were instead estimated. A Discretionary Annuity amount was added so that at the end of the 20-year modeling period, the balance will equal the average of the annual replacement cost amounts, less interest paid for borrowing during the negative balance years.

Starting Account Balance	$43,116	$56,688
Minimum Annual Annuity	$78,684	Minimum Desired Balance in Today's Dollars
Discretionary Annuity	$4,039	

Required Annual Deposit (Annuity) to Replacement Account **$82,724**

(This amount is included in Table 4 as an operating cost.)

Table 8 - Average Cost Classification

Hillsboro, Missouri, 2020 Sewer Rates Model 2

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: 7/1/2023 through 6/30/2024

Cost Items	Cost During Rate Structure Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
SALARIES S	$143,580	25.0%	75.0%	$35,895	$107,685
PROFESSIONAL SERVICES ACCTG	$8,924	100.0%	0.0%	$8,924	$0
PROFESSIONAL SVCS LEGALS	$278	100.0%	0.0%	$278	$0
EMPLOYEEINSURANCE-S	$47,281	25.0%	75.0%	$11,820	$35,461
RETIREMENT-SEWER	$2,113	25.0%	75.0%	$528	$1,585
WORKER'S COMP SEWER	$2,953	25.0%	75.0%	$738	$2,215
PAYROLL TAX SEWER	$10,768	25.0%	75.0%	$2,692	$8,076
SEWER SYSTEM REPAIRS	$77,320	25.0%	75.0%	$19,330	$57,990
SEWER SYSTEM EQUIPMENT	$7,043	25.0%	75.0%	$1,761	$5,282
SEWER CONNECTION FEE	$2,057	100.0%	0.0%	$2,057	$0
DUES & SUBSCRIPTIONS SEWER	$362	25.0%	75.0%	$91	$272
FUEL/OIL- S	$8,188	25.0%	75.0%	$2,047	$6,141
INSURANCE SEWER	$19,630	100.0%	0.0%	$19,630	$0
COMPUTER/TECHNOLOGY EXPENS	$4,173	100.0%	0.0%	$4,173	$0
MISC S	$7,434	44.9%	55.1%	$3,338	$4,096
POSTAGE - SEWER	$2,632	100.0%	0.0%	$2,632	$0
MATERIALS & SUPPLIES OPS S	$52,340	25.0%	75.0%	$13,085	$39,255
REPAIRS-VEHICLES SEWER	$30,529	25.0%	75.0%	$7,632	$22,897
REPAIRS-EQUIP S	$3,776	25.0%	75.0%	$944	$2,832
SLUDGE REMOVAL	$12,046	0.0%	100.0%	$0	$12,046
SUPPLIES-OFFICE SEWER	$1,332	100.0%	0.0%	$1,332	$0
MATERIALS & SUPPLIES MAINT S	$9,199	25.0%	75.0%	$2,300	$6,899
TELEPHONE SEWER	$2,150	100.0%	0.0%	$2,150	$0
UTILITIES SEWER	$89,349	0.0%	100.0%	$0	$89,349
UNIFORivIS SEWER	$6,472	25.0%	75.0%	$1,618	$4,854
UTILITY PILOT (6% of Sales)	$40,897	44.9%	55.1%	$18,363	$22,534
2012 BOND PAYMENT	$0	25.0%	75.0%	$0	$0
200 I COP Adm in Fees	$0	25.0%	75.0%	$0	$0
2012 BOND ADMIN FEES	$0	25.0%	75.0%	$0	$0
COST OF ISSUANCE	$0	25.0%	75.0%	$0	$0
H&S TO 19 NORTH WWTP EXPANSI	$0	25.0%	75.0%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$82,724	50.0%	50.0%	$41,362	$41,362
User Charge Analysis Services	$0	100.0%	0.0%	$0	$0
Grand Total Costs, Weighted Avg Percentages	$675,550	30.3%	69.7%	$204,719	$470,831

Bases for Cost to Serve Rate Structure

		100%	$675,550
Number Customers During Year Defined Above	1,157	Inflow and Infiltration is Estimated at	0%
Billed Volume, in Gallons, During Year Defined Above	85,897,935	Inflow and Infiltration is Estimated at This Percentage of Average Cost	22%
Average Fixed Cost per User per Month During Year Defined Above	$14.75	Resulting Cost of Inflow and Infiltration	$0
Average Variable Cost to Produce per 1,000 Gallons During Year Defined Above	$5.48	Test Year Customer Metered Volume, in Gallons	82,184,500
Gallons per Billing Cycle Used by Average Residential Customer	3,971	+ Test Year Inflow and Infiltration, in Gallons	0
		Total Test Year Volume, in Gallons, From Master Meter Readings	82,184,500

Table 9 - Marginal Cost Classification

Hillsboro, Missouri, 2020 Sewer Rates Model 2

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 fixed costs are being calculated for: No Applicable

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

The marginal rate structure basis year runs from: 7/1/2023 through 6/30/2024

Cost Items	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
SALARIES S	$35,895	$107,685	25%	25%	$8,974	$26,921
PROFESSIONAL SERVICES ACCTG	$8,924	$0	100%	100%	$8,924	$0
PROFESSIONAL SVCS LEGALS	$278	$0	100%	100%	$278	$0
EMPLOYEEINSURANCE-S	$11,820	$35,461	25%	25%	$2,955	$8,865
RETIREMENT-SEWER	$528	$1,585	25%	25%	$132	$396
WORKER'S COMP SEWER	$738	$2,215	25%	25%	$185	$554
PAYROLL TAX SEWER	$2,692	$8,076	25%	25%	$673	$2,019
SEWER SYSTEM REPAIRS	$19,330	$57,990	25%	25%	$4,833	$14,498
SEWER SYSTEM EQUIPMENT	$1,761	$5,282	100%	100%	$1,761	$5,282
SEWER CONNECTION FEE	$2,057	$0	25%	25%	$514	$0
DUES & SUBSCRIPTIONS SEWER	$91	$272	100%	100%	$91	$272
FUEL/OIL- S	$2,047	$6,141	25%	25%	$512	$1,535
INSURANCE SEWER	$19,630	$0	100%	100%	$19,630	$0
COMPUTER/TECHNOLOGY EXPENS	$4,173	$0	100%	100%	$4,173	$0
MISC S	$3,338	$4,096	25%	25%	$834	$1,024
POSTAGE - SEWER	$2,632	$0	100%	100%	$2,632	$0
MATERIALS & SUPPLIES OPS S	$13,085	$39,255	25%	25%	$3,271	$9,814
REPAIRS-VEHICLES SEWER	$7,632	$22,897	25%	25%	$1,908	$5,724
REPAIRS-EQUIP S	$944	$2,832	25%	25%	$236	$708
SLUDGE REMOVAL	$0	$12,046	25%	25%	$0	$3,011
SUPPLIES-OFFICE SEWER	$1,332	$0	25%	25%	$333	$0
MATERIALS & SUPPLIES MAINT S	$2,300	$6,899	25%	25%	$575	$1,725
TELEPHONE SEWER	$2,150	$0	25%	25%	$538	$0
UTILITIES SEWER	$0	$89,349	0%	0%	$0	$0
UNIFORivIS SEWER	$1,618	$4,854	100%	100%	$1,618	$4,854
UTILITY PILOT (6% of Sales)	$18,363	$22,534	25%	25%	$4,591	$5,634
2012 BOND PAYMENT	$0	$0	100%	100%	$0	$0
200 I COP Adm in Fees	$0	$0	100%	100%	$0	$0
2012 BOND ADMIN FEES	$0	$0	100%	100%	$0	$0
COST OF ISSUANCE	$0	$0	100%	100%	$0	$0
H&S TO 19 NORTH WWTP EXPANSI	$0	$0	100%	100%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$41,362	$41,362	25%	25%	$10,340	$10,340
User Charge Analysis Services	$0	$0	100%	100%	$0	$0
Grand Total All Costs	$204,719	$470,831			$80,510	$103,176
	$675,550				$183,686	

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
	$5.80	
Marginal Fixed Cost as a Percent of Total Fixed Cost:	39%	$1.20
Marginal Variable Cost as a Percent of Total Variable Cost:		22%

Table 10 - Initial Rate Adjustments and Resulting Revenues

Hillsboro, Missouri, 2020 Sewer Rates Model 2

This table calculates a new set of user charge rates and the revenues they would generate.

Out of City Multiplier	150%	Conservation Rate Block Multiplier	100%	Other Multiplier	100%

6/30/20 — Date when fees will first be collected at adjusted rates. Actual adjustment should occur one billing cycle earlier.

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

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. 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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
3/4" Meter In City	-15,000	-1	-$100	$21.45	0.000	$7.87	$0	-$100
	0	999	$0	$21.45	0.000	$7.87	$259	$259
	1,000	1,999	$42,000	$21.45	0.000	$7.87	$325	$42,325
	2,000	2,999	$105,346	$21.45	0.000	$7.87	$303	$105,649
	3,000	3,999	$91,862	$21.45	0.000	$7.87	$258	$92,120
	4,000	4,999	$70,560	$21.45	0.000	$7.87	$195	$70,755
	5,000	5,999	$47,904	$21.45	0.000	$7.87	$131	$48,035
	6,000	6,999	$29,638	$21.45	0.000	$7.87	$81	$29,720
	7,000	7,999	$17,953	$21.45	0.000	$7.87	$50	$18,003
	8,000	8,999	$11,301	$21.45	0.000	$7.87	$31	$11,333
	9,000	9,999	$6,873	$21.45	0.000	$7.87	$20	$6,893
	10,000	14,999	$15,368	$21.45	0.000	$7.87	$44	$15,412
	15,000	19,999	$5,613	$21.45	0.000	$7.87	$17	$5,630
	20,000	24,999	$2,903	$21.45	0.000	$7.87	$9	$2,912
	25,000	29,999	$1,507	$21.45	0.000	$7.87	$4	$1,511
	30,000	39,999	$1,081	$21.45	0.000	$7.87	$3	$1,084
	40,000	49,999	$226	$21.45	0.000	$7.87	$1	$227
	50,000	59,999	$96	$21.45	0.000	$7.87	$0	$97
	60,000	69,999	$83	$21.45	0.000	$7.87	$0	$83
	70,000	79,999	$0	$21.45	0.000	$7.87	$0	$0
	80,000	89,999	$0	$21.45	0.000	$7.87	$0	$0
	90,000	99,999	$0	$21.45	0.000	$7.87	$0	$0
	100,000	109,999	$0	$21.45	0.000	$7.87	$0	$0
	110,000	119,999	$0	$21.45	0.000	$7.87	$0	$0
	120,000	129,999	$0	$21.45	0.000	$7.87	$0	$0
	130,000	139,999	$0	$21.45	0.000	$7.87	$0	$0
	140,000	69,000	$0	$21.45	0.000	$7.87	$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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
	0	999	$1,121	$21.85	0.000	$7.87	$9	$1,130
	1,000	1,999	$1,121	$21.85	0.000	$7.87	$8	$1,129
	2,000	2,999	$2,171	$21.85	0.000	$7.87	$7	$2,178
	3,000	3,999	$2,079	$21.85	0.000	$7.87	$6	$2,085
	4,000	4,999	$1,980	$21.85	0.000	$7.87	$6	$1,986
	5,000	5,999	$1,277	$21.85	0.000	$7.87	$4	$1,281
	6,000	6,999	$1,107	$21.85	0.000	$7.87	$3	$1,111
	7,000	7,999	$908	$21.85	0.000	$7.87	$3	$910
	8,000	8,999	$881	$21.85	0.000	$7.87	$3	$884
	9,000	9,999	$741	$21.85	0.000	$7.87	$2	$744
	10,000	14,999	$2,848	$21.85	0.000	$7.87	$9	$2,856
	15,000	19,999	$2,449	$21.85	0.000	$7.87	$8	$2,457
	20,000	24,999	$1,985	$21.85	0.000	$7.87	$6	$1,991
1" Meter In City	25,000	29,999	$1,123	$21.85	0.000	$7.87	$3	$1,127
	30,000	34,999	$782	$21.85	0.000	$7.87	$2	$784
	35,000	44,999	$649	$21.85	0.000	$7.87	$2	$651
	45,000	54,999	$133	$21.85	0.000	$7.87	$0	$133
	55,000	64,999	$110	$21.85	0.000	$7.87	$0	$110
	65,000	74,999	$66	$21.85	0.000	$7.87	$0	$67
	75,000	84,999	$66	$21.85	0.000	$7.87	$0	$67
	85,000	94,999	$66	$21.85	0.000	$7.87	$0	$67
	95,000	104,999	$66	$21.85	0.000	$7.87	$0	$67
	105,000	114,999	$66	$21.85	0.000	$7.87	$0	$67
	115,000	124,999	$63	$21.85	0.000	$7.87	$0	$63
	125,000	134,999	$0	$21.85	0.000	$7.87	$0	$0
	135,000	144,999	$0	$21.85	0.000	$7.87	$0	$0
	145,000	121,000	$0	$21.85	0.000	$7.87	$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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
1 1/2" Meter In City	0	999	$0	$22.52	0.000	$7.87	$6	$6
	1,000	1,999	$23	$22.52	0.000	$7.87	$6	$29
	2,000	2,999	$1,826	$22.52	0.000	$7.87	$6	$1,832
	3,000	3,999	$1,843	$22.52	0.000	$7.87	$6	$1,849
	4,000	4,999	$1,870	$22.52	0.000	$7.87	$6	$1,876
	5,000	5,999	$1,883	$22.52	0.000	$7.87	$6	$1,889
	6,000	6,999	$1,867	$22.52	0.000	$7.87	$6	$1,873
	7,000	7,999	$1,877	$22.52	0.000	$7.87	$6	$1,883
	8,000	8,999	$1,801	$22.52	0.000	$7.87	$6	$1,806
	9,000	9,999	$1,848	$22.52	0.000	$7.87	$6	$1,854
	10,000	14,999	$7,661	$22.52	0.000	$7.87	$24	$7,685
	15,000	19,999	$5,687	$22.52	0.000	$7.87	$18	$5,705
	20,000	24,999	$4,069	$22.52	0.000	$7.87	$13	$4,081
	25,000	29,999	$2,639	$22.52	0.000	$7.87	$8	$2,647
	30,000	34,999	$1,944	$22.52	0.000	$7.87	$6	$1,950
	35,000	44,999	$2,553	$22.52	0.000	$7.87	$8	$2,561
	45,000	54,999	$1,438	$22.52	0.000	$7.87	$5	$1,443
	55,000	64,999	$1,080	$22.52	0.000	$7.87	$3	$1,083
	65,000	74,999	$794	$22.52	0.000	$7.87	$3	$797
	75,000	84,999	$482	$22.52	0.000	$7.87	$2	$483
	85,000	94,999	$379	$22.52	0.000	$7.87	$1	$380
	95,000	104,999	$210	$22.52	0.000	$7.87	$1	$210
	105,000	114,999	$37	$22.52	0.000	$7.87	$0	$37
	115,000	124,999	$0	$22.52	0.000	$7.87	$0	$0
	125,000	134,999	$0	$22.52	0.000	$7.87	$0	$0
	135,000	144,999	$0	$22.52	0.000	$7.87	$0	$0
	145,000	107,000	$0	$22.52	0.000	$7.87	$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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
	0	999	$1,658	$23.32	0.000	$7.87	$11	$1,669
	1,000	1,999	$444	$23.32	0.000	$7.87	$8	$451
	2,000	2,999	$2,240	$23.32	0.000	$7.87	$7	$2,247
	3,000	3,999	$2,150	$23.32	0.000	$7.87	$7	$2,157
	4,000	4,999	$1,954	$23.32	0.000	$7.87	$6	$1,960
	5,000	5,999	$1,741	$23.32	0.000	$7.87	$6	$1,746
	6,000	6,999	$1,798	$23.32	0.000	$7.87	$6	$1,803
	7,000	7,999	$1,771	$23.32	0.000	$7.87	$6	$1,777
	8,000	8,999	$1,665	$23.32	0.000	$7.87	$5	$1,670
	9,000	9,999	$1,521	$23.32	0.000	$7.87	$5	$1,526
	10,000	14,999	$7,101	$23.32	0.000	$7.87	$23	$7,124
	15,000	19,999	$6,790	$23.32	0.000	$7.87	$22	$6,811
	20,000	24,999	$6,270	$23.32	0.000	$7.87	$20	$6,290
2" Meter In City	25,000	29,999	$5,116	$23.32	0.000	$7.87	$16	$5,132
	30,000	34,999	$4,536	$23.32	0.000	$7.87	$14	$4,551
	35,000	44,999	$5,962	$23.32	0.000	$7.87	$19	$5,981
	45,000	54,999	$3,416	$23.32	0.000	$7.87	$11	$3,427
	55,000	64,999	$2,272	$23.32	0.000	$7.87	$7	$2,279
	65,000	74,999	$1,973	$23.32	0.000	$7.87	$6	$1,980
	75,000	84,999	$1,591	$23.32	0.000	$7.87	$5	$1,596
	85,000	94,999	$1,326	$23.32	0.000	$7.87	$4	$1,330
	95,000	104,999	$897	$23.32	0.000	$7.87	$3	$900
	105,000	114,999	$714	$23.32	0.000	$7.87	$2	$716
	115,000	124,999	$495	$23.32	0.000	$7.87	$2	$497
	125,000	134,999	$336	$23.32	0.000	$7.87	$1	$337
	135,000	144,999	$266	$23.32	0.000	$7.87	$1	$267
	145,000	202,000	$1,063	$23.32	0.000	$7.87	$3	$1,066

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
	0	999	$70	$25.46	0.000	$7.87	$1	$71
	1,000	1,999	$140	$25.46	0.000	$7.87	$1	$141
	2,000	2,999	$229	$25.46	0.000	$7.87	$1	$230
	3,000	3,999	$159	$25.46	0.000	$7.87	$1	$160
	4,000	4,999	$159	$25.46	0.000	$7.87	$1	$160
	5,000	5,999	$159	$25.46	0.000	$7.87	$1	$160
	6,000	6,999	$159	$25.46	0.000	$7.87	$1	$160
	7,000	7,999	$159	$25.46	0.000	$7.87	$1	$160
	8,000	8,999	$159	$25.46	0.000	$7.87	$1	$160
	9,000	9,999	$159	$25.46	0.000	$7.87	$1	$160
	10,000	14,999	$797	$25.46	0.000	$7.87	$3	$800
	15,000	19,999	$817	$25.46	0.000	$7.87	$3	$820
	20,000	24,999	$664	$25.46	0.000	$7.87	$2	$666
3" Meter In City	25,000	29,999	$674	$25.46	0.000	$7.87	$2	$676
	30,000	34,999	$631	$25.46	0.000	$7.87	$2	$633
	35,000	44,999	$1,173	$25.46	0.000	$7.87	$4	$1,177
	45,000	54,999	$751	$25.46	0.000	$7.87	$2	$753
	55,000	64,999	$605	$25.46	0.000	$7.87	$2	$607
	65,000	74,999	$409	$25.46	0.000	$7.87	$1	$410
	75,000	84,999	$332	$25.46	0.000	$7.87	$1	$333
	85,000	94,999	$296	$25.46	0.000	$7.87	$1	$297
	95,000	104,999	$136	$25.46	0.000	$7.87	$0	$137
	105,000	114,999	$66	$25.46	0.000	$7.87	$0	$67
	115,000	124,999	$66	$25.46	0.000	$7.87	$0	$67
	125,000	134,999	$66	$25.46	0.000	$7.87	$0	$67
	135,000	144,999	$66	$25.46	0.000	$7.87	$0	$67
	145,000	179,000	$249	$25.46	0.000	$7.87	$1	$250

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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
	0	999	$303	$27.88	0.000	$7.87	$3	$306
	1,000	1,999	$70	$27.88	0.000	$7.87	$2	$72
	2,000	2,999	$619	$27.88	0.000	$7.87	$2	$621
	3,000	3,999	$485	$27.88	0.000	$7.87	$2	$487
	4,000	4,999	$446	$27.88	0.000	$7.87	$1	$447
	5,000	5,999	$389	$27.88	0.000	$7.87	$1	$390
	6,000	6,999	$306	$27.88	0.000	$7.87	$1	$307
	7,000	7,999	$276	$27.88	0.000	$7.87	$1	$277
	8,000	8,999	$286	$27.88	0.000	$7.87	$1	$287
	9,000	9,999	$239	$27.88	0.000	$7.87	$1	$240
	10,000	14,999	$1,212	$27.88	0.000	$7.87	$4	$1,216
	15,000	19,999	$1,159	$27.88	0.000	$7.87	$4	$1,163
	20,000	24,999	$1,156	$27.88	0.000	$7.87	$4	$1,160
4" Meter In City	25,000	29,999	$996	$27.88	0.000	$7.87	$3	$999
	30,000	34,999	$1,000	$27.88	0.000	$7.87	$3	$1,003
	35,000	44,999	$1,910	$27.88	0.000	$7.87	$6	$1,916
	45,000	54,999	$1,667	$27.88	0.000	$7.87	$5	$1,673
	55,000	64,999	$1,594	$27.88	0.000	$7.87	$5	$1,599
	65,000	74,999	$1,594	$27.88	0.000	$7.87	$5	$1,599
	75,000	84,999	$1,594	$27.88	0.000	$7.87	$5	$1,599
	85,000	94,999	$1,594	$27.88	0.000	$7.87	$5	$1,599
	95,000	104,999	$1,594	$27.88	0.000	$7.87	$5	$1,599
	105,000	114,999	$1,594	$27.88	0.000	$7.87	$5	$1,599
	115,000	124,999	$1,591	$27.88	0.000	$7.87	$5	$1,596
	125,000	134,999	$1,528	$27.88	0.000	$7.87	$5	$1,533
	135,000	144,999	$1,528	$27.88	0.000	$7.87	$5	$1,533
	145,000	947,000	$66,198	$27.88	0.000	$7.87	$214	$66,412
No Meter in City (Assume 1")	0	999	$3,133	$50.50	0.000	$0.00	$8	$3,141
	1,000	1,999	$0	$50.50	0.000	$0.00	$0	$0
	2,000	2,999	$0	$50.50	0.000	$0.00	$0	$0
No Meter Out of City (Assume 1")	0	999	$2,639	$50.50	0.000	$0.00	$7	$2,645
	1,000	1,999	$0	$50.50	0.000	$0.00	$0	$0
	2,000	2,999	$0	$50.50	0.000	$0.00	$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	Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
All Weather Sewer Service, Inc.	0	999	$251	$458.06	23.810	$24.82	$1	$252
	1,000	1,999	$251	$458.06	23.810	$24.82	$1	$252
	2,000	2,999	$251	$458.06	23.810	$24.82	$1	$252
	3,000	3,999	$251	$458.06	23.810	$24.82	$1	$252
	4,000	4,999	$251	$458.06	23.810	$24.82	$1	$252
	5,000	5,999	$251	$458.06	23.810	$24.82	$1	$252
	6,000	6,999	$251	$458.06	23.810	$24.82	$1	$252
	7,000	7,999	$251	$458.06	23.810	$24.82	$1	$252
	8,000	8,999	$251	$458.06	23.810	$24.82	$1	$252
	9,000	9,999	$251	$458.06	23.810	$24.82	$1	$252
	10,000	14,999	$1,256	$458.06	23.810	$24.82	$4	$1,260
	15,000	19,999	$1,256	$458.06	23.810	$24.82	$4	$1,260
	20,000	29,999	$2,513	$458.06	23.810	$24.82	$8	$2,521
	30,000	39,999	$2,513	$458.06	23.810	$24.82	$8	$2,521
	40,000	49,999	$2,513	$458.06	23.810	$24.82	$8	$2,521
	50,000	59,999	$2,513	$458.06	23.810	$24.82	$8	$2,521
	60,000	69,999	$7,663	$458.06	23.810	$24.82	$20	$7,683
Total Rate Revenue at Current Rates			$715,741	Total Rate Revenue at Modeled Rates			$2,610	
				Total Blended Rate Revenues for the Year				$718,351

Note: New Minimum Charge Base Rates: If meter size-based minimum charges are to be used, and the user classes modeled above include meter or connection sizes, the amounts shown in this column include meter size surcharges as calculated in Table 16. Either way, the narrative report includes the rates and surcharges to assess.

12.0	months at the old user charge rates	and	0.0	months at the new user charge rates.

Table 11 - Capacity Costs

Hillsboro, Missouri, 2020 Sewer Rates Model 2

System capacity and connection costs WILL be recovered in one way by default, or a combination of ways by design. That could be through regular user fees, in which case existing customers pay the costs to bring on new customers. It could be through system development or connection fees, in which case new customers pay "up front" for the capacity they are granted. It could be through on-going capacity surcharges added to minimum charges, preferably based on meter or connection size, in which case each customer pays for the capacity they are granted over time. Or, it could be by a combination of these. This table shows capacity costs to expect. From these costs, system development fees and surcharges were developed in Tables 13 through 16.

Peak and Base Flow Capacity Costs

	Fixed Assets Original Value (Capacity Cost)	% of Value Attributable to Peak Flow Capacity	Peak Flow Capacity Cost	Annual Peak Flow Capacity Cost (40-year Depreciation)	% of Value Attributable to Base Flow Capacity	Base Flow Capacity Cost	Annual Base Flow Capacity Cost (40-year Depreciation)
	$711,739	50.0%	$355,870	$20,739	50.0%	$355,870	$20,739
Totals	$711,739		$355,870	$20,739		$355,870	$20,739

How Capacity Costs Will Be Recovered

These costs are modeled to be recovered from system development fees in Table 14

Peak Flow Capacity Costs to be Recovered by System Development Fees

73.850%	Target Percentage of Costs to Recover
$15,316	Target Portion of Costs to Recover
$1,000	Cost per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by System Development Fees

0.0%	Target Percentage of Costs to Recover
$0	Target Portion of Costs to Recover
$0	Base Capacity Cost per New Customer Connected

In addition to calculation of the capacity cost for each new connection based on the unit cost above, the system development fee for each new connection should also include recovery of the following costs:

$100	Average Field Cost per New Connection
$50	Average Administration Cost per New Connection
$150	Field and Admin Cost per New Connection
$150	Base Cost to Recover per New Connection

These costs are modeled to be recovered from minimum charge surcharges in Table 16

Peak Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

26.2%	Target Percentage of Costs to Recover
$5,423	Target Portion of Costs to Recover in One Full Year
$452	Target Portion of Costs to Recover in Monthly Surcharges
$0.27	Monthly Surcharge per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

0.0%	Target Percentage of Costs to Recover
$0	Target Portion of Costs to Recover in One Full Year
$0	Target Portion of Costs to Recover in Monthly Surcharges
$0.00	Monthly Base Flow Surcharge per Bill

Note: Non-capital costs, such as field costs for inspection of connections and administration costs, should be recovered by fees charged for providing the services involved. These costs are in addition to peak flow capacity costs. If your system's basic costs to sign up and connect new customers is different than assumed above, adjust your final fees accordingly.

Table 13 - System Development Fees
Hillsboro, Missouri, 2020 Sewer Rates Model 2

This table calculates system development fees to charge each meter size.

Note: Larger meter sizes are available in two or more types, each having different flow capacities. To be conservative when projecting revenues, it was assumed all meters in use are of the lowest capacity types. However, when setting fees, they should be based upon the type of meter in use at each location.

In-City

Meter Size	Meter Type	AWWA Capacity "Share" Factor, Compared to 5/8 Inch Meter	Foot Notes	Cost per Peak Flow Capacity Share From Table 11	Out of City Multiplier From Table 10	Adjusted Peak Capacity Cost Each Meter Size	Peak Plus Base Capacity Cost	Field and Admin Cost per New Connection	System Development Fee
Five Eighths	Displacement	1.0		$1,000	100%	$1,000	$1,000	$150	$1,150
Three Quarters	Displacement	1.0	1	$1,000	100%	$1,000	$1,000	$150	$1,150
One Inch	Displacement	2.5		$1,000	100%	$2,500	$2,500	$150	$2,650
One & a Half Inch	Displacement	5.0		$1,000	100%	$5,000	$5,000	$150	$5,150
Two Inch	Displacement	8.0		$1,000	100%	$8,001	$8,001	$150	$8,151
Two & a Half Inch	Displacement	12.5	2	$1,000	100%	$12,501	$12,501	$150	$12,651
Three Inch	Singlet	16.0		$1,000	100%	$16,001	$16,001	$150	$16,151
Three Inch	Compound, Class I	16.0		$1,000	100%	$16,001	$16,001	$150	$16,151
Three Inch	Turbine, Class I	17.5		$1,000	100%	$17,501	$17,501	$150	$17,651
Four Inch	Singlet	25.0		$1,000	100%	$25,002	$25,002	$150	$25,152
Four Inch	Compound, Class I	25.0		$1,000	100%	$25,002	$25,002	$150	$25,152
Four Inch	Turbine, Class I	31.0		$1,000	100%	$31,002	$31,002	$150	$31,152
Six Inch	Singlet	50.0		$1,000	100%	$50,003	$50,003	$150	$50,153
Six Inch	Compound, Class I	50.0		$1,000	100%	$50,003	$50,003	$150	$50,153
Six Inch	Turbine, Class I	65.0		$1,000	100%	$65,004	$65,004	$150	$65,154
Eight Inch	Compound, Class I	80.0		$1,000	100%	$80,005	$80,005	$150	$80,155
Eight Inch	Turbine, Class I	140.0		$1,000	100%	$140,009	$140,009	$150	$140,159

Table 13 - System Development Fees

Hillsboro, Missouri, 2020 Sewer Rates Model 2

Out-of-City

Meter Size	Meter Type	AWWA Capacity "Share" Factor, Compared to 5/8 Inch Meter	Foot Notes	Cost per Peak Flow Capacity Share From Table 11	Out of City Multiplier From Table 10	Adjusted Peak Capacity Cost Each Meter Size	Peak Plus Base Capacity Cost	Field and Admin Cost per New Connection	System Development Fee
Five Eighths	Displacement	1.0		$1,000	150%	$1,500	$1,500	$150	$1,650
Three Quarters	Displacement	1.0	1	$1,000	150%	$1,500	$1,500	$150	$1,650
One Inch	Displacement	2.5		$1,000	150%	$3,750	$3,750	$150	$3,900
One & a Half Inch	Displacement	5.0		$1,000	150%	$7,500	$7,500	$150	$7,650
Two Inch	Displacement	8.0		$1,000	150%	$12,001	$12,001	$150	$12,151
Two & a Half Inch	Displacement	12.5	2	$1,000	150%	$18,751	$18,751	$150	$18,901
Three Inch	Singlet	16.0		$1,000	150%	$24,002	$24,002	$150	$24,152
Three Inch	Compound, Class I	16.0		$1,000	150%	$24,002	$24,002	$150	$24,152
Three Inch	Turbine, Class I	17.5		$1,000	150%	$26,252	$26,252	$150	$26,402
Four Inch	Singlet	25.0		$1,000	150%	$37,502	$37,502	$150	$37,652
Four Inch	Compound, Class I	25.0		$1,000	150%	$37,502	$37,502	$150	$37,652
Four Inch	Turbine, Class I	31.0		$1,000	150%	$46,503	$46,503	$150	$46,653
Six Inch	Singlet	50.0		$1,000	150%	$75,005	$75,005	$150	$75,155
Six Inch	Compound, Class I	50.0		$1,000	150%	$75,005	$75,005	$150	$75,155
Six Inch	Turbine, Class I	65.0		$1,000	150%	$97,506	$97,506	$150	$97,656
Eight Inch	Compound, Class I	80.0		$1,000	150%	$120,008	$120,008	$150	$120,158
Eight Inch	Turbine, Class I	140.0		$1,000	150%	$210,014	$210,014	$150	$210,164

Foot Notes, which apply to Tables 14, 15 and 16, as well:

[1] The Three-Quarter-Inch meter capacity share factor is 1.5. However, it was set equal to the Five-eighths-Inch meter because most such meters are used for residential connections. This enables a uniform system development fee for almost all residential customers.

[2] These meter sizes were not included in AWWA study results, so these values are estimates.

Economy of Scale Adjustments: As meter size rises, capacity to pass peak flow rises. However, costs to build that capacity do not rise as rapidly. Therefore, peak flow capacity shares were adjusted downward by an estimated cost savings factor to account for that savings. Economy of scale savings do not apply to base costs because all connections are afforded the same level of base flow capacity.

Table 14 - Revenues From System Development Fees

Hillsboro, Missouri, 2020 Sewer Rates Model 2

This table calculates total fee revenues that would be generated during one full year at the fees in Table 13.

In-City

Meter Size	Meter Type	Mix of New Taps in a Typical Year	Capacity Shares After Economy of Scale Adj	Adjusted Annual Growth in Capacity Shares	Adjusted Peak Capacity Fees, One Full Year	Adjusted Admin and Field Fees, One Full Year	**System Development Fee Revenues, One Full Year**
Five Eighths	Displacement	0.0	1.0	0.0	$0	$0	**$0**
Three Quarters	Displacement	9.1	1.0	9.1	$9,067	$1,360	**$10,427**
One Inch	Displacement	0.3	2.5	0.8	$767	$46	**$813**
One & a Half Inch	Displacement	0.2	5.0	1.0	$1,040	$31	**$1,071**
Two Inch	Displacement	0.3	8.0	2.3	$2,334	$44	**$2,378**
Two & a Half Inch	Displacement	0.0	12.5	0.0	$0	$0	**$0**
Three Inch	Singlet	0.0	16.0	0.4	$434	$4	**$438**
Three Inch	Compound, Class I	0.0	16.0	0.0	$0	$0	**$0**
Three Inch	Turbine, Class I	0.0	17.5	0.0	$0	$0	**$0**
Four Inch	Singlet	0.1	25.0	1.6	$1,583	$9	**$1,592**
Four Inch	Compound, Class I	0.0	25.0	0.0	$0	$0	**$0**
Four Inch	Turbine, Class I	0.0	31.0	0.0	$0	$0	**$0**
Six Inch	Singlet	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Compound, Class I	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Turbine, Class I	0.0	65.0	0.0	$0	$0	**$0**
Eight Inch	Compound, Class I	0.0	80.0	0.0	$0	$0	**$0**
Eight Inch	Turbine, Class I	0.0	140.0	0.0	$0	$0	**$0**
	Subtotal:	10.0		15.2	$15,226	$1,495	**$16,720**

Out-of-City

Five Eighths	Displacement	0.0	1.0	0.0	$0	$0	**$0**
Three Quarters	Displacement	0.0	1.0	0.0	$0	$0	**$0**
One Inch	Displacement	0.0	2.5	0.1	$136	$5	**$141**
One & a Half Inch	Displacement	0.0	5.0	0.0	$0	$0	**$0**
Two Inch	Displacement	0.0	8.0	0.0	$0	$0	**$0**
Two & a Half Inch	Displacement	0.0	12.5	0.0	$0	$0	**$0**
Three Inch	Singlet	0.0	16.0	0.0	$0	$0	**$0**
Three Inch	Compound, Class I	0.0	16.0	0.0	$0	$0	**$0**
Three Inch	Turbine, Class I	0.0	17.5	0.0	$0	$0	**$0**
Four Inch	Singlet	0.0	25.0	0.0	$0	$0	**$0**
Four Inch	Compound, Class I	0.0	25.0	0.0	$0	$0	**$0**
Four Inch	Turbine, Class I	0.0	31.0	0.0	$0	$0	**$0**
Six Inch	Singlet	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Compound, Class I	0.0	50.0	0.0	$0	$0	**$0**
Six Inch	Turbine, Class I	0.0	65.0	0.0	$0	$0	**$0**
Eight Inch	Compound, Class I	0.0	80.0	0.0	$0	$0	**$0**
Eight Inch	Turbine, Class I	0.0	140.0	0.0	$0	$0	**$0**
	Subtotal:	0.0		0.1	$136	$5	**$141**
	Total:	10.0		15.3	$15,361	$1,500	**$16,861**

This is the amount used to calculate the "Meter Size-based System Development Fees" income in Table 3.

Table 15 - Minimum Charge Fees, Including Capacity Surcharges

Hillsboro, Missouri, 2020 Sewer Rates Model 2

This table does, essentially, the same thing as Table 13, except costs are recovered over time as minimum charge surcharges.

In-City

Meter Size	Meter Type	Monthly Peak Capacity-only Cost per Capacity Share	Uniform Adj to Peak Capacity Cost	Peak Plus Base Capacity Cost	Adjusted Peak Capacity-only Surcharge Revenues	Cost to Serve Minimum From Table 10	Monthly Minimum Charge
Five Eighths	Displacement	$0.27	$0.00	$0.27	$0	$21.18	$21.45
Three Quarters	Displacement	$0.27	$0.00	$0.27	$3,222	$21.18	$21.45
One Inch	Displacement	$0.67	$0.00	$0.67	$273	$21.18	$21.85
One & a Half Inch	Displacement	$1.34	$0.00	$1.34	$370	$21.18	$22.52
Two Inch	Displacement	$2.14	$0.00	$2.14	$829	$21.18	$23.32
Two & a Half Inch	Displacement	$3.35	$0.00	$3.35	$0	$21.18	$24.53
Three Inch	Singlet	$4.29	$0.00	$4.29	$154	$21.18	$25.46
Three Inch	Compound, Class I	$4.29	$0.00	$4.29	$0	$21.18	$25.46
Three Inch	Turbine, Class I	$4.69	$0.00	$4.69	$0	$21.18	$25.87
Four Inch	Singlet	$6.70	$0.00	$6.70	$563	$21.18	$27.88
Four Inch	Compound, Class I	$6.70	$0.00	$6.70	$0	$21.18	$27.88
Four Inch	Turbine, Class I	$8.30	$0.00	$8.30	$0	$21.18	$29.48
Six Inch	Singlet	$13.39	$0.00	$13.39	$0	$21.18	$34.57
Six Inch	Compound, Class I	$13.39	$0.00	$13.39	$0	$21.18	$34.57
Six Inch	Turbine, Class I	$17.41	$0.00	$17.41	$0	$21.18	$38.59
Eight Inch	Compound, Class I	$21.43	$0.00	$21.43	$0	$21.18	$42.61
Eight Inch	Turbine, Class I	$37.50	$0.00	$37.50	$0	$21.18	$58.68

Out-of-City

Five Eighths	Displacement	$0.40	$0.00	$0.40	$0	$21.18	$21.58
Three Quarters	Displacement	$0.40	$0.00	$0.40	$0	$21.18	$21.58
One Inch	Displacement	$1.00	$0.00	$1.00	$48	$21.18	$22.18
One & a Half Inch	Displacement	$2.01	$0.00	$2.01	$0	$21.18	$23.19
Two Inch	Displacement	$3.21	$0.00	$3.21	$0	$21.18	$24.39
Two & a Half Inch	Displacement	$5.02	$0.00	$5.02	$0	$21.18	$26.20
Three Inch	Singlet	$6.43	$0.00	$6.43	$0	$21.18	$27.61
Three Inch	Compound, Class I	$6.43	$0.00	$6.43	$0	$21.18	$27.61
Three Inch	Turbine, Class I	$7.03	$0.00	$7.03	$0	$21.18	$28.21
Four Inch	Singlet	$10.04	$0.00	$10.04	$0	$21.18	$31.22
Four Inch	Compound, Class I	$10.04	$0.00	$10.04	$0	$21.18	$31.22
Four Inch	Turbine, Class I	$12.46	$0.00	$12.46	$0	$21.18	$33.63
Six Inch	Singlet	$20.09	$0.00	$20.09	$0	$21.18	$41.27
Six Inch	Compound, Class I	$20.09	$0.00	$20.09	$0	$21.18	$41.27
Six Inch	Turbine, Class I	$26.12	$0.00	$26.12	$0	$21.18	$47.30
Eight Inch	Compound, Class I	$32.14	$0.00	$32.14	$0	$21.18	$53.32
Eight Inch	Turbine, Class I	$56.25	$0.00	$56.25	$0	$21.18	$77.43

Table 16 - Revenues From Minimum Charges

Hillsboro, Missouri, 2020 Sewer Rates Model 2

This table calculates total minimum charge surcharge revenues that would be generated during one full year at the fees in Table 15.

Meter Size	Meter Type	Capacity Shares After Economy of Scale Adj	Current Number Meters This Size	Total Adjusted Capacity Shares	Adjusted Peak Capacity-only Surcharge Revenues	Base Capacity-only Surcharge Revenues	Capacity Surcharges for One Full Year
In-City							
Five Eighths	Displacement	1.0	0	0	$0	$0	$0
Three Quarters	Displacement	1.0	1,002	1,002	$3,222	$0	$3,222
One Inch	Displacement	2.5	34	85	$273	$0	$273
One & a Half Inch	Displacement	5.0	23	115	$370	$0	$370
Two Inch	Displacement	8.0	32	258	$829	$0	$829
Two & a Half Inch	Displacement	12.5	0	0	$0	$0	$0
Three Inch	Singlet	16.0	3	48	$154	$0	$154
Three Inch	Compound, Class I	16.0	0	0	$0	$0	$0
Three Inch	Turbine, Class I	17.5	0	0	$0	$0	$0
Four Inch	Singlet	25.0	7	175	$563	$0	$563
Four Inch	Compound, Class I	25.0	0	0	$0	$0	$0
Four Inch	Turbine, Class I	31.0	0	0	$0	$0	$0
Six Inch	Singlet	50.0	0	0	$0	$0	$0
Six Inch	Compound, Class I	50.0	0	0	$0	$0	$0
Six Inch	Turbine, Class I	65.0	0	0	$0	$0	$0
Eight Inch	Compound, Class I	80.0	0	0	$0	$0	$0
Eight Inch	Turbine, Class I	140.0	0	0	$0	$0	$0
		Subtotal:	1,102	1,683	$5,411	$0	$5,411
Out-of-City							
Five Eighths	Displacement	1.0	0	0	$0	$0	$0
Three Quarters	Displacement	1.0	0	0	$0	$0	$0
One Inch	Displacement	2.5	4	4	$48	$0	$48
One & a Half Inch	Displacement	5.0	0	0	$0	$0	$0
Two Inch	Displacement	8.0	0	0	$0	$0	$0
Two & a Half Inch	Displacement	12.5	0	0	$0	$0	$0
Three Inch	Singlet	16.0	0	0	$0	$0	$0
Three Inch	Compound, Class I	16.0	0	0	$0	$0	$0
Three Inch	Turbine, Class I	17.5	0	0	$0	$0	$0
Four Inch	Singlet	25.0	0	0	$0	$0	$0
Four Inch	Compound, Class I	25.0	0	0	$0	$0	$0
Four Inch	Turbine, Class I	31.0	0	0	$0	$0	$0
Six Inch	Singlet	50.0	0	0	$0	$0	$0
Six Inch	Compound, Class I	50.0	0	0	$0	$0	$0
Six Inch	Turbine, Class I	65.0	0	0	$0	$0	$0
Eight Inch	Compound, Class I	80.0	0	0	$0	$0	$0
Eight Inch	Turbine, Class I	140.0	0	0	$0	$0	$0
		Subtotal:	4	4	$48	$0	$48
		Total:	1,106	1,687	$5,459	$0	$5,459

Table 17 - Financial Capacity Indicators and Reserves

Hillsboro, Missouri, 2020 Sewer Rates Model 2

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 7/1/18	0 Year Starting 7/1/19	1st Year Starting 7/1/20	2nd Year Starting 7/1/21	3rd Year Starting 7/1/22	4th Year Starting 7/1/23	5th Year Starting 7/1/24	6th Year Starting 7/1/25	7th Year Starting 7/1/26	8th Year Starting 7/1/27	9th Year Starting 7/1/28	10th Year Starting 7/1/29
Customary Affordability Index												
Monthly Bill for a 5,000 gal per Month, Small Meter Residential Customer	$43.39	$60.80	$62.62	$64.50	$66.43	$68.43	$70.48	$72.59	$74.77	$77.01	$79.33	$81.71
AMHI Within Service Area	$58,555	$60,367	$62,235	$64,160	$66,145	$68,192	$70,302	$72,477	$74,720	$77,032	$79,415	$81,872
Affordability Index: Current Rates First Column, Modeled Rates After That	0.89%	1.21%	1.21%	1.21%	1.21%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%

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 not consider awarding grants if this indicator is less than 1.5 to 2.0%.

Low-income, Low-volume Affordability Index												
Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	$23.41	$37.19	$38.30	$39.45	$40.63	$41.85	$43.11	$44.40	$45.73	$47.11	$48.52	$49.98
Income at One-half the AMHI and Rising at One-half the Rate Above	$29,278	$29,730	$30,190	$30,657	$31,132	$31,613	$32,102	$32,599	$33,103	$33,616	$34,136	$34,664
Affordability for Low-income, Low-volume: Current Rates First Column, Modeled Rates After That	0.96%	1.50%	1.52%	1.54%	1.57%	1.59%	1.61%	1.63%	1.66%	1.68%	1.71%	1.73%

This additional indicator of affordability assumes a residential customer with income at one-half of 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.

Estimated Operating Ratio: Current Rates First Column, Modeled Rates After That	1.45	1.35	1.70	1.67	1.67	1.71	1.72	1.72	1.75	1.77	1.76	1.80

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 the OR implies.

Estimated Coverage Ratio: Current Rates First Column, Modeled Rates After That	2.36	0.54	1.10	1.22	1.15	1.19	1.14	1.17	1.25	1.29	1.35	1.44

Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments out of current incomes. OR applies only to years with debt service. 1.0 is break even. Generally, the CR should be at least 1.25. Note: If the utility has or will have reserves (shown below,) it has more ability to make debt payments than the CR implies.

Reserves	Balance Ending on 6/30/19	Balance Ending on 6/30/20	Balance Ending on 6/30/21	Balance Ending on 6/30/22	Balance Ending on 6/30/23	Balance Ending on 6/30/24	Balance Ending on 6/30/25	Balance Ending on 6/30/26	Balance Ending on 6/30/27	Balance Ending on 6/30/28	Balance Ending on 6/30/29	Balance Ending on 6/30/30
Cash and Cash Equivalents	$244,464	$267,577	$315,158	$331,682	$344,939	$350,813	$360,842	$375,430	$381,881	$392,912	$408,968	$416,051
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$244,464	$267,577	$315,158	$331,682	$344,939	$350,813	$360,842	$375,430	$381,881	$392,912	$408,968	$416,051
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$244,464	$267,577	$305,703	$312,080	$314,816	$310,572	$309,868	$312,723	$308,554	$307,942	$310,910	$316,295
Repair & Replacement	$18,978	$53,156	$65,332	$68,774	$67,053	$81,561	$136,064	$146,179	$155,820	$160,112	$120,046	$160,183
Debt and CIP Reserves	$65,722	-$108,455	-$82,884	-$160,167	-$172,499	-$249,311	-$201,582	-$140,715	-$40,131	$93,106	$253,246	$459,784
Sum of All Reserves	$329,165	$212,279	$297,607	$240,288	$239,493	$183,063	$295,325	$380,895	$497,570	$646,131	$782,260	$1,036,018

Table 18 - Bills Before and After Rate Adjustments

Hillsboro, Missouri, 2020 Sewer Rates Model 2

Revenue increase to be generated by the modeled rates 33.1%

If applicable, the revenue increase above includes meter size-based minimum charges calculated in Table 15. If rate classes shown below do not include meter size, the modeled bills below do not include those surcharges.

To reduce confusion, this table shows only example customer bills.

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
3/4" Meter In City	(15,000)	0	0	$23.41	$21.45	-$1.96
	0	0	0	$23.41	$21.45	-$1.96
	1,000	150	150	$23.41	$29.32	$5.91
	2,000	187	337	$23.41	$37.19	$13.78
	3,000	194	530	$30.07	$45.06	$14.99
	4,000	164	694	$36.73	$52.93	$16.20
	5,000	116	811	$43.39	$60.80	$17.41
	6,000	72	882	$50.05	$68.67	$18.62
	7,000	42	924	$56.71	$76.54	$19.83
	8,000	25	949	$63.37	$84.41	$21.04
	9,000	13	962	$70.03	$92.28	$22.25
	10,000	27	989	$76.69	$100.15	$23.46
	15,000	6	995	$109.99	$139.50	$29.51
	20,000	4	999	$143.29	$178.85	$35.56
	25,000	2	1,001	$176.59	$218.20	$41.61
	30,000	1	1,002	$209.89	$257.55	$47.66
1" Meter In City	0	4	4	$23.41	$21.85	-$1.56
	1,000	4	8	$23.41	$29.72	$6.31
	2,000	2	10	$23.41	$37.59	$14.18
	3,000	3	13	$30.07	$45.46	$15.39
	4,000	4	17	$36.73	$53.33	$16.60
	5,000	2	18	$43.39	$61.20	$17.81
	6,000	1	20	$50.05	$69.07	$19.02
	7,000	1	20	$56.71	$76.94	$20.23
	8,000	1	21	$63.37	$84.81	$21.44
	9,000	1	22	$70.03	$92.68	$22.65
	10,000	1	23	$76.69	$100.55	$23.86
	15,000	1	24	$109.99	$139.90	$29.91
	20,000	2	26	$143.29	$179.25	$35.96
	25,000	1	27	$176.59	$218.60	$42.01
	30,000	1	28	$209.89	$257.95	$48.06
	35,000	1	29	$243.19	$297.30	$54.11

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
1 1/2" Meter In City	0	0	0	$23.41	$22.52	-$0.89
	1,000	0	0	$23.41	$30.39	$6.98
	2,000	0	0	$23.41	$38.26	$14.85
	3,000	0	0	$30.07	$46.13	$16.06
	4,000	0	0	$36.73	$54.00	$17.27
	5,000	0	1	$43.39	$61.87	$18.48
	6,000	1	1	$50.05	$69.74	$19.69
	7,000	1	2	$56.71	$77.61	$20.90
	8,000	1	3	$63.37	$85.48	$22.11
	9,000	1	4	$70.03	$93.35	$23.32
	10,000	5	9	$76.69	$101.22	$24.53
	15,000	4	13	$109.99	$140.57	$30.58
	20,000	3	16	$143.29	$179.92	$36.63
	25,000	2	18	$176.59	$219.27	$42.68
	30,000	1	19	$209.89	$258.62	$48.73
	35,000	2	21	$243.19	$297.97	$54.78
	45,000	0	22	$309.79	$376.67	$66.88
	55,000	0	22	$376.39	$455.37	$78.98
	65,000	0	22	$442.99	$534.07	$91.08
	75,000	0	23	$509.59	$612.77	$103.18
2" Meter In City	0	6	6	$23.41	$23.32	-$0.09
	1,000	2	8	$23.41	$31.19	$7.78
	2,000	1	9	$23.41	$39.06	$15.65
	3,000	1	10	$30.07	$46.93	$16.86
	4,000	1	11	$36.73	$54.80	$18.07
	5,000	0	12	$43.39	$62.67	$19.28
	6,000	1	12	$50.05	$70.54	$20.49
	7,000	1	13	$56.71	$78.41	$21.70
	8,000	1	14	$63.37	$86.28	$22.91
	9,000	0	14	$70.03	$94.15	$24.12
	10,000	1	15	$76.69	$102.02	$25.33
	15,000	2	17	$109.99	$141.37	$31.38
	20,000	3	20	$143.29	$180.72	$37.43
	25,000	1	21	$176.59	$220.07	$43.48
	30,000	3	24	$209.89	$259.42	$49.53
	35,000	4	27	$243.19	$298.77	$55.58
	45,000	2	29	$309.79	$377.47	$67.68
	55,000	0	30	$376.39	$456.17	$79.78
	65,000	1	30	$442.99	$534.87	$91.88
	75,000	0	30	$509.59	$613.57	$103.98
	85,000	1	31	$576.19	$692.27	$116.08
	95,000	0	31	$642.79	$770.97	$128.18
	105,000	0	31	$709.39	$849.67	$140.28
	115,000	0	32	$775.99	$928.37	$152.38

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
3" Meter In City	0	0	0	$23.41	$25.46	$2.05
	1,000	1	1	$23.41	$33.33	$9.92
	2,000	0	1	$23.41	$41.20	$17.79
	3,000	0	1	$30.07	$49.07	$19.00
	4,000	0	1	$36.73	$56.94	$20.21
	5,000	0	1	$43.39	$64.81	$21.42
	6,000	0	1	$50.05	$72.68	$22.63
	7,000	0	1	$56.71	$80.55	$23.84
	8,000	0	1	$63.37	$88.42	$25.05
	9,000	0	1	$70.03	$96.29	$26.26
	10,000	0	1	$76.69	$104.16	$27.47
	15,000	0	1	$109.99	$143.51	$33.52
	20,000	0	1	$143.29	$182.86	$39.57
	25,000	0	1	$176.59	$222.21	$45.62
	30,000	0	1	$209.89	$261.56	$51.67
	35,000	1	2	$243.19	$300.91	$57.72
	45,000	0	2	$309.79	$379.61	$69.82
	55,000	0	3	$376.39	$458.31	$81.92
4" Meter In City	0	1	1	$23.41	$27.88	$4.47
	1,000	0	1	$23.41	$35.75	$12.34
	2,000	1	2	$23.41	$43.62	$20.21
	3,000	1	3	$30.07	$51.49	$21.42
	4,000	1	3	$36.73	$59.36	$22.63
	5,000	0	4	$43.39	$67.23	$23.84
	6,000	0	4	$50.05	$75.10	$25.05
	7,000	0	4	$56.71	$82.97	$26.26
	8,000	0	4	$63.37	$90.84	$27.47
	9,000	0	4	$70.03	$98.71	$28.68
	10,000	0	4	$76.69	$106.58	$29.89
	15,000	0	4	$109.99	$145.93	$35.94
	20,000	0	5	$143.29	$185.28	$41.99
	25,000	0	5	$176.59	$224.63	$48.04
	30,000	0	5	$209.89	$263.98	$54.09
	35,000	0	5	$243.19	$303.33	$60.14
	45,000	0	5	$309.79	$382.03	$72.24
	55,000	0	5	$376.39	$460.73	$84.34
	65,000	0	5	$442.99	$539.43	$96.44
	75,000	0	5	$509.59	$618.13	$108.54
	85,000	0	5	$576.19	$696.83	$120.64
	95,000	0	5	$642.79	$775.53	$132.74
	105,000	0	5	$709.39	$854.23	$144.84
	115,000	0	5	$775.99	$932.93	$156.94
	125,000	0	5	$842.59	$1,011.63	$169.04
	135,000	0	5	$909.19	$1,090.33	$181.14
	145,000	2	7	$975.79	$1,169.03	$193.24

Table 18 - Bills Before and After Rate Adjustments

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume and Below the Next	Customers up to and Including This Volume	Current Bill	Modeled Bill	Modeled Bill Increase or Decrease (-)
No Meter in City (Assume 1")	0	5	5	$55.12	$50.50	-$4.62
	145,000	0	5	$55.12	$50.50	-$4.62
No Meter Out of City (Assume 1")	0	4	4	$55.12	$50.50	-$4.62
	145,000	0	4	$55.12	$50.50	-$4.62
All Weather Sewer Service, Inc.	0	0	0	$500.00	$458.06	-$41.94
	50,000	0	0	$1,050.00	$1,107.98	$57.98
	60,000	1	1	$1,260.00	$1,356.14	$96.14

Table 19 - User Statistics

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This table shows measures of equitability, or "fairness," of the rates as modeled in Table 10. If debt, capacity or other surcharges were also calculated but not included in Table 10, this table does not take those fees into account.

If your rates were based only on volume of service, your % of Usage and % of Revenues figures would be the same within all the classes. While rates are not set up that way, it is still useful to make comparisons on that basis. This table does that, among other things.

Normally, the % of usage figure will be lower than the % of revenue for the lower volumes of use. That will switch for the higher volumes of use. Even for declining rate structures, this switch should occur near the volume of the average residential user, typically near 5,000 gallons/month (668 cu ft).

In urban and suburban areas the average monthly use for residential or general customers can be twice that used by their rural and "old town" counterparts. Use is largely dependent upon who lives in a community. Older people living in longer established neighborhoods tend to use less volume than younger people living in more recently developed areas. As you make comparisons between different customers and customer classes, keep that, and the following statistics about your rates in mind:

3,971	Gallons: This is the average residential customer's usage per Monthly billing cycle.

Usage allowance is the volume "given away" with the minimum charge. The higher the allowance, the less volume the utility can sell to generate income.

82,184,500	Gallons: The volume metered through customer meters that was available to be sold during the test year.
24,178,500	Gallons: The volume given away as a usage allowance during the test year.
$146,320	Revenue Loss: At the unit charge rate in effect during the test year, revenue lost due to the usage allowance.
$0	Revenue Loss: At the modeled unit charge rates and usage allowance (if any), revenue lost due to the usage allowance.

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
3/4" Meter In City	-15,000	-1	(15,000)	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	0	999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	9.9%
	1,000	1,999	1,799,000	149.9	3.7%	100.0%	13.5%	2.2%	5.9%	12.5%
	2,000	2,999	4,478,000	186.6	13.1%	96.3%	16.9%	5.4%	14.7%	11.6%
	3,000	3,999	6,966,000	193.5	27.7%	86.9%	17.5%	8.5%	12.8%	9.9%
	4,000	4,999	7,880,000	164.2	44.2%	72.3%	14.8%	9.6%	9.9%	7.5%
	5,000	5,999	6,985,000	116.4	58.8%	55.8%	10.5%	8.5%	6.7%	5.0%
	6,000	6,999	5,154,000	71.6	69.6%	41.2%	6.5%	6.3%	4.1%	3.1%
	7,000	7,999	3,507,000	41.8	77.0%	30.4%	3.8%	4.3%	2.5%	1.9%
	8,000	8,999	2,416,000	25.2	82.0%	23.0%	2.3%	2.9%	1.6%	1.2%
	9,000	9,999	1,413,000	13.1	85.0%	18.0%	1.2%	1.7%	1.0%	0.8%
	10,000	14,999	3,574,000	26.7	92.5%	15.0%	2.4%	4.3%	2.1%	1.7%
	15,000	19,999	1,283,000	6.3	95.1%	7.5%	0.6%	1.6%	0.8%	0.6%
	20,000	24,999	926,000	3.6	97.1%	4.9%	0.3%	1.1%	0.4%	0.3%
	25,000	29,999	616,000	1.9	98.4%	2.9%	0.2%	0.7%	0.2%	0.2%
	30,000	39,999	573,000	1.4	99.6%	1.6%	0.1%	0.7%	0.2%	0.1%
	40,000	49,999	87,000	0.2	99.7%	0.4%	0.0%	0.1%	0.0%	0.0%
	50,000	59,999	51,000	0.1	99.9%	0.3%	0.0%	0.1%	0.0%	0.0%
	60,000	69,999	69,000	0.1	100.0%	0.1%	0.0%	0.1%	0.0%	0.0%
		Totals for Class	47,762,000	1,002.4			90.6%	58.1%	62.9%	66.4%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
1" Meter In City	0	999	0	4.0	0.0%	100.0%	0.4%	0.0%	0.2%	0.4%
	1,000	1,999	48,000	4.0	1.6%	100.0%	0.4%	0.1%	0.2%	0.3%
	2,000	2,999	58,000	2.4	3.6%	98.4%	0.2%	0.1%	0.3%	0.3%
	3,000	3,999	105,000	2.9	7.2%	96.4%	0.3%	0.1%	0.3%	0.2%
	4,000	4,999	172,000	3.6	13.1%	92.8%	0.3%	0.2%	0.3%	0.2%
	5,000	5,999	90,000	1.5	16.2%	86.9%	0.1%	0.1%	0.2%	0.1%
	6,000	6,999	90,000	1.3	19.3%	83.8%	0.1%	0.1%	0.2%	0.1%
	7,000	7,999	63,000	0.8	21.5%	80.7%	0.1%	0.1%	0.1%	0.1%
	8,000	8,999	88,000	0.9	24.5%	78.5%	0.1%	0.1%	0.1%	0.1%
	9,000	9,999	63,000	0.6	26.6%	75.5%	0.1%	0.1%	0.1%	0.1%
	10,000	14,999	166,000	1.3	32.3%	73.4%	0.1%	0.2%	0.4%	0.3%
	15,000	19,999	223,000	1.1	40.0%	67.7%	0.1%	0.3%	0.3%	0.3%
	20,000	24,999	541,000	2.1	58.5%	60.0%	0.2%	0.7%	0.3%	0.2%
	25,000	29,999	264,000	0.8	67.5%	41.5%	0.1%	0.3%	0.2%	0.1%
	30,000	34,999	344,000	0.9	79.3%	32.5%	0.1%	0.4%	0.1%	0.1%
	35,000	44,999	424,000	0.9	93.9%	20.7%	0.1%	0.5%	0.1%	0.1%
	45,000	54,999	0	0.0	93.9%	6.1%	0.0%	0.0%	0.0%	0.0%
	55,000	64,999	58,000	0.1	95.9%	6.1%	0.0%	0.1%	0.0%	0.0%
	65,000	74,999	0	0.0	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
	75,000	84,999	0	0.0	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
	85,000	94,999	0	0.0	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
	95,000	104,999	0	0.0	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
	105,000	114,999	0	0.0	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
	115,000	124,999	121,000	0.1	100.0%	4.1%	0.0%	0.1%	0.0%	0.0%
	Totals for Class		2,918,000	29.2			2.6%	3.6%	3.3%	3.2%
1 1/2" Meter In City	0	999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.2%
	1,000	1,999	1,000	0.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.2%
	2,000	2,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.3%	0.2%
	3,000	3,999	3,000	0.1	0.1%	100.0%	0.0%	0.0%	0.3%	0.2%
	4,000	4,999	12,000	0.3	0.3%	99.9%	0.0%	0.0%	0.3%	0.2%
	5,000	5,999	25,000	0.4	0.7%	99.7%	0.0%	0.0%	0.3%	0.2%
	6,000	6,999	36,000	0.5	1.2%	99.3%	0.0%	0.0%	0.3%	0.2%
	7,000	7,999	63,000	0.8	2.3%	98.8%	0.1%	0.1%	0.3%	0.2%
	8,000	8,999	64,000	0.7	3.3%	97.7%	0.1%	0.1%	0.3%	0.2%
	9,000	9,999	126,000	1.2	5.3%	96.7%	0.1%	0.2%	0.3%	0.2%
	10,000	14,999	709,000	5.1	16.8%	94.7%	0.5%	0.9%	1.1%	0.9%
	15,000	19,999	824,000	4.1	30.2%	83.2%	0.4%	1.0%	0.8%	0.7%
	20,000	24,999	877,000	3.3	44.4%	69.8%	0.3%	1.1%	0.6%	0.5%
	25,000	29,999	532,000	1.7	53.0%	55.6%	0.2%	0.6%	0.4%	0.3%
	30,000	34,999	470,000	1.3	60.6%	47.0%	0.1%	0.6%	0.3%	0.2%
	35,000	44,999	857,000	1.8	74.5%	39.4%	0.2%	1.0%	0.4%	0.3%
	45,000	54,999	254,000	0.4	78.6%	25.5%	0.0%	0.3%	0.2%	0.2%
	55,000	64,999	177,000	0.3	81.4%	21.4%	0.0%	0.2%	0.2%	0.1%
	65,000	74,999	337,000	0.4	86.9%	18.6%	0.0%	0.4%	0.1%	0.1%
	75,000	84,999	227,000	0.3	90.6%	13.1%	0.0%	0.3%	0.1%	0.1%
	85,000	94,999	180,000	0.2	93.5%	9.4%	0.0%	0.2%	0.1%	0.0%
	95,000	104,999	296,000	0.3	98.3%	6.5%	0.0%	0.4%	0.0%	0.0%
	105,000	114,999	107,000	0.1	100.0%	1.7%	0.0%	0.1%	0.0%	0.0%
	Totals for Class		6,177,000	23.0			2.1%	7.5%	6.1%	5.7%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
	0	999	0	5.9	0.0%	100.0%	0.5%	0.0%	0.2%	0.4%
	1,000	1,999	19,000	1.6	0.2%	100.0%	0.1%	0.0%	0.1%	0.3%
	2,000	2,999	32,000	1.3	0.5%	99.8%	0.1%	0.0%	0.3%	0.3%
	3,000	3,999	51,000	1.4	1.1%	99.5%	0.1%	0.1%	0.3%	0.3%
	4,000	4,999	48,000	1.0	1.6%	98.9%	0.1%	0.1%	0.3%	0.2%
	5,000	5,999	20,000	0.3	1.8%	98.4%	0.0%	0.0%	0.2%	0.2%
	6,000	6,999	54,000	0.8	2.4%	98.2%	0.1%	0.1%	0.3%	0.2%
	7,000	7,999	77,000	0.9	3.2%	97.6%	0.1%	0.1%	0.2%	0.2%
	8,000	8,999	72,000	0.8	4.0%	96.8%	0.1%	0.1%	0.2%	0.2%
	9,000	9,999	36,000	0.3	4.4%	96.0%	0.0%	0.0%	0.2%	0.2%
	10,000	14,999	132,000	1.0	5.8%	95.6%	0.1%	0.2%	1.0%	0.9%
	15,000	19,999	304,000	1.5	9.0%	94.2%	0.1%	0.4%	0.9%	0.8%
	20,000	24,999	728,000	2.8	16.8%	91.0%	0.2%	0.9%	0.9%	0.8%
2" Meter In City	25,000	29,999	434,000	1.3	21.5%	83.2%	0.1%	0.5%	0.7%	0.6%
	30,000	34,999	1,042,000	2.8	32.6%	78.5%	0.2%	1.3%	0.6%	0.5%
	35,000	44,999	1,693,000	3.7	50.7%	67.4%	0.3%	2.1%	0.8%	0.7%
	45,000	54,999	1,160,000	2.0	63.1%	49.3%	0.2%	1.4%	0.5%	0.4%
	55,000	64,999	238,000	0.3	65.7%	36.9%	0.0%	0.3%	0.3%	0.3%
	65,000	74,999	416,000	0.5	70.1%	34.3%	0.0%	0.5%	0.3%	0.2%
	75,000	84,999	234,000	0.3	72.6%	29.9%	0.0%	0.3%	0.2%	0.2%
	85,000	94,999	620,000	0.6	79.3%	27.4%	0.1%	0.8%	0.2%	0.2%
	95,000	104,999	391,000	0.3	83.4%	20.7%	0.0%	0.5%	0.1%	0.1%
	105,000	114,999	109,000	0.1	84.6%	16.6%	0.0%	0.1%	0.1%	0.1%
	115,000	124,999	582,000	0.4	90.8%	15.4%	0.0%	0.7%	0.1%	0.1%
	125,000	134,999	132,000	0.1	92.2%	9.2%	0.0%	0.2%	0.0%	0.0%
	135,000	144,999	0	0.0	92.2%	7.8%	0.0%	0.0%	0.0%	0.0%
	145,000	202,000	726,000	0.3	100.0%	7.8%	0.0%	0.9%	0.1%	0.1%
	Totals for Class		9,350,000	32.3			2.9%	11.4%	9.4%	8.6%
	0	999	500	0.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	1,000	1,999	6,000	0.5	0.5%	100.0%	0.0%	0.0%	0.0%	0.0%
	2,000	2,999	6,000	0.3	0.9%	99.5%	0.0%	0.0%	0.0%	0.0%
	3,000	3,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	4,000	4,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	5,000	5,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	6,000	6,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	7,000	7,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	8,000	8,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	9,000	9,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	10,000	14,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.1%	0.1%
	15,000	19,999	69,000	0.3	6.1%	99.1%	0.0%	0.1%	0.1%	0.1%
	20,000	24,999	0	0.0	6.1%	93.9%	0.0%	0.0%	0.1%	0.1%
3" Meter In City	25,000	29,999	28,000	0.1	8.2%	93.9%	0.0%	0.0%	0.1%	0.1%
	30,000	34,999	0	0.0	8.2%	91.8%	0.0%	0.0%	0.1%	0.1%
	35,000	44,999	277,000	0.6	28.8%	91.8%	0.1%	0.3%	0.2%	0.1%
	45,000	54,999	96,000	0.2	35.9%	71.2%	0.0%	0.1%	0.1%	0.1%
	55,000	64,999	237,000	0.3	53.6%	64.1%	0.0%	0.3%	0.1%	0.1%
	65,000	74,999	73,000	0.1	59.0%	46.4%	0.0%	0.1%	0.1%	0.1%
	75,000	84,999	0	0.0	59.0%	41.0%	0.0%	0.0%	0.0%	0.0%
	85,000	94,999	269,000	0.3	79.1%	41.0%	0.0%	0.3%	0.0%	0.0%
	95,000	104,999	102,000	0.1	86.7%	20.9%	0.0%	0.1%	0.0%	0.0%
	105,000	114,999	0	0.0	86.7%	13.3%	0.0%	0.0%	0.0%	0.0%
	115,000	124,999	0	0.0	86.7%	13.3%	0.0%	0.0%	0.0%	0.0%
	125,000	134,999	0	0.0	86.7%	13.3%	0.0%	0.0%	0.0%	0.0%
	135,000	144,999	0	0.0	86.7%	13.3%	0.0%	0.0%	0.0%	0.0%
	145,000	179,000	179,000	0.1	100.0%	13.3%	0.0%	0.2%	0.0%	0.0%
	Totals for Class		1,342,500	3.0			0.3%	1.6%	1.3%	1.2%

Table 19 - User Statistics

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Use in Each Range in Gallons	Customers Within This Range	Cumulative Use % in This Class From Low to High	Cumulative Use % in This Class From High to Low	% Users	% Use	% Revenue at Current Rates	% Revenue at Modeled Rates
	0	999	0	1.1	0.0%	100.0%	0.1%	0.0%	0.0%	0.1%
	1,000	1,999	3,000	0.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.1%
	2,000	2,999	20,000	0.8	0.2%	100.0%	0.1%	0.0%	0.1%	0.1%
	3,000	3,999	18,000	0.5	0.3%	99.8%	0.0%	0.0%	0.1%	0.1%
	4,000	4,999	24,000	0.5	0.5%	99.7%	0.0%	0.0%	0.1%	0.1%
	5,000	5,999	25,000	0.4	0.7%	99.5%	0.0%	0.0%	0.1%	0.0%
	6,000	6,999	12,000	0.2	0.7%	99.3%	0.0%	0.0%	0.0%	0.0%
	7,000	7,999	7,000	0.1	0.8%	99.3%	0.0%	0.0%	0.0%	0.0%
	8,000	8,999	16,000	0.2	0.9%	99.2%	0.0%	0.0%	0.0%	0.0%
	9,000	9,999	0	0.0	0.9%	99.1%	0.0%	0.0%	0.0%	0.0%
	10,000	14,999	14,000	0.1	1.0%	99.1%	0.0%	0.0%	0.2%	0.2%
	15,000	19,999	16,000	0.1	1.1%	99.0%	0.0%	0.0%	0.2%	0.1%
	20,000	24,999	90,000	0.3	1.8%	98.9%	0.0%	0.1%	0.2%	0.1%
4" Meter In City	25,000	29,999	0	0.0	1.8%	98.2%	0.0%	0.0%	0.1%	0.1%
	30,000	34,999	32,000	0.1	2.0%	98.2%	0.0%	0.0%	0.1%	0.1%
	35,000	44,999	122,000	0.3	2.9%	98.0%	0.0%	0.1%	0.3%	0.2%
	45,000	54,999	94,000	0.2	3.6%	97.1%	0.0%	0.1%	0.2%	0.2%
	55,000	64,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	65,000	74,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	75,000	84,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	85,000	94,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	95,000	104,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	105,000	114,999	0	0.0	3.6%	96.4%	0.0%	0.0%	0.2%	0.2%
	115,000	124,999	121,000	0.1	4.4%	96.4%	0.0%	0.1%	0.2%	0.2%
	125,000	134,999	0	0.0	4.4%	95.6%	0.0%	0.0%	0.2%	0.2%
	135,000	144,999	0	0.0	4.4%	95.6%	0.0%	0.0%	0.2%	0.2%
	145,000	947,000	13,221,000	1.9	100.0%	95.6%	0.2%	16.1%	9.2%	8.2%
	Totals for Class		13,835,000	7.0			0.6%	16.8%	13.0%	11.6%
No Meter in City (Assume 1")	0	999	0	4.8	0.0%	100.0%	0.4%	0.0%	0.4%	0.3%
	1,000	1,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	Totals for Class		0	4.8			0.4%	0.0%	0.4%	0.3%
No Meter Out of City (Assume 1")	0	999	0	4.0	0.0%	100.0%	0.4%	0.0%	0.4%	0.3%
	1,000	1,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	Totals for Class		0	4.0			0.4%	0.0%	0.4%	0.3%
All Weather Sewer Service, Inc.	0	999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	1,000	1,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	2,000	2,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	3,000	3,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	4,000	4,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	5,000	5,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	6,000	6,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	7,000	7,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	8,000	8,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	9,000	9,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	10,000	14,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.2%	0.2%
	15,000	19,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.2%	0.2%
	20,000	29,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.4%	0.3%
	30,000	39,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.4%	0.3%
	40,000	49,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.4%	0.3%
	50,000	59,999	0	0.0	0.0%	100.0%	0.0%	0.0%	0.4%	0.3%
	60,000	69,999	800,000	1.0	100.0%	100.0%	0.1%	1.0%	1.1%	0.8%
	Totals for Class		800,000	1.0			0.1%	1.0%	3.2%	2.7%
	Grand Totals		82,184,500				100.00%	100.00%	100.00%	100.00%

Chart 1 - Operating Ratio

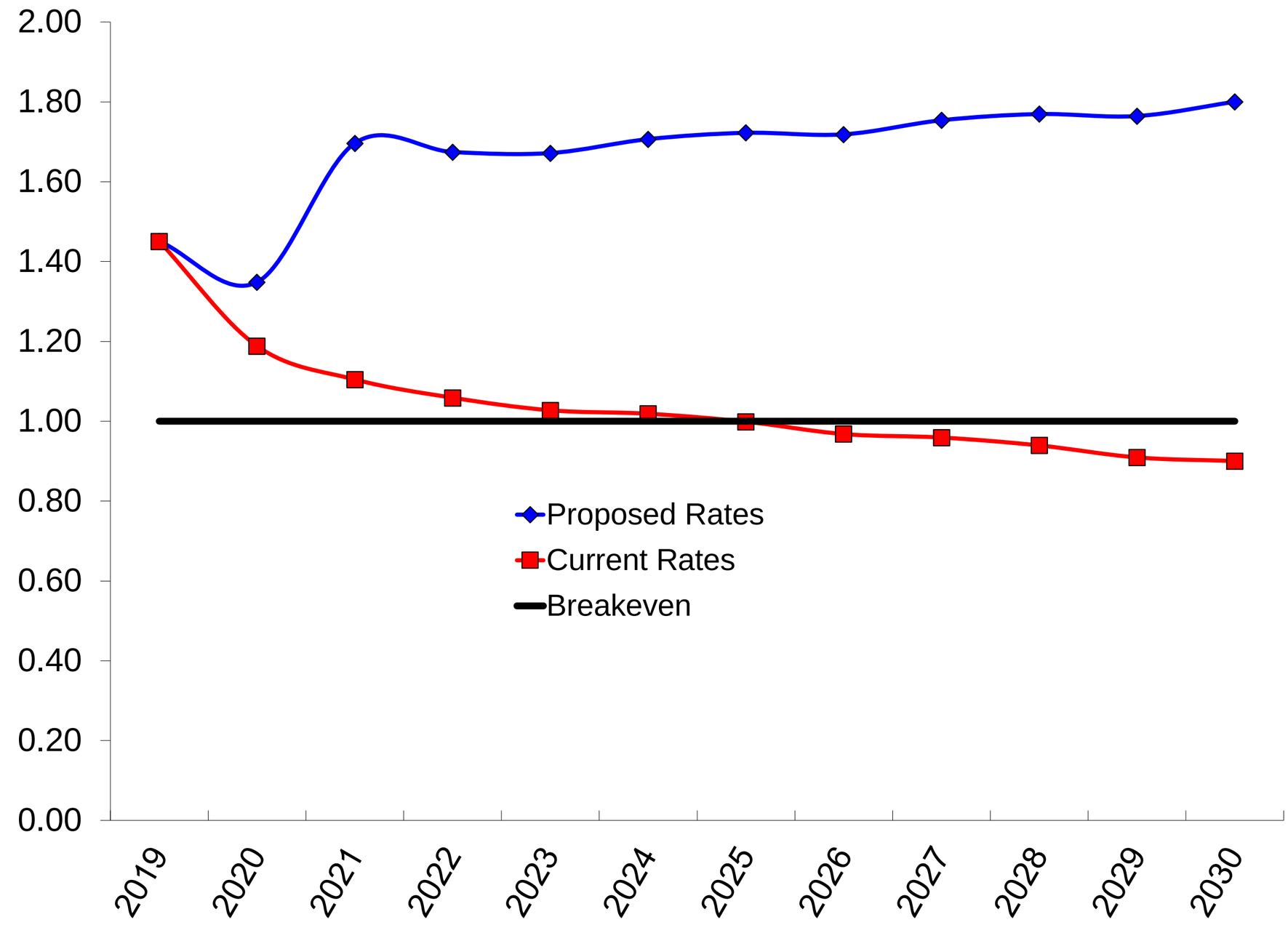

Chart 2 - Coverage Ratio

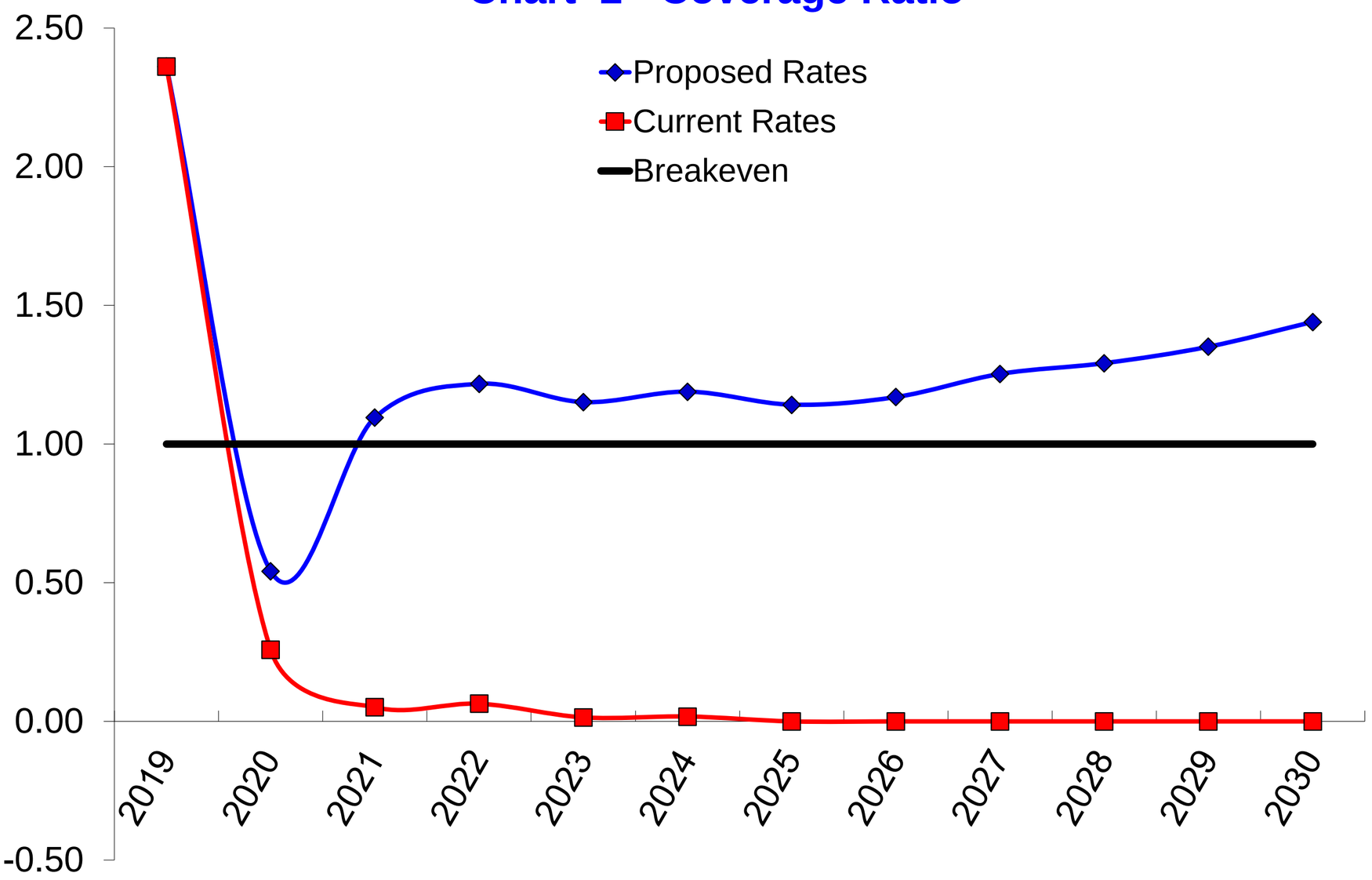

Chart 3 - Residential Users' Bills

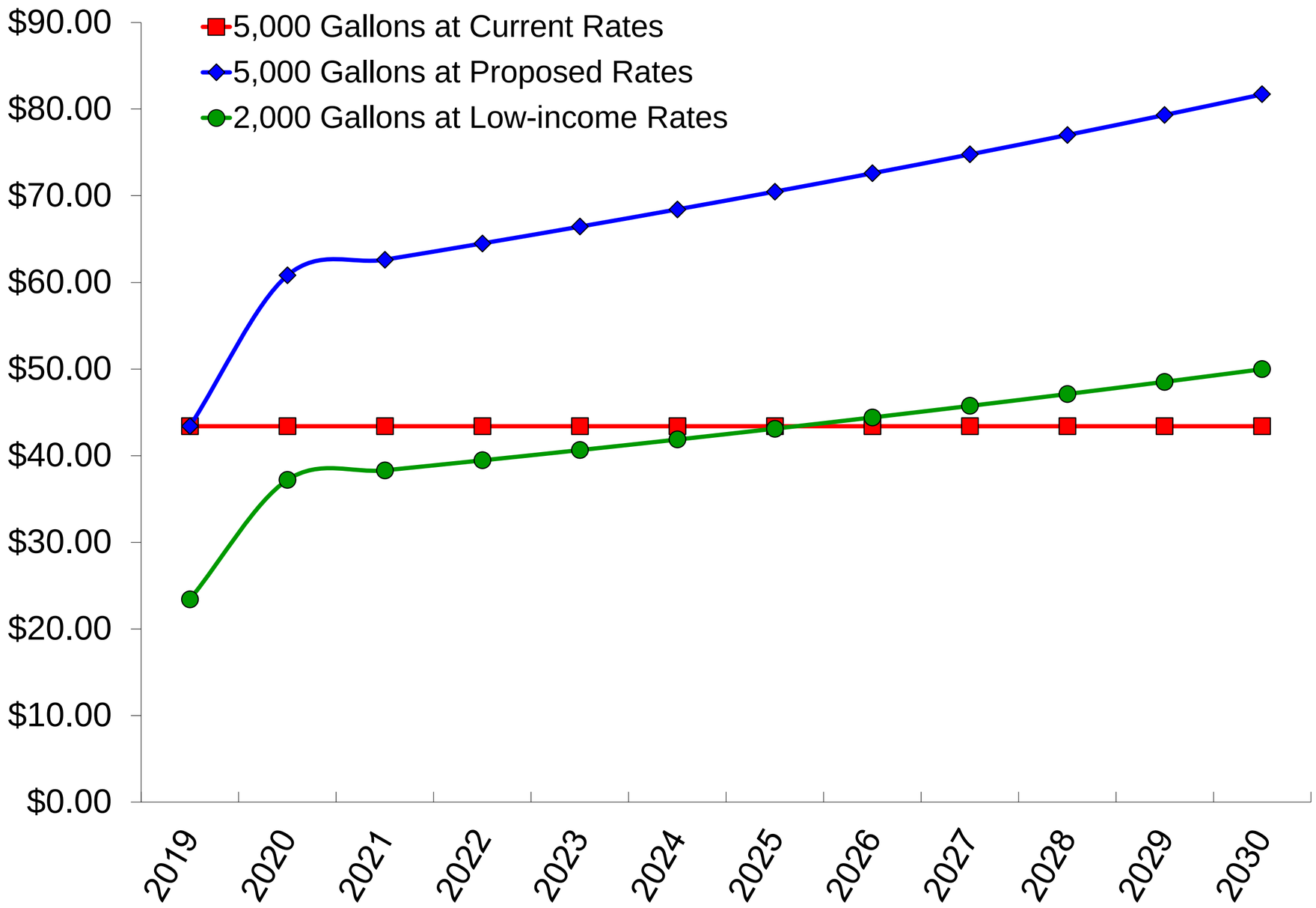

Chart 4 - Affordability

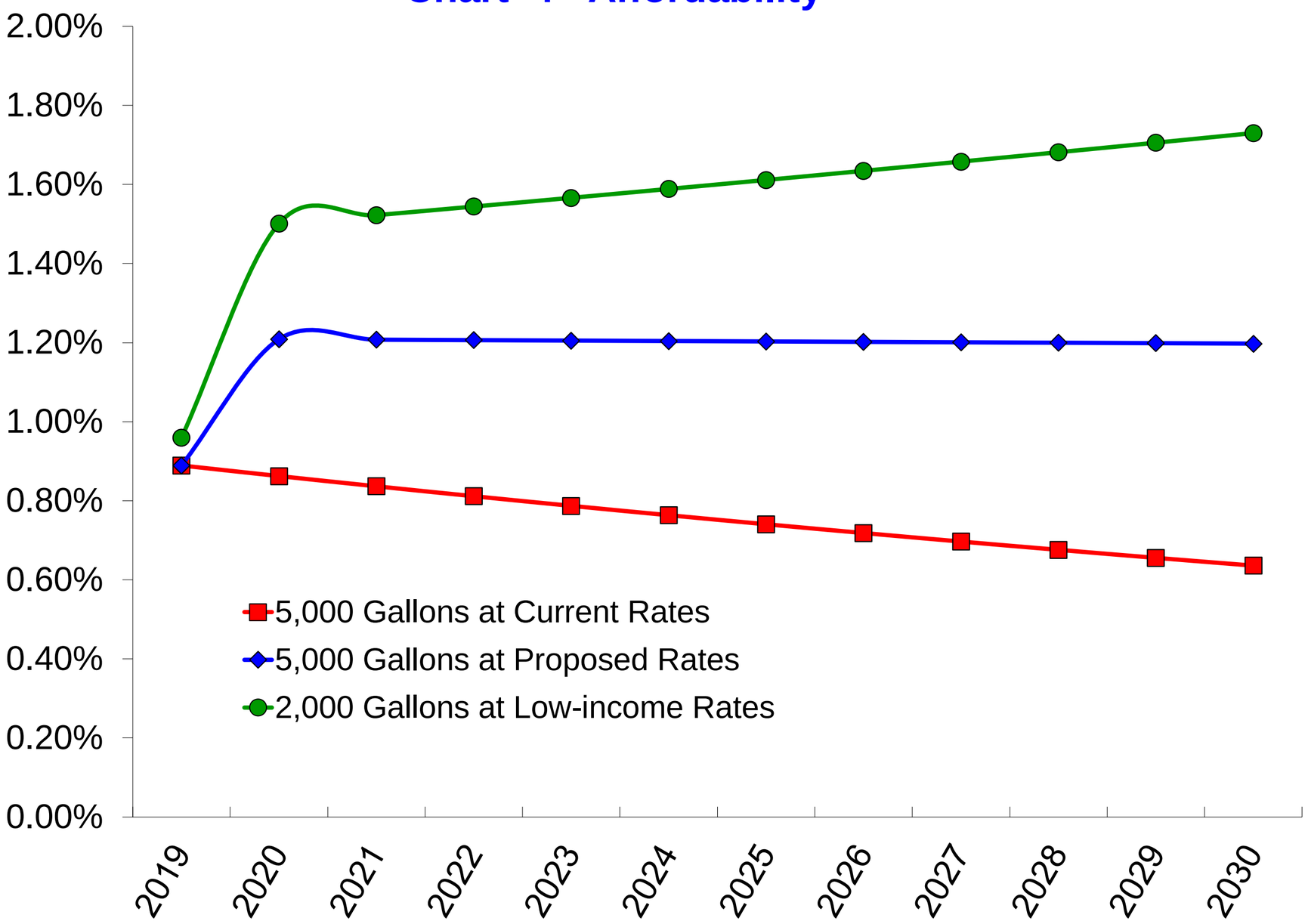

Chart 5 - Working Capital vs Goal

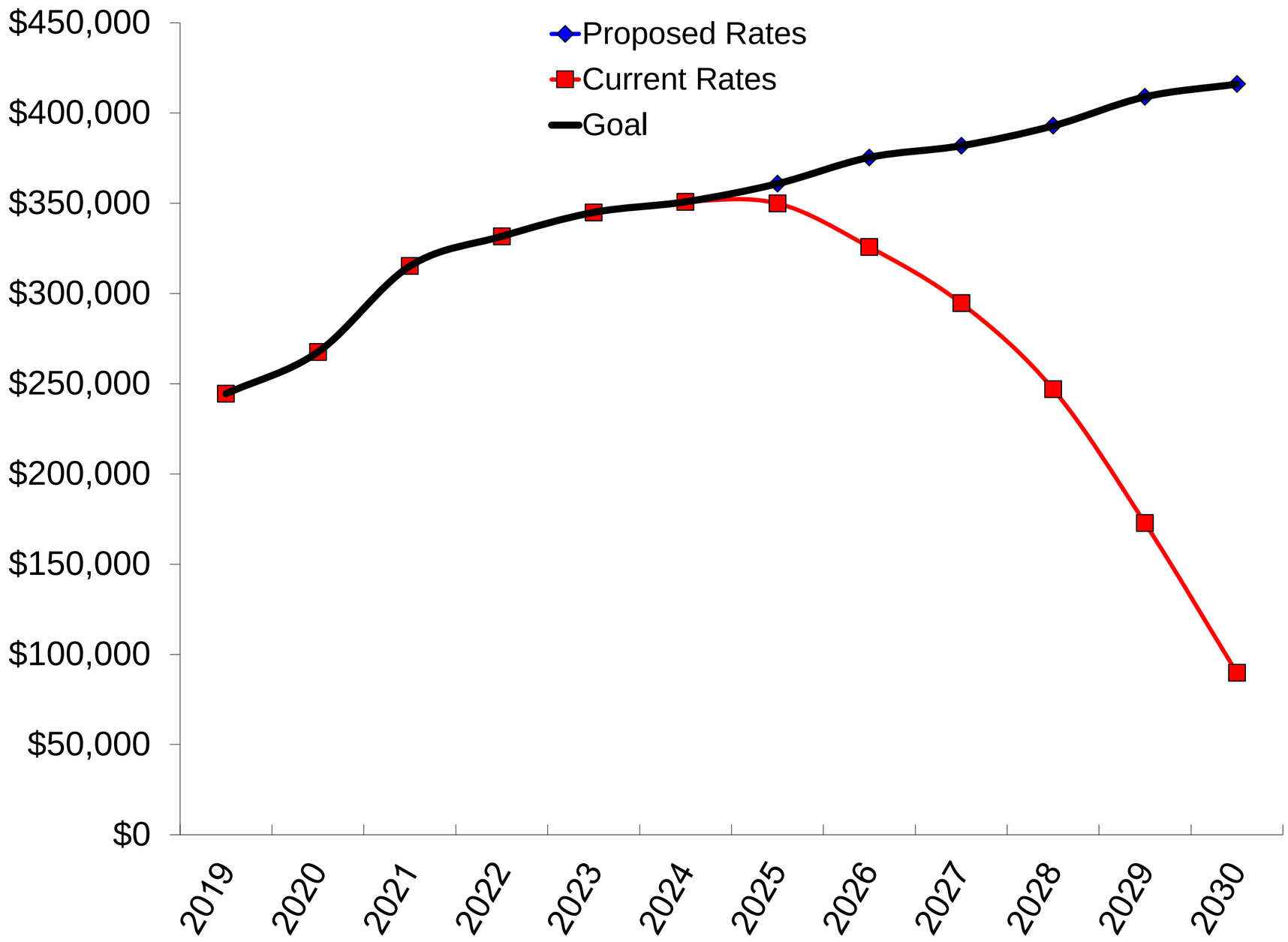

Chart 6 - Value of Cash Assets Before Inflation

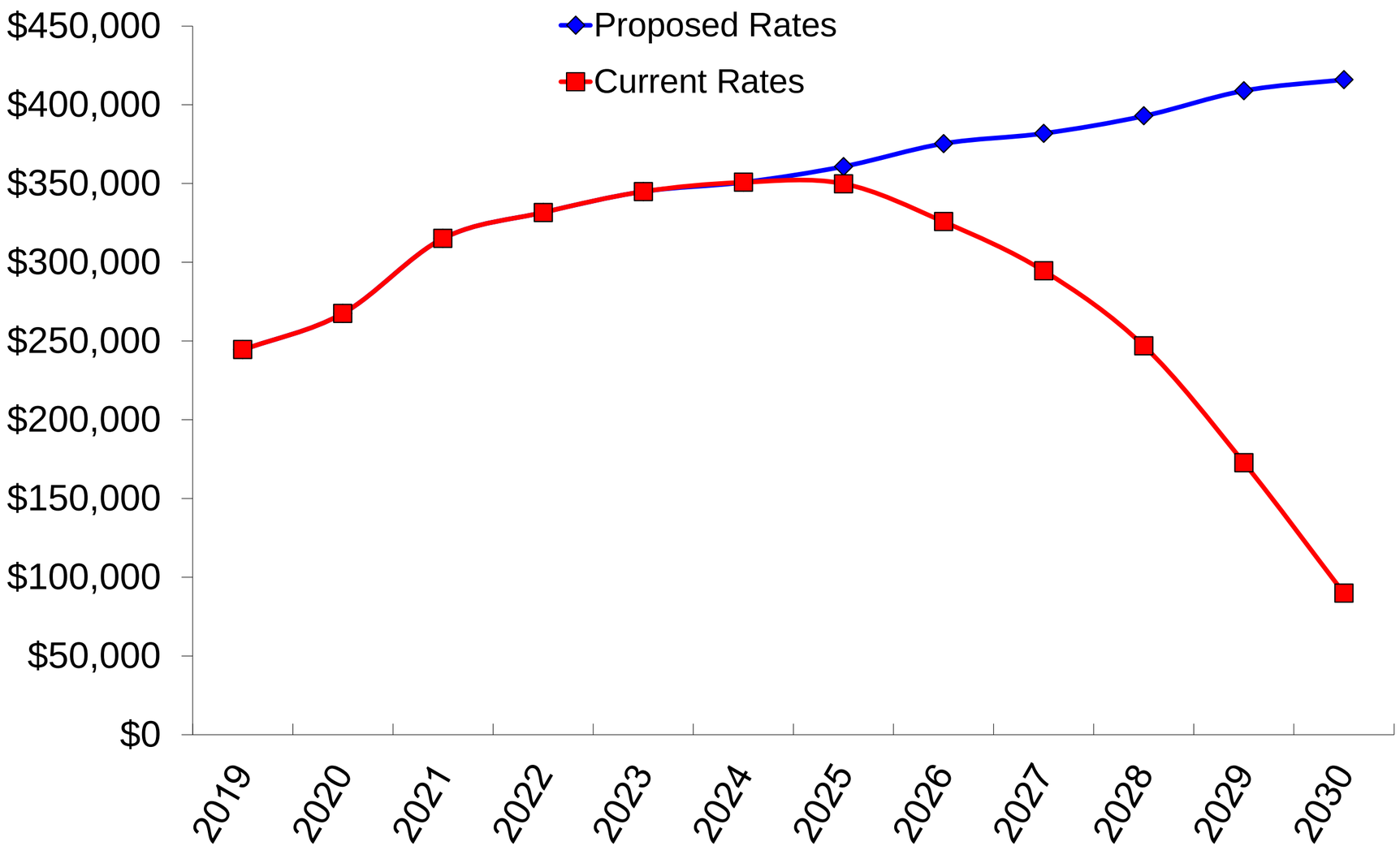

Chart 7 - Value of Cash Assets After Inflation

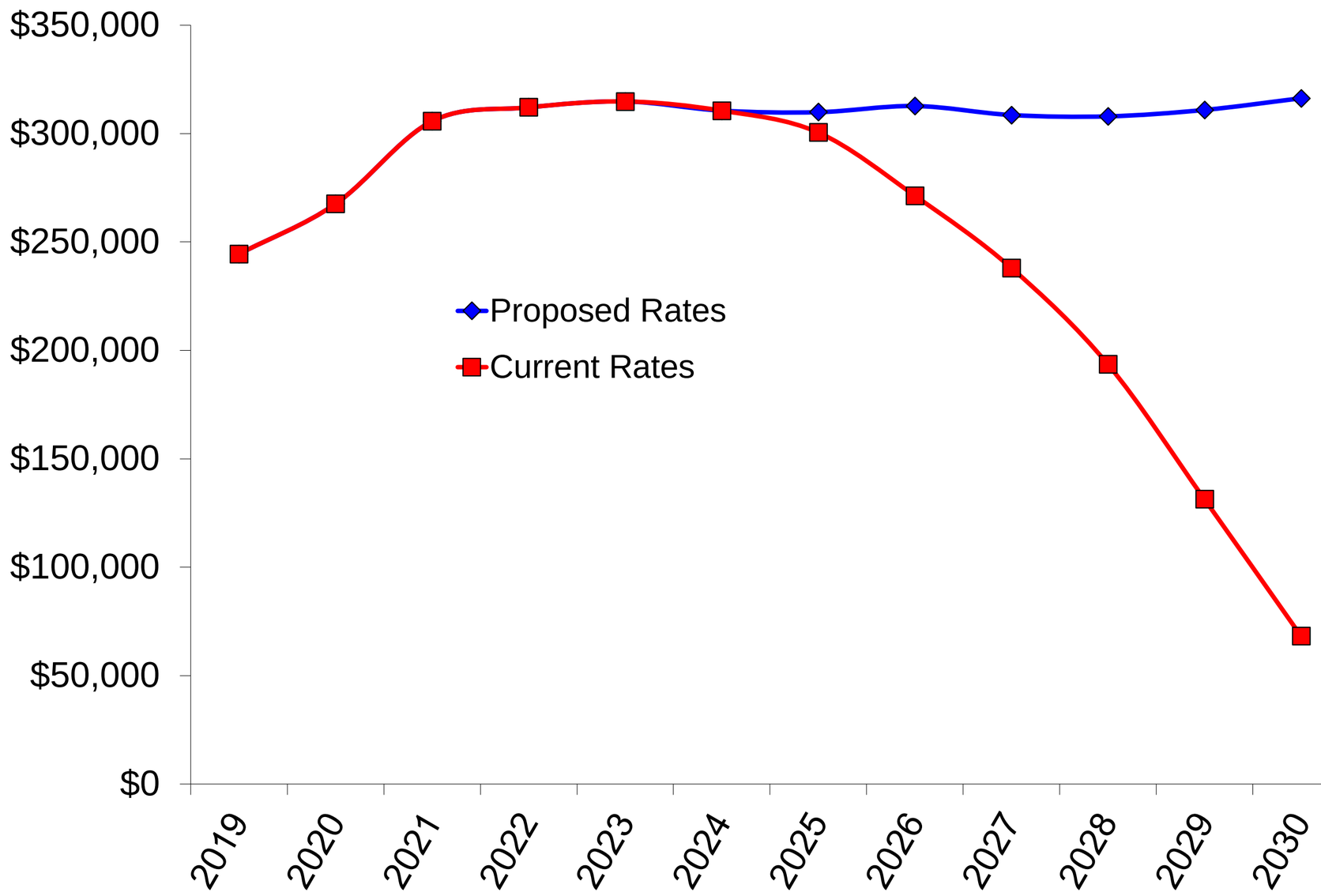

Chart 8 - Sum of All Reserves