October 18, 2021

The Board of Directors
Skyline Improvement & Service District
P O Box 3601
Jackson, WY 83001

Subject: Water Rate Analysis Report

Dear Board Members:

Attached is the rate analysis report for the District's water utility. Before I address the report to the Board, I want to address everyone else who will read this.

Jim Lewis served as my primary contact for this analysis. Jim was always so helpful, informative, and responsive to my data needs and requests. He also knows the business and finances of the District thoroughly, so I know it was quite easy for him to gather what I needed. Furthermore, Jim has a very good understanding of the principles that underlie adequate and fair utility rate setting. I suspect that is why my calculations arrived at rates that are fairly close to the District's current rates.

Dave Adams, the District's bookkeeper, also provided lots of detailed data and was also always very responsive and helpful.

Finally, the District's consulting engineer, Josh Kilpatrick of Nelson Engineering provided excellent technical information about the system's capital improvement needs and how they will be satisfied.

I enjoyed working with all three of these gentlemen because of their expertise, but also simply because they were great folks to work with. Due to their knowledge and expertise, I feel quite confident that the District can carry out improvements, set new rates and perform well long into the future.

Now, on to the report.

Most of the water rates and fees I calculated for you are in a "cost-to-serve" structure. These rates were designed to fully fund significant improvement needs in the next few years while assessing fair rates to all. Overlaid onto that structure is a structure commonly called, "conservation rates." This will be the District's introduction to conservation rates, so the incremental unit charge increases I calculated are modest. This structure may be as far as you ever need to go with conservation rates. If not, the structure can be revised later as needed.

My calculations found that overall, rate revenues need to go up 86 percent. That increase is needed to fund a combination of system improvements, operating cost increases and the need to build a more prudent level of reserves. However, in two additional years, the increase will fall back significantly when a temporary system improvements special assessment will cease to be needed.

Board members now have some reading to do. As you review the report, if anyone has questions, please filter them through Jim and he will get them to me. That way, if people have the same basic questions, Jim can blend them together for me.

I expect you will soon convene the Board to discuss the report and at that meeting or soon after that, the Board will entertain adopting new rates. When you have that meeting, remember that I can join you. You assumed at the outset that you will not need me there in person, and I think you are right. I can attend by "Zoom" or other online meeting application, and that should suffice to help everyone become well informed.

Finally, I am sure Board members know of other districts and utilities that also need rate setting help. As you run into these folks at 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 Skyline.

Best regards,
GettingGreatRates.com

Carl E. Brown
President

Enclosure

Water Rate Analysis Report

Skyline Improvement & Service District

Jackson, Wyoming

Prepared October 18, 2021

Carl Brown, President
GettingGreatRates.com, LLC

Table of Contents

Index of Model Tables and Charts

Executive Summary

Except for the addition of a conservation rates structure, and two special assessments for system improvements, this analysis calculates water rates for Skyline that are in a cost-to-serve structure. The water system needs substantial improvements, which are covered by an engineering report and are included in the calculations for new rates. Improvement costs will be the main driver for higher fees. Rates will also include a conservation structure. Details are covered by the full report and the Model.

The Governing Body's Job is Broad and Critical

This report covers my findings. Based on those findings, I made rate and fee setting recommendations. However, and this is quite important, my job is only to advise. The governing body's job is to set rates, among many other things.

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

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

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

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

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

The Meaning of This Report, in a Nutshell

The Skyline Improvement and Service District, later called "Skyline" or "you," hired GettingGreatRates.com, later called "me," or "I," to perform rate analysis of its water utility; to produce a report of my findings and recommendations; and to provide guidance on rate setting.

This report is detailed and long. The math behind the report is complex. Some assumptions had to be made about data and outcomes, which is normal. Still, these things make the modeling complex and interpreting the Model 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. In your case, rate revenues need to go up. Like nearly all rate structures, those also need adjustment. The tables of rates and fees that follow are designed to be adequate and fair, on a cost-to-serve basis.

Introduction

Skyline is rather unique. It is essentially a neighborhood where nearly all available properties that could be developed have already been developed. That implies you have little future "growth" to accommodate. However, Skyline has experienced some redevelopment, meaning, some smaller or older homes have been remodeled or removed and have been replaced by more upscale homes. And some properties have seen addition of second living quarters, barns, irrigation systems, and other additional water using facilities. This is a phenomenon we usually associate with redevelopment of older urban centers. Thus, while you probably will not "grow" by adding many new homes, you may well grow in water used by existing properties as they are redeveloped.

Skyline's metering and meter reading system also will soon be revamped with a remote read system. If other system improvements under consideration now are implemented, capital improvements will be the main driver of rate adjustments, especially in the more distant future.

As for me, your rate analyst, I have analyzed rates as a consultant since 2005, completing 335 analyses since then. Before that, from 1993 to 2005, I did similar work, as well as grant and loan coordination work, for the Missouri Department of Natural Resources. My experience is deep. I calculated your rates with due diligence using the best methodologies I can. I trust my expertise and the results I get. You should, too. You can adopt the rates recommended in this report and all should turn out well for you.

But it is reasonable for you to be curious about my methodologies and why and how I employ them. "Trust but verify" is a reasonable attitude for you to have because rate setting is one of your most critical and criticized tasks. You need to get it right. Just summarizing my methodologies requires a lot of discussion, therefore, I left that discussion out of the main part of the report. I placed those discussions in Appendix A, starting on page 23.

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

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

Now, to the specifics of your rates situation and my analysis and recommendations.

The rate analysis modeling covered 12 years, as follows:

- The "test year" is the one-year period from which data was used as the starting place for the analysis. We almost always use the last completed fiscal year as the test year. That is what we did in your case, too.
- The modeling was done during the next year. In the model tables, this is called, "0 Year."
- For the next ten years, the modeling used budget figures, engineer's estimates, etc. when available. Those normally cover one or two future years. For the remainder of the ten projection years, we calculated incomes, costs, etc. you should expect to experience.

This report is the culmination of a process where I submitted information and data requests to Jim Lewis, a board member, and Dave Adams, Skyline's bookkeeper. I also received capital improvements planning and engineering data and information from Skyline's engineer, Josh Kilpatrick, of Nelson Engineering. All replied. We went through this step several times. As I received information and data, I modeled the utility's finances and rates and submitted drafts for review and feedback. They reviewed those drafts to assure accuracy, and when needed, they corrected data. We consulted by phone several times to review data and information to make sure all critical items are accurate. We cycled through this process two additional times as new data, loan requirements and other issues developed to arrive at this, hopefully, final report.

The report is in two parts. The first part 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 spreadsheet. That model is called, "Skyline I&SD District, WY, Water Rates Model 2021-1D," later just called, "Water Model 1" or "the Model."

The Model is a set of integrated calculations that mathematically depict the utility's situation – incomes, expenses, capital improvement needs, debt and more.

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

Important Assumptions and Details

Capital Improvements Program (CIP)

Upcoming capital improvements are an important driver of new rates and special assessments. Current operating costs are relatively low. Future operating costs should be, too. Currently Skyline has no debt to pay. But a large part of the costs of capital improvements will be paid with debt or special assessments. If all improvements being considered are done, the annual payments on that debt will amount to approximately one-fifth of the system's total costs. That puts pressure on rates.

Funding for these improvements will be paid by a combination of State Revolving Fund loan proceeds, which come primarily from federal grants to the states; state grants, which are "gifts" from the state; and system reserves which will be largely replenished by special assessments.

Were Skyline to not use any outside funding and only use its own reserves, it would not need to be aware of policies and cultures of outside funders. But you will get outside funding, so you need to be aware that those funders, within their regulatory latitude, "want" you to have rates that will treat ratepayers fairly. They also "like" rates that take stewardship of the resource – water – into account. Cost-to-serve rates achieve revenue adequacy and general structure fairness. Conservation rates overlaid on a cost-to-serve structure seek to steward the resource. This combination of structures is what I recommend you adopt. And this combination should bode well for Skyline for future funding acquisition. Keep in mind, paying near-term capital costs will be costly, and there are future phases of improvements yet to come, too.

Other rate structure aspects will be discussed later that will fairly recover all costs, including capital costs. And, starting on page 33 in Appendix A, I discuss rate structure alternatives, their merits, and their shortcomings.

In Table 5 of the Model, page 49 of this report, there is a summarized list of improvement needs sourced from the engineer's "…Level II Study," referenced later. Metering will be in the first phase of improvements to be made. Meters are often referred to as the "cash register" of a water system. Your current meters are old and undoubtedly are under-registering use. Some may be under-registering dramatically. That means you are not charging customers for all volume they use and that is a source of billing unfairness. In addition, many meters are in quite inconvenient locations (crawl spaces under homes, for example) and are being read by the customers themselves, which makes meter reading timing an issue. The remote-read meter system will solve these problems.

Other improvements will upgrade system capacity and service, so those features will better fit the nature of the properties being served. Most of those improvements, if done at all, will be done in the future, probably in phases, as well.

Repair and Replacement Scheduling

Skyline handles equipment repair and replacement (R&R) scheduling and payment on an as needed, and as funds are available basis. In Table 4, page 48, that cost item is called, "6133 Repair & maintenance." This cost item was higher than usual during the test year, at $20,598. You will likely continue handling R&R in this way, but to be more conservative, I converted the test year amount for this to an annual annuity at 3.0 percent inflation per year. Thus, over a 20-year period, you would need to deposit $29,210 annually to keep up with R&R needs that are now costing $20,598. That deposit needs to be made even in years when equipment repair and replacement do not cost that much. These things are shown in Tables 6 and 7, starting on page 50.

I suggest you soon begin using my replacement scheduling spreadsheet, called, "ReplacementScheduler©." That is available as a free download at https://gettinggreatrates.com/Freebies. By doing R&R in this way you will be able to save ahead of time for longer term R&R needs and costs, such as pumps, motors, and other equipment that wears out before the useful life of the overall system is over. I created ReplacementScheduler© with water and sewer utilities in mind, but it works just as well for other long-lived facilities like stormwater, electric, roads, and buildings.

General Issues

Concerning construction of the Model, it was built to match the system's 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 Model does not always match financial statements.

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

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

Chart 8 depicts total reserve levels under the existing rates (red line) and the modeled rates (blue line). Because you will soon pay for some system improvement costs out of reserves, and a bit later you will start paying debt for those improvements, reserves will dip in the next couple of years. Special assessments aside, if you did not increase rates (red line), you would exhaust reserves in a few years. But at the recommended rates plus the special assessments, reserves will grow.

Charts 3 and 4 in the Model depict user rates. Chart 3 shows that the modeled rates will go up each year. But Chart 4, which depicts rates on an affordability basis, shows even the recommended rates going down. (Note: This does not include the effect of special system improvement assessments.) In fact, those rates would go up, but incomes are projected to go up faster, so the affordability of the recommended rates would improve.

Chart 8 shows the difference between the two sets of rates. The modeled rates will generate more revenue and, thus, produce strong, positive reserves.

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

The remainder of this report directly addresses the analysis findings and my recommendations.

Water Model 1 Rates

Current Rate Structures

Currently Skyline assesses water user charge rates that can be summarized like this:

- Water rates include an annual water maintenance charge plus an overhead charge, no usage allowance for any customers, and a "price per gallon" that stays the same regardless of volume used. I and most analysts call the annual charge a "minimum charge" and the price per gallon a "unit charge." I use those terms throughout this report.
- You assess a "readiness-to-serve" charge to undeveloped lots that is the same as the minimum charge.
- You assess a one-time connection fee of $6,415 for a new connection to the system, regardless of meter size serving the connection.

Recommended Rate Structures

I recommend your regular rates include:

- System development fees that graduate with meter size, based on the cost of capacity to serve different meter sizes. You may never connect another two-inch meter to the system, but it would be good to have that rate in place just in case someone asked to use one.

- Minimum charges that are also based on meter size, reflecting the extra cost of capacity to serve larger meters. To be clear, the "minimum" charges I modeled cover the "water maintenance assessment" and "overhead" charges you currently assess.
- Unit charges that graduate with volume used (conservation rates), with no usage allowance.

You do not currently assess multiple connection fees when multiple connections are made to a single property. I do not recommend you assess a connection fee to a meter that is already connected. But in the interest of fairness and best practice, I recommend you start assessing a connection fee to each new connection made and price each connection based on meter size. I grant, you have few meters greater than one inch in size, so if you continued to assess level connection and minimum charges, that would have little revenue effect on Skyline. But changing this policy is a matter of structure fairness and consistency.

I also think it is better to set up such rate structures before you need them than to wait until you are asked to allow a large meter at the same low fee, for example. At that point, it is "messy" to inform the potential customer that you just decided you want to charge them several times more than what your current rate ordinance says. Meter size-based rates reflect the fact that larger meter sizes have the peak flow capacity to pass more flow, requiring greater system capacity (greater cost) to be able to supply that flow. That issue is in play everywhere there is more than one meter size that could be connected.

All that said, the big structure change is "conservation rates," whereby unit charges escalate with the volume used. Conservation rates reflect the fact that water is a critical and diminishing resource, particularly in the West. I expound on that in the next subsection.

You also have a "readiness-to-serve" rate equal to the minimum charge. I recommend you keep that fee. I almost always recommend such a fee be priced to cover the marginal costs of the service. Quite simply, the cost of maintaining capacity to serve, should someone decide to connect, usually does not include some fixed costs that water-using customers cause. However, due to the nature of your costs, I ended up classifying almost all fixed costs as marginal costs, too, so the "readiness-to-serve" charge should still be the same as the minimum charge, though that rate should change a bit. Marginal costs are developed in Table 9, page 53 of the report.

Finally, some properties have "accessory residential units" (ARUs), which are additional living units on one house lot, or they may have other water using facilities. You do not currently assess additional base fees for such units. I assumed you will continue this practice. However, the best practice is, if it is connected to the Skyline system by a separate line or meter, it is a customer and should pay a minimum charge and whatever unit charges the meter accounts for. And that should be done consistently. If, however, the ARU's water comes from the property's internal plumbing system, the unit is, effectively, being served by the property's service line, not Skyline's lines.

If a property undergoes redevelopment that includes adding a water using facility, and that addition requires upsizing that property's meter, you should assess the additional system development fee described in a soon to follow subsection of this report. This and all other pricing is shown in Table A on page 20.

Conservation Rates

I am told that Skyline sees a need for conservation rates. I am glad to hear that. Because this structure is new to you, conservation rates will take some explanation.

Conservation rates are quite appropriate in situations like yours for at least one of two possible reasons:

1. Conservation makes sense when source water is limited. Skyline is situated right next to the Snake River, so it may seem you have an essentially unlimited supply of water. The "jury is still out" on this issue over the long term. We will see if the Snake remains a robust water source. Do keep in mind, Skyline is not the only entity that lays claim to water that is in or originates from the Snake. There are many users of the Snake River.
2. Conservation makes sense when infrastructure is required to source, treat, store, pump, and distribute water. That is the definition of a community-based water system. In your case, infrastructure needs are a large reason to try to encourage customers to conserve. Your use is bumping up against the system's ability to meet peak demands. Quite literally, high use is one of the main reasons you need the well.

Be aware, there is not a "standard" conservation rate structure. Setting such rates is subjective and the chosen structure should meet the needs at hand and be practical to administer. If you err, you should err on the side of keeping the structure simple rather than complex. If a customer were to call and ask why their bill was $X.xx this time, you should be able to explain how the bill was calculated in a minute or two.

A few statistics should lend perspective to the rate blocks I recommend for your situation. For grant and lending purposes, it is common to consider 5,000 gallons per month (30,000 gallons semi-annually) to be the average use for most households. By comparison, the average use by all customers in Skyline, based on the total use included in the Model, is 20,242 gallons per month (121,452 gallons semi-annually), about four times higher than what is commonly thought of as the "average" use rate. You live in a dry area, and I suspect the households in Skyline are much more upscale than the national average. Those factors tend to push water use up. But this information should put what I recommend into better perspective.

When I structure conservation rates, I commonly recommend three rate blocks structured in this way:

- The average customer's use should almost all fall into the first rate block. (Because there is some variation in volume we all use from one period to the next, some volume used by the average customer may fall into the second rate block, but most of their volume will be covered by the first.)
- Customers who use double the average will have half (or perhaps a bit more) of their use fall into the second rate block.
- Customers who use more than that will have all the additional volume fall into a third and final rate block.
- When starting up a new conservation rates program, I commonly recommend each rate block's price escalate by 25 percent over the next lower rate block. Thus, volume used in the highest rate block would be billed at slightly more than 50 percent higher than the first rate block (because of compounding). For upgrading of existing conservation rate structures where customers need more encouragement to use less water, many utilities set the incremental price increase from one block to the next at 50 percent.
- Finally, I round the block volumes to a convenient amount, so bill calculation will be easier, remembering the blocks will be easier and explaining bills will be easier.

Therefore, in your case, I recommend three rate blocks as follows:

1. Block 1, which is the first gallons used by everyone, should cover 99,999 gallons, or anything less than 100,000 gallons. That is, 121,452 rounded down to 100,000.
2. Block 2 is where conservation pricing "kicks in." Quite arbitrarily, I admit, I set the top of that range at double the first block volume. Thus, the unit charge for that range of use would go from 100,000 to 199,999 gallons, which covers the average use.
3. Block 3 is for all volume over Block 2. Thus, that block covers all volume of 200,000 gallons or greater.

As to pricing, Block 1 is at the starting price, Block 2 is 25 percent more than Block 1 and Block 3 is 25 percent higher than Block 2.

Finally, and this is quite important, because conservation rates escalate, the revenues they produce will be higher than if you kept a level unit charge in place. However, this structure introduces risk that revenues will not come in as strong as simple math says they should. That is especially true when conservation rates are first implemented. It is human nature to try to buy less of something if the price goes up. For this reason, I assumed that customers will change their water using habits and not use all the volume they used before you adopted the new rates.

No one knows how much conservation may happen. You simply must adopt a new set of rates and track use and revenues. If water use goes up or down compared to the volume I assumed, you may need to fine tune the rates a bit. Because your customers only receive one bill per year, it may take a year or two for the picture to become clear. So, adopt new rates and then give me a call in a year or so and tell me how it is going. Do that again after another year, too.

Conservation rates are based on volume usage, so I cover that topic in more detail next.

Volume Usage

Volume usage is going to be a wildcard for Skyline and deserves some discussion.

Mr. Lewis gave me data that shows usage in 2019-2020 was right at 16.5 million gallons. In 2020-2021, it was 21,618,442 gallons. Clearly, usage can vary substantially even before switching to a conservation rate structure.

Conservation rate structures encourage some customers to use water more conservatively than they did in the past. You may sell less water than you would if you continued with a level unit charge structure. Customers have demonstrated that they can use water at the lower level of 16.5 million gallons, at least under the prior year's circumstances. For those reasons, assuming the higher reserve targets and special assessments to fund system improvements are more fiscally conservative and make good sense.

That said, if customers do use higher volumes than expected, more revenue will be generated in future years. If you do not make allowances for that situation and the trend continues, you will net more revenue than I calculated. That will enable you to reach the higher reserve targets I recommended quicker. Or perhaps you could pay for more system improvement costs from reserves and borrow less. Or in future years, you may choose to slow down the inflationary increases you make compared to those I calculated you will need. That would enable costs, as they rise with inflation, to catch up to incomes, holding reserves at the desired levels. There are several ways you can deal with higher-than-expected revenues, and they all involve good results. The reverse is not a good position to be in.

The easy way to say this is, adopt the recommended rates and see how customers use water and how net revenues accrue. If reserves accrue too quickly, which is always a good problem to have, hold off on inflationary increases and allow costs to eat away at reserves as needed. Or retain those reserves in preparation for big capital improvements yet to come.

Meter Size-based Water Rates

Since you are attempting to make rates as fair as possible, it is reasonable to assess meter size-based rates.

I calculated 26.8 percent of past system development costs (original system value) to be paid for partly with up-front fees at the time of connection of a new customer – commonly called a "connection fee," which I and others call a "system development fee." Why 26.8 percent? I wanted to keep your small meter (five-eighth and three-quarter inch) connection fee where it is right now, $6,415. (Larger meters would pay a higher fee, as shown in Table 13, page 57.) I will

try to describe the math briefly. Most of this math is shown in Tables 12 and 13, starting on page 56.

The hard assets value in your balance sheet is $415,627. Assigning half of that to peak flow capacity costs and then annualizing that over 31.2 years, which is the weighted average for your facilities, yields an annual peak capacity cost of $8,991. At the expected average growth in new connections of approximately one every third year, the new connection fee works out to the current $6,415. This fee should be recalculated in future rate analyses as the original system development cost changes, which will soon happen markedly. And you may decide to recover a higher percentage of new connection costs in the future, too.

I calculated recovery of two cost components with minimum charges – the balance of system development (capacity) costs not recovered by system development (new connection) fees and all fixed costs of the system.

This simply means that a new customer will pay for some of their system development costs up-front and all customers will pay for another part of those costs over time in the form of surcharges. Remember, system development costs do not occur only once. Systems continually wear out or become obsolete. Their usefulness gets used up and must be replaced. That is why some system development costs should be recovered over time from existing customers.

Skyline has few lots available for new development. However, as property owners approach Skyline about redeveloping their property, if that redevelopment warrants upsizing their meter, you should require them to install the indicated meter type and size. Your engineer can advise you about that. If they upsize their meter, from Table 13, page 57, find the fee they should pay for the upsized meter, deduct the fee they paid for their current meter and assess the difference. In essence, they pre-paid part of the fee needed for the new meter size when they tapped on originally, and you will be assessing them the balance of that fee when they upsize their meter.

This is a bit complicated but just keep in mind, the key math is done on a cost-to-serve basis.

I almost always recommend meter size-based system development fees and minimum charge surcharges. I recommend both for you, too.

Where are these things covered in the Model?

- Table 11, page 55, lays out the American Water Works Association's (AWWA) meter flow capacity findings, the basis for capacity shares in my calculations.
- Tables 12 through 16 calculate system development fees and surcharges, based on the AWWA findings.
- The system development fee revenue that results is brought back to Table 3, page 47, as a revenue source.

In Tables 13 through 16, you will see that small meters have low capacities to pass flow, so they are assessed low levels of capacity costs. Big meters can sustainably pass high flows, accounting for more peak flow capacity costs.

There is a lot of math to such calculations. If you want to research this further, please refer to Appendix A on page 23 for resources to do that.

Expected Incomes

Table 3, page 47, shows the various past incomes and future incomes to expect, as well as several other things related to revenues. However, it does not show income from special system improvement assessments. That income is shown in Table 5, page 49.

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. I assumed that almost all costs in Table 4, page 48, will inflate by three percent per year, so I assumed in Table 3 that you will match future rates of budget inflation with user charge rate increases.

Also, near the top of Table 3, note that I assumed customer growth over the years. In discussion with Mr. Lewis, I learned that a few lots are available for new development, but redevelopment is a possibility for others. I incorporated Mr. Lewis' best estimate of development and redevelopment as growth in the Model. That is on the line called, "Customers Added or Lost (-) Each Year."

Expected Operating Costs

Table 4 shows expected operating costs. I expect most operating costs will inflate by three percent per year. To make calculation of a few financial indicators accurate and simple, I do not include as "operating costs" those costs associated with building and financing capital improvements. Those costs are covered in Table 5, page 49.

Capital Improvements and Their Effect on Rates

Building infrastructure is expensive. Skyline has no debt now but some of the needed capital improvements will be paid with debt. Capital improvements, debt and grants are included in Table 5. I tried to name capital improvements descriptively. That may not be completely accurate. The important issue is the cost and timing of improvements and how those will be paid.

The WWDC Level II engineering study was quite thorough and helpful to me. I included in my Table 5 data from the engineering report Table 9.6 on pages 57 and 58, with modifications provided in a table entitled, "Funding & Payment Schedule for Phase 1 Improvements." My Table 5 appears a bit different compared to the engineer's tables because I just tried to describe what was to be done rather than place things in "Phases" or "Levels." I also moved the repair and replacement types of needs to my Table 6, page 50.

Finally, I will point out what is likely to happen to your rates over the next ten years.

In my modeling, I calculated rates that will enable you to pay all costs and reach prudent reserve levels by the tenth year, based upon tenth-year costs. The tenth year will be 2031. By then, your biggest single expense will be debt service for distribution line replacement. For modeling purposes, that will not begin until the ninth year, with debt service likely starting in the tenth year. Thus, that expense has only a modest effect on the rates I have calculated for you now. But that will change markedly in a few years. If all these things come to pass, future rates will need to go up. That is in addition to what I am recommending now.

About five years from now you should have me, or another analyst of your choosing reanalyze your rate adjustment needs. By that time five more years of the higher debt service will show up in rate modeling, pushing rates higher at that time.

Five years or so from then you should have rates analyzed again. By that time debt service will then show up in all ten years of a ten-year modeling period, so debt service will then be fully incorporated into your rates. Note: If the cost of those improvements come in markedly different than they are now expected to be, you may want to move the ten-years out rate analysis up in time a year or two to capture that change in the third round of rate adjustments.

Unbilled-for and Lost Water

According to the difference between your produced water volumes and the volumes billed to customers, you appear to have modest unbilled-for water, at approximately 11 percent of the volume produced. As a reference, an unbilled-for water volume (loss) rate of 15 percent of water produced or ten percent of water purchased is considered a reasonable rate of "loss" for systems. Your rate is below that.

The marginal annual cost of unbilled-for water is $5,117. Unless you had a very easy to find and cheap to fix water leak, it would be hard to recover that amount of loss fixing leaks. Table 9, page 53, shows the marginal cost calculations for unbilled-for water. And it is likely some of this unbilled-for water is not loss, but water used for line flushing. That kind of use will need to continue.

Target Reserve Levels

Rates, meaning revenues, need to go up so you can cover all costs including new debt, and build appropriate water fund reserves. I almost always recommend rates that will build reserves as follows. My recommendations for Skyline are in italics:

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. *Skyline is quite small, so I recommend double that reserve level, 70 percent, in your case;*
2. A 20-year repair and replacement (R&R) schedule reserve, in the 20th year equal to at least two times greater than the average year's cost of R&R. *In your case, I recommend future reserves at three times the average annual R&R cost, which is calculated in Tables 6 and 7, starting on page 50*, 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. *I recommend no less than that for Skyline. CIP reserves are calculated by and then shown at the bottom of Table 5, page 49.*

The lines on the bottom of Table 17, page 61, 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. The water utility total reserves will dip a bit this fiscal year, I think primarily due to paying some capital improvement-related costs from reserves. But once the new rates are in place, reserves will begin to grow through the ninth year, which will be the fiscal year beginning in 2031. Recall that debt service for the large capital improvement package is scheduled to begin in the tenth year, so without future rate increases, reserves will then start to decline and be depleted in approximately two years. But also recall that you should have at least one and probably two rate analyses done between now and then, so you will have time, and no doubt better data and analysis with which to make needed rate adjustments in a few years.

Chart 8, page 67, graphically shows how reserves will grow, and then begin to decline near the end of the next ten years. As that chart shows, under the recommended rates reserves will be substantially in the black. Under the current rates, reserves will approach zero soon and finish dramatically in the red.

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

An important note: In future years I added the special assessment amounts to the regular unit charges to arrive at the "Monthly Bill Equivalent for a 5,000 gal per Month, Small Meter Residential Customer" at the top of Table 17. Skyline assesses water bills annually, but the Affordability Index (AI) is typically calculated on a monthly use basis.

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

In your case, I am not confident in the median household income to use. I have researched income for Teton County, Wyoming. The Census Bureau is normally the source I use. For Teton County in 2019, that is $98,837. However, Bloomberg gives a per capita value of over $250,000 for the County. It may be that only residents who report their income in the County are included in one study and another study includes others who live elsewhere, too. For my calculations, I used Census Bureau figures for the entire County.

In addition, water use in Skyline varies from year to year. Last year it averaged 20,242 gallons per month, far above the national use benchmark for affordability of 5,000 gallons per month.

All that said, the following may still help you assess the impact of the current and recommended rates on your customers.

In Table 17, near the top, I show the estimated AI. The AI is also shown graphically in Chart 4, page 65.

In the table, the AI calculation for the test year was at 0.63 percent. That means, a 5,000 gallon per month residential customer earning at the Teton County average income rate paid 0.63 percent of their monthly household income to pay their monthly water bill.

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.

Under the modeled rates for the fiscal year starting on 7/1/2022, the first full year at the new rates, this customer's AI would rise to 0.89 percent. That means those rates, which include both special assessments, will be less affordable than the current rates. The AI is projected to fall gradually for several years because the Census Bureau projects incomes will rise faster than I project your costs, and rates, will rise. In the fiscal year starting on 7/1/2025, the Well Number 4 groundwater special assessment will sunset, reducing the AI markedly to 0.64 percent. After that, the AI will resume its gradual fall for the rest of the modeling period.

The affordability index is useful, but it does not depict how new rates will affect customers using different volumes. Table 18, page 62, shows "before and after" bills for a one inch or smaller meter customer using different volumes of water. Systemwide average semi-annual use and bills for that use are highlighted in gold in the table. 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.

Now we have arrived at the rates I recommend you adopt initially, and some related issues.

Recommendations for Adopting Water Model 1 Rates

Water Model 1 contains all my rates-related recommendations and special assessment assumptions and shows what all are built upon. I have discussed many recommendations earlier in this narrative report, too. In the following, I summarize most of them. In the table that follows, I list the rates, fees, and special assessments you should adopt:

1. Once Skyline starts reading meters remotely, you should do each reading on the designated reading dates, or as close to those dates as possible. There should rarely if ever be a physical reason that schedule cannot be accomplished because remote reading technology handles a broad range of physical and weather conditions. And, you have so few meters that meter reading should take minutes, not hours or days like larger systems experience. Thus, remote meter reading should end your need to do "true ups" on metered volumes.
2. Table A that follows this list states the rates, fees, and special assessments you should adopt. I call this the "initial rate adjustment."
3. The calculations assumed you would have made initial rate adjustments early enough to begin assessing at the new rates on 2022 tax assessments. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date and coordinate that with the deadline for submission of assessments to the County Assessor.
4. The first inflationary adjustment following the initial rate adjustment, which will most likely be an across-the-board regular rate increase of 3.0 percent, should be made early enough to begin charging at those rates starting on the anniversary of the first bill calculations date. Note: I assumed the special assessments will <u>not</u> be increased each year. Rather, the appropriate amounts for each successive year will simply be added to the inflation-increased regular minimum and unit charges.
5. Subsequent inflationary increases should then be made once per year at the required timing for bill submission and finalizing the budget.
6. When making inflationary increases, you should 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 for the year in question:
    a) If all criteria performed close to the values in the Model, raise regular rates by 3.0 percent, as shown near the top of Table 3, page 47.
    b) If criteria did not perform close to those shown at the bottom of Table 17, page 61, but they are not egregiously different, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly, adjusting for variations in incomes, costs, etc. Download that book for free from https://gettinggreatrates.com/Freebies.

c) If any criterion performed poorly by an amount that is troubling to you (balances too low, incomes too low, expenses too high), call me to discuss the situation. It is likely I will be able to "talk you through" how to make appropriate rate adjustments to correct the situation. If not, I can do a model revision for a small fee.

7. I normally recommend repeating Number 6 each following year until you have raised rates and fees by a certain percentage. However, in your case, costs, capital improvements, debt and other things are likely to change, perhaps markedly, over the next few years. Therefore, I suggest you target five and nine years out for new rate analyses. At those times, have me or another rate analyst of your choice perform new rate analyses.

Table A: Water Rates From Water Model 1D

Table A: System Development Fees; Minimum and Unit Charges With No Usage Allowance Calculated by the Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

In addition to the minimum charges below:

Each customer and ARU would be charged a meter loan repayment asssessment of $170 in Fiscal Year 2022-23. That would drop to $85 in Fiscal Year 2023-24 and thereafter.

Each landowner and ARU would be charged a meter loan asssessment of $220 in each of Fiscal Years 2022, 2023 and 2024.

Water Meter Size in Inches	Meter Type	Fee per New Tap for Peak Costs	Annual Minimum Charge for Each Meter Size	Unit Charge per 1,000 Gallons For Following Ranges of Gallons Used Semi-annually: 0 to 99,999	100,000 to 199,000	200,000 or More
0.625	Displacement	$6,416	$519.70	$1.85	$2.31	$2.89
0.750	Displacement	$6,416	$519.70	$1.85	$2.31	$2.89
1.000	Displacement	$14,435	$562.99	$1.85	$2.31	$2.89
1.500	Displacement	$25,983	$625.33	$1.85	$2.31	$2.89
2.000	Displacement	$37,416	$687.04	$1.85	$2.31	$2.89
2.500	Displacement	$52,616	$769.09	$1.85	$2.31	$2.89
3.000	Singlet	$60,614	$812.26	$1.85	$2.31	$2.89
3.000	Compound, Class I	$60,614	$812.26	$1.85	$2.31	$2.89
3.000	Turbine, Class I	$59,667	$807.15	$1.85	$2.31	$2.89
4.000	Singlet	$76,714	$899.18	$1.85	$2.31	$2.89
4.000	Compound, Class I	$76,714	$899.18	$1.85	$2.31	$2.89
4.000	Turbine, Class I	$85,613	$947.21	$1.85	$2.31	$2.89

Closing

If you adopt the recommended rates and fees, and if future costs, growth, and other assumptions come to pass, you will build prudent reserves and fully fund the utility for several years to come. Those rates will bill customers fairly for the service they use. The conservation rate structure may encourage some customers to curb volume use a bit. Keep in mind that your future capital improvement costs will increase dramatically. As you get closer to that time, you should anticipate needing a new round of analyses that will likely lead to overall rate increases to cover those higher costs.

It is important that you examine incomes, costs, and accrual of balances each year to assure the rates are bringing in adequate revenue to meet needs and build reserves on schedule. 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.

Future inflationary increases are projected to raise regular rates by 3.0 percent per year, but because incomes are projected to rise faster, rate affordability should improve for several years.

Conclusion

"Conclusion" is a misnomer here. This report provides information upon which Skyline 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 modeled in this report and as described in more detail in my book. Eventually, you will start this cycle over.

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

- Everyone impacted by Skyline's water rates should at least be made aware of the results of this report.
- My default recommendation is to give any customer as much information as they want. If they want a copy of the full report, give them that.
- If media takes interest, give the media a copy of the full report so they can quote the report directly and accurately rather than be forced to "figure things out." Much of this is very complex. Few people know how to, or have the time to, calculate utility rates. Make it easy for everyone to get the facts right.
- For most customers, what would happen to their bills is as much as they will care to know about this analysis. To satisfy those information needs, Skyline can publicize the current and modeled rates and/or the bill comparisons.
- A few customers will want to know more, especially high-volume customers. Give them the full report if that is what they want.
- A good way to accomplish these things is to post the report on Skyline's Web site, Facebook page or other social 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 to pay one visit to the Board by remote contact, such as by Zoom, to discuss my findings and recommendations and answer questions. I look forward to meeting with the Board, answering everyone's questions and helping you get on your way to great rates.

Appendix A: Rate Analysis Methodology and Related Issues

Rate Setting Resources Beyond This Report

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

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

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

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

Recommendations for Policy and General Issues

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

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

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

must have a billing program that is user-friendly and robust. If your current billing program is not as usable as you would like, I recommend you acquire a program that is. A good first contact to research billing programs is to contact the rural water association.

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

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

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

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

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

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

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

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

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

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

Cost-based Rate Calculations

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

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.

A quote from page 5 of the Seventh Edition of the Manual:

> **KEY TECHNICAL ANALYSES OF COST-BASED RATE-MAKING**
>
> In establishing cost-based water rates, it is important to understand that a cost-of-service methodology does not prescribe a single approach. Rather, as the first edition of AWWA's Manual M1 noted, "the [M1 manual] is aimed at outlining the basic elements involved in water rates and suggesting alternative rules of procedure for formulating rates, thus permitting the exercise of judgment and preference to meet local conditions and requirements" (AWWA 1954). This manual, like those before it, provides the reader with an understanding of the options that make up the generally accepted methodologies and principles used to establish cost-based rates. From the application of these options within the principles and methodologies, a utility may create cost-based rates that reflect the distinct and unique characteristics of that utility and the values of the community.

That last sentence is critical. The analyst must take the community's situation into account.

I would summarize the Manual's 441 pages in a few words like this: Cost-to-serve rates require you to first determine the revenue need, then "functionalize" costs (determine their purpose), then allocate costs by function to rate classes, and finally, calculate a set of minimum charges, unit charges, system development fees and perhaps other fees within each class that will recover the costs caused by each class.

That methodology works fine for large systems with multiple rate classes. When there is only one rate class, or only a few in a small system and allocation of costs to classes would be onerous, or where direct classification of costs would keep things simpler, I forgo cost allocation to classes and simply functionalize costs and convert them directly into minimum and unit charges and system development fees.

Important Terms

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

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

What does all this mean? If a cost is incurred just because you have customers, it is a 100 percent fixed cost. If it is incurred due to flow or volume of the commodity, it is a 100 percent variable cost. System development costs are of two main types: peak capacity and base flow capacity. Peak flow costs can be recovered through a combination of system development (new connection) fees and surcharges to the minimum charge. Base flow costs could also be recovered that way, but those costs will end up being recovered through minimum and unit charges by default, based on how the overall rates "classify out." Small, simple systems spend very little on costs that these three types do not cover. And many do not need to be concerned much, if at all, about system development costs.

The troublesome part of the cost classification phase, and this is the case with allocating costs to rate classes, too, is this. Some costs are a blend of fixed and variable, so one must use their judgment and estimate those splits based on their nature and based on what the overall purpose of the system is:

- If the purpose of the utility is to own property and infrastructure, blended costs or those that are difficult to determine should be weighted heavily to the fixed cost side. By the way, owning things should not be the function of a utility. Rather, they should own things so they can provide services. That gets at the alternative.
- If the purpose of the utility is to provide the named service (water, sewer and so on), blended costs should be weighted heavily to the variable cost side.

When I do not know how a cost should be weighted, or I do not want my sense of how it should be weighted to influence the overall rate structure, I often postpone making the weighting "call" on those costs. I classify all other costs, without the unclassified costs' dollars in the mix. That classification results in a fixed versus variable costs ratio. I then bring the unclassified costs back in and apply the same fixed cost and variable cost percentages to those undetermined costs. That way, those costs do not skew the cost structure of the well-known costs.

Finally, based upon my experience since 1993 in administering SRF loans, state grants, and providing advisory services to utilities in rate setting, asset management, equipment repair and replacement scheduling and capital improvements planning, I have developed a good sense of what the purposes of various costs are, and I classify costs accordingly.

Some may debate the above notions and say, "Variable costs are only those that go up or down in direct relationships with how much commodity is served." Electricity is (almost) such a cost (electric service has a minimum charge, too). Water treatment chemicals are similar. Some would also argue, "Staff are not a variable cost because their salaries are going to be paid whether there is any flow of commodity or not."

I will grant that staff will be paid regardless, at least for a little while. But I would counter with, if you paid the electric bill and you paid for treatment chemicals, and you fired all the utility's staff, would the commodity still flow? Clearly, some of the cost of staffing must be considered a variable cost. Without staffing, even the most automated system would eventually shut down.

There is not getting around the fact that some costs are a blend of fixed and variable costs, and a few others, so one must make some "calls."

Now that I have "gotten way ahead of myself," I will return to discussing methodology and process.

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

The cost-needs approach is a static (one year) rate calculation. One could do a new rate study every year to arrive at the rates to assess each year. But that is a lot of work or expense with very little practical benefit to be gained.

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

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

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

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

Based on my calculations, the initially adjusted rates will be closer to a "cost-to-serve" structure than the current rates. And as across-the-board increases are applied, rates will move even closer to a cost-to-serve structure until the year used for cost classification has arrived. After that, additional across-the-board increases will move the rate structure further away from cost-to-serve. Eventually, a new rate analysis should be done to make the structure fair again.

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

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

Rate Analysis, in a Nutshell

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

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

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

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

That said, here are the basic steps:

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

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

complicated than that but understand that notion and you will understand cost-to-serve rates fairly well.

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

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

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

2. Capacity costs: In the ideal, capacity costs should be assessed on a cost-to-be-able-to-serve basis, but these costs are a long-term proposition. No one knows at present what the cost of capacity is because those costs unfold over decades. Thus, the dollar cost of capacity can only be estimated, but that is not a problem. The key is, whatever one estimates capacity will cost, or whatever portion of capacity a utility desires to recover with capacity charges, that cost should be divvied out to new connections and current customers on a fair basis. The following goes to that goal.
    - The American Water Works Association has done excellent research on the sustainable peak flow capacity of different water meter sizes and types, so I generally use the flow capacity of each meter size and type as the basis for divvying water and sewer peak flow capacity costs. That math is lengthy, so it is spread out over Tables 11 through 16 of the model(s).
    - The notion of capacity applies to all utility services, so when I calculate water and sewer rates where meters are used, I use meter flow capacity as the capacity share criterion.
    - When I calculate electric rates, I use what is commonly called the "demand" exerted on the wholesale power supplier. If the client produces its own power, I use the demand measured by the client's metering system.
    - When I calculate sanitation (trash collection) rates, I use the cubic foot capacity of the various bin and dumpster sizes times the number of pickups per month of each as the capacity criterion. Thus, for trash collection services except for the rare ones that actually weigh trash as it is collected, the capacity of bins times the pickup frequency becomes a component of the unit charge for each customer.

- Stormwater capacity is like trash collection in that impervious surface area is the usual capacity, and unit charge criterion. Square footage or the equivalent of impervious surface area appears in the rates as the unit charge analogue.

3. Future cost projections: I project costs ten years into the future. Generally, this is done by applying an expected inflationary factor to each cost. But it is also common that some costs, like the cost of debt service needed to build a new treatment plant in two years, will change future costs markedly. Such cost changes are estimated, then entered into the model in the year in which they are expected to occur. Some expenses, like postage, treatment chemicals and electricity for production, treatment, and distribution, rise with inflation plus growth in the customer base or use. Those are increased in future years by inflation and growth.

4. Reserves: Reserve goals are set through the tenth year. Those goals will only be met if (primarily) rates are set high enough and/or (secondarily) grants and subsidized loans are large enough to enable the utility to generate net revenues over the modeling period. The amount or percentages and types of reserves are dependent upon each utility's needs, so that is discussed in the foregoing report.

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

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

For some of our larger client utilities with more rate classes and more customers, total size of all the linked spreadsheets runs over 250 mega-bites. We run computers with lots of RAM and memory but some of the calculations for a larger utility can take around 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.

5. Calculate rates: The full suite of rates needed to fully fund the utility and do it fairly is a dynamic set of calculations, too complex to completely explain here. And each situation requires variations on this theme. I will leave out some details, so this is the "Cliff's Notes" version of rate calculation:

   - Capacity cost recovery is calculated first. Likewise, penalties collected, and other incomes are calculated. These revenues are deducted from the total revenue need to arrive at the revenues needed from user charge fees.

   - Next, the across-the-board future rate increase rate (a percentage) is then set. In the future, starting about one year after the initial rate adjustments have been done, rates will increase annually by this percentage. The revenue needed from the initial rate adjustments, here called the "net revenue need," will come from the revenues generated by the initial rate adjustments. (In truth, future inflationary revenue increases, plus interest earnings on balances accrued are dependent upon the rates that are initially set, so most

"pre-calculated" revenue streams are adjusted dynamically as initial rate revenues rise or fall.)

- The calculated bases for fixed costs and variable costs (Table 8) establish a ratio of the revenues that each rate component would generate in a cost-to-serve structure.
- To increase (or very rarely decrease) overall revenues to satisfy the net revenue need, each revenue stream is increased or decreased by the same percentage. Thus, the revenue streams remain in the same ratio to each other. That means they retain their cost-to-serve proportions.
- Once the overall revenue increase (or decrease) is established:
    - The base minimum charge is "back calculated" from the adjusted minimum charge revenue amount. (Every customer, regardless of their meter size, pays the base minimum charge.) The meter size-based surcharge, for water and sewer systems, is added to the base minimum charge to arrive at the full minimum charge for each meter size. (Similar math is done for other utility types.)
    - The average unit charge is calculated from the unit charge revenue amount. If inclining or declining rates are to be assessed, or if there is to be a usage allowance, unit charge revenues are calculated dynamically based on those variations.
    - The resulting rates are the starting user charge rates – the initial adjusted rates – what you will (hopefully) adopt initially. In later years, you will increase these starter rates and fees across-the-board by the inflationary factor, generally to keep them tracking with rising costs.
- After examining balances projected for future years, the future inflationary increase rate may be raised or lowered to enable the utility to accrue appropriate balances either sooner or later. That, of course, will result in initial rate adjustments that would need to be either lower or higher, respectively, to offset the change to the future adjustments rate.
- Finally, it is common for managers and decision-makers of utilities to want to "tweak" rates into a different structure, timing of adjustment or in other ways. Having built the model to handle "on-the-fly" adjustments, I model their preferences to arrive at the rates needed to fund the utility as they desire.

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

   If desired by the client, I present the report, my findings and recommendations, and answer questions, usually at a Council or Board meeting. Before COVID-19 that was always done in person or occasionally by phone call into their Council or Board meeting. During COVID-19, that has been done by remote video. After COVID-19, these meetings could be done either way, as the client desires. Many of my client systems are small and their management had not yet adopted on-line meetings. COVID has changed that, so I expect many of my future "meetings" will be on-line.

Cost-to-serve rates are considered by many, including me, to be the most mathematically fair and defensible rate structure. While I previously described how I do such calculations, it may still be unclear to you why I do calculations like that. The following should help you.

Utilities that serve customers through various meter sizes usually 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, "basic 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, the utility incurs one increment of this type of cost.
- 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.***

  These surcharges are added to the base minimum charge to arrive at the full minimum charge for each meter size.

  - Larger systems invariably have more large meter customers and that makes surcharging the larger meters worthwhile and fair.

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

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

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

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

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

- Most systems use, and should use, level unit charges – a unit charge that is the same regardless of how much volume a customer uses. With level unit charges, customers are assessed unit charges on an average unit cost basis. Such rates are the easiest to calculate, they are the easiest for a clerk to explain to a complaining customer on the phone and the revenues such rates will produce next year are the easiest to accurately predict. Most water utilities, and almost all sewer utilities assess level unit charges.
- The last major unit charge structure is called, "declining" rates. These are the reverse of conservation rates. I often call them, "use encouragement" rates. It is popular these days for many to belittle those who do not conserve resources at every opportunity. Declining rates are often scorned for that reason. However, if a system has an ample water supply and ample infrastructure to produce and distribute it, doing so will not cause unintended bad (mostly environmental) consequences; and if the governing body wants to encourage high use (which often entails such users hiring more or better paid workers), declining rates make good sense. Declining rates are most appropriate in areas that have many high-volume industrial users or folks in that area want to attract such users. Declining rates seem to be most common in the industrial east, but they seem to be less popular everywhere these days.

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 Model adjusts rates and fees accordingly. Such modeling enables me to do dynamic "what-if" scenario calculations. That enables me to arrive quickly at the "best fit" rates for each utility. Usually but not always, the client goes with what I recommended.

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 clients find that to be a very accurate and cost-effective way to maintain good rates.

Temptation Happens

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

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

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

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

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. Then, get around to the rest as soon as you can.
- You will get complaints about customers' bills going up. I do not want to be dismissive, but in my experience, most of the time, when the math is laid out for all to see, most people are understanding. Cost-to-serve rate analysis does not arrive at unfair rates. It arrives at fair rates. The degree by which some customers' bills change highlights the fact that rates are unfairly structured right now. Cost-to-serve rate adjustments are aimed at correcting that unfairness. If a customer's bill will go up a lot under the new rates, that means they have been subsidized a lot by other customers. They need to count themselves lucky to have gotten that subsidy before, but fairness demands that those rates should now end.
    - These statements do not mean "do-it-yourself" rate adjustments are always unfair or insufficient, or that "rate analyst" calculated rate adjustments always are fair and sufficient. I always try to calculate and advocate for rates that are fairly structured. But over time, costs and other conditions change, so even cost-to-serve rates I have calculated will become unfair after some years.
        - A good blend of fair rates and low cost to achieve them is this. You get a rate analysis done occasionally and adjust accordingly. For a few years after that, do-it-yourself across-the-board increases will keep revenues tracking with inflation.

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. I considered these principles as I prepared the foregoing rate analysis report and the model(s) that follow:

1. Water, sewer, and all other utilities are businesses, regardless of who owns them. The first order of business is, stay in business. Your customers want you to do that. They do not want their investments to be left high and dry without utility services to support them.

2. The second order of business is, perform in a business-like manner. First, be effective. If you do nothing else, be effective. Next, be as efficient as is reasonably possible. Efficiency tends to foster lower rates, which ratepayers appreciate. But effectiveness and efficiency fight against each other. In most utility services and situations, effectiveness trumps efficiency. It does not benefit water customers if you pump lots of water cheaply if that water will make them sick, or if too much of it leaks out of holes in the pipe. Customers also gain more benefit from water rates that are a bit higher than they would like, but that fund the utility sustainably.

3. If a service costs the utility money, the utility should recover that cost from the most logical "person" if that makes good business and community administration sense. For example, generally "growth should pay for growth." Developers should fairly pay for their consumption of utility capacity obligated to them by paying commensurate system development fees. Likewise, service users should pay for what they use. Each class of users should pay their fair share of service costs. Ideally, each individual user should do that, too.

4. It sometimes contradicts point number 3 above, but if adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, or discourage development that the community desires, you should consider the necessity of making the change carefully before doing it. For example, while it may be warranted, raising the minimum charge markedly to your residential customers may make it very difficult for fixed, low-income customers to pay their utility bill. That may cause more of them to pay late or not pay at all. That may trigger the utility's attorney to write collection letters to those customers and eventually require shutoff of service. Thus, in the attempt to generate more net revenue by raising rates, net revenues may go down due to non-payment and payment collection costs. Likewise, stifling development with uncompetitive system development fees costs a utility in the form of additional paying customers that choose to "build down the road." That forces existing customers to pay all the costs of the utility rather than sharing them with new customers.

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

5. While cost-based rates are the most demonstrably fair rate structure, purely cost-to-serve rates can be impractical for some utilities. Consider this: a 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, those rates will be 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 by complicated rates. Simpler rates are better for them.
    a. However, you or a good rate analyst should still calculate cost-to-serve rates, so even if you adopt something else, you will know what you are giving up.

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

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

This model calculated cost-to-serve rates overlaid with a conservation rate structure. It includes new connection fees. And it includes minimum charge surcharges and special assessments that together, will recover capacity costs.

October 18, 2021

This rate analysis model was produced by
Carl E. Brown, GettingGreatRates.com
1014 Carousel Drive, Jefferson City, Missouri 65101
(573) 619-3411
https://gettinggreatrates.com
carl1@gettinggreatrates.com

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.

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 Table 19.
Cost-to-serve Rates	Rates where, at the customer class level, fixed and variable costs caused by each customer class are paid by that class with minimum and unit charges, respectively. However, this analysis models takes it one step further and calculated cost-to-serve rates at the individual customer level.
Cost Types; Fixed and Variable	The two main types of costs are fixed - those that are related to the fact that someone is a customer; and variable - those that are related to the volume of the commodity delivered to customers. Generally, fixed costs should be recovered with minimum charges and variable costs with unit charges.
Coverage Ratio (CR)	Incomes available to pay debt divided by the amount of the debt for that year. A CR of 1.0 is "break-even." Most systems should have a CR greater than 1.25.
Current Position	For purposes of this report, for one year, the sum of all incomes and undedicated reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position is a good measure of overall financial health.
Declining Rates	Rates where unit charges go down as the volume used goes up
Fire Sprinkler Systems and Related Costs	Generally, fire suppression in businesses is provided by a built-in system of fire sprinklers. "Service" to such systems is primarily in the form of peak flow capacity availability to fight a fire. Capacity costs money, so larger, more sophisticated water systems should assess at least part of such costs to fire suppression systems.
Flat Rates	Rates where all users pay exactly the same fee regardless of the volume of service they use
Equivalent Dwelling Unit (EDU) or Equivalent Residential Unit (ERU)	This definition is for water and sewer service. Based upon number of water using fixtures, average flow, potential flow or similar criteria; the consumption rate of the average single family home is rated at one ERU. All other types of customers are then compared on this basis and multiples or parts of an ERU are assigned to each for billing purposes.

Definitions

Equivalent Residential Unit (ERU) for Stormwater	This definition is for stormwater. As compared to water and sewer, that are concerned with water flow, one ERU of stormwater service is the average square footage of impervious surface of a single family home. Then, larger and non-residential properties are rated by their multiples or parts of an ERU of impervious surface area for the purpose of billing for stormwater cost impacts. When there is a large variation in single family home size and impervious surface area, some cities and similar places use the smaller size range of homes as their ERU standard and assess larger homes at multiples of that ERU basis, as well.
Incremental Rate Increases (Inflationary Increases)	Rate increases done, generally annually, following the initial rate adjustment. The usual goal of such increases is to keep the system's incomes on track with inflation. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in response to the comprehensive rate analysis. Generally, the goal of such adjustments is to establish rates that cover the system's short-term expected costs and do it with a structure that is fair to ratepayers. Initial adjustments should be followed in subsequent years with incremental rate increases.
Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts, plus leaks in manholes and sewer lines (infiltration)
Infrastructure	Most commonly thought of as the hard assets, such as buildings, treatment plants and lines needed to provide service to customers connected to the system. In reality, staff, software and other "soft" assets should be thought of as infrastructure, as well.
Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of, or decommission, an asset. One asset may cost less to build but it may be more expensive to operate and maintain, yielding a higher total life-cycle cost.
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 generated during "profitable" years and retained to fund operating costs during times when costs exceed incomes.
Operating Revenues	Revenues collected in the form of user fees and similar operating cost-related fees
Operating Ratio (OR)	Current incomes divided by current expenses, not including debt. An OR of 1.0 is "break even." Most systems should have an OR of 1.25 or higher.
Payback Period	In this case, time required for the investment made to get this analysis done to return that investment through increased user and other fees.
Peak Flow Capacity or Demand	The volume of service that a user could demand for a short period of time at full volume use. In water systems, and generally in sewer systems, too, the peak flow capacity limiting factor is usually the size of the customer's meter or service line. In electric systems, demand for each commercial and industrial customer (and sometimes others) is usually calculated annually based upon the peak energy usage during a defined short period.
Proportional to Use Rates	Rates where the minimum charge recovers all fixed costs, the unit charge recovers all variable costs, the unit charge is the same for all volume sold, and there is no usage allowance in the minimum charge. This rate structure is similar to and often the same as cost-to-serve rates.
Replacement Schedule	A timetable that describes equipment replacement and important repairs that are too infrequent and/or too expensive to cover as annual operating costs but not so expensive that they need to be covered as capital improvements.
Replacement Reserves	Cash reserves used to fund the Replacement Schedule
Return on Investment	In this case, the dollar amount or percentage of revenue gain enabled by this rate analysis. Related to payback period.

Definitions

Snow Bird	A customer, usually residential, that goes away during part of the year. Most commonly, these are people of "means" who live in the north who "fly south" for the winter. But, this category includes everyone who is absent for a significant part of the year but returns to their permanent residence.
Stormwater	Precipitation that falls on and then leaves a site, flows elsewhere, potentially causing or adding to flooding and often carries with it sediment and pollutants.
Stormwater Management	The practice of reducing and mitigating off-site stormwater flows and impacts.
System Development Charge, or Fee	Fee assessed to pay for at least part of the cost to build system capacity. For purposes of this model, all charges related to connecting new customers will be "rolled together" into a system development charge, usually including a charge that buys a new customer system capacity. This combined charge may be a few hundred dollars for a residential customer, if little or no capacity costs are included, 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. This does not include 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 Goal or Operating Reserves Goal	The desired operating fund reserve, in dollars or percent, at a stated point in time. Small systems (1,000 connections) generally should target 35 percent or greater. Larger systems can target a lower percentage. The goal for each system should be based upon the needs of that system and the risk the customers are willing to take.

Table and Chart Descriptions

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	If applicable, detailed schedule of equipment replacements for next 20 years
Table 7 - Equipment Replacement Annuity Calculation	If applicable, calculation of the annual annuity (yearly savings amount) needed to pay for all equipment replacements as they come due and ending with the desired balance
Table 8 - Average Cost Classification	Sumation of a target year's costs and calculation of the "cost-of-service" rate structure basis for recovery of fixed costs and variable costs. Unless directed to do otherwise, this analysis developed cost-to-serve rates based on cost classification in this table.
Table 9 - Marginal Cost Classification	If applicable, calculation of costs incurred to serve a specified type of customer
Table 10 - Initial Rate Adjustments and Resulting Revenues	These are the modeled user rates and the resulting "blended" revenues they, and the current rates, will generate during the rate adjustment year
Table 11 - AWWA Safe Operating Flow by Meter Size	If applicable, this table calculates the meter equivalent ratio, which is used for calculating peak flow capacity-based system development fees, surcharges and revenues in Tables 13 through 16 for water meters, and when applicable, capacity costs for fire sprinklers.
Table 11B - Fire Sprinkler Peak Flow Capacity Factor	If applicable, this table shows peak flow capacity shares of various size fire sprinkler systems.
Table 12 - Flow Capacity Costs	If applicable, calculation of the various costs to build base and peak flow capacity to serve customers, when such fees will be based on water meter size
Table 12B - Capacity Costs Attributable to Fire Sprinkler Systems	If applicable, nearly the same as Table 12, except it applies to fire suppression systems.
Table 13 - System Development Fees	If applicable, calculation of meter size-based system development fees needed to recover costs calculated in Table 11, when such fees will be based on water meter size.
Table 13B - System Development Fees for Fire Sprinkler Systems	If applicable, nearly the same as Table 13, except it applies to fire suppression systems
Table 14 - Revenues From System Development Fees	If applicable, calculation of total fee revenues that would be generated during one full year at the fees in Table 13.
Table 14B - Revenues From System Development Fees for Fire Sprinkler Systems	If applicable, nearly the same as Table 14, except it applies to fire suppression systems
Table 15 - Minimum Charge Fees, Including Capacity Surcharges	If applicable, calculation of meter size-based capacity surcharges and minimum charges to recover costs calculated in Table 11, when such fees will be based on water meter size
Table 15B - Sprinkler System Capacity Charges	Nearly the same as Table 15, except it applies to fire suppression systems.
Table 16 - Revenues From Minimum Charge Surcharges	If applicable, calculation of total fee revenues that would be generated during one full year at the fees in Table 15.

Table 16B - Revenues From Sprinkler System Charges	Nearly the same as Table 16, except it applies to fire suppression systems
Table 17 - Financial Capacity Indicators and Reserves	Shows the financial effects of the modeled rates, costs, etc. on the utility and on the benchmark 5,000 gallon per month residential water or sewer customer, as appropriate
Table 18 - Bills Before and After Rate Adjustments	Bills at the modeled rates are compared to those under the current rates. Note: the modeled bills do not include capacity surcharges to the minimum charges unless they are included in the minimum charges column of Table 10.
Table 19 - User Statistics	If included, this table shows volumes and percentages of use, revenue generated and other statistics
Chart 1 - Operating Ratio	*Graph of operating ratio for 10 years as a result of the modeled rates and the current rates*
Chart 2 - Coverage Ratio	*Graph of coverage ratios for 10 years of the modeled rates and the current rates*
Chart 3 - 5,000 Gallon Residential User's Bill	*Graph of the bill for the benchmark 5,000 gallon per month residential user, with smallest available meter size (used in grant and loan eligibility determinations) as a result of the modeled rates, and the current rates*
Chart 4 - Affordability Index	*Graph of the affordability index for 10 years of the benchmark residential user's bill (used in grant and loan eligibility determinations)*
Chart 5 - Working Capital vs Goal	*Graph for 10 years of total (unobligated) cash assets at modeled rates compared to the goal for total cash assets*
Chart 6 - Value of Cash Assets Before Inflation	*Graph for 10 years of unobligated cash assets NOT adjusted for inflation at modeled rates and current rates*
Chart 7 - Value of Cash Assets After Inflation	*Graph for 10 years of unobligated cash assets adjusted for inflation at modeled rates and current rates. This is the real buying power of cash reserves.*
Chart 8 - Sum of All Reserves	*Graph of all reserves of all kinds at the modeled rates and at the current rates*

Table 1 - Rates

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

Rates were recently changed, so these are the current rates. Note that meters are read biannually, Spring and Fall, but customers are billed annually. The "Billing Cycle Minimum Charge" shown in the table is tied to meter readings, therefore, that amount must be doubled to arrive at the annual total minimum charge and readiness to serve charge.

Rates in Effect at End of Test Year

Customer Type, Rate Class or Meter Size	Billing Cycle Minimum Charge (Bi-annual)	Usage Allowance in 1,000s	Unit Charge per 1,000 Gallons
All Metered Usage	$309.71	0.000	$1.70
Readiness-to-Serve Unoccupied Lots	$309.71	0.000	$0.00

Table 2 - Test Year Usage
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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

Test year = the one-year period being analyzed starts: 7/1/2020

Date this model created: 8/24/2021

Residential meter readings per year: 2

Other customer readings per year: 2

Customer, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	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
All Metered Usage	0	999	171,444	7	444	4	3.8%	0.0%
	1,000	1,999	168,957	3	3,957	2	1.6%	0.0%
	2,000	2,999	166,155	2	4,155	1	1.1%	0.0%
	3,000	3,999	164,471	2	6,471	1	1.1%	0.0%
	4,000	4,999	162,387	3	13,387	2	1.6%	0.1%
	5,000	5,999	161,000	0	0	0	0.0%	0.0%
	6,000	6,999	157,863	5	31,863	3	2.7%	0.1%
	7,000	7,999	154,621	3	22,621	2	1.6%	0.1%
	8,000	8,999	151,362	2	16,362	1	1.1%	0.1%
	9,000	9,999	151,000	0	0	0	0.0%	0.0%
	10,000	14,999	725,602	9	105,602	5	4.9%	0.5%
	15,000	19,999	691,575	5	81,575	3	2.7%	0.4%
	20,000	29,999	1,294,120	14	344,120	7	7.7%	1.6%
	30,000	39,999	1,173,626	12	423,626	6	6.6%	2.0%
	40,000	49,999	1,054,614	9	394,614	5	4.9%	1.8%
	50,000	59,999	978,471	11	618,471	6	6.0%	2.9%
	60,000	69,999	881,313	6	391,313	3	3.3%	1.8%
	70,000	79,999	826,834	6	456,834	3	3.3%	2.1%
	80,000	89,999	755,129	5	415,129	3	2.7%	1.9%
	90,000	99,999	705,012	7	665,012	4	3.8%	3.1%
	100,000	121,451	1,351,908	9	1,007,692	5	4.9%	4.7%
	121,452	249,999	5,106,684	33	5,900,900	17	18.0%	27.3%
	250,000	499,999	3,447,381	20	7,197,381	10	10.9%	33.3%
	500,000	749,999	728,801	3	1,728,801	2	1.6%	8.0%
	750,000	999,999	280,231	1	780,231	1	0.5%	3.6%
	1,000,000	1,007,880	7,881	0	0	0	0.0%	0.0%
	1,007,881	1,100,000	0	1	1,007,881	1	0.5%	4.7%
			21,618,442	178	21,618,442	89	97.3%	100.0%
Readiness-to-Serve Unoccupied Lots	0	999	0	11	0	6	6.0%	0.0%
			0	11	0	6	6.0%	0.0%
Adjustment to Account for Multi-meter Customers Not Charged for Extra Meters	0	999	0	-6	0	-3	-3.3%	0.0%
			0	-6	0	-3	-3.3%	0.0%
		Grand Totals:	21,618,442	183	21,618,442	92	100%	100%

Table 3 - Operating Incomes and Basic User Data
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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)

$99,087	Census Bureau estimate of AMHI for the year	2018
$75,348	Census Bureau estimate of AMHI for the year	2014
$23,739	AMHI growth during this time period	
7.88%	Simple annual income growth rate during this time period (used to project incomes into the future)	

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

Basic User (Customer) Data

(First year balances and incomes are actual, subsequent years are projected.)	Inflation/ Deflation (–) Factor	Test Year	Analysis Year	Years Following the Analysis Year (for Which Results Have Been Projected)									
			0 Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
		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	7/1/30	7/1/31
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	N.A.	92	92	92	93	94	95	95	95	96	96	97	97
Customers Added or Lost (-) Each Year	N.A.	0.375	0.375	0.375	1.0	1.0	0.375	0.375	0.375	0.375	0.375	0.375	0.375
Customer Growth or Loss (-) Rate	N.A.	0.41%	0.41%	0.41%	0.41%	1.06%	0.40%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%
Actual (Test Year) and Projected Service, in Gallons	N.A.	21,618,442	21,707,042	21,795,642	22,031,909	22,268,176	22,356,776	22,445,376	22,533,977	22,622,577	22,711,177	22,799,777	22,888,377
How User Charge Fees Were Calculated, Accounting for New Customers and Future Rate Increases													
Actual or Calculated Sales Revenues		$79,598	$93,474	$113,610	$117,494	$121,511	$126,484	$130,795	$135,250	$139,855	$144,615	$149,535	$154,619
Additional Sales Revenues From New Customers			$1	$462	$478	$1,289	$501	$516	$532	$548	$564	$581	$599
Total Calculated Revenues (User Charge Fees)		$79,598	$93,475	$114,072	$117,971	$122,800	$126,985	$131,311	$135,782	$140,403	$145,179	$150,116	$155,218
Operating Incomes													
Water Maintenance, Overhead and Usage Fees	N.A.	$69,740	$81,898	$99,944	$103,361	$107,591	$111,258	$115,048	$118,966	$123,015	$127,199	$131,524	$135,995
Late Payment Charge	N.A.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New Water Taps or Connections (Current Rate Structure)	% Above	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Meter Size-based System Development Fees (Tables 13, 14)	% Above	$0	$7	$2,478	$6,806	$7,011	$2,708	$2,789	$2,873	$2,959	$3,048	$3,139	$3,233
Interest Income	N.A.	$413	$489	$379	$422	$550	$628	$548	$489	$378	$364	$376	-$110
Usage Fee Revenue Loss (-) Due to Conservation	15.0%	$0	-$5,498	-$2,707	-$513	-$635	-$550	-$569	-$588	-$607	-$628	-$649	-$671
Total Operating Incomes		**$70,153**	**$76,896**	**$100,094**	**$110,077**	**$114,517**	**$114,044**	**$117,817**	**$121,740**	**$125,744**	**$129,984**	**$134,391**	**$138,448**

Table 4 - Operating Costs and Net Income

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

In the first column showing dollars, this table depicts water system expenses during the test year, plus the water system portion of expenses that are shared by the road fund and the water fund. Expenses for the "Analysis Year" and thereafter are projected at an expected inflation rate and perhaps as adjusted by utility management.

(First year costs and net incomes are actual, subsequent years are projected.)	Inflation/ Deflation (–) Factor	Test Year Starting 7/1/20	Analysis Year 0 Year Starting 7/1/21	Years Following the Analysis Year (for Which Results Have Been Projected) 1st Year Starting 7/1/22	2nd Year Starting 7/1/23	3rd Year Starting 7/1/24	4th Year Starting 7/1/25	5th Year Starting 7/1/26	6th Year Starting 7/1/27	7th Year Starting 7/1/28	8th Year Starting 7/1/29	9th Year Starting 7/1/30	10th Year Starting 7/1/31
6149 · Advertising Expense	3.0%	$85	$87	$90	$93	$96	$98	$101	$104	$108	$111	$114	$118
6020 · Bank Charges	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
6040 · Bonding Fees	3.0%	$85	$88	$90	$93	$96	$99	$101	$105	$108	$111	$114	$118
6041 · Clerical Contract Services	3.0%	$15,515	$15,980	$16,459	$16,953	$17,462	$17,986	$18,525	$19,081	$19,653	$20,243	$20,850	$21,476
6120 · Contract Labor Expense	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
6121 · Water Contingency Expense	3.0%	$5,283	$13,000	$13,390	$13,792	$14,205	$14,632	$15,071	$15,523	$15,988	$16,468	$16,962	$17,471
6122 · Depreciation	0.0%	$11,656	$13,331	$17,981	$17,981	$17,981	$38,610	$38,610	$38,610	$38,610	$38,610	$75,989	$75,989
6127 · Insurance - Board of Directors	3.0%	$675	$695	$716	$738	$760	$783	$806	$830	$855	$881	$907	$934
6128 · Insurance - Property Liability	3.0%	$1,250	$1,271	$1,309	$1,348	$2,509	$2,584	$2,661	$2,741	$2,823	$2,908	$2,995	$3,085
6148 · Office Expense	0.0%	$261	$261	$261	$261	$261	$261	$261	$261	$261	$261	$261	$261
6044 · Professional Fees	3.0%	$4,030	$4,151	$4,276	$4,404	$4,536	$4,672	$4,812	$4,957	$5,105	$5,258	$5,416	$5,579
6133 · Repair and Maintenance Expense	3.0%	$20,598	$21,216	Table 6	Table 6	Table 6	Table 6	Table 6	Table 6	Table 6	Table 6	Table 6	Table 6
6207 · Snow Removal Expense	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
6220 · Utilities Expense	3.0%	$3,552	$3,659	$3,768	$3,881	$3,998	$4,118	$4,241	$4,369	$4,500	$4,635	$4,774	$4,917
6119 · Water Operations Expense	3.0%	$5,673	$5,843	$6,018	$6,198	$6,384	$6,576	$6,773	$6,976	$7,186	$7,401	$7,623	$7,852
6221 · Water Testing Expense	3.0%	$626	$645	$664	$684	$705	$726	$747	$770	$793	$817	$841	$867
6219 · Water Leak Detection Expense	3.0%	$350	$1,250	$1,288	$1,326	$1,366	$1,407	$1,449	$1,493	$1,537	$1,583	$1,631	$1,680
6043 · Website Administration Expense	3.0%	$269	$277	$285	$294	$303	$312	$321	$331	$341	$351	$362	$372
6223.2 · Water Capital Imprmnts - Other	3.0%	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
6223.1 · Water Infrastructure Study	3.0%	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 Repair & Replacement (R&R) Annuity	0.0%	-$29,210	-$29,210	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Payment to R&R Reserve (Table 7)	0.0%	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210	$29,210
User Charge Analysis Services of GettingGreatRates.com	5.0%	$0	$6,191	$0	$0	$6,826	$0	$0	$7,525	$0	$0	$8,297	$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		**$69,908**	**$87,945**	**$95,806**	**$97,257**	**$106,696**	**$122,072**	**$123,692**	**$132,885**	**$127,078**	**$128,848**	**$176,347**	**$169,928**
Net Income (or Loss)		$246	-$11,048	$4,288	$12,820	$7,821	-$8,028	-$5,875	-$11,145	-$1,334	$1,136	-$41,956	-$31,480
Working Capital Goal: 70%	In Dollars, That is:	$48,935	$61,561	$67,064	$68,080	$74,687	$85,450	$86,584	$93,020	$88,955	$90,194	$123,443	$118,950

Notes: Skyline currently budgets for a "Repair & maintenance" cost item, highlighted green in the middle of the table. I converted that to an annualized repair and replacement annuity with Tables 6 and 7 and this new item appears near the bottom of the table, also highlighted green. Several cost items highlighted yellow will change, based on information from Skyline. Depreciation will change over time as new assets are added to the system.

Table 5 - Capital Improvement Program (CIP)

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

This table depicts categories of capital improvements, and their expected funding, as covered in detail in an engineering report dated May, 2021 by Nelson Engineering.

	Test Year Starting	Analysis Year 0 Year Starting	1st Year Starting	2nd Year Starting	3rd Year Starting	4th Year Starting	5th Year Starting	6th Year Starting	7th Year Starting	8th Year Starting	9th Year Starting	10th Year Starting
	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	7/1/30	7/1/31
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)												
Replace residential water meters, plus related items	$0	$0	$145,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storage and Supply Improvements	$0	$0	$0	$0	$0	$643,165	$0	$0	$0	$0	$0	$0
Supply, Storage & Distribution Improvements Not Included in Projects Above (For planning purposes, first 1/3 of the total package assumed here)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,165,421	$0
Total Debt-paid Portion of Projects	$0	$0	$145,000	$0	$0	$643,165	$0	$0	$0	$0	$1,165,421	$0
Planned Spending, WWDC Grant-paid Portion of Projects (CIP costs to be grant-funded are shown here.)												
Well #4 Groundwater Exploration	$0	$0	$176,003	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storage and Supply Improvements	$0	$0	$0	$0	$408,997	$0	$0	$0	$0	$0	$0	$0
Total Grant-paid Portion of Projects	$0	$0	$176,003	$0	$408,997	$0	$0	$0	$0	$0	$0	$0
Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)												
Well #4 Easement	$0	$6,960	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Well #4 Groundwater Exploration	$0	$0	$58,668	$0	$0	$0	$0	$0	$0	$0	$0	$0
Compiled Financial Statements (Required by Lending Agency)	$0	$0	$2,500	$2,500	$2,500	$2,500	$0	$0	$0	$0	$0	$0
Total Cash-paid Portion of Projects	$0	$6,960	$61,168	$2,500	$2,500	$2,500	$0	$0	$0	$0	$0	$0
Total CIP Costs	**$0**	**$6,960**	**$382,171**	**$2,500**	**$411,497**	**$645,665**	**$0**	**$0**	**$0**	**$0**	**$1,165,421**	**$0**
Debt Repayment												
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: 20 years at a 0.0% interest rate.)												
Loan Originated in 1st Year				$7,250	$7,250	$7,250	$7,250	$7,250	$7,250	$7,250	$7,250	$7,250
Loan Originated in 4th Year							$32,158	$32,158	$32,158	$32,158	$32,158	$32,158
Loan Originated in 9th Year												$58,271
Total Debt Payments	$0	$0	$0	$7,250	$7,250	$7,250	$39,408	$39,408	$39,408	$39,408	$39,408	$97,679
Total CIP-related Payouts	**$0**	**$6,960**	**$382,171**	**$9,750**	**$418,747**	**$652,915**	**$39,408**	**$39,408**	**$39,408**	**$39,408**	**$1,204,830**	**$97,679**
(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												
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	$64,389	$72,047	$64,941	$101,801	$139,399	$178,357	$188,436	$198,716	$209,202	$219,898	$268,187
Working Capital Transferred in	$52,733	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt and CIP Reserves Interest Earned (or Paid)	$0	$1,288	$1,441	$1,299	$2,036	$2,788	$3,567	$3,769	$3,974	$4,184	$4,398	$5,364
6122 · Depreciation	$11,656	$13,331	$17,981	$17,981	$17,981	$38,610	$38,610	$38,610	$38,610	$38,610	$75,989	$75,989
Meter Loan Repayment Assessment, 2022-23 $170 Each Customer/ARU, in 2023 and Thereafter Drop to $85 Each Customer/ARU	$0	$0	$14,620	$7,310	$7,310	$7,310	$7,310	$7,310	$7,310	$7,310	$7,310	$7,310
Well #4 Groundwater Exploration Assessment, Starting in 2022-23 $220 Each Landowner/ARU Each Year for 3 Years	$0	$0	$20,020	$20,020	$20,020	$0	$0	$0	$0	$0	$0	$0
Total Available Internal Funds	$64,389	$79,007	$126,109	$111,551	$149,149	$188,107	$227,844	$238,124	$248,610	$259,306	$307,595	$356,850
Grant and Loan Proceeds (External Funds)												
Grants Assumed in Second Sub-section Above	$0	$0	$176,003	$0	$408,997	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 1st Year			$145,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 4th Year						$643,165	$0	$0	$0	$0	$0	$0
Loan Originated in 9th Year											$1,165,421	$0
Total Available External Funds	$0	$0	$321,003	$0	$408,997	$643,165	$0	$0	$0	$0	$1,165,421	$0
Total Available Funds	**$64,389**	**$79,007**	**$447,112**	**$111,551**	**$558,146**	**$831,272**	**$227,844**	**$238,124**	**$248,610**	**$259,306**	**$1,473,016**	**$356,850**
Outcomes (This CIP spending and funding plan will result in the following cash needs and ending balances each year.)												
Total Available Funds	**$64,389**	**$79,007**	**$447,112**	**$111,551**	**$558,146**	**$831,272**	**$227,844**	**$238,124**	**$248,610**	**$259,306**	**$1,473,016**	**$356,850**
Total CIP-related Payouts	**$0**	**$6,960**	**$382,171**	**$9,750**	**$418,747**	**$652,915**	**$39,408**	**$39,408**	**$39,408**	**$39,408**	**$1,204,830**	**$97,679**
Debt and CIP Reserves Ending Balances	**$64,389**	**$72,047**	**$64,941**	**$101,801**	**$139,399**	**$178,357**	**$188,436**	**$198,716**	**$209,202**	**$219,898**	**$268,187**	**$259,170**

Notes: Skyline needs various system improvements. The earlier projects will be relatively low cost. Distribution system improvements - replacing distribution lines and related work - will be expensive and is assumed at this time to be funded with debt and special asssessments. For planning purposes of this analyst, only 1/3 of the estimated total for the more distant project is expected to be done during this ten-year planning horizon.

Table 6 - Equipment Replacement Schedule - Detailed

Skyline I&SD, Jackson Skyline | Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

Note: The detailed cost items in this table come from the WWDC Level II Study. The "Initial Annualized Average Replacement Needs" item was added to bring the total annualized R&R costs up to a prudent level.

Year Beginning	Initial Annualized Average Replacement Needs (Based on Test Year R&R)	Clean Valve Box (V-15)	Install Existing Fire Hydrant	Relocate Air Release Valve (ARV-1)	Replace ARV-2, Install Bollards (2 each)	Replace Water Main Valves (V-13 & C-20)			Total Annual Replacement Costs
7/1/20	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/21	$16,000	$0	$6,000	$27,000	$0	$0	$0	$0	$49,000
7/1/22	$16,000	$546	$0	$0	$2,443	$7,644	$0	$0	$26,633
7/1/23	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/24	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/25	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/26	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/27	$16,000	$546	$0	$0	$0	$0	$0	$0	$16,546
7/1/28	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/29	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/30	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/31	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/32	$16,000	$546	$0	$0	$0	$0	$0	$0	$16,546
7/1/33	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/34	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/35	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/36	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/37	$16,000	$546	$0	$0	$0	$0	$0	$0	$16,546
7/1/38	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/39	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/40	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/41	$16,000	$0	$6,000	$27,000	$0	$0	$0	$0	$49,000
7/1/42	$16,000	$546	$0	$0	$2,443	$7,644	$0	$0	$26,633
7/1/43	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000
7/1/44	$16,000	$0	$0	$0	$0	$0	$0	$0	$16,000

Table 7 - Equipment Replacement Annuity Calculation

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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
2.50%	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
7/1/20	Analysis Year	$16,000	$16,000	$0	-$16,000	$52,391
7/1/21	1st Year	$49,000	$50,470	-$320	-$37,580	$53,962
7/1/22	2nd Year	$26,633	$28,255	-$940	-$37,565	$55,581
7/1/23	3rd Year	$16,000	$17,484	-$939	-$26,779	$57,249
7/1/24	4th Year	$16,000	$18,008	-$669	-$16,247	$58,966
7/1/25	5th Year	$16,000	$18,548	-$406	-$5,992	$60,735
7/1/26	6th Year	$16,000	$19,105	-$150	$3,963	$62,557
7/1/27	7th Year	$16,546	$20,349	$79	$12,902	$64,434
7/1/28	8th Year	$16,000	$20,268	$258	$22,101	$66,367
7/1/29	9th Year	$16,000	$20,876	$442	$30,877	$68,358
7/1/30	10th Year	$16,000	$21,503	$618	$39,201	$70,409
7/1/31	11th Year	$16,000	$22,148	$784	$47,047	$72,521
7/1/32	12th Year	$16,546	$23,591	$941	$53,607	$74,697
7/1/33	13th Year	$16,000	$23,497	$1,072	$60,392	$76,937
7/1/34	14th Year	$16,000	$24,201	$1,208	$66,608	$79,246
7/1/35	15th Year	$16,000	$24,927	$1,332	$72,222	$81,623
7/1/36	16th Year	$16,000	$25,675	$1,444	$77,200	$84,072
7/1/37	17th Year	$16,546	$27,348	$1,544	$80,606	$86,594
7/1/38	18th Year	$16,000	$27,239	$1,612	$84,189	$89,192
7/1/39	19th Year	$16,000	$28,056	$1,684	$87,026	$91,867

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	$0
Minimum Annual Annuity	$25,362
Discretionary Annuity	$3,847

Required Annual Deposit (Annuity) to Replacement Account **$29,210**

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

Table 8 - Average Cost Classification

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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: 7/1/2022 through 6/30/2023

Cost Items	Cost During Rate Structure Basis Year	Fixed Cost %	Variable Cost %	Fixed Cost	Variable Cost
6149 · Advertising Expense	$90	100.0%	0.0%	$90	$0
6020 · Bank Charges	$0	100.0%	0.0%	$0	$0
6040 · Bonding Fees	$90	100.0%	0.0%	$90	$0
6041 · Clerical Contract Services	$16,459	52.6%	47.4%	$8,658	$7,802
6120 · Contract Labor Expense	$0	52.6%	47.4%	$0	$0
6121 · Water Contingency Expense	$13,390	52.6%	47.4%	$7,043	$6,347
6122 · Depreciation	$17,981	52.6%	47.4%	$9,458	$8,523
6127 · Insurance - Board of Directors	$716	100.0%	0.0%	$716	$0
6128 · Insurance - Property Liability	$1,309	100.0%	0.0%	$1,309	$0
6148 · Office Expense	$261	100.0%	0.0%	$261	$0
6044 · Professional Fees	$4,276	100.0%	0.0%	$4,276	$0
6133 · Repair and Maintenance Expense	$0	100.0%	0.0%	$0	$0
6207 · Snow Removal Expense	$0	100.0%	0.0%	$0	$0
6220 · Utilities Expense	$3,768	0.0%	100.0%	$0	$3,768
6119 · Water Operations Expense	$6,018	50.0%	50.0%	$3,009	$3,009
6221 · Water Testing Expense	$664	100.0%	0.0%	$664	$0
6219 · Water Leak Detection Expense	$1,288	100.0%	0.0%	$1,288	$0
6043 · Website Administration Expense	$285	100.0%	0.0%	$285	$0
6223.2 · Water Capital Imprmnts - Other	$0	100.0%	0.0%	$0	$0
6223.1 · Water Infrastructure Study	$0	100.0%	0.0%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$29,210	50.0%	50.0%	$14,605	$14,605
User Charge Analysis Services of GettingGreatRates.com	$0	52.6%	47.4%	$0	$0
Total CIP-related Payouts, Less Capacity Charges From Tables 14 & 16 (This value can be negative)	$52,177	50.0%	50.0%	$26,089	$26,089
Grand Total Costs, Weighted Avg Percentages	$147,984	52.6%	47.4%	$77,841	$70,143

Bases for Cost to Serve Rate Structure

		100%	$147,984
Number Customers During Year Defined Above	92	Unbilled-for Water is Estimated at	11%
Billed Volume, in Gallons, During Year Defined Above	21,795,642	Unbilled-for Water is Estimated at This % of Average Cost (Marginal Cost)	60%
Average Fixed Cost/User Semi-annually	$421.90	Resulting Marginal Cost of Unbilled-for Water	$5,250
Average Variable Cost to Produce per 1,000 Gallons During Year Defined Above	$3.22	Test Year Customer Volume, in Gallons	21,618,442
Gallons per Billing Cycle Used by Average Residential Customer	121,452	+ Test Year Unbilled-for Water, in Gallons	2,725,058
		Total Test Year Volume, in Gallons, From Master Meter Readings	24,343,500

Table 9 - Marginal Cost Classification

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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: Readiness-to-serve

Below, it is assumed that marginal variable costs are being calculated for: Unbilled-for water

The marginal rate structure basis year runs from: 7/1/2022 through 6/30/2023

Cost Items	Fixed Cost	Variable Cost	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Fixed Cost	Marginal Variable Cost
6149 · Advertising Expense	$90	$0	100%	0%	$90	$0
6020 · Bank Charges	$0	$0	100%	0%	$0	$0
6040 · Bonding Fees	$90	$0	100%	0%	$90	$0
6041 · Clerical Contract Services	$8,658	$7,802	100%	0%	$8,658	$0
6120 · Contract Labor Expense	$0	$0	100%	100%	$0	$0
6121 · Water Contingency Expense	$7,043	$6,347	100%	100%	$7,043	$6,347
6122 · Depreciation	$9,458	$8,523	100%	100%	$9,458	$8,523
6127 · Insurance - Board of Directors	$716	$0	100%	0%	$716	$0
6128 · Insurance - Property Liability	$1,309	$0	100%	0%	$1,309	$0
6044 · Professional Fees	$4,276	$0	100%	100%	$4,276	$0
6133 · Repair and Maintenance Expense	$0	$0	100%	100%	$0	$0
6207 · Snow Removal Expense	$0	$0	100%	100%	$0	$0
6220 · Utilities Expense	$0	$3,768	100%	100%	$0	$3,768
6119 · Water Operations Expense	$3,009	$3,009	100%	100%	$3,009	$3,009
6221 · Water Testing Expense	$664	$0	100%	100%	$664	$0
6219 · Water Leak Detection Expense	$1,288	$0	100%	100%	$1,288	$0
6043 · Website Administration Expense	$285	$0	100%	0%	$285	$0
6223.2 · Water Capital Imprmnts - Other	$0	$0	100%	100%	$0	$0
6223.1 · Water Infrastructure Study	$0	$0	100%	100%	$0	$0
Annual Payment to R&R Reserve (Table 7)	$14,605	$14,605	100%	50%	$14,605	$7,302
User Charge Analysis Services of GettingGreatRates.com	$0	$0	100%	100%	$0	$0
Total CIP-related Payouts, Less Capacity Charges From Tables 14 & 16 (This value can be negative)	$26,089	$26,089	100%	50%	$26,089	$13,044
Grand Total All Costs	$77,580	$70,143			$77,580	$41,994
	$147,722				$119,574	

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

	Semi-annual Marginal Fixed Cost per Customer	Marginal Variable Cost per 1,000 Gallons
	$420.49	
Marginal Fixed Cost as a Percent of Total Fixed Cost:	100%	$1.93
Marginal Variable Cost as a Percent of Total Variable Cost:		60%

Table 10 - Initial Rate Adjustments and Resulting Revenues
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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

Conservation Rate Block Multiplier: 125%

After rate adjustments are made, customers will be billed semi-annually.

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

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Semi-annual Minimum Charge for Calculation Purposes	New Usage Allowance in 1,000s	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Total "Blended" Sales This Year
All Metered Usage	0	999	$2,453	$259.85	0.000	$1.85	$6	$2,459
	1,000	1,999	$1,213	$259.85	0.000	$1.85	$3	$1,216
	2,000	2,999	$899	$259.85	0.000	$1.85	$2	$902
	3,000	3,999	$897	$259.85	0.000	$1.85	$2	$899
	4,000	4,999	$1,202	$259.85	0.000	$1.85	$3	$1,205
	5,000	5,999	$273	$259.85	0.000	$1.85	$1	$274
	6,000	6,999	$1,812	$259.85	0.000	$1.85	$4	$1,816
	7,000	7,999	$1,189	$259.85	0.000	$1.85	$3	$1,192
	8,000	8,999	$874	$259.85	0.000	$1.85	$2	$877
	9,000	9,999	$256	$259.85	0.000	$1.85	$1	$257
	10,000	14,999	$4,010	$259.85	0.000	$1.85	$10	$4,020
	15,000	19,999	$2,717	$259.85	0.000	$1.85	$7	$2,724
	20,000	29,999	$6,518	$259.85	0.000	$1.85	$17	$6,534
	30,000	39,999	$5,696	$259.85	0.000	$1.85	$14	$5,710
	40,000	49,999	$4,568	$259.85	0.000	$2.31	$13	$4,581
	50,000	59,999	$5,056	$259.85	0.000	$2.89	$16	$5,072
	60,000	69,999	$3,347	$259.85	0.000	$2.89	$11	$3,359
	70,000	79,999	$3,255	$259.85	0.000	$2.89	$11	$3,266
	80,000	89,999	$2,824	$259.85	0.000	$2.89	$10	$2,834
	90,000	99,999	$3,357	$259.85	0.000	$2.89	$11	$3,368
	100,000	121,451	$5,072	$259.85	0.000	$2.89	$17	$5,089
Readiness-to-Serve Unoccupied Lots	0	999	$3,397	$259.85	0.000	$0.00	$8	$3,405
Adjustment to Account for Multi-meter Customers Not Charged for Extra Meters	0	999	-$1,853	$259.85	0.000	$0.00	-$4	-$1,857
Total Rate Revenue at Current Rates			$93,171	Total Rate Revenue at Modeled Rates			$284	
Prorated capacity surcharges from Table 16 (minimum charges above do not include them)								$18
Total Blended Rate Revenues for the Year								$93,474

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 - AWWA Safe Operating Flow by Meter Size

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

Water meter data source: Table VII.2-5, page 338, American Water Works Association Manual M1, Principles of Water Rates, Fees and Charges, Seventh Edition

Fire sprinkler data source: National Fire Protection Association

This table calculates the meter equivalent ratio, which is used for calculating peak flow capacity-based system development fees, surcharges and revenues in Tables 13 through 16 for water meters, and when applicable, capacity costs for fire sprinklers.

Meter Size, in Inches	Meter Type	Maximum-Rated Safe Operating Flow, in gallons per minute	Meter Equivalent Ratio (Capacity Shares)	Equivalent Fire Sprinkler Square Footage*
Five Eighths	Displacement	20	1.0	100
Three Quarters	Displacement	30	1.5	150
One Inch	Displacement	50	2.5	250
One & a Half Inch	Displacement	100	5.0	500
Two Inch	Displacement	160	8.0	800
Three	Singlet	320	16.0	1,600
Three	Compound, Class I	320	16.0	1,600
Three	Turbine, Class I	350	17.5	1,750
Four	Singlet	500	25.0	2,500
Four	Compound, Class I	500	25.0	2,500
Four	Turbine, Class I	630	31.0	3,150
Six	Singlet	1,000	50.0	5,000
Six	Compound, Class I	1,000	50.0	5,000
Six	Turbine, Class I	1,300	65.0	6,500
Eight	Compound, Class I	1,600	80.0	8,000
Eight	Turbine, Class I	2,800	140.0	14,000
Ten	Turbine, Class II	4,200	210.0	21,000
Twelve	Turbine, Class II	5,300	265.0	26,500

* If applicable, see Table 12B for sprinkler calculations and explanations.

Table 12 - Flow Capacity Costs
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

Building system capacity and connecting new customers to the system costs money. Those costs must be recovered. That can be done on the "front end" with system development fees and connection fees. It can be done later with system development surcharges to the minimum charge. It is usually most practical to use a blend of both. This table shows capacity costs. From these costs, system development fees and surcharges were developed in Tables 13 through 16.

Peak and Base Flow Capacity Costs

	Costs Related to Water Service						
Fixed Assets Original Value (Capacity Cost)	% of That Value Attributable to Regular Water Service	% Attributable to Water Peak Capacity	Peak Water Capacity Cost	Annual Water Peak Capacity Cost (31.2-year Weighted-average Depreciation)*	% of Value Attributable to Water Base Flow Capacity	Base Flow Capacity Cost for Water Service	Annual Water Base Capacity Cost (31.2-year Weighted-average Depreciation)*
$415,627	100.0%	50.0%	$207,813	$8,991	50.0%	$207,813	$8,991

*** It is assumed full system replacement costs will escalate each year by: 3.0%**

How Water System Capacity Costs Will Be Recovered

These costs are modeled to be recovered from system development fees in Tables 13 and 14

Part of Peak Flow Capacity Costs to be Recovered by System Development Fees

26.76%	Target Percentage of Annualized Costs to Recover
$2,405.86	Target Portion of Annualized Costs to Recover
$6,415.62	Peak Capacity Cost per Capacity Share

Part of Base Flow Capacity Costs to be Recovered by System Development Fees, if Any

0.0%	Target Percentage of Annualized Costs to Recover
$0.00	Target Portion of Annualized Costs to Recover
$0.00	Base Capacity Cost per New Capacity Share

Note: Base flow costs exist, but they will not be recovered with system development fees. Rather, they will be recovered by default from regular user charge fees.

In addition to peak and base flow-based system development fees caculated above, each new connection should reimburse the utility for all "out-of-pocket" connection costs it incurs. Such costs were not included in these calculations.

These costs are modeled to be recovered from minimum charge surcharges in Tables 15 and 16

Part of Peak Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

73.24%	Target Percentage of Costs to Recover
$6,584.64	Target Portion of Costs to Recover in One Full Year
$3,292.32	Target Portion of Costs to Recover in Semi-annual Surcharges
$17.32	Semi-annual Surcharge per Peak Capacity Share

Table 13 - System Development Fees
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

This table calculates system development fees to assess to each meter size. Size for nearly half of the system's meters is currently unknown, therefore, the unknown meters are included in the size class called, "One Inch or Smaller."

Note: Larger meter sizes are available in two or more types, some 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.

Premium for Out-of-District Service 100%

Economy of Scale Adjustment to Peak Capacity Factors[3] 90%

Meter Size	Meter Type	Meter Size in Inches	Meter Size in Square Inches	Number Meters This Size	New Taps (Customer Growth) in a Typical Year	AWWA Capacity "Share" Factor, Compared to 5/8 Inch Meter	Economy of Scale Adjustment to Peak Capacity Factors	Capacity Shares Each Meter Size After Adjustment	Foot Notes	Peak Capacity Cost per Capacity Share From Table 11	Peak Capacity Cost per Meter This Class	**Fee per New Tap for Peak Costs**
In-District												
Five Eighths	Displacement	0.625	0.307	11	0.4	1.0	100%	1.0		$6,416	$6,416	**$6,416**
Three Quarters	Displacement	0.750	0.442	5	0.0	1.0	100%	1.0	1	$6,416	$6,416	**$6,416**
One Inch or Smaller	Displacement	1.000	0.785	73	0.0	2.5	90%	2.3		$6,416	$14,435	**$14,435**
One & a Half Inch	Displacement	1.500	1.767	1	0.0	5.0	81%	4.1		$6,416	$25,983	**$25,983**
Two Inch	Displacement	2.000	3.142	1	0.0	8.0	73%	5.8		$6,416	$37,416	**$37,416**
Two & a Half Inch	Displacement	2.500	4.909	0	0.0	12.5	66%	8.2	2	$6,416	$52,616	**$52,616**
Three Inch	Singlet	3.000	7.069	0	0.0	16.0	59%	9.4		$6,416	$60,614	**$60,614**
Three Inch	Compound, Class I	3.000	7.069	0	0.0	16.0	59%	9.4		$6,416	$60,614	**$60,614**
Three Inch	Turbine, Class I	3.000	7.069	0	0.0	17.5	53%	9.3		$6,416	$59,667	**$59,667**
Four Inch	Singlet	4.000	12.566	0	0.0	25.0	48%	12.0		$6,416	$76,714	**$76,714**
Four Inch	Compound, Class I	4.000	12.566	0	0.0	25.0	48%	12.0		$6,416	$76,714	**$76,714**
Four Inch	Turbine, Class I	4.000	12.566	0	0.0	31.0	43%	13.3		$6,416	$85,613	**$85,613**
				91	0.4							
				91	0.4							

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.

[3] 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
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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

Meter Size	Meter Type	New Taps (Customer Growth) in a Typical Year	Fee per New Tap for Peak Costs	**Total Annual System Development Fees**
In-District				
Five Eighths	Displacement	0.4	$6,416	**$2,406**
Three Quarters	Displacement	0.0	$6,416	**$0**
One Inch or Smaller	Displacement	0.0	$14,435	**$0**
One & a Half Inch	Displacement	0.0	$25,983	**$0**
Two Inch	Displacement	0.0	$37,416	**$0**
Two & a Half Inch	Displacement	0.0	$52,616	**$0**
Three Inch	Singlet	0.0	$60,614	**$0**
Three Inch	Compound, Class I	0.0	$60,614	**$0**
Three Inch	Turbine, Class I	0.0	$59,667	**$0**
Four Inch	Singlet	0.0	$76,714	**$0**
Four Inch	Compound, Class I	0.0	$76,714	**$0**
Four Inch	Turbine, Class I	0.0	$85,613	**$0**
	Total:	0.4		**$2,406**

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

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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

Meter Size	Meter Type	Capacity Shares Each Meter Size After Adjustment	Semi-annual Surcharge per Peak Capacity Share (Table 11)	Peak Capacity Cost per Meter Size	Cost-to-Serve Minimum Charge From Table 10	**Semi-annual Minimum Charge Each Meter Size**
In-District						
Five Eighths	Displacement	1.0	$17.32	$17.32	$242.53	**$259.85**
Three Quarters	Displacement	1.0	$17.32	$17.32	$242.53	**$259.85**
One Inch or Smaller	Displacement	2.3	$17.32	$38.96	$242.53	**$281.49**
One & a Half Inch	Displacement	4.1	$17.32	$70.13	$242.53	**$312.66**
Two Inch	Displacement	5.8	$17.32	$100.99	$242.53	**$343.52**
Two & a Half Inch	Displacement	8.2	$17.32	$142.01	$242.53	**$384.55**
Three Inch	Singlet	9.4	$17.32	$163.60	$242.53	**$406.13**
Three Inch	Compound, Class I	9.4	$17.32	$163.60	$242.53	**$406.13**
Three Inch	Turbine, Class I	9.3	$17.32	$161.04	$242.53	**$403.58**
Four Inch	Singlet	12.0	$17.32	$207.05	$242.53	**$449.59**
Four Inch	Compound, Class I	12.0	$17.32	$207.05	$242.53	**$449.59**
Four Inch	Turbine, Class I	13.3	$17.32	$231.07	$242.53	**$473.61**

Table 16 - Revenues From Minimum Charge Surcharges
Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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	Number Meters This Size	Total Adjusted Capacity Shares	**Annual Peak Capacity Surcharge Revenues**
In-District				
Five Eighths	Displacement	11	1	**$381**
Three Quarters	Displacement	5	1	**$173**
One Inch or Smaller	Displacement	73	2	**$5,688**
One & a Half Inch	Displacement	1	4	**$140**
Two Inch	Displacement	1	6	**$202**
Two & a Half Inch	Displacement	0	8	**$0**
Three Inch	Singlet	0	9	**$0**
Three Inch	Compound, Class I	0	9	**$0**
Three Inch	Turbine, Class I	0	9	**$0**
Four Inch	Singlet	0	12	**$0**
Four Inch	Compound, Class I	0	12	**$0**
Four Inch	Turbine, Class I	0	13	**$0**
		91	1,121	**$6,585**

Table 17 - Financial Capacity Indicators and Reserves

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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 7/1/20	0 Year Starting 7/1/21	1st Year Starting 7/1/22	2nd Year Starting 7/1/23	3rd Year Starting 7/1/24	4th Year Starting 7/1/25	5th Year Starting 7/1/26	6th Year Starting 7/1/27	7th Year Starting 7/1/28	8th Year Starting 7/1/29	9th Year Starting 7/1/30	10th Year Starting 7/1/31
Customary Affordability Index: Monthly Bill Equivalent for a 5,000 gal per Month, Small Meter Residential Customer	$60.12	$85.06	$99.20	$102.17	$105.24	$89.51	$92.20	$94.96	$97.81	$100.75	$103.77	$106.88
Annual Median Household Income for Teton County, WY (source: US Census Bureau)	$115,311	$124,393	$134,191	$144,760	$156,162	$168,463	$181,731	$196,045	$211,487	$228,144	$246,114	$265,499
Affordability Index: Current Rates First Column, Modeled Rates After That	0.63%	0.82%	0.89%	0.85%	0.81%	0.64%	0.61%	0.58%	0.55%	0.53%	0.51%	0.48%
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%.												
Estimated Operating Ratio: Current Rates First Column, Modeled Rates After That	1.00	0.87	1.04	1.13	1.07	0.93	0.95	0.92	0.99	1.01	0.76	0.81
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.	N.A.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments out of current incomes. 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 6/30/20	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	Balance Ending on 6/30/31	Balance Ending on 6/30/32
Cash and Cash Equivalents	$101,422	$48,935	$37,887	$42,175	$54,995	$62,816	$54,788	$48,914	$37,768	$36,434	$37,570	-$4,387	-$35,867
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$101,422	$48,935	$37,887	$42,175	$54,995	$62,816	$54,788	$48,914	$37,768	$36,434	$37,570	-$4,387	-$35,867
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$101,422	$48,935	$37,887	$40,910	$51,745	$57,330	$48,504	$42,004	$31,460	$29,438	$29,445	-$5,770	-$47,180
Repair & Replacement	$0	-$16,000	-$37,580	-$37,565	-$26,779	-$16,247	-$5,992	$3,963	$12,902	$22,101	$30,877	$39,201	$47,047
Debt and CIP Reserves	$0	$64,389	$72,047	$64,941	$101,801	$139,399	$178,357	$188,436	$198,716	$209,202	$219,898	$268,187	$259,170
Sum of All Reserves	$101,422	$97,324	$72,354	$69,551	$130,018	$185,968	$227,153	$241,312	$249,387	$267,738	$288,344	$303,001	$270,350

Table 18 - Bills Before and After Rate Adjustments

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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 its size and still cover many customers, this table shows bills for only the most common or extraordinary classes.

Customer, Rate Class or Meter Size	Gallons of Use	Customers at or Above This Volume But Below the Next	Customers Using This Volume or Less	Customers Using This Volume or More	Current Semi-annual Bill	Modeled Semi-annual Bill	Modeled Bill Increase or Decrease (-)
All Metered Usage Note: The two special assessments are included in the modeled bills	0	4	4	89	$309.71	$454.85	$145.14
	1,000	2	5	86	$311.41	$456.70	$145.29
	2,000	1	6	84	$313.11	$458.55	$145.44
	3,000	1	7	83	$314.81	$460.40	$145.59
	4,000	2	9	82	$316.51	$462.25	$145.74
	5,000	0	9	81	$318.21	$464.10	$145.89
	6,000	3	11	81	$319.91	$465.95	$146.04
	7,000	2	13	78	$321.61	$467.80	$146.19
	8,000	1	14	77	$323.31	$469.65	$146.34
	9,000	0	14	76	$325.01	$471.50	$146.49
	10,000	5	18	76	$326.71	$473.35	$146.64
	15,000	3	21	71	$335.21	$482.60	$147.39
	20,000	7	28	69	$343.71	$491.85	$148.14
	30,000	6	34	62	$360.71	$510.35	$149.64
	40,000	5	38	56	$377.71	$528.85	$151.14
	50,000	6	44	51	$394.71	$551.97	$157.27
	60,000	3	47	46	$411.71	$580.88	$169.18
	70,000	3	50	43	$428.71	$609.79	$181.08
	80,000	3	52	40	$445.71	$638.69	$192.99
	90,000	4	56	37	$462.71	$667.60	$204.89
	100,000	5	60	34	$479.71	$696.51	$216.80
	121,452	17	77	29	$516.17	$758.52	$242.34
	250,000	10	87	13	$734.71	$1,130.10	$395.39
	500,000	2	88	3	$1,159.71	$1,852.76	$693.05
	750,000	1	89	1	$1,584.71	$2,575.41	$990.71
	1,000,000	0	89	1	$2,009.71	$3,298.07	$1,288.36
	1,007,881	1	89	1	$2,023.10	$3,320.85	$1,297.75
Readiness-to-Serve Unoccupied Lots	0	6	6	6	$309.71	$454.85	$145.14

Note: Usage averaged 121,452 gallons semi-annually during the test year. The gold highlighted row shows what will happen to the bill for that volume - it will rise by approximately $242, which is $484 per year. The median customer's use is just above 50,000 gallons semi-annually. The yellow highlighted row for that use shows that those bills will rise by approximately $157, which is $314 per year. Finally, the last "hit" of use, 1,007,881 gallons, was the highest volume of use recorded for the test year.

Table 19 - User Statistics

Skyline I&SD, Jackson, WY, Water Rates Model 2021-1D

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:

121,452	Gallons: This is the average residential customer's usage per Semi-annual 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.

21,618,442	Gallons: The volume metered through customer meters that was available to be sold during the test year.
0	Gallons: The volume given away as a usage allowance during the test year.
$0	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 (Excluding Spec Assmts)
All Metered Usage	0	999	444	3.5	0.0%	100.0%	3.8%	0.0%	2.6%	2.1%
	1,000	1,999	3,957	1.5	0.0%	100.0%	1.6%	0.0%	1.3%	1.1%
	2,000	2,999	4,155	1.0	0.0%	100.0%	1.1%	0.0%	1.0%	0.8%
	3,000	3,999	6,471	1.0	0.1%	100.0%	1.1%	0.0%	1.0%	0.8%
	4,000	4,999	13,387	1.5	0.1%	99.9%	1.6%	0.1%	1.3%	1.0%
	5,000	5,999	0	0.0	0.1%	99.9%	0.0%	0.0%	0.3%	0.3%
	6,000	6,999	31,863	2.5	0.3%	99.9%	2.7%	0.1%	1.9%	1.5%
	7,000	7,999	22,621	1.5	0.4%	99.7%	1.6%	0.1%	1.3%	1.0%
	8,000	8,999	16,362	1.0	0.5%	99.6%	1.1%	0.1%	0.9%	0.8%
	9,000	9,999	0	0.0	0.5%	99.5%	0.0%	0.0%	0.3%	0.3%
	10,000	14,999	105,602	4.5	0.9%	99.5%	4.9%	0.5%	4.3%	3.5%
	15,000	19,999	81,575	2.5	1.3%	99.1%	2.7%	0.4%	2.9%	2.5%
	20,000	29,999	344,120	7.0	2.9%	98.7%	7.7%	1.6%	7.0%	5.8%
	30,000	39,999	423,626	6.0	4.9%	97.1%	6.6%	2.0%	6.1%	5.1%
	40,000	49,999	394,614	4.5	6.7%	95.1%	4.9%	1.8%	4.9%	4.6%
	50,000	59,999	618,471	5.5	9.6%	93.3%	6.0%	2.9%	5.4%	5.5%
	60,000	69,999	391,313	3.0	11.4%	90.4%	3.3%	1.8%	3.6%	4.0%
	70,000	79,999	456,834	3.0	13.5%	88.6%	3.3%	2.1%	3.5%	3.8%
	80,000	89,999	415,129	2.5	15.4%	86.5%	2.7%	1.9%	3.0%	3.4%
	90,000	99,999	665,012	3.5	18.5%	84.6%	3.8%	3.1%	3.6%	3.7%
	100,000	121,451	1,007,692	4.5	23.1%	81.5%	4.9%	4.7%	5.4%	6.0%
	121,452	249,999	5,900,900	16.5	50.4%	76.9%	18.0%	27.3%	20.2%	22.5%
	Totals for Class		21,618,442	89.0			97.3%	100.0%	98.3%	98.7%
Readiness-to-Serve Unoccupied Lots	0	999	0	5.5	0.0%	100.0%	6.0%	0.0%	3.6%	2.8%
	Totals for Class		0	5.5			6.0%	0.0%	3.6%	2.8%
Adjustment to Account for Multi-meter Customers Not Charged for Extra Meters	0	999	0	-3.0	0.0%	100.0%	-3.3%	0.0%	-2.0%	-1.5%
	Totals for Class		0	-3.0			-3.3%	0.0%	-2.0%	-1.5%
	Grand Totals		21,618,442				100.00%	100.00%	100.00%	100.00%

Chart 1 - Operating Ratio

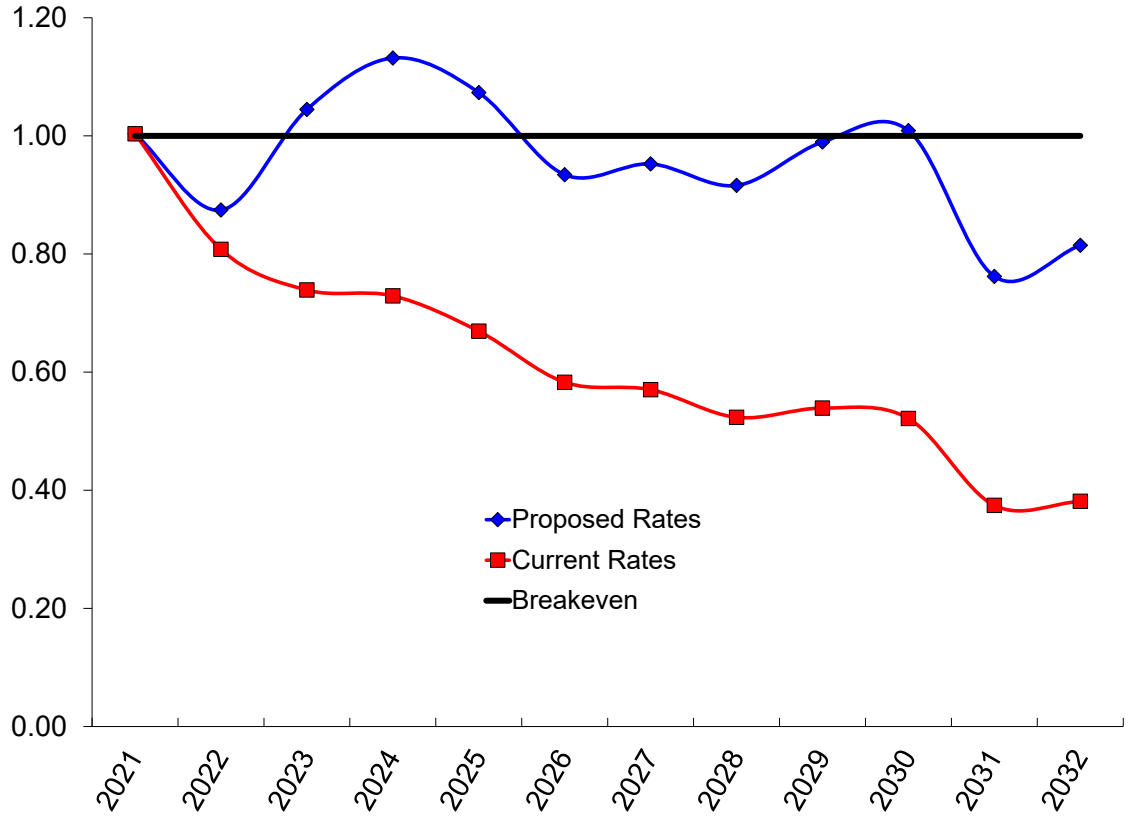

Chart 2 - Coverage Ratio

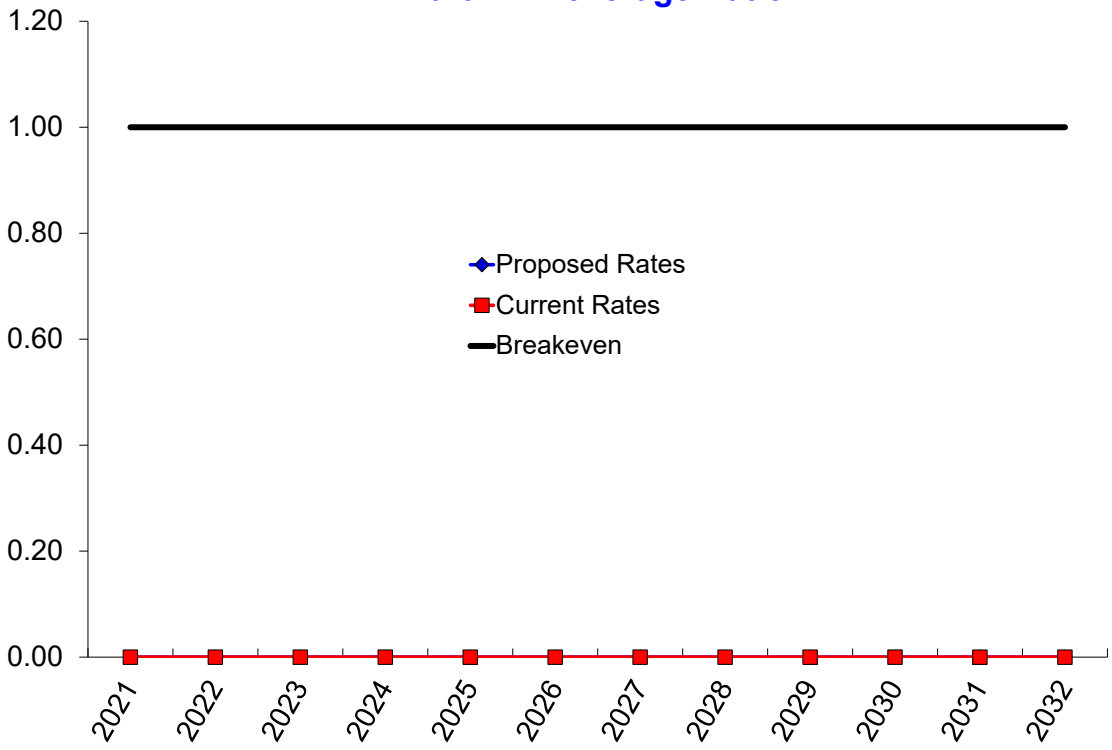

Chart 3 - Residential Users' Bills

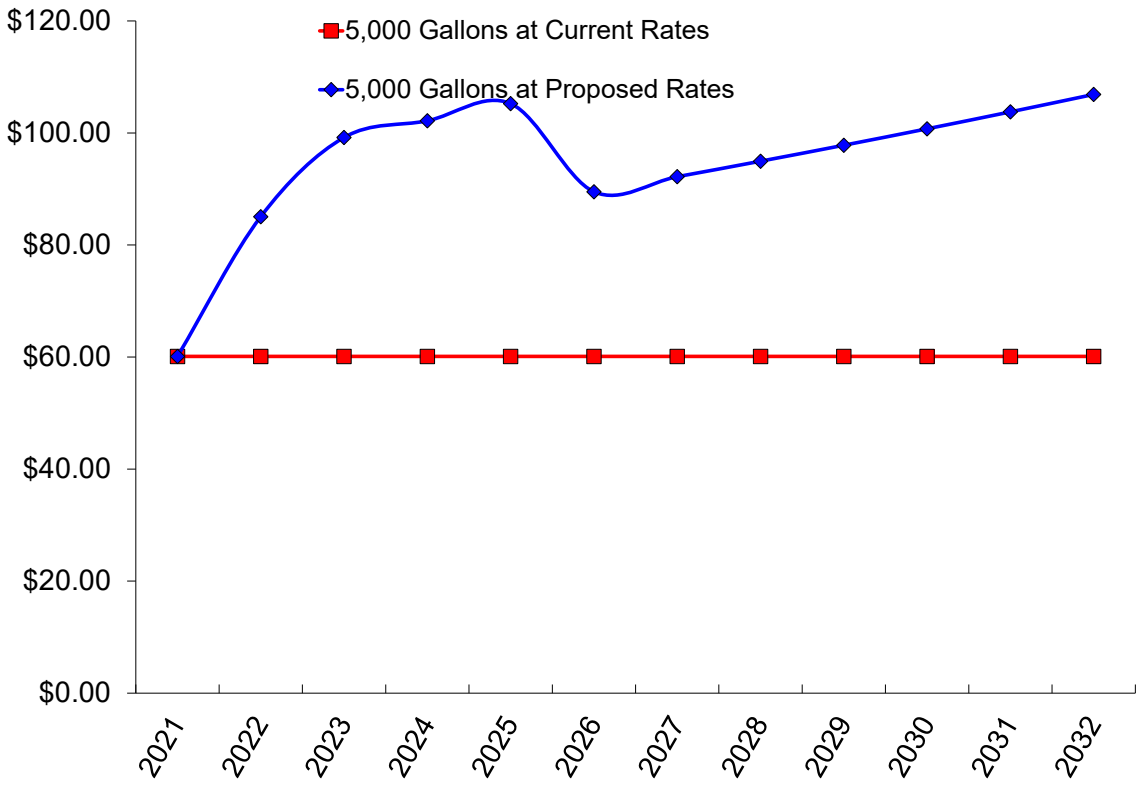

Chart 4 - Affordability

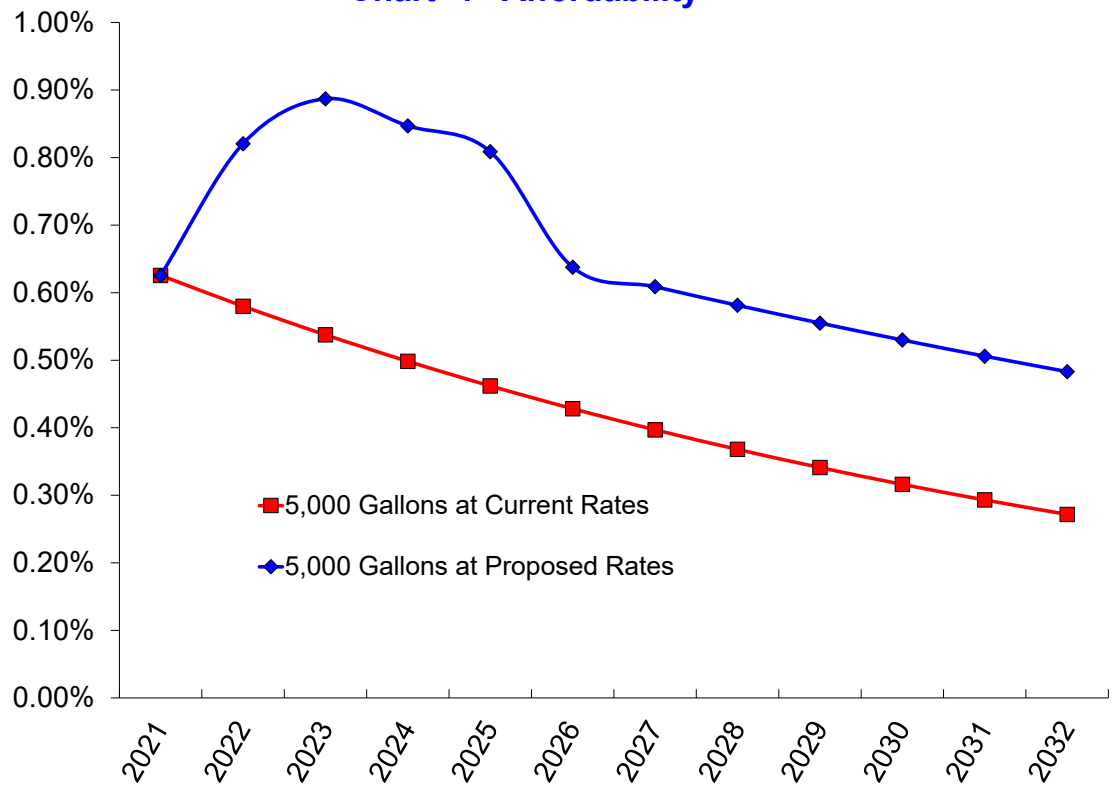

Chart 5 - Working Capital vs Goal

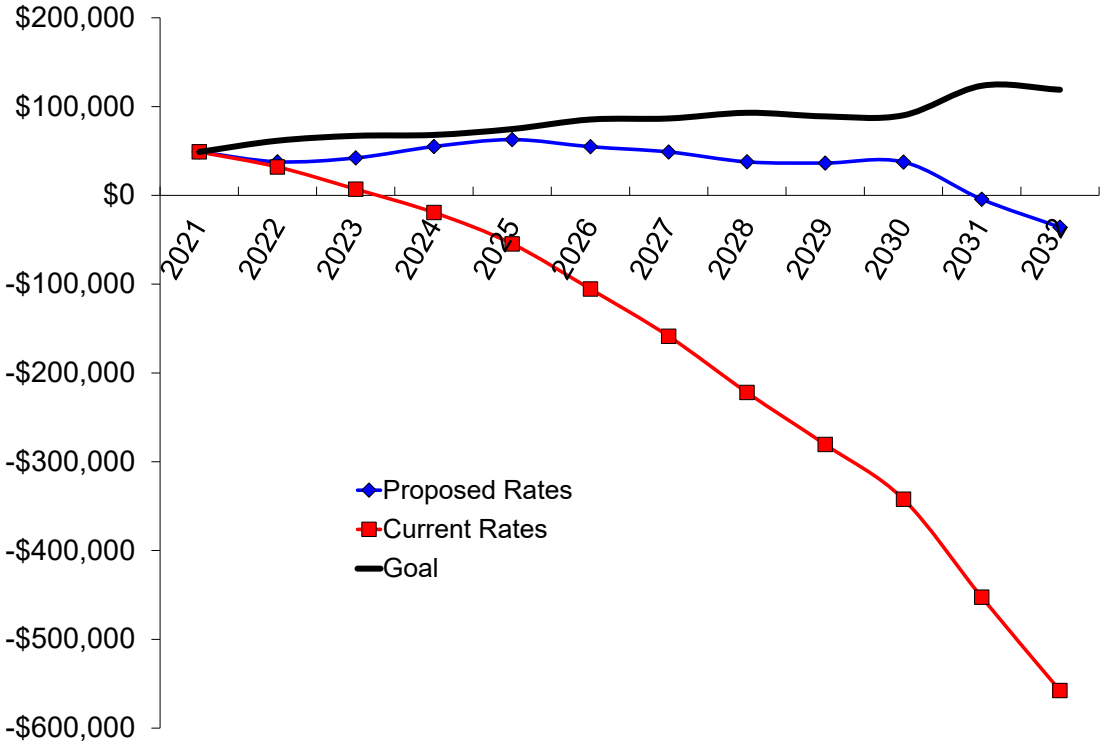

Chart 6 - Value of Cash Assets Before Inflation

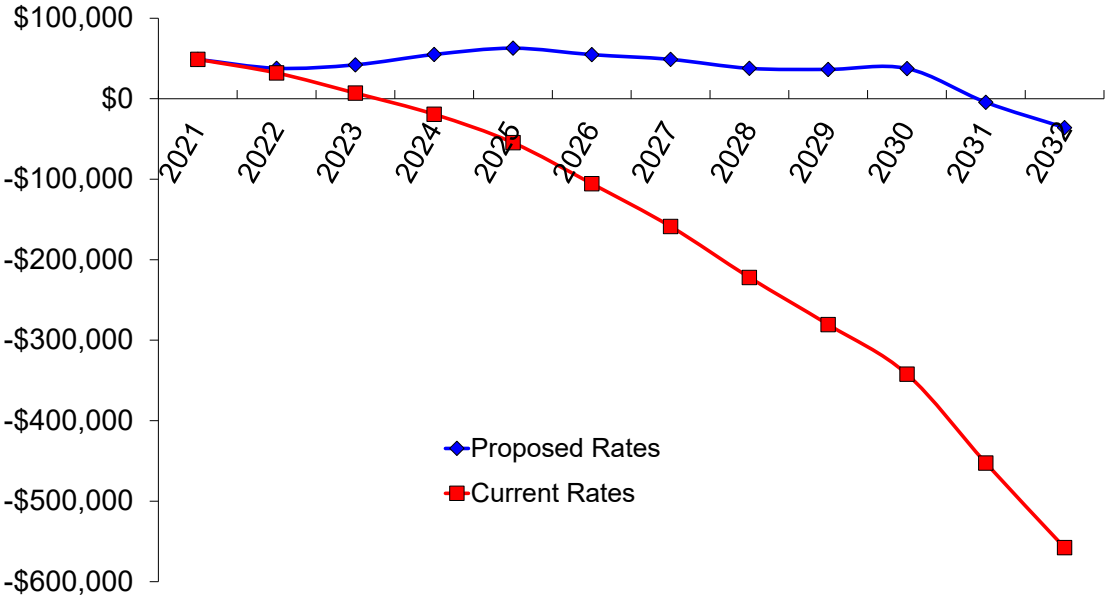

Chart 7 - Value of Cash Assets After Inflation

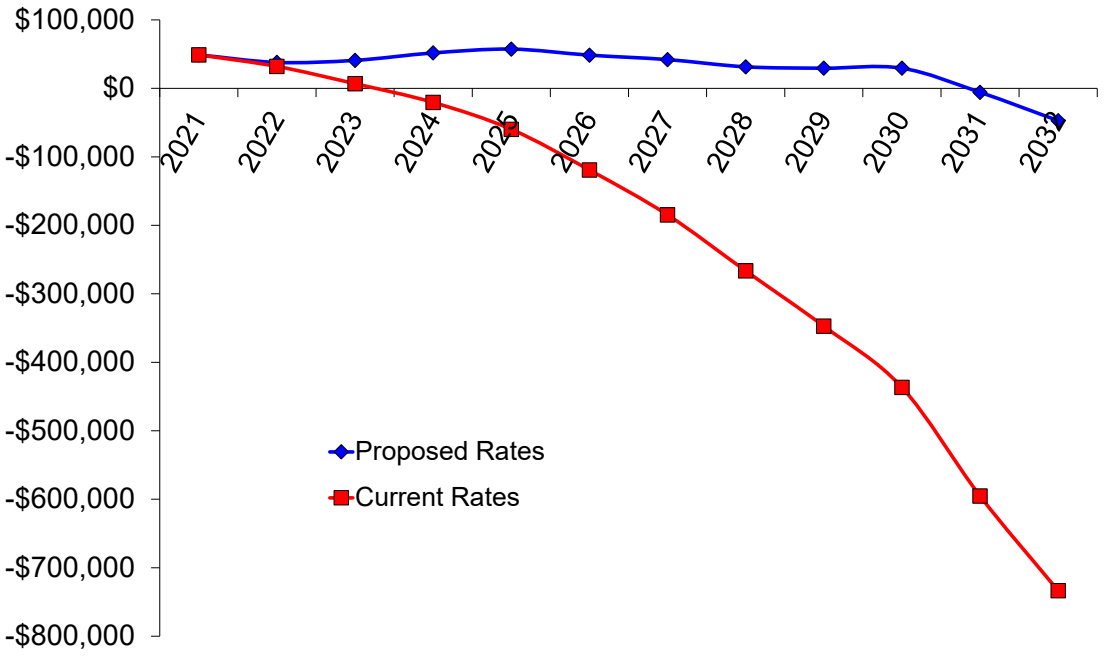

Chart 8 - Sum of All Reserves