WATER RATE ANALYSIS LETTER OF ENGAGEMENT

The City of Palmer Lake, Colorado (the City) solicited water rate analysis services, and GettingGreatRates, LLC (GGR), offered such services in a proposal dated August 24, 2018. That proposal is attached, and this letter is made a part of that proposal. This letter serves as a summary of the key parts of that proposal and it is the means by which the City and GGR agree on this arrangement for services and fees.

Having scoped the City's situation, GGR found that the City needs a water rate analysis and, most likely, one visit before the City council where GGR's president will review the analysis results, the rate setting recommendations and answer questions. If services need to be different than that, the proposal describes how to make those adjustments.

For the analysis and one visit described above, including discounts described in the proposal, the total fee will be ~~$7,832~~ $5887.00. Half of that fee will be due 90 days after the date this engagement letter is signed by the City. The last half will be due when the City accepts the final rate analysis report and GGR has made the visit to the council.

Therefore, by their signatures the parties agree to perform as specified in the proposal.

For: GettingGreatRates, LLC

Carl E. Brown, President

Jacquelyn C. Hicks, Vice-president

Date

For: City of Palmer Lake, Colorado

Mayor

Witness: Verla Brunner

Signature

Town Clerk

Print Name and Affiliation

9-27-18

Date

Proposal for Water Rate Analysis
Town of Palmer Lake, Colorado

Purpose and Need

This proposal describes the need, responsibilities, timing, investment and other issues for rate analysis (later referred to as the "analysis") of the water utility for the Town of Palmer Lake, Colorado (later referred to as "you"). This analysis will be performed by GettingGreatRates.com (later referred to as "I"). To adequately fund operation of your utility, build and maintain reserves, fund capital improvements and related debt service, and establish rates that are fairly structured for ratepayers, you need to analyze your rates and fees, set them appropriately and periodically reset them. The services proposed are intended to support you as you satisfy those needs.

Expected Results

With completion of the analysis:

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

Firm Revenues, Qualifications and References

One-hundred percent of the firm's revenues come from rate analysis and related work. Visit gettinggreatrates.com/ggr/freebies/ReferenceList.pdf or see the attached qualifications and references" document to see all rate analysis clients since 2013.

GettingGreatRates.com has one office in Jefferson City, Missouri but we operate nation-wide. Our work focuses almost exclusively on rate analysis and rate setting.

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

Jacki Hicks, the firm's Vice-president, will likely assist in this analysis by doing data testing and data input. Ms. Hicks prepares analysis models, especially those for analyses that require databases. She also performs data quality checks and enters raw data. Ms. Hicks has approximately 23 years of experience in accounting, financial assurance and complex spreadsheet and database design. Seven of those years have been devoted to water, sewer and other utility rate analyses.

GettingGreatRates.com serves as the rate analyst for the Colorado RATES Program https://gettinggreatrates.com/consulting/CORATES.pdf. Colorado Rural Water Association (CRWA) member systems qualify for a 25 percent discount on all fees. I have verified that Palmer Lake is a member system of CRWA. Therefore, you qualify for this discount.

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

Form of Agreement

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

Guarantee

In the unlikely event you feel I am not fulfilling the commitments in this proposal, simply tell me what you feel the problem is. I will do my best to make it right by you. If I still am not able to satisfy you, notify me by mail or e-mail. I will cease the services in question at that point, you will owe me nothing for those services, whether I have completed them or not, and I will refund any payments you may have already made for those services.

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

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

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

- Service package 1 is analysis of your water utility's user charge and other fee adjustment needs. Analysis will include output from modeling of your current financial situation and, perhaps, several proposed rate scenarios that depict rate structures and other variables you may want to consider. All potentially productive scenarios that you or I conceive of will be modeled and reported to you.
- Service package 2 is for on-site visits. Each visit will be one instance of this service package. (I generally recommend one on-site visit to present the completed analyses and recommendations and to answer questions at a public board meeting. That is especially useful when the analysis and rate adjustments are complex.)

You may add or drop service packages at any time.

Approach and Timeline

For most of my clients, rate analysis and eventual rate adjustments take about six months from start to finish. That is mainly because clients must gather data for the analysis and make some interim decisions as the project proceeds – that takes time. Completion time is only slightly affected by my workload. Generally, we are able to move analyses along almost as fast as data and guidance are available.

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

1. I will call your contact person, probably the day I am notified that I will be doing the analysis, to discuss data needs and get the contact started on initial data retrieval.
2. Your staff will assemble and send to me data and information, most of which is described in the "Data Needs Sheet," attached. I will guide your staff through the entire process. Where data is missing, I will create estimates or help you to create estimates. Initial data retrieval will be accomplished early on, preferably within a few weeks. But, some data will be acquired throughout the project.

3. I will analyze this data and information and build your rate analysis model(s).
    a. Coordinating with your contact, I will target a set of goals ten years in the future. These will include, at least, covering all costs, including capital improvements over that time period, and building appropriate reserves.
    b. I will model rates on a "cost-to-serve" basis to satisfy those goals. If you request other structures, I will model those, as well.
    c. Key model building will probably be completed about three months into the project, if you collect data quickly. Some modeling will continue through nearly the end of the project.
    d. Once the basic model has been built, "what-if" scenarios will be run to find the optimum mix of rate and fee levels and structures, capital improvement funding options, reserve levels, etc. to suit the needs of your utility.
4. During the last half of the project I will examine as many scenarios of your possible future as it makes sense. I will share with you all that are potentially useful.
5. You will likely choose to consider adopting rates and funding levels from the one or two most promising scenarios.
6. Final output will include a cover letter, a narrative report of my findings and recommendations and copies of the analysis scenario(s) that interest you.
    a. The project is "complete" when you say it is. Until then, I will reanalyze and issue supplemental reports until you are satisfied.
7. If you choose the on-site visit service package, I will present my final analysis results and recommendations to your board in person. While there I would also like to meet with staff to discuss how to effectuate needed changes to billing, equipment replacement scheduling and any other administration or operational issues that are discovered.
8. As you draft proposed amendments to your ordinances and budgets to effectuate the rate, fee and other changes, at your request I will review those changes to assure that they will accomplish what you intend to accomplish.
9. The board will pass ordinance amendments to effectuate new rates, fees, budget revisions and other changes. From this point forward, your utility will be headed to a better financial future.

Use of Electronic Technology

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

Work Coordination

Early on you will probably want to have me communicate primarily with your finance director and public works director or delegated staff. This stage is primarily a data gathering and modeling function. When we progress to the reporting out stage, you may want to have me begin communicating with others in preparation for developing rate, fee and policy decisions and actions or you can funnel that work through your finance director, as you prefer.

Investment

Because Palmer Lake is a member system of CRWA, you qualify for the 25 percent Colorado RATES program discount. Therefore, following are your complete investments for my services, materials and travel costs, based upon the service descriptions above:

- **Service package 1**, water rate analysis – full fee of $7,849, less the Colorado RATES Program 25 percent discount of $1,962, yields a **net fee of $5,887**
- **Service package 2**, on-site visits – $2,593, less the Colorado RATES Program discount of $648 yields a **net fee of $1,945 per visit**

If you choose service package 1 and one visit from package 2, the group of services you most likely need, the total investment will be $7,832, including Colorado RATES Program discounts of $2,611.

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

Proposal Acceptance

This proposal is effective through October 1, 2019, if you choose at least one service package by October 1, 2018. Once you tell me what service packages you desire, and you provide data to work with, I will immediately start the analysis.

Promptly given the data I need, there is no good reason why I cannot complete the analysis part of the project by February 1, 2019.

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

Payment

I will first invoice you the day of, or perhaps the day after I am notified you want me to do the analysis. In that invoice you will have the opportunity to pre-pay (make payment by the 30-day due date) and capture an additional 2.5 percent pre-payment discount. **For package 1 and one visit from package 2, that discount would amount to $195.79.**

If you choose not to pre-pay (about two-thirds of my clients select that option), I will re-invoice you for one-half of the project dollar amount after 90 days from proposal acceptance and the balance when I submit the final report package. You shall promptly pay the full amounts of those invoices. If you request and pay for services but later cancel those services, I will refund those fees to you. If I cancel any services in this proposal (I have yet to do such a thing), you will owe me no fees for those services and I will refund any fees you have already paid for those services.

In Closing

I am looking forward to the opportunity to conduct your water rate analysis, so you can get your rates and finances set on an excellent course.

Best regards,
GettingGreatRates.com

Carl E. Brown
President

March 4, 2019

John E. Cressman, Jr., Mayor
Town of Palmer Lake
P O Box 208
Palmer Lake, CO 80133P

Subject: Water User Charge Rate Analysis Report

Dear Mr. Cressman:

I want to thank you, the Board and everyone who attended the meeting February 28, to hear the results and recommendations from the water rate analysis I recently did for Palmer Lake. I think we had a very useful discussion and I sense that you will soon adopt fair and adequate rates.

In the meeting I gathered some feedback. Thus, the attached report, which is likely the final report, includes these changes:

- Correction of a few typographical errors, including correction of Table A in the narrative report, and
- Modeling of the option of making the initial rate adjustments over a two-year period, rather than in one adjustment. The suggestion I heard at the meeting from a member of the public was to phase in new rates over three years. I modeled that schedule and found that many customers' bills would go down markedly in the first year. Thus, I backed off to a two-year phase in to reduce the number of bills that would temporarily go down.

One of the Board members also asked about follow up work; what that might involve, whether I do such work as part of the original engagement or if I charge for such work. I will address that here:

1. As laid out in my proposal, my service under the lump sum fees will continue until you have arrived at a set of rates that you intend to adopt. I'm in it until I get you across that finish line.
2. After you adopt new rates you should monitor how things are going. If incomes, expenses and other things turn out much like I modeled, each year you should increase rates across the board as recommended in the report. You will need no extra help from me to do that.

3. Here is the follow up work part. In the future, if something significant turns out to be different than we had assumed, you should have your finance officer give me a call to discuss the situation. The easy example of such a situation is the assumption of loan funding of, and the total cost of the well project that is approaching. If that project comes in at higher cost, or if you can get grants that I did not consider, that could affect how you should adjust future rates.

    a. If modeling of such a situation, or anything else is fairly simple and takes two hours or less, I do such follow up work for no charge. It is fairly common for past clients to request such help.

    b. If it looks like it will take longer than that, I will estimate the time it would take and offer to do that work at the same hourly rate I used for calculating the original lump sum fee. I can do most such projects in about a half-day, usually costing around $500. A few of my clients come back, perhaps once or twice, for such updating for changed conditions. And, a few others come back regularly, just to check in and tune up rates, if indicated.

The easy way for you to think of such follow up work is this. If I can help you out and not charge you much, or not charge you at all, I will do that. You will be very pleased with that help and tell your colleagues about my services. Some of them will hire me. Thus, helping you in the future is the right thing to do. It is good marketing. And, it gets my help to more communities. We turn more bad rates into great rates.

Back to the attached report, it is nearly the same as what you have already reviewed, so the Board should review it promptly and adjust rates promptly. The adage, "time is money" applies to rate adjustments that result in an overall revenue increase.

Once you make the initial rate adjustments, I bet Palmer Lake will become another rate setting success story.

Best regards,
GettingGreatRates.com

Carl E. Brown
President

Enclosure

Palmer Lake, Colorado

Water Rate Analysis Report 2

Prepared March 4, 2019

Carl Brown, President
GettingGreatRates.com, LLC

Executive Summary

This report and modeling are updates to the report dated January 8, 2019. This report is nearly the same as the original except a few typographical errors have been corrected and another scenario has been added. The added scenario depicts phasing in the initial adjustments over two years instead of doing them in one year.

Table of Contents

Introduction

Palmer Lake, Colorado, later called "the Town" or "you," hired GettingGreatRates.com, later called "me," "we" or "I," to perform rate analysis of its water utility, produce a report of my findings and recommendations and provide guidance on rate setting.

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

Overall, water rate revenues need to go up somewhat substantially, at an average of 41.2 percent as compared to the test year (2017) rates. However, that is misleading. The Town increased rates rather substantially in 2018, to cover the added debt service it recently incurred for system improvements. Thus, when compared to the now current rates, the full-cost rates I calculated do not need to rise nearly so much.

Having adequate rates is rate setting job one. But, having fairly structured rates is very important, too. Cost-to-serve rates are the clearest way to achieve both goals, thus, I am recommending such rates. Based on the nature of your costs, the basic minimum charge is nearly high enough, but unit charges are too low. That rate restructuring will cause bills to low-volume, small meter customers to rise slightly, while high-volume, larger meter customers' bills will rise more.

I also recommend lowering the volume tiers at which the conservation rates "kick in." That is because, currently, the first conservation rates tier does not start until 15,000 gallons. Only 0.3 percent of the customers use that much volume and only 19.5 percent of the total volume exceeds that level. The result is, your conservation rates have little opportunity to actually encourage conservation. The structure I recommend will better match the usage pattern of your customers.

As to the analysis methodology, this report is the culmination of a process where I submitted information and data requests to Valerie Remington, Finance Officer, Human Resources Director for the Town. Ms. Remington replied. We went through several iterations of this step. I subsequently modeled the Town's finances and rates using that data and submitted those items for review and feedback. Ms. Remington reviewed those draft submittals to assure accuracy, and in some instances, she corrected data.

With that feedback, I prepared and submitted a draft full report. Again, Ms. Remington reviewed and gave me feedback, from which I revised the full report slightly to arrive at the report I presented to the Board at its meeting on February 28, 2019. As a result of feedback from that meeting, I have revised the report and model again. In response to a suggestion by a member of the public, I have also added a second model that assumes the initial rate adjustments will be phased in over two years rather than being done in one year. Actually, that person suggested a three-year phase in. I modeled that schedule and found that low-volume customers' bills would go down markedly, albeit, temporarily. I opted for a two-year phase in to limit the number and degree of temporary bill reductions.

The report is in two parts. The first is this narrative report that tells readers what should be done to the utility's rates and why. The second is a printout of the modeling spreadsheets. The model from which I recommend you adopt rates is called, "Palmer Lake, CO; Water Rates, Scenario 2019-2." Later, it is just called, "Model 2."

Model 2 is a set of integrated calculations that mathematically depict the utility's situation to arrive at a set of rates. A few tables from my modeling template were left out of this report. That was not an oversight. Those tables were not required for the calculation of your rates.

There is a second model called, "Palmer Lake, CO; Water Rates, Scenario 2019-3," and later just called, "Model 3." Model 3 depicts initial rate adjustments that would be phased in. Other than phasing of adjustments, Model 3 is nearly identical to Model 2. Therefore, the identical or nearly identical tables have been left out of Model 3 to shorten and simplify this report. And, the Model 3 section of the report only discusses those things that are different from the Model 2 section.

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

Finally, a note about meter sizes and the rates.

You already have meter size-based system development (connection) fees. That is a good practice. I recommend you also assess meter size-based minimum charges from a five-eighths inch water meter up to a four-inch meter. (I calculated rates for larger meters, too, but because you currently have no meters larger than three inches, in the interest of brevity and preventing confusion, I left larger meters out of this report.)

Why different rates for different meter sizes? Quite simply, "big" customers cost the utility more, in terms of capacity-to-serve. Thus, "big" customers would be assessed higher minimum charges to recover part of those higher costs.

The same notion can be applied to system development costs. In fact, I was quite pleased to discover that your current meter size-based system development fee structure, for a certain level of cost recovery, is quite close to a cost-based structure. I will expand that discussion in a later sub-section.

Rate Setting Resources Beyond This Report

Over the years, I have found that several topics are common to lots of utilities. Others can be important to certain utilities, or to any utility at a certain time. I used to specifically write such things into each rate analysis report. Now, I cover such things in separate guides, all available for FREE download at https://gettinggreatrates.com/freebies/freebies.shtml. Following is a brief listing of several guides and resources:

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

The first two give guidance on rate setting. In particular, there was some concern about how higher rates will affect elderly, fixed-income customers. I have an entire chapter on that issue in the Rate Setting Issues Guide.

The last two items are spreadsheet applications that enable users to build their own equipment repair and replacement and capital improvement schedules, calculating their costs and calculating revenue needs to pay those costs. In fact, these spreadsheets were extracted from my model template and made a bit more user-friendly for do-it-yourselfers. You will see these same sheets in Model 2 in this report.

There are other guides and resources on that site. All are FREE, so I invite you to check them out.

Cost-based Rate Calculations

To give you a synopsis of rate analysis, as I do it, and to make it easier for you to read and understand my findings and recommendations, a tutorial on my methodology is in order.

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

The cost-needs approach results in rates that are called, "cost-to-serve" or "cost-of-service" rates. Simply stated, the costs for a targeted time period, usually in the near future, are classified as "fixed," "variable," "capacity-to-serve," or some combination of the three. Fixed costs are converted to a minimum charge. Variable costs are converted to a unit charge. Capacity costs are converted to some combination of system development fees and surcharges to the minimum charge.

The classification process is done in Table 8, page 41. The "Average Fixed Cost/User/Month" from Table 8 of Model 2 is used for calculating the base minimum charge. Also from that table, the "Average Variable Cost to Produce/1,000 gallons" is the basis for calculating unit charges.

The second cut at rate structuring is to arrive at capacity costs. These were calculated in Table 11, page 44, and were distributed as system development fees in Table 13, page 46, and surcharges to the minimum charge in Table 15, page 48. The capacity "share" of costs of each meter size is based upon the calculated shares in Table 12, page 45. This table derives from American Water Works Association studies of the maximum sustainable flow capacity of different water meter sizes and types.

The third cut is to project costs ten years into the future. Generally, this is done by applying an expected inflationary factor to each cost. Some expenses, like postage, treatment chemicals and electricity, rise with inflation plus growth in the customer base or use. Those were increased in future years by both factors. And, because the Town gave me projected budgets for 2018 and 2019, I used those incomes and costs, except for those incomes and costs that were determined in the course of this analysis.

The fourth cut is to set reserve goals and project those 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.

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 utility need analysis only to this level of complexity – doing more results in rates that are overly complex.

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 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.

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

- The calculated bases for fixed costs and variable costs in Table 8, page 41, establish a ratio of the revenues that each rate component would generate in a cost-to-serve structure.
- To increase overall revenues to a target, each revenue stream is increased by the same percentage. Thus, the revenue streams remain in the same ratio to each other. They retain their cost-to-serve proportions.

- Once the overall revenue increase need is established, the base minimum charge is "back calculated" from the minimum charge revenue stream. The unit charge is "back calculated" from the unit charge revenue stream. The resulting rates are the starting rates, what you will (hopefully) adopt initially. In later years, you will increase these starter rates and fees across-the-board by an inflationary factor, to keep them tracking with rising costs.
- Of course, system development fees, minimum charge surcharges, investment earnings, penalties collected, and other income sources generate smaller revenues, which are added to rate revenues. And, I assumed future inflationary rate increases, so those revenues are added over the years, as well. Without explaining the details, you should have a sense that, while the math is complex, the rates are calculated to be proportionate to the costs each customer causes and the revenues will be adequate to cover all costs for the next ten years. That is, if our projection of costs and other things turn out to be accurate.

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

I usually recommend meter size-based minimum charges composed of two parts:

- One is the basic cost to make any level of service available to any customer. These are the so-called, "fixed costs" that come from the classification exercise. Billing, general administration and similar costs that are the same for all customers, regardless of "size," make up the base minimum charge. To make it easier to understand this concept, and related concepts, I use catch phrases. For this type of cost, the phrase is: *Fixed costs are related to the fact that you have customers.* For every customer, you incur one increment of this type of cost.
- The other part of the minimum charge is a surcharge intended to recover all or part of peak flow or unusual capacity costs. These are almost always based upon water meter size because the larger a meter is, the greater is its capacity to sustainably pass peak flows (as determined by American Water Works Association studies). This peak flow capacity relates well to the cost of building infrastructure "big enough" to handle peak flows. *Capacity costs are related to the fact that a particular customer has a certain capacity to demand flow or service, regardless of how much flow or service they actually use.* The surcharges are added to the base minimum charge to arrive at the surcharged, or full minimum charge for each meter size.

With this structure, the smallest meter size customer ends up paying the lowest minimum charge. As meter size goes up, a larger capacity surcharge is added to the base minimum charge resulting in ever higher total minimum charges for larger meter size customers. Remember: It's not just how much water such customers use that determines how much they cost the utility. It's how big and robust they cause the utility to be built, because the utility must be built robust enough to handle their maximum demand should they someday draw it.

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 actually use.

There are three main unit charge structures that I recommend in different situations:

- 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.

  The City currently assesses conservation rates and I recommend you stay with that structure, albeit, in a structure more in tune with use by your customers.

- Most systems use, and should use, level unit charges – a unit charge that is the same regardless of how much volume a customer uses. With level unit charges, customers are assessed unit charges on an average unit cost basis. Such rates are the easiest to calculate, they are the easiest for a clerk to explain to a complaining customer on the phone and the revenues such rates will produce next year are the easiest to accurately predict. I like to tell most of my clients that if they are going to err either on the side of complex rates that precisely assess costs to each customer or simpler rates that round off some of the accuracy corners but are easier to administer, choose simple rates. Most water and almost all sewer service is assessed using level unit charges.

- The last major unit charge structure is called, "declining" rates. These are the reverse of conservation rates. I often call them, "use encouragement" rates. It is popular these days for many to belittle those who do not conserve resources at every opportunity. Declining rates are often scorned for that reason. However, if a system has an ample water supply and ample infrastructure to produce and distribute it, doing so will not cause unintended bad (mostly environmental) consequences; and if the governing body wants to encourage high use (which often entails such users hiring more or better paid workers), declining rates make good sense. Declining rates are most appropriate in areas that have a high concentration of high water using industry or in an area where folks want to attract such users.

To complicate the aforesaid just a bit, rate setting is, indeed, 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 take into account 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 system development fees are assessed, the utility's other charges can be lower. When future expenses need to be higher, or lower, or of a different nature, Model 2 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 the utility.

Coincidentally, such a dynamic model makes it easy to calculate rate and other changes over the next two or three years, too. If a change does not affect the cost structure drastically, I can do the same for almost any cost 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'll enter the changes into the model 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, I do those projects on an hourly basis, which usually works out to an additional fee of $500 – $1,000. Some of my clients find that to be a very accurate and cost-effective way to maintain good rates.

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.

Two final thoughts on the rate modeling and adjustment topic:

- Almost always, rate adjustments include bill increases. Thus, time is money, often big money, to the utility. A rate increase delayed is a rate increase that must be even higher to reach the same reserve target. Get to know this report well but do not spend months mulling it over. Time will not make your rate setting task easier. Proceed deliberately but quickly and make the needed changes. If you cannot make all the needed changes at the same time, make those that you can as soon as you can.

- You will get complaints about customers' bills going up. In my experience, most of the time, when the math is laid out for all to see, most people are understanding. Cost-to-serve rate analysis does not arrive at unfair rates. It arrives at fair rates. The degree by which some customers' bills change highlights the fact that rates are unfairly structured right now.

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

Principles

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

1. Water, sewer and all other utilities are businesses, regardless of who owns them. Businesses must cash flow properly. Otherwise, they go out of business and your customers do not want that.
2. In addition to functioning in a business-like manner, a utility has a responsibility to its customers to strive to guarantee its long-term prosperity for their benefit. The customers expect the service to be there whenever they want to use it. Thus, a utility must err on the conservative side by building and maintaining strong reserves that will enable it to weather financial storms.
3. If a service costs the utility money, the utility should recover that cost from the most logical "person" if that makes good business and community administration sense. For example, generally "growth should pay for growth." Developers should fairly pay for their consumption of utility capacity by paying commensurate system development fees. Likewise, service users should pay for what they use. Each user or class of users should pay their fair share of service costs.
4. Sometimes contradicting point 3 above, if adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, or discourage development that the community desires, consider the necessity of the change carefully before making it. For example, while it may be warranted, raising the minimum charge markedly to your residential customers may make it very difficult for fixed, low-income customers to pay their utility bill. That may cause more of them to pay late or not pay at all. That may trigger the utility's attorney to write collection letters to those customers and eventually require shutoff of service. Thus, in the attempt to generate more net revenue by raising rates, net revenues may go down due to non-payment and payment collection costs. Likewise, stifling development with uncompetitive system development fees costs a utility in the form of additional paying customers. That forces existing customers to pay all the costs of the utility rather than sharing them with new customers.

General Issues

Concerning construction of the models, they were built to match the system's actual financial statements and other data as much as possible. However, the intent of rate modeling is to see to it that the resulting rates are adequate to pay all system expenses for the next ten years, build and maintain responsible reserves and collect fees from customers on a fair basis. Because incomes and expenses in standard financial statements, and other data, are seldom grouped in such a way as to enable the required rate calculation methodology, the models do not always match your statements.

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

Several line graph charts in the models graphically depict some things which would be difficult to pick out of the tables. In all the charts, the **blue line** represents what would happen under the **recommended** rates and the **red line** under the **current** rates. Financial trends for the red lines are (generally) bad. Those for the blue lines are (generally) good. Review the definitions section of Model 2, to learn the meaning of terms used in the charts.

I will say it simply, like this. Chart 8 depicts reserve levels under the existing rates (red line) and the modeled rates (blue line). When the blue line goes up, that is a good thing for the utility. When the red line goes down, that is a bad thing, at least, if you decide to keep your current rates. If either line is headed down toward zero, that is a very bad thing that needs to change by reducing costs, if you prudently can, or increasing rates.

In contrast to Chart 8, Charts 3 and 4 in the models depict user rates. When the Chart 3 and 4 blue lines go up, meaning rates are going up, customers don't like that. But the utility will be better funded as a result of those higher rates and that benefits ratepayers because it makes their utility more resilient and able to make improvements that will serve them better.

One thing you will notice in viewing the charts in the models is this. Sometimes, only one of the lines shows up. When that occurs, it means that all the lines are taking the same path (one line is covering up the others). For example, sometimes Chart 5 shows only one line – the working capital goal amount. When that happens both the current rates and modeled rates' net revenues are adequate to satisfy the goal, so those two lines are hidden by the line for the goal. That is because, in the models, I programmed all funds that exceed what is needed to meet the working capital goal to "spill over" into the CIP and Debt Service fund reserve. When that happens, rest assured, the other two lines are underneath the goal line and that is a good thing.

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

As you set and later reset rates, I suggest you follow the guidance I give in my book, "How to Get Great Rates." I gave a copy to Ms. Remington so check with her about reviewing it. Also, use the rate setting resources I mentioned earlier.

Action Recommendations for Policy and General Issues

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

1. Periodically determine how long, on average, it takes to perform the various services you provide in the field, such as after-hours service, meter disconnects and reconnects, special meter readings, etc. Be sure to include all the time you actually pay staff for performing these services. Then determine how much it costs the utility per hour, on average, to have staff perform these services. This includes benefits, taxes, use of utility vehicles, tools and minor equipment, etc. It should also include a fair amount to cover the time that office staff devotes to working on these services to track them, bill for them, etc. This should be the hourly rate or a set fee you will charge for these services. In addition, set a minimum that you will charge for showing up, whether the service takes an hour to perform or 10 minutes. In essence, set your fees in the same way plumbers and similar technicians do – a set fee for showing up, which buys the customer a set amount of time, and an hourly rate if the job takes longer than the show up charge will cover. While accounting for time and other investments in the various functions is important, do not make the process burdensome. For many functions you likely can just estimate your time occasionally and charge fees based upon those estimates.
2. Retain required funds in interest bearing debt service and debt reserve accounts when required by your lender(s).
3. Have me conduct a full rate analysis again when the actual financial performance and my projection of future performance diverge significantly. Conditions should dictate rate analysis frequency.
4. Fully adopt management strategies that are included in what is most commonly called, "advanced asset management." These strategies can yield better service and reduced costs for a utility, especially those looking to build new facilities or replace existing facilities soon.
5. Track volume usage, incomes and expenses on a regular basis so the data and information you generate will support future rate analyses.

6. As a reminder, check with your attorney for language and legality of all charges and issues discussed.

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

Model 2 Water Rates Discussion

Model 2 depicts the rates I recommend you adopt.

Expected Incomes

Table 3, page 34, shows incomes to expect. A few incomes deserve discussion.

In Table 3, near the top, on the line called, "Rate Increases Projected for Future Years," note that I show no across the board rate increase in 2019. That is because rate adjustments for this year will be restructuring adjustments, not across the board increases.

However, starting in 2020, I assumed you would increase all major rates and fees by 3.0 percent. This is the rate of inflation I assumed for most costs, so future increases were modeled to match inflation in the costs to own and operate the system.

Lower in that table are a couple of yellow highlighted rows that cover system development fees and water meter sales revenues, both related to new connections. As mentioned before, you will have no such revenues until the moratorium on new connections is lifted on the sewer service provider.

On the row called, "Revenue Loss Because Rate Adjustments Made # Months Late," I assumed you will adopt the recommended rates and begin collecting at those rates four months into 2019. Thus, the full year increased rate revenues calculated by Model 2 needed to be reduced to account for the late start with the new rates. The initial increases were, therefore, increased commensurately to make up this revenue loss.

On the last income line called, "Revenue Loss (-) Due to Conservation," I assumed that lowering the volume levels, or "blocks," at which you assess conservation rates, and the increased unit charges generally, will "cost" the utility five percent of the total rate revenues. That is approximately ten percent of unit charge revenues. Simply put, when you raise the price of something, customers buy less of it – they change their purchasing habits. This line reduces the total income to be generated by the new rates, so the final rates are commensurately higher to make up for that shortfall.

Expected Operating Costs

Table 4, page 35, shows expected operating costs. A few costs deserve discussion.

The first row of this table is the salary cost of system staff. Several following rows cover staff-related costs. Ms. Remington informed me that, due to escalating regulatory requirements, it is likely the system will need to hire an additional operator in 2019, and another in about 2024. These additional operators will cause two "jumps" in salary and related costs. Costs for those years are highlighted in green.

A bit lower in the table, utility and postage costs will begin to increase not only by inflation, but also by growth starting in 2023, when the new connections moratorium is expected to be lifted. Thus, these costs will grow by inflation and by the growth rate in new connections, too.

Several costs which you include in your operating budget are for debt service and capital improvements. On those rows, instead of showing dollar amounts, I show "Table 5." That means, I moved those costs to the table that covers capital improvements and debt. I did that to accurately calculate operating and coverage ratios in Table 17, page 50. Thus, those costs are in Model 2, but accounted for differently than the way you do it.

Finally, the cost item called, "One-time Reduction of R&R Annuity" means this. The repair and replacement schedule in Model 2 started in 2017. But, you did not and still do not budget for R&R expenses in this way. Thus, during the first two years of the Model, and one partial year during which you did not and will not have budgeted in that way, I reduced the annual annuity to account for that.

Capital Improvements

Capital improvements and debt are covered in Table 5, page 37. The Town plans to finish some substantial, already-started improvements. Debt is already in place for those things. The Town also has need of a new well. That will require new debt issuance. There might be other substantial capital improvement needs surface over the years, but those mentioned are the only ones included in Model 2.

I assumed that the new well would be 100 percent funded with a State Revolving Fund (SRF) loan. That has rate affordability effects, to be discussed later.

In the "Existing Debt Payments" sub-section, I listed an item called, "20-81-3600 Fund Reserve Account." This is not debt, but a "payment" you will make to the CIP and debt service reserve account each year to accumulate, primarily, debt coverage reserves. Thus, in the "Cash Reserves" sub-section, I "deposited" that amount each year, so these payments will fund up that reserve.

Actually, the rates I calculated will be high enough that you will be able to deposit a bit more than $30,000 each year. But I listed this item specifically to bring home the point that you should build a substantial CIP and debt coverage reserve. Your lender wants you to do that. And, I feel sure that new capital improvement needs will crop up over the years that have not been modeled and you may as well prepare for that likely event by building reserves.

System Development Fees and Capacity Surcharges

As mentioned before, the Town has a meter size-based system development fee program in place. That is a good practice. Unfortunately, growth will likely be stymied for a few years. That is because the sewer system that serves the Town is under a new connections moratorium by the permitting agency. Ms. Remington and I estimate that moratorium will be lifted in about 2022 and growth will resume at an average of five new connections, starting in 2023.

System development fees are calculated in Table 14, page 47. Revenues expected from these fees are shown in Table 3, page 34. You will note that there will be no such fees until 2023.

Minimum charge surcharges, later just called, "surcharges," should also be used to recover capacity costs, so I modeled such surcharges to pay for system improvements on an on-going basis. Surcharges for peak capacity costs were modeled on a water meter size basis, and base capacity costs on a minimum charge surcharge basis, as further described in the following:

1. You should assess surcharges that recover those capacity costs not recovered with system development fees to new connections. That will be most such costs. I calculated these surcharges such that, each meter size would be assessed peak capacity costs based upon the sustainable peak flow capacity determined by AWWA studies. Those calculations and resulting fees appear first in the bottom left corner of Table 11, page 44. Peak capacity surcharges are calculated in Table 13, page 46. Base capacity surcharges are calculated in Table 15, page 48.

System Development Fees

In this report and elsewhere, you will see the terms like "tap fee," "tap-on fee" and "connection charges." There are other names for these and similar fees. I call them, "system development fees."

Most small systems set such fees anecdotally, and almost always too low, as well. They almost never attempt to recover the full cost of the infrastructure capacity they dedicate to each customer when they authorize them to "tap on." Rarely do they even have much of an idea what that capacity costs.

Failing to assess development costs to development is a problem because with each dedication of capacity to customers, the capacity of the utility gets "used up." That hastens the day when new capacity must be built. If that capacity cost is not assessed to those who cause it, it will be assessed by default to all customers. That forces existing customers to subsidize development, and that is a rate structure fairness issue.

I recommend you handle system development costs with a combination of system development fees and surcharges to minimum charges based upon meter size. **And, in your ordinances and elsewhere: call such new connection charges by the name, "system development fees."** This descriptively tells developers and new customers what they are paying for. It is not just an arbitrary fee. They are actually buying something of great value. Then, **assess as much of the full cost of system development as you can and still be competitive with comparable systems.**

Later in this report when you see "tap-on fee" and those other terms, think, "system development fee." And when you talk with customers and others about this fee, make sure they know this is not just "government assessing another kind of tax." This is a utility having customers fairly pay for what they are buying – capacity to serve them.

2. Customers outside of the Town, if there were any, would be assessed double the costs that are called, "Monthly Peak Capacity-only Costs (Surcharge per Capacity Share, Including Out of Town Multiplier)" and "Adjusted Field and Admin Costs (Fee) per New Connection." Both are shown in Table 15. But they would be assessed the same basic administration and fixed costs as in-Town meters would be assessed, because those costs remain the same or about the same regardless of location.
3. Likewise, for base capacity costs in Table 15, out of Town customers would be assessed double the capacity costs but the same fee for basic fixed costs.
4. Revenue generated by minimum charge surcharge fees would amount to approximately 25 percent of total user charge revenues, so this is an important revenue component. The bigger issue is that each customer would pay proportionately for what they get from the utility. That is, capacity-to-serve each of their properties. For peak capacity, that is related to the size of their meter. In addition, you should be ***seen*** by all ratepayers as attempting to recover costs from each based upon the costs that each causes the utility to incur.

I recommend you assess the same minimum charge to five-eighths and three-quarter inch meter sizes (if you allow both) because these are the most common meter sizes for residential customers in most systems and almost all these meters are in use by residential customers. Setting the same minimum charge for these meter sizes will simplify administration of the fee program.

Equipment Repair and Replacement

Ms. Remington told me that the Town handles equipment repair and replacement (R&R) in its annual budgeting process. That process only plans on a short timeframe basis compared to R&R scheduling, which plans for at least 20 years.

I recommend you switch to a more refined R&R budgeting process. To do that, you should develop a schedule of R&R needs. From that you would calculate the annual savings (annuity) needed to pay those costs. That savings amount would go into your annual budget as a line item cost. From the R&R reserve, you would pay for R&R needs. This process markedly evens out the budget "hit" of wide swings in R&R costs from year to year. And, it makes covering those widely varying costs much easier to handle because you will have reserves set aside to assure those needs will be met.

To start the scheduling process, I suggest you read Chapter 9 of the "Rate Setting Issues Guide," and use the "ReplacementScheduler©" spreadsheet mentioned earlier.

All that said, you are not there yet. Thus, for purposes of calculating rates now, Ms. Remington and I estimated your annual line replacement needs at $100,000 and other equipment replacement needs at $50,000. That shows in Table 6, page 39, and is used in Table 7, page 40, to calculate the annual annuity amount to include in future budgets, until you develop the R&R schedule.

Target Reserve Levels

Your current total reserves are stressed. The following spells out what goes into the reserves I recommend.

Most systems serving fewer than 5,000 connections, including yours, should have reserves at least as high as the sum of the following:

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. *I recommend 50 percent in your case because your utility is small. That reserves goal shows in the bottom left corner of Table 4, page 35;*
2. A 20-year repair and replacement (R&R) schedule reserve, in the 20th year equal to at least one average year's cost of R&R, and
3. Capital improvement and debt reserves at the end of the tenth year, after debt is paid, equal to that year's debt payments plus cash-paid capital improvement expenses. *In your case, there are no expected cash-paid capital improvements in the tenth year, thus, this reserve goal is effectively a debt coverage reserve goal.*

The lines on the bottom of Table 17, page 50, and several of the charts at the end of Model 2 show your reserve balances expected for the next ten years. The last line of Table 17, the "Sum of All Reserves," is the critical one. You are projected to have positive total reserves during the next ten years and by the tenth year, you will be at the goal total reserve level.

Projecting budgets and ending balances for next year is difficult. 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.

A Technical Note About How Reserves Are Shown in Model 2

In Table 17, page 50, at the bottom of the table, you will find the reserve balances. These deserve a bit more discussion.

From your balance sheet, I extracted the operating reserve, and capital improvement and debt service reserves. (I disregard meter deposit and similar funds because those are restricted and self-funding.) As funds flow through the rate analysis model, they first fund up the operating reserve. Funds exceeding those requirements flow into the CIP and debt service reserve.

The take-away is this. The "Sum of All Reserves" at the bottom of Table 17, is the key balance to track. That balance will remain positive and grow stronger for the next ten years.

Rate Affordability

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

In Table 17, page 50, near the top, I show the estimated Affordability Index. The Affordability Index is also shown graphically in Chart 4, page 54.

In the table, the Affordability Index calculation for the test year was at 1.55 percent. That means, such a customer paid 1.55 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 recommended rates, this customer's bill would go up, resulting in an Affordability Index of 1.94 percent. That is a significant percentage and bill increase for a few reasons, including this. Most grant programs that have an Affordability Index eligibility criterion attempt to keep rates, after a capital improvement is completed and debt is in place, below 2.0 percent. It looks like you are approaching that threshold with the recommended rates. And, once you acquire debt for the new well project, you likely will go over that threshold. You may qualify for grants for that project. I suggest you discuss this issue with, and show this report to, the grant agencies to see if you will qualify for grants.

An important note: In Table 17, I used the current rates, including the debt service surcharges, to compare against the recommended rates. Thus, this is an "apples to apples" comparison.

The affordability index is useful, but it does not depict how new rates will affect customer types or those using different volumes. Table 18, page 51, shows how customers' bills at different volumes of use will be affected by the recommended rates. This table only depicts bills for the smallest meter ratepayers, but that describes almost all your customers. Table 18 gives ratepayers useful information. It is one of the few from Model 2 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.

Recommended Rate Structures

Your current unit charges are in a "conservation rate structure," which is a good practice where water supply is an issue. "Conservation" just means, as use goes up, the unit charge rate goes up. Currently, you have three rate "blocks" or tiers.

- For the first block, from zero to 14,999 gallons, the rate is $3.89 per 1,000 gallons,
- From 15,000 to 19,999 gallons, the rate is $6.36, and
- For 20,000 or more gallons, the rate is $7.35.

The stated purpose of conservation rates is to encourage customers to conserve the resource; use less water. The difficulty with your current structure is that only 19.5 percent of the volume used is above 15,000 gallons and only 14.8 percent exceeds 20,000 gallons. Your average customer uses 4,065 gallons per month. Thus, few bills and little volume is billed at the conservation rates – little conservation encouragement is occurring.

I recommend you bring the first unit charge increase down to the level of 5,000 gallons, which is close to the national average residential usage rate and above your average residential customers' usage rate. At that level, 48.0 percent of the flow will be billable at or above the first conservation rate level. The second tier should start at 10,000 gallons, double the approximate national average residential use. That means 28.4 percent of the Town's flow will be billable at that rate. These statistics, and more, can be viewed in Table 19 of Model 2, page 52.

One more thing about conservation rates. Your current conservation rate increases are quite large. Your current conservation rates go up 63 percent at 15,000 gallons, and another 16 percent at 20,000 gallons. When you lower the volume level at which the first tier starts, more volume is billable, so the increase can be lower. I modeled conservation rate tiers at 20 percent each. The average customer still does not use enough volume to get into the first conservation rate tier. But, a bit of volume above that and again at about 2.5 times the average volume, the conservation rate tiers take effect.

Your current minimum plus debt service surcharges amount, at $60.50, is almost adequate to pay expected fixed costs plus debt service costs. That fee needs to be $62.41 for the smallest meter and graduate higher for larger meters. The recommended rates are calculated in Table 15, page 48, and are summarized in the recommended rates Table A, that soon follows.

Recommendations for Adjusting Water Rates

Model 2 contains all my rates-related recommendations and shows what they are built upon. However, Model 2 is complex, components of the rates and fees are calculated and shown in different tables and Model 2 does not spell out policy issues. Therefore, I have summarized most of my recommendations as follows:

1. You may continue to assess the debt service surcharges you currently assess, or switch to the all-inclusive minimum charges shown in Table A, that follows this list. If you continue to assess separate debt service surcharges, be sure to deduct those amounts from the minimum charges in Table A to arrive at the "base minimum charges" to assess.
2. As to system development fees for new connections, these fees only "buy" a new customer access to the utility. You should continue to bill new connections for out of pocket costs for supplies and equipment, meters, etc. that you provide them to make their connection to your lines.
3. Table B shows the unit charges you should adopt. These are in a conservation rates structure, but the tiers start at lower levels than your current rate structure.

4. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates for the May 1, 2019, billing. If you delay making the increases longer than that, you will lose additional revenues.
5. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date. That is coming up soon, so if you want to make that date, you will need to move promptly.
6. If costs, incomes and balances accrue close to those I assumed in Model 2, on or about January 1, 2020, and annually thereafter, raise all rates and important fees by 3.0 percent. Do this until you have raised rates and fees by a cumulative 20 percent. At that time, have me or another rate analyst of your choosing perform a new rate analysis, so rate structure and adequacy can be adjusted again. Because you need to do significant capital improvements and repair and replacements soon, you likely will need a new rate analysis sooner than that.
7. In the future, if balances do not accrue as shown at the bottom of Table 17, page 50, but they are not egregiously too low, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly. If you cannot solve the problem easily that way, just give me a call to discuss the situation.

Table A: Recommended System Development Fees and Minimum Charges

Table A: Palmer Lake, CO Water System Development Fees, and Minimum Charges That Include the Current Debt Service Surcharges

Water Meter Size in Inches	Meter Type	System Development Fee	Monthly Minimum Charge
0.625	Displacement	$10,000	$62.41
0.750	Displacement	$10,000	$62.41
1.000	Displacement	$18,318	$81.74
1.500	Displacement	$32,181	$113.96
2.000	Displacement	$48,816	$152.63
2.500	Displacement	$73,768	$210.63
3.000	Singlet	$93,176	$255.73
3.000	Compound, Class I	$93,176	$255.73
3.000	Turbine, Class I	$101,494	$275.07
4.000	Singlet	$143,082	$371.73
4.000	Compound, Class I	$143,082	$371.73
4.000	Turbine, Class I	$176,352	$449.06

Table B: Recommended Unit Charges

Table B: Palmer Lake, CO Unit Charges		
Volume Ranges, in Gallons	Usage Allowance in Gallons	Unit Charge per 1,000 Gallons
0 - 4,999	0	$7.40
5,000 - 9,999	0	$8.88
10,000 and greater	0	$10.66

Closing

I recommend you adopt the rates calculated in Model 2 and discussed in several sub-sections above, most of which are shown in the table immediately above. These rates are in a cost-to-serve and conservation rates structure and were calculated to fully fund the utility.

These rates would result in lower increases in bills to lower-volume, small meter customers. As volume used increases, bills would rise more. As meter size goes up, bills would be a bit higher still. For high volumes of use, bills would be markedly higher than they are now. However, your usage records show that there is the equivalent of only 15 customers using above 20,000 gallons per month, so few customers would see markedly higher bills on a dollar basis.

Model 3 Water Rates Discussion

As mentioned before, this section of the report will only discuss those things that are different from those earlier in the report regarding Model 2 rates. Again, the Model 3 rates assumes the initial increases will be spread over the first two years rather than be done all at once.

Rate Affordability

Rate affordability, as measured by the Affordability Index, will be markedly less (more affordable) for the first year, due to phasing in the new rates. After that, affordability will be nearly the same as that for the Model 2 rates.

Table 18, page 62, shows how customers' bills at different volumes of use will be affected by the initial rate adjustments. In this case, this table depicts the first year's adjustments. In the next year, there would be an across the board increase to all minimums and unit charges of 15 percent. That is shown in Table 3, page 58, on the line called, "Rate Increases Projected for Future Years."

Model 3 Rate Structures

Your current minimum plus debt service surcharges amount, at $60.50, is almost adequate to pay expected fixed costs plus debt service costs. That fee, for a 5/8 inch or 3/4 inch meter customer needs to be set initially at $57.40.

As a result of this lower minimum charge, a small meter customer's bill would go down until they used more than about 1,500 gallons. The bills that would result from the Model 3 rates are shown in Table 18, page 62. Again, keep in mind, phasing in the initial rate adjustments delays bill increases for some customers for one year. In the second year, bills for all would go up by an across the board increase to all minimum and unit charges, resulting in all customers' bill being higher than they are presently.

Model 3 Water Rate Adjustments

Following is a summary of the Model 3 adjustments:

1. You may continue to assess the debt service surcharges you currently assess, or switch to the all-inclusive minimum charges shown in Table C, that follows this list. If you continue to assess separate debt service surcharges, be sure to deduct those amounts from the minimum charges in Table C to arrive at the base minimum charges to assess.
2. As to system development fees for new connections, these fees only "buy" a new customer access to the utility. You should continue to bill new connections for out of pocket costs for supplies and equipment, meters, etc. that you provide them to make their connection to your lines.
3. Table D shows the unit charges you should adopt. These are in a conservation rates structure, but the tiers start at lower levels than your current rate structure.
4. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates for the May 1, 2019, billing. If you delay making the increases longer than that, you will lose additional revenues.
5. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date. That is coming up soon, so if you want to make that date, you will need to move promptly.
6. Approximately one-year after making the initial adjustments above, increase all minimum and unit charges across the board by 15 percent.
7. If costs, incomes and balances accrue close to those I assumed in Model 3, approximately one-year after the above describe increases, and annually thereafter, raise all rates and important fees by 3.0 percent. Do this until you have raised rates and fees by a cumulative 20 percent. At that time, have me or another rate analyst of your choosing perform a new rate analysis, so rate structure and adequacy can be adjusted again. If you need to do significant capital improvements or repair and replacements, you will need a new rate analysis sooner than that.
8. In the future, if balances do not accrue as shown at the bottom of Table 17, page 61, but they are not egregiously too low, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly.

Table C: Recommended System Development Fees and Minimum Charges

Table C: Palmer Lake, CO Water System Development Fees, and Minimum Charges That Include the Current Debt Service Surcharges

Water Meter Size in Inches	Meter Type	System Development Fee	Monthly Minimum Charge
0.625	Displacement	$10,000	$57.40
0.750	Displacement	$10,000	$57.40
1.000	Displacement	$18,318	$76.73
1.500	Displacement	$32,181	$108.95
2.000	Displacement	$48,816	$147.61
2.500	Displacement	$73,768	$205.61
3.000	Singlet	$93,176	$250.72
3.000	Compound, Class I	$93,176	$250.72
3.000	Turbine, Class I	$101,494	$270.05
4.000	Singlet	$143,082	$366.71
4.000	Compound, Class I	$143,082	$366.71
4.000	Turbine, Class I	$176,352	$444.04

Table D: Recommended Unit Charges

Table D: Palmer Lake, CO Unit Charges

Volume Ranges, in Gallons	Usage Allowance in Gallons	Unit Charge per 1,000 Gallons
0 - 4,999	0	$6.36
5,000 - 9,999	0	$7.63
10,000 and greater	0	$9.16

Closing

While I do not recommend you adopt the rates calculated in Model 3, phasing rate increases like this is a common way to reduce the "rate shock" customers will experience. Like the Model 2 rates, these rates are in a cost-to-serve and conservation rates structure and were calculated to fully fund the utility. However, due to the across the board 15 percent rate increases the year after the initial adjustments, the rates will diverge from true cost-to-serve rates more quickly than those resulting from Model 2.

For one year, the Model 3 rates would result in bill decreases for low-volume, small meter customers, thus giving these customers additional time to prepare for increases. In the second year, all bills would go up by 15 percent, resulting in all customers seeing bill increases.

Conclusion

"Conclusion" is a misnomer here. This report provides information upon which the Town 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.

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

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

- Everyone impacted by the Town's water rates should at least be made aware of the results of this report.
- My default recommendation is to give any customer as much information as they want. If they want a copy of the full report, give them that.
- Give the media a copy of the full report so they can quote the report directly and accurately rather than be forced to "figure things out." Much of this is very complex. Few people know how to, or have the time to, calculate utility rates. Make it easy for everyone to get the facts right.
- For most customers, what would happen to their water bills is as much as they will care to know about this analysis. To satisfy those information needs, the Town can publicize the current and recommended rates and/or the bill comparisons.
- A few customers will want to know more, especially high-volume customers. Give them the full report, if that is what they want.
- A good way to accomplish these things is to post the report on the Town's Web site so everyone can see for themselves what the report says. That way, no one would have to print out a very long document, unless they wanted to. Publicize the Web 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.

Palmer Lake, CO; Water Rates, Scenario 2019-2

This model assumes a cost-of-service and conservation rates structure.

March 4, 2019

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

Index of Tables and Charts

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.

Definitions

Affordability Index	The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. Affordability index is often a factor in determining grant and loan eligibility and grant amount.
Analysis Year	The year following the "test year." Generally, rate analysis is done during the year following the "test year" and intial rate adjustments are done later still during the analysis year or sometime during the following year once the analysis shows how rates should be adjusted. See related "test year."
Capital Improvement Plan or Program (CIP)	A schedule of anticipated capital improvements. These are the more expensive items such as treatment plants, lines and other expensive infrastructure that generally requires bond or grant funding.
Capital Improvement Reserves	Cash reserves dedicated to funding the CIP
Comprehensive Rate Analysis	A thorough examination of a system's operating, capital improvement, equipment replacement and other costs, revenues, current rates, number of users and their use of the system, growth rates and all other key issues surrounding the system. This examination will determine how rates and fees should be set in the future to cash-flow the system properly, to build appropriate reserves and to be fair to ratepayers. It also will determine how policies should be adjusted to enable the system to operate well now, operate well in the medium-range future (about 10 years) and prepare for expected and expectable events such as capital improvements and equipment replacement.
Connection Charge	See system development fee
Conservation (Inclining) Rates	Unit charges that go up as the volume used goes up
Cost to Produce	There are several ways to define and calculate cost to produce. Each is acceptable for different purposes. Generally, cost to produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. This calculation will yield the average cost to produce. In a proportional to use rate structure, this is the unit charge. See "Cost Calculations" at the bottom of Chart 19.
Cost to Serve Rates	Rates where fixed and variable costs generated by each user class are paid by that class with minimum and unit charges, respectively. Similar to and sometimes the same as "proportional to use" rates.
Cost Types; Fixed and Variable	The two main types of costs are fixed - those that are related to the fact that someone is a customer; and variable - those that are related to the volume of the commodity delivered to customers. Generally, fixed costs should be recovered with minimum charges and variable costs with unit charges.
Coverage Ratio (CR)	Incomes available to pay debt divided by the amount of the debt for that year. Most systems should have a CR of 1.25 or higher.
Current Position	For purposes of this report, for one year, the sum of all incomes and undedicated reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position is a good measure of overall financial health.
Declining Rates	Rates where unit charges go down as the volume used goes up
Flat Rates	Rates where all users pay exactly the same fee regardless of the volume of service they use
Equivalent Dwelling Unit (EDU) or Equivalent Residential Unit (ERU)	Based upon number of water using fixtures, average flow, potential flow or similar criteria; the consumption rate of the average single family home is rated at one EDU. All other types of customers are then compared on this measuring basis and the EDUs are calculated. Generally the purpose of this exercise is to calculate fees that each EDU must pay.
Incremental Rate Increases (Inflationary Increases)	Rate increases done, generally annually, following the initial rate adjustment. The usual goal of such increases is to keep the system's incomes on track to meet reserve targets. Rate structure fairness is a small issue, if it is an issue at all. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in follow up to the comprehensive rate analysis. Generally, the goal of such adjustments is to establish rates that cover the system's short-term expected costs and do it with a structure that is fair to ratepayers. Initial adjustments should be followed in subsequent years with incremental rate increases.
Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts, plus leaks in manholes and sewer lines (infiltration)
Infrastructure	Most commonly thought of as the hard assets, such as buildings, treatment plants and lines needed to provide service to customers connected to the system. In reality, staff, software and other "soft" assets should be thought of as infrastructure, as well.

Definitions

Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of an asset. One asset may cost less to build but it may be more expensive to operate and maintain, yielding a higher total life-cycle cost.
Marginal Costs	The parts of a utility's costs that are unavoidable in the course of serving a particular customer, a group of customers, more volume to all customers or some other marginal use of the system. Such customer(s) or extra use could be added at a discounted but still profitable fee, if desired. Generally marginal costs are less than the average costs but when extra use requires a system upsizing, they can be greater. These costs are especially useful when considering selling service at wholesale or charging "snow birds" while they are away.
Operating Costs	Definitions and calculations vary. For rate setting purposes operating costs are costs incurred because a system is operated. Such costs are usually recovered primarily through unit charges.
Operating Reserves or Working Capital	Analogous to current position, this is the net revenues retained to fund operating costs during times when costs exceed incomes.
Operating Revenues	Revenues collected in the form of user fees and similar operating cost-related fees
Operating Ratio (OR)	Current incomes divided by current expenses, not including debt. An OR of 1.0 is "break even." Most systems should have an OR of 1.25 or higher.
Payback Period	In this case, time required for the investment made to get this analysis to return that investment through increased user and other fees
Potential Demand	The volume of service that a user could demand for a short period of time at full volume use. The potential demand limiting factor is usually the size of the customer's meter or service line.
Proportional to Use Rates	Rates where the minimum charge recovers all fixed costs, the unit charge recovers all variable costs, the unit charge is the same for all volume sold, and there is no usage allowance in the minimum charge. This rate structure is similar to and often the same as cost to serve rates.
Replacement Schedule	A timetable that describes equipment replacement and important repairs that are too infrequent and/or too expensive to cover as annual operating costs but not so expensive that they need to be covered as capital improvements.
Replacement Reserves	Cash reserves used to fund the Replacement Schedule
Return on Investment	In this case, the dollar amount or percentage of revenue gain enabled by this rate analysis. Related to payback period.
Snow Bird	A customer, usually residential, that goes away during part of the year. Most commonly, people of "means" who live in the north who "fly south" for the winter. But, this category includes everyone who is absent for a significant part of the year but returns to their permanent residence.
System Development Charge, or Fee	Fee assessed to pay for at least part of the cost to build system capacity. For purposes of this model, all charges related to connecting new customers will be "rolled together" into a system development charge, usually including a charge that buys a new customer system capacity. This combined charge may be a few hundred dollars for a residential customer, if little or no capacity costs are included, to many thousands of dollars for a large industrial customer with capacity costs included. Similar terms in common use include "tap-on fee," "connection fee or charge," "hook-up fee," "impact fee," "availability charge," and "capacity charge."
Test Year	The one year period from which data was gathered to be the basis of the rate analysis, which is usually the last completed fiscal year. See related "analysis year."
Usage Allowance	The volume, if any, that is "given away" with the minimum charge. Most systems give away no volume. Those that give away an unlimited volume have what are called "flat rates" - a minimum charge only.
User Fee, User Charge, User Rates	Fees assessed to customers for use of the system. Does not system development charges, late payment penalties or other types of charges.
Water Loss	Measured by volume or percent, the part of a water system's net water production that does not reach customers or is not billed to customers. This loss also includes billable volume lost due to under-registering customer meters.
Working Capital, Net Income	The amount left in the operating fund after paying all costs due during that month, year or other time period. Working capital of $0 is "break even." Related to "current position."
Working Capital Goal or Operating Reserves Goal	The desired operating fund reserve, in dollars or percent, at a stated point in time. Small systems (1,000 connections) generally should target 35 percent or greater. Larger systems can target a lower percentage. The goal for each system should be based upon the needs of that system and the risk the customers are willing to take.

Return on Investment

Palmer Lake, CO; Water Rates, Scenario 2019-2

The rates depicted in this model will produce various returns on investment or paybacks. Usually the most important payback, at least to ratepayers, is a rate structure that is demonstrably fair. For the system, however, making sure that revenue will be adequate to pay all expected, expectable and many unexpectable costs is the the most important return. If revenue will increase as a result of this analysis, which is almost always the case, one can calculate a dollar and percentage return on investment.

The following calculations show what was invested and what the returns will be over two periods; five years and 10 years. Five years is a reasonable period for return projections. Ten years is a good basic planning horizon but you should not bank on amounts or returns projected that far out. Besides, most systems should have their analyses redone long before then.

Consider these key points about return on investment. Higher rates will fund more improvements, better repair and replacement and more. Most increases in revenue end up being used for such expenses. Thus, few systems end up with a dramatic increase in their cash reserves but they do markedly improve their financial position. In addition, fairer and higher rates generally enable systems to qualify for grant and loan funding that they otherwise would not. That increases the importation of "other people's money," which is a drain on the state and federal funds, where the money comes from, but it is very desirable at the utility level. The calculation below ignores any "outside" funds the utility may capture.

Also note that rates in this model have been modeled to be adjusted during the year following the test year or even later. That year is included in the first five-year return on investment calculation. Thus, the first year of returns calculated below include most or all of one year where rates will not have been changed yet. Thus, the real rate of return will be greater than the calculation reflects.

Calculations

$5,887	Fees to GettingGreatRates.com
$500	Estimated value of system staff time and incidentals to assemble needed information
$6,387	Total Investment for This Analysis
$2,677,348	Five-year Increase in Revenue Due at Least Partly to This Analysis
41,919%	Five-year Return on Investment (increase in revenues / investment)
$6,804,428	Ten-year Improvement in Cash Position Due at Least Partly to This Analysis
106,536%	Ten-year Return on Investment (increase in revenues / investment)

Table 1 - Rates

Palmer Lake, CO; Water Rates, Scenario 2019-2

These rates were in effect at the end of the test year. If a volume range was left out of the table, in order to make it shorter, the unit charge that shows for the next lowest volume range also applies to the hidden volume range.

Rates in Effect at End of Test Year

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Billing Cycle Minimum Charge	Usage Allowance in 1,000 Gallons	Unit Charge per 1,000 Gallons
All Customers	0	$38.85	0.000	$3.89
	1,000	$38.85	0.000	$3.89
	2,000	$38.85	0.000	$3.89
	3,000	$38.85	0.000	$3.89
	4,000	$38.85	0.000	$3.89
	5,000	$38.85	0.000	$3.89
	6,000	$38.85	0.000	$3.89
	7,000	$38.85	0.000	$3.89
	8,000	$38.85	0.000	$3.89
	9,000	$38.85	0.000	$3.89
	10,000	$38.85	0.000	$3.89
	15,000	$38.85	0.000	$6.36
	16,000	$38.85	0.000	$6.36
	17,000	$38.85	0.000	$6.36
	18,000	$38.85	0.000	$6.36
	19,000	$38.85	0.000	$6.36
	20,000	$38.85	0.000	$7.35
	25,000	$38.85	0.000	$7.35
	30,000	$38.85	0.000	$7.35
	50,000	$38.85	0.000	$7.35
	75,000	$38.85	0.000	$7.35
	100,000	$38.85	0.000	$7.35
	150,000	$38.85	0.000	$7.35
	200,000	$38.85	0.000	$7.35
	300,000	$38.85	0.000	$7.35
	400,000	$38.85	0.000	$7.35
	500,000	$38.85	0.000	$7.35

Table 2 - Test Year Usage

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Residential meter readings per year: 12

Date this scenario created: 3/2/2019

Test year = the one-year period being analyzed starts: 1/1/2017

Other customer meter readings per year: 12

Bills sent per year: 12

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Conversion Factor for Billable Units	Avg. Use in Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Total Annual Use in Each Volume Range in Gallons	Count of Bills Where Volume "Maxed Out" in Each Range	Volume of Bills Where Volume "Maxed Out" in Each Range	# of Customers With Volume That "Maxed Out" in Each Range	% of Customers That Averaged This Volume of Use	% of Total Use at This Average Volume
All Customers	0	999	1,000	0.868	11,589	10,057,595	1,905	373,595	159	16.4%	0.8%
	1,000	1,999	1,000	0.912	9,684	8,832,200	1,672	2,492,200	139	14.4%	5.3%
	2,000	2,999	1,000	0.850	8,012	6,808,800	2,171	5,309,800	181	18.7%	11.3%
	3,000	3,999	1,000	0.816	5,841	4,767,800	1,868	6,398,800	156	16.1%	13.6%
	4,000	4,999	1,000	0.815	3,973	3,236,800	1,270	5,613,800	106	11.0%	11.9%
	5,000	5,999	1,000	0.829	2,703	2,240,300	791	4,283,300	66	6.8%	9.1%
	6,000	6,999	1,000	0.844	1,912	1,613,400	524	3,369,400	44	4.5%	7.2%
	7,000	7,999	1,000	0.877	1,388	1,216,800	312	2,324,800	26	2.7%	4.9%
	8,000	8,999	1,000	0.877	1,076	944,100	222	1,866,100	19	1.9%	4.0%
	9,000	9,999	1,000	0.882	854	753,300	179	1,689,300	15	1.5%	3.6%
	10,000	14,999	1,000	3.407	675	2,299,400	351	4,189,400	29	3.0%	8.9%
	15,000	15,999	1,000	0.933	324	302,300	35	538,300	3	0.3%	1.1%
	16,000	16,999	1,000	0.933	289	269,700	35	575,700	3	0.3%	1.2%
	17,000	17,999	1,000	0.953	254	242,100	21	366,100	2	0.2%	0.8%
	18,000	18,999	1,000	0.949	233	221,100	20	368,100	2	0.2%	0.8%
	19,000	19,999	1,000	0.950	213	202,400	19	369,400	2	0.2%	0.8%
	20,000	24,999	1,000	3.901	194	756,700	73	1,611,700	6	0.6%	3.4%
	25,000	29,999	1,000	3.933	121	475,900	50	1,370,900	4	0.4%	2.9%
	30,000	49,999	1,000	8.944	71	635,000	56	2,015,000	5	0.5%	4.3%
	50,000	74,999	1,000	19.073	15	286,100	5	286,100	0	0.0%	0.6%
	75,000	99,999	1,000	20.150	10	201,500	3	251,500	0	0.0%	0.5%
	100,000	149,999	1,000	43.043	7	301,300	1	101,300	0	0.0%	0.2%
	150,000	199,999	1,000	37.883	6	227,300	2	327,300	0	0.0%	0.7%
	200,000	299,999	1,000	45.325	4	181,300	3	681,300	0	0.0%	1.4%
	300,000	399,999	1,000	31.800	1	31,800	1	331,800	0	0.0%	0.7%
	400,000	499,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	500,000	331,800	1,000	0.000	0	0	0	0	0	0.0%	0.0%
			Monthly and Annual Subtotals:		49,449	47,104,995	11,589	47,104,995	966	100.0%	100.0%
			Grand Totals:		49,449	47,104,995	11,589	47,104,995	966	100%	100%

Table 3 - Operating Incomes
(and Basic User Data)
Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Annual Median Household Income (AMHI)

$61,238 Census Bureau estimate of AMHI for the year: 2016

$52,340 Census Bureau estimate of AMHI for the year: 2000

$8,898 AMHI growth during this time period

1.06% Simple annual income growth rate during this time period (used to project incomes into the future)

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

7 Number of new connections made during the test year

$10,000 Average tap or installation fee assessed during the test year

This model is programmed to assume that rates will be reset in the "Analysis (This) 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. The change-over from the current rates to new rates is modeled to happen on the date near the top of Table 10. Thus, the revenues shown in the last column of that table are "blended" revenues; part collected at the old rates and part collected at the new rates. It was then assumed that all rate adjustments made after the initial (major) adjustment will be done annually on approximately the anniversary of the first adjustment.

Basic User (Customer) Data

(First year balances and incomes are actual, subsequent years are projected.)	Inflation or Deflation (–) Factor	Test Year	Analysis (This) Year	Years Following the Analysis Year (for Which Results Have Been Projected)									
				1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
		1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Average Number of Customers for the Year	N.A.	966	972	972	972	972	972	977	982	987	992	997	1,002
Customers Added or Lost (-) During the Year	N.A.	7.0	6.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0	5.0	5.0
Customer Growth or Loss (-) Rate	N.A.	0.72%	0.62%	0.00%	0.00%	0.00%	0.00%	0.51%	0.51%	0.51%	0.50%	0.50%	0.50%
Actual (Test Year) and Projected Volumes, in Gallons	N.A.	47,104,995	47,397,648	47,397,648	47,397,648	47,397,648	47,397,648	47,641,526	47,885,404	48,129,282	48,373,160	48,617,037	48,860,915

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.

Operating Incomes

User Charge Fees	N.A.	$672,011	$673,320	$1,145,709	$1,180,081	$1,215,483	$1,251,948	$1,296,107	$1,341,789	$1,389,046	$1,437,930	$1,488,498	$1,540,805
Late Payment Charge	N.A.	$14,295	$14,383	$14,383	$14,383	$14,383	$14,383	$14,457	$14,531	$14,604	$14,678	$14,751	$14,825
New Taps or Connections (Current Rate Structure)	% Above	$70,000	$59,836	$0	$0	$0	$0	$0	$0	$0	$0	$1	$2
Meter Size-based System Development Fees (Table 14)	% Above	$0	$166	$0	$0	$0	$0	$56,898	$58,605	$60,364	$62,174	$64,040	$65,961
Interest Income	N.A.	$4,531	$1,822	$3,675	$4,694	$5,067	$5,220	$5,313	$5,445	$6,017	$6,133	$6,289	$6,490
Water Meter Sales/Parts	N.A.	$3,470	$2,974	$0	$0	$0	$0	$2,478	$2,478	$2,478	$2,478	$2,478	$2,478
Water Improvement Fee, From $3.89 D.S. Surcharge	N.A.	$41,641	$45,746	$34,310	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Loan Revenue/WELL, From $11.42 D.S. Surcharge (Since Raised to $17.76)	N.A.	$122,798	$169,913	$197,178	$0	$0	$0	$0	$0	$0	$0	$0	$0
Revenue Loss Because Rate Adjustments Made # Months Late	4.0	$0	$0	-$152,080	$0	$0	$0	$0	$0	$0	$0	$0	$0
Revenue Loss (-) Due to Conservation	5.0%	$0	-$65	-$23,619	-$1,719	-$1,770	-$1,823	-$2,208	-$2,284	-$2,363	-$2,444	-$2,528	-$2,615
Total Operating Incomes		**$928,746**	**$968,095**	**$1,219,556**	**$1,197,439**	**$1,233,163**	**$1,269,728**	**$1,373,046**	**$1,420,564**	**$1,470,146**	**$1,520,950**	**$1,573,529**	**$1,627,946**

Table 4 - Operating Costs
(and Net Income)

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

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

	Inflation or Deflation (–) Factor	Test Year Starting 1/1/17	Analysis (This) Year Starting 1/1/18	Years Following the Analysis Year (for Which Results Have Been Projected)									
				1st Year Starting 1/1/19	2nd Year Starting 1/1/20	3rd Year Starting 1/1/21	4th Year Starting 1/1/22	5th Year Starting 1/1/23	6th Year Starting 1/1/24	7th Year Starting 1/1/25	8th Year Starting 1/1/26	9th Year Starting 1/1/27	10th Year Starting 1/1/28
20-81-3111 Salaries / Wages Regular (Including Additional Operators Starting in 2019 & 2024)	3.0%	$213,784	$198,000	$253,241	$260,838	$268,663	$276,723	$285,025	$340,335	$350,545	$361,061	$371,893	$383,050
20-81-3112 Salaries / Wages Temp	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-81-3115 Overtime	3.0%	$0	$0	$1,101	$1,134	$1,168	$1,203	$1,239	$1,276	$1,315	$1,354	$1,395	$1,437
Vacation Payout	3.0%	$0	$0	$10,801	$11,125	$11,459	$11,803	$12,157	$14,951	$15,400	$15,862	$16,338	$16,828
20-81-3119 FICA Employer	3.0%	$14,942	$15,100	$20,081	$20,684	$21,304	$21,944	$22,602	$27,797	$28,631	$29,490	$30,375	$31,286
20-81-3120 Medicare Employer	3.0%	$3,507	$3,531	$4,696	$4,837	$4,982	$5,132	$5,286	$6,501	$6,696	$6,897	$7,104	$7,317
SUTA Employer	3.0%	$0	$0	$2,008	$2,068	$2,130	$2,194	$2,260	$2,780	$2,863	$2,949	$3,037	$3,128
FUTA Employer	3.0%	$0	$0	$19,433	$20,016	$20,617	$21,235	$21,872	$26,900	$27,707	$28,538	$29,394	$30,276
20-81-3125 Employee Benefits	3.0%	$46,500	$45,500	$71,289	$73,427	$75,630	$77,899	$80,236	$98,680	$101,641	$104,690	$107,830	$111,065
20-81-3127 Life Insurance Premiums	3.0%	$208	$227	$437	$451	$464	$478	$492	$605	$624	$642	$662	$681
20-81-3131 Workers Compensation	3.0%	$6,510	$8,400	$6,083	$6,265	$6,453	$6,647	$6,846	$8,420	$8,673	$8,933	$9,201	$9,477
20-81-3141 Employee Clothing	3.0%	$292	$400	$512	$527	$543	$559	$576	$708	$729	$751	$774	$797
20-81-3145 Employee Training	3.0%	$0	$250	$384	$395	$407	$419	$432	$531	$547	$563	$580	$598
20-81-3149 Employee Travel	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-81-3153 Memberships/Registrations	3.0%	$18,736	$18,000	$12,790	$13,174	$13,569	$13,976	$14,395	$17,704	$18,235	$18,782	$19,346	$19,926
20-81-3161 Professional Services-Legal	3.0%	$1,762	$10,000	$30,000	$30,900	$31,827	$32,782	$33,765	$34,778	$35,822	$36,896	$38,003	$39,143
20-81-3162 Professional Services-Acctg	3.0%	$20,875	$20,000	$20,000	$20,600	$21,218	$21,855	$22,510	$23,185	$23,881	$24,597	$25,335	$26,095
20-81-3163 Professional Services-Other	3.0%	$14,047	$10,000	$12,000	$12,360	$12,731	$13,113	$13,506	$13,911	$14,329	$14,758	$15,201	$15,657
20-81-3167 Payment Processing	3.0%	$19,955	$18,000	$18,000	$18,540	$19,096	$19,669	$20,259	$20,867	$21,493	$22,138	$22,802	$23,486
20-81-3169 Bank Fees and Services	3.0%	$0	$500	$500	$515	$530	$546	$563	$580	$597	$615	$633	$652
20-81-3211 Contract Services	3.0%	$3,115	$2,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
20-81-3245 Utilities	3.0%	$87,765	$90,000	$93,000	$95,790	$98,664	$101,624	$105,208	$108,916	$112,752	$116,720	$120,825	$125,071
20-81-3253 Postage	3.0%	$5,133	$6,000	$6,000	$6,180	$6,365	$6,556	$6,788	$7,027	$7,274	$7,530	$7,795	$8,069
20-81-3281 Insurance	3.0%	$14,058	$13,500	$17,000	$17,510	$18,035	$18,576	$19,134	$19,708	$20,299	$20,908	$21,535	$22,181
20-81-3333 Publication/Legal Notices	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-81-3338 Communications	3.0%	$466	$0	$3,500	$3,605	$3,713	$3,825	$3,939	$4,057	$4,179	$4,305	$4,434	$4,567
20-81-3365 Advertising	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-81-3391 Misc. Expenses	3.0%	$287	$500	$500	$515	$530	$546	$563	$580	$597	$615	$633	$652
20-81-3395 Electric Siren	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-81 Vehicle Loan-Principle	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
20-81 Vehicle Loan-Interest	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
20-81 CWRPDA 2009 Principle	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
20-81 CWRPDA 2009 Interest	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
20-81 CWRPDA 2018 Principle	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
20-81 CWRPDA 2018 Interest	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
20-81-3600 Fund Reserve Account	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
20-82-3223 Operating Supplies	3.0%	$67,924	$93,095	$50,000	$51,500	$53,045	$54,636	$56,275	$57,964	$59,703	$61,494	$63,339	$65,239
20-82-3225 Building Maintenance	3.0%	$1,904	$2,500	$2,500	$2,575	$2,652	$2,732	$2,814	$2,898	$2,985	$3,075	$3,167	$3,262
20-82-3228 Shop Maintenance	3.0%	$17	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-82-3233 Water Meters / Parts	3.0%	$11,249	$15,000	$18,000	$18,540	$19,096	$19,669	$20,259	$20,867	$21,493	$22,138	$22,802	$23,486
20-82-3269 Vehicle License / Fees	3.0%	$0	$0	$1,000	$1,030	$1,061	$1,093	$1,126	$1,159	$1,194	$1,230	$1,267	$1,305

Table 4 - Operating Costs
(and Net Income)

	Inflation or Deflation (–) Factor	Test Year Starting 1/1/17	Analysis (This) Year Starting 1/1/18	1st Year Starting 1/1/19	2nd Year Starting 1/1/20	3rd Year Starting 1/1/21	4th Year Starting 1/1/22	5th Year Starting 1/1/23	6th Year Starting 1/1/24	7th Year Starting 1/1/25	8th Year Starting 1/1/26	9th Year Starting 1/1/27	10th Year Starting 1/1/28
20-82-3271 Vehicle Repair	3.0%	$3,545	$5,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
20-82-3273 Heavy Equipment Repairs	3.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-82-3275 Fuels/Lubricants	3.0%	$4,686	$4,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
20-82-3291 Capital Improvement Bldgs.	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
20-82-3292 Capital Improvement-Water	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
20-82-3293 Capital Equipment/TANK	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
20-82-3294 Water Line Repair	3.0%	$5,719	$4,000	$15,000	$15,450	$15,914	$16,391	$16,883	$17,389	$17,911	$18,448	$19,002	$19,572
20-82-3313 Equipment Maintenance	3.0%	$2,636	$5,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
20-82-3338 Communications	3.0%	$802	$700	$700	$721	$743	$765	$788	$811	$836	$861	$887	$913
20-82-3411 Reservoirs/Dam Maintenance	3.0%	$192,063	$100,000	$40,000	$41,200	$42,436	$43,709	$45,020	$46,371	$47,762	$49,195	$50,671	$52,191
20-82-3431 Water Quality Tests	3.0%	$34,540	$40,000	$35,000	$36,050	$37,132	$38,245	$39,393	$40,575	$41,792	$43,046	$44,337	$45,667
25-25-3166 Water Loan Principal Repay-2009	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
25-25-3167 Water Loan Interest Repay-2009	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
25-25-5950 Water Loan Reserve	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 R&R Annuity	0.0%	-$204,207	-$204,207	-$51,052	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Payment to Repair & Replacement (Table 7)	0.0%	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207	$204,207
User Charge Analysis Services	5.0%	$0	$5,887	$0	$0	$6,490	$0	$0	$7,156	$0	$0	$7,889	$0
Total, All 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		**$797,029**	**$735,090**	**$938,711**	**$1,013,330**	**$1,044,094**	**$1,062,605**	**$1,088,928**	**$1,203,381**	**$1,226,591**	**$1,257,886**	**$1,298,028**	**$1,323,378**
Net Income (or Loss)		$131,718	$233,005	$280,845	$184,109	$189,069	$207,123	$284,118	$217,183	$243,555	$263,064	$275,502	$304,568
Working Capital Goal: 50%	In Dollars, That is:	$398,514	$367,545	$469,356	$506,665	$522,047	$531,303	$544,464	$601,691	$613,296	$628,943	$649,014	$661,689

Notes: The Town will add one extra operator in 2019 and 2024, increasing staff-related costs in those two years (green highlighted items). In addition, utilities and postage costs (yellow highlighted items) will rise, once new connections are allowed. That is assumed to start in 2023.

Table 5 - Capital Improvement Program (CIP)

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

	Test Year Starting	Analysis (This) 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
			Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected)									
	1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)												
20-82-3291 Capital Improvement Bldgs.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-82-3292 Capital Improvement-Water (Previously Loan-funded)	$374,683	$150,000	$120,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-82-3293 Capital Equipment/TANK (Previously Loan-funded)	$137,288	$1,100,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Drill New Well	$0	$0	$0	$0	$750,000	$0	$0	$0	$0	$0	$0	$0
Loan Closing Costs, Estimated at: 2.5%	$12,799	$31,250	$3,090	$0	$20,489	$0	$0	$0	$0	$0	$0	$0
Total Debt-paid Portion of Projects	$524,771	$1,281,250	$123,090	$0	$770,489	$0	$0	$0	$0	$0	$0	$0
Planned Spending, Grant-paid Portion of Projects (CIP costs to be grant-funded are shown here.)												
None	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Grant-paid Portion of Projects	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)												
None	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Cash-paid Portion of Projects	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total CIP Costs	**$524,771**	**$1,281,250**	**$123,090**	**$0**	**$770,489**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Debt Repayment												
Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)												
25-25-3166 Water Loan Principal Repay-2009	$11,618	$137,340	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
25-25-3167 Water Loan Interest Repay-2009	$36,026	$33,923	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
25-25-5950 Water Loan Reserve	$0	$32,477	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Vehicle Loan-Principle & Interest	$0	$0	$6,540	$6,540	$6,540	$6,540	$6,540	$6,540	$6,540	$6,540	$6,540	$6,540
20-81 CWRPDA 2009 Principle & Interest	$0	$0	$104,971	$104,971	$104,971	$104,971	$104,971	$104,971	$104,971	$104,971	$104,971	$104,971
20-81 CWRPDA 2018 Principle & Interest	$0	$0	$5,584	$68,168	$68,168	$68,168	$68,168	$68,168	$68,168	$68,168	$68,168	$68,168
20-81-3600 Fund Reserve Account	$0	$0	$32,500	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
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 2.0% interest rate.)												
Loan Originated in 3rd Year (New Well)						$47,121	$47,121	$47,121	$47,121	$47,121	$47,121	$47,121
Total Debt Payments	$47,644	$203,740	$149,595	$209,679	$209,679	$256,800	$256,800	$256,800	$256,800	$256,800	$256,800	$256,800
Total, All CIP-related Payouts	**$572,415**	**$1,484,990**	**$272,685**	**$209,679**	**$980,168**	**$256,800**	**$256,800**	**$256,800**	**$256,800**	**$256,800**	**$256,800**	**$256,800**

(This is the total cash required for this CIP and debt payment schedule. These amounts must come from utility income, reserves or outside sources, as shown in the next section.)

Table 5 - Capital Improvement Program (CIP)

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

	Test Year Starting	Analysis (This) Year Starting	Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected) 1st Year Starting	2nd Year Starting	3rd Year Starting	4th Year Starting	5th Year Starting	6th Year Starting	7th Year Starting	8th Year Starting	9th Year Starting	10th Year Starting
	1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
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	$305,106	$257,462	$139,045	$203,765	$174,961	$172,468	$146,984	$194,081	$131,119	$138,891	$162,285	$194,162
Working Capital Transferred in	$0	$47,697	$179,034	$146,800	$173,687	$197,867	$270,957	$159,956	$231,950	$247,416	$255,431	$291,893
Debt and CIP Reserves Interest Earned (or Paid)	$0	$5,149	$2,781	$4,075	$3,499	$3,449	$2,940	$3,882	$2,622	$2,778	$3,246	$3,883
25-25-5950 Water Loan Reserve	$0	$32,477	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
20-81-3600 Fund Reserve Account	$0	$0	$32,500	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Total Available Internal Funds	$305,106	$342,785	$353,360	$384,640	$382,147	$403,784	$450,881	$387,919	$395,691	$419,085	$450,962	$519,938
Grant and Loan Proceeds (External Funds)												
Loans Originated in or Before Test Year	$524,771	$1,281,250	$123,090	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loan Originated in 3rd Year (New Well)					$770,489	$0	$0	$0	$0	$0	$0	$0
Total Available External Funds	$524,771	$1,281,250	$123,090	$0	$770,489	$0	$0	$0	$0	$0	$0	$0
Total Available Funds	**$829,877**	**$1,624,035**	**$476,450**	**$384,640**	**$1,152,636**	**$403,784**	**$450,881**	**$387,919**	**$395,691**	**$419,085**	**$450,962**	**$519,938**
Outcomes (This CIP spending and funding plan will result in the following cash needs and ending balances each year.)												
Total Available Funds	**$829,877**	**$1,624,035**	**$476,450**	**$384,640**	**$1,152,636**	**$403,784**	**$450,881**	**$387,919**	**$395,691**	**$419,085**	**$450,962**	**$519,938**
Total, All CIP-related Payouts	**$572,415**	**$1,484,990**	**$272,685**	**$209,679**	**$980,168**	**$256,800**	**$256,800**	**$256,800**	**$256,800**	**$256,800**	**$256,800**	**$256,800**
Debt and CIP Reserves Ending Balances	**$257,462**	**$139,045**	**$203,765**	**$174,961**	**$172,468**	**$146,984**	**$194,081**	**$131,119**	**$138,891**	**$162,285**	**$194,162**	**$263,138**

Notes: The Town originated several projects, and loan funding for those projects, in prior years. Those projects and their funding are occurring now and debt payments will commence in 2019. The Town has one additional project to loan fund; a new well. That will commence soon.

Table 6 - Equipment Replacement Schedule - Detailed

Palmer Lake, CO; Water Rates, Scenario 2019-2

Year Beginning	Reserve-paid Line Repairs and Replacements - Annual Average	Other Annual R&R Costs								Total Annual Replacement Costs
1/1/18	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
1/1/19	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
1/1/20	$150,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$200,000
1/1/21	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/22	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/23	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/24	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/25	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/26	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/27	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/28	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/29	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/30	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/31	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/32	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/33	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/34	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/35	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/36	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/37	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/38	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/39	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/40	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/41	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000
1/1/42	$100,000	$50,000	$0	$0	$0	$0	$0	$0	$0	$150,000

Table 7 - Equipment Replacement Annuity Calculation

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

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

3.00% Average Inflation Rate for the Following Water System Equipment for the Term of This Replacement Schedule

2.00% Average Interest Rate on Balances Invested for the Term of This Replacement Schedule

2.00% Average Interest Rate on Amounts Borrowed for the Term of This Replacement Schedule

Year Beginning	Schedule Year	This Year's Costs in Current Dollars	Future Annual Inflated Net Costs	Interest Earned on Prior Balance	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
1/1/18	Analysis Year	$0	$0	$0	$0	$137,500
1/1/19	1st Year	$0	$0	$0	$204,207	$141,625
1/1/20	2nd Year	$200,000	$212,180	$4,084	$200,318	$145,874
1/1/21	3rd Year	$150,000	$163,909	$4,006	$244,622	$150,250
1/1/22	4th Year	$150,000	$168,826	$4,892	$284,895	$154,757
1/1/23	5th Year	$150,000	$173,891	$5,698	$320,909	$159,400
1/1/24	6th Year	$150,000	$179,108	$6,418	$352,426	$164,182
1/1/25	7th Year	$150,000	$184,481	$7,049	$379,200	$169,108
1/1/26	8th Year	$150,000	$190,016	$7,584	$400,975	$174,181
1/1/27	9th Year	$150,000	$195,716	$8,020	$417,486	$179,406
1/1/28	10th Year	$150,000	$201,587	$8,350	$428,455	$184,789
1/1/29	11th Year	$150,000	$207,635	$8,569	$433,596	$190,332
1/1/30	12th Year	$150,000	$213,864	$8,672	$432,610	$196,042
1/1/31	13th Year	$150,000	$220,280	$8,652	$425,189	$201,923
1/1/32	14th Year	$150,000	$226,888	$8,504	$411,012	$207,981
1/1/33	15th Year	$150,000	$233,695	$8,220	$389,744	$214,221
1/1/34	16th Year	$150,000	$240,706	$7,795	$361,039	$220,647
1/1/35	17th Year	$150,000	$247,927	$7,221	$324,540	$227,267
1/1/36	18th Year	$150,000	$255,365	$6,491	$279,872	$234,085
1/1/37	19th Year	$150,000	$263,026	$5,597	$226,651	$241,107
				Starting Account Balance	$0	$137,500
				Minimum Annual Annuity	$194,284	Minimum Desired Balance in Today's Dollars
				Discretionary Annuity	$9,923	

Notes: The Town does not currently have a R&R schedule. R&R needs are thought to be backlogged. Therefore, this calculation is aimed at "catching up."

Required Annual Deposit (Annuity) to Replacement Account **$204,207**

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

Table 8 - Average Cost Classification

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

The average rate structure basis year runs from: 1/1/2022 through 12/31/2022

Cost Items	Cost During Average Rate Structure Basis Year	Fixed Cost Percentage	Variable Cost Percentage	Average Fixed Cost	Average Variable Cost
20-81-3111 Salaries / Wages Regular (Including Additional Operators Starting in 2019 & 2024)	$276,723	50.0%	50.0%	$138,362	$138,362
20-81-3112 Salaries / Wages Temp	$0	50.0%	50.0%	$0	$0
20-81-3115 Overtime	$1,203	50.0%	50.0%	$602	$602
Vacation Payout	$11,803	50.0%	50.0%	$5,901	$5,901
20-81-3119 FICA Employer	$21,944	50.0%	50.0%	$10,972	$10,972
20-81-3120 Medicare Employer	$5,132	50.0%	50.0%	$2,566	$2,566
SUTA Employer	$2,194	50.0%	50.0%	$1,097	$1,097
FUTA Employer	$21,235	50.0%	50.0%	$10,618	$10,618
20-81-3125 Employee Benefits	$77,899	50.0%	50.0%	$38,950	$38,950
20-81-3127 Life Insurance Premiums	$478	50.0%	50.0%	$239	$239
20-81-3131 Workers Compensation	$6,647	50.0%	50.0%	$3,323	$3,323
20-81-3141 Employee Clothing	$559	100.0%	0.0%	$559	$0
20-81-3145 Employee Training	$419	100.0%	0.0%	$419	$0
20-81-3149 Employee Travel	$0	100.0%	0.0%	$0	$0
20-81-3153 Memberships/Registrations	$13,976	100.0%	0.0%	$13,976	$0
20-81-3161 Professional Services-Legal	$32,782	100.0%	0.0%	$32,782	$0
20-81-3162 Professional Services-Acctg	$21,855	100.0%	0.0%	$21,855	$0
20-81-3163 Professional Services-Other	$13,113	100.0%	0.0%	$13,113	$0
20-81-3167 Payment Processing	$19,669	54.3%	45.7%	$10,680	$8,989
20-81-3169 Bank Fees and Services	$546	54.3%	45.7%	$297	$250
20-81-3211 Contract Services	$5,464	100.0%	0.0%	$5,464	$0
20-81-3245 Utilities	$101,624	0.0%	100.0%	$0	$101,624
20-81-3253 Postage	$6,556	100.0%	0.0%	$6,556	$0
20-81-3281 Insurance	$18,576	100.0%	0.0%	$18,576	$0
20-81-3333 Publication/Legal Notices	$0	100.0%	0.0%	$0	$0
20-81-3338 Communications	$3,825	100.0%	0.0%	$3,825	$0
20-81-3365 Advertising	$0	100.0%	0.0%	$0	$0
20-81-3391 Misc. Expenses	$546	100.0%	0.0%	$546	$0
20-81-3395 Electric Siren	$0	100.0%	0.0%	$0	$0
20-82-3223 Operating Supplies	$54,636	50.0%	50.0%	$27,318	$27,318
20-82-3225 Building Maintenance	$2,732	50.0%	50.0%	$1,366	$1,366
20-82-3228 Shop Maintenance	$0	100.0%	0.0%	$0	$0
20-82-3233 Water Meters / Parts	$19,669	50.0%	50.0%	$9,835	$9,835
20-82-3269 Vehicle License / Fees	$1,093	100.0%	0.0%	$1,093	$0
20-82-3271 Vehicle Repair	$5,464	100.0%	0.0%	$5,464	$0

Table 8 - Average Cost Classification

Cost Items	Cost During Average Rate Structure Basis Year	Fixed Cost Percentage	Variable Cost Percentage	Average Fixed Cost	Average Variable Cost
20-82-3273 Heavy Equipment Repairs	$0	100.0%	0.0%	$0	$0
20-82-3275 Fuels/Lubricants	$5,464	100.0%	0.0%	$5,464	$0
20-82-3294 Water Line Repair	$16,391	100.0%	0.0%	$16,391	$0
20-82-3313 Equipment Maintenance	$5,464	100.0%	0.0%	$5,464	$0
20-82-3338 Communications	$765	100.0%	0.0%	$765	$0
20-82-3411 Reservoirs/Dam Maintenance	$43,709	50.0%	50.0%	$21,855	$21,855
20-82-3431 Water Quality Tests	$38,245	100.0%	0.0%	$38,245	$0
Annual Payment to Repair & Replacement (Table 7)	$204,207	50.0%	50.0%	$102,103	$102,103
User Charge Analysis Services	$0	54.3%	45.7%	$0	$0
Grand Total Costs, Weighted Avg Percentages	$1,062,605	54.3%	45.7%	$576,638	$485,968

Bases for Cost to Serve Rate Structure

		100%	$1,062,605
Number of Customers During Year Defined Above =	972	Unbilled-for Water is Estimated at	29%
Billed Volume, in Gallons, During Year Defined Above =	47,397,648	Unbilled-for Water is Estimated at This Percentage of Average Cost	70%
Average Fixed Cost per User per Month During Year Defined Above =	$49.45	Resulting Cost of Unbilled-for Water	$140,150
Average Variable Cost to Produce per 1,000 Gallons During Year Defined Above =	$10.25	Test Year Customer Metered Volume, in Gallons	47,104,995
Gallons per Billing Cycle Used by Average Residential Customer =	4,065	+ Test Year Unbilled-for Water, in Gallons	19,367,280
		Total Test Year Volume, in Gallons, From Master Meter Readings	66,472,275

Table 10 - Initial Rate Adjustments and Resulting Revenues

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Out of Town Multiplier	200%	Conservation Rate Block Multiplier	120%	Other Multiplier	100%

If there are no special costs to consider and before capacity costs are added, if appropriate, rates for a 5/8" meter would be in a "cost to serve" structure when: there is no usage allowance,

the base minimum charge is $35.69 Monthly, and the unit charge is $7.40 per 1,000 Gallons.

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

Sales to be billed this year: 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 if the modeled rates are adopted. The grand total "blended" sales revenues are the total revenues generated by the two different sets of rates. Those 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	Customers Within This Volume Range	New Minimum Charge Including Surcharges1	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
All Customers	0	999	$112,823	159	$62.41	0.000	$7.40	$530	$113,353
	1,000	1,999	$99,042	139	$62.41	0.000	$7.40	$465	$99,507
	2,000	2,999	$110,526	181	$62.41	0.000	$7.40	$509	$111,035
	3,000	3,999	$90,869	156	$62.41	0.000	$7.40	$416	$91,285
	4,000	4,999	$61,761	106	$62.41	0.000	$7.40	$283	$62,044
	5,000	5,999	$39,337	66	$62.41	0.000	$8.88	$190	$39,527
	6,000	6,999	$26,561	44	$62.41	0.000	$8.88	$129	$26,689
	7,000	7,999	$16,808	26	$62.41	0.000	$8.88	$83	$16,891
	8,000	8,999	$12,264	19	$62.41	0.000	$8.88	$61	$12,324
	9,000	9,999	$9,857	15	$62.41	0.000	$8.88	$49	$9,906
	10,000	14,999	$22,519	29	$62.41	0.000	$10.66	$127	$22,646
	15,000	15,999	$3,273	3	$62.41	0.000	$10.66	$15	$3,288
	16,000	16,999	$3,067	3	$62.41	0.000	$10.66	$14	$3,080
	17,000	17,999	$2,349	2	$62.41	0.000	$10.66	$11	$2,360
	18,000	18,999	$2,177	2	$62.41	0.000	$10.66	$10	$2,187
	19,000	19,999	$2,020	2	$62.41	0.000	$10.66	$9	$2,029
	20,000	24,999	$8,375	6	$62.41	0.000	$10.66	$35	$8,409
	25,000	29,999	$5,425	4	$62.41	0.000	$10.66	$22	$5,448
	30,000	49,999	$6,824	5	$62.41	0.000	$10.66	$28	$6,852
	50,000	74,999	$2,291	0	$62.41	0.000	$10.66	$9	$2,300
	75,000	99,999	$1,593	0	$62.41	0.000	$10.66	$6	$1,600
	100,000	149,999	$2,247	0	$62.41	0.000	$10.66	$9	$2,256
	150,000	199,999	$1,744	0	$62.41	0.000	$10.66	$7	$1,751
	200,000	299,999	$1,445	0	$62.41	0.000	$10.66	$6	$1,451
	300,000	399,999	$272	0	$62.41	0.000	$10.66	$1	$273
	400,000	499,999	$0	0	$62.41	0.000	$10.66	$0	$0
	500,000	331,800	$0	0	$62.41	0.000	$10.66	$0	$0
Total Rate Revenue at Current Rates			$645,470		Total Rate Revenue at Modeled Rates			$3,023	
Total Blended Rate Revenues for the Year [2]									$648,493

Note 1, New Minimum Charge Base Rates: If meter or connection 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 or connection size surcharges as calculated in Table 16. Either way, the narrative report includes the rates and surcharges to assess.

Note 2, Blended Rate Revenues: During the year when rates will be adjusted, rate revenues generated will be "blended" revenues - part collected at the current rates and part collected at the adjusted rates. The table above calculates both kinds of revenue and totals them in the right-most column. Therefore, the anticipated timing of rate adjustment shown at the top of this table will cause rates to be charged as follows:

Table 11 - Capacity Costs

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Peak and Base Flow Capacity Costs

	Fixed Assets Original Value (Capacity Cost)	% of Value Attributable to Peak Flow Capacity	Peak Flow Capacity Cost	Annual Peak Flow Capacity Cost (40-year Depreciation)	% of Value Attributable to Base Flow Capacity	Base Flow Capacity Cost	Annual Base Flow Capacity Cost (40-year Depreciation)
	$6,469,418	50.0%	$3,234,709	$188,513	50.0%	$3,234,709	$188,513
Totals	$6,469,418		$3,234,709	$188,513		$3,234,709	$188,513

How Capacity Costs Will Be Recovered

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

Peak Flow Capacity Costs to be Recovered by System Development Fees

18.00%	Target Percentage of Costs to Recover
$33,932	Target Portion of Costs to Recover
$5,545	Cost per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by System Development Fees

13.70%	Target Percentage of Costs to Recover
$25,832	Target Portion of Costs to Recover
$4,305	Base Capacity Cost per New Customer Connected

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

$100	Average Field Cost per New Connection
$50	Average Administration Cost per New Connection
$150	Field and Admin Cost per New Connection
$4,455	Base Cost to Recover per New Connection

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

Peak Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

82.00%	Target Percentage of Costs to Recover
$154,581	Target Portion of Costs to Recover in One Full Year
$12,882	Target Portion of Costs to Recover in Monthly Surcharges
$12.89	Monthly Surcharge per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

86.30%	Target Percentage of Costs to Recover
$162,681	Target Portion of Costs to Recover in One Full Year
$13,557	Target Portion of Costs to Recover in Monthly Surcharges
$13.83	Monthly Base Flow Surcharge per Bill

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

Table 12 - AWWA Safe Operating Capacities by Meter Size

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

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

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

Table 13 - System Development Fees

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

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

Meter Size	Meter Type	AWWA Capacity "Share" Factor, Compared to 5/8 Inch Meter	Foot Notes	Capacity Shares, Including Out of Town Multiplier and Economy of Scale Adjustments	Adjusted Peak Capacity Cost Each Meter Size	Base Capacity Cost per New Customer Connected, as Adjusted by the Out of Town Multiplier	Capacity-only Cost (Fee)	Field and Admin Cost per New Connection	Uniform Adjustment to Field and Admin Costs	Adjusted Field and Admin Costs (Fee) per New Connection	System Development Fee
In-Town Meters											
Five Eighths	Displacement	1.0		1.0	$5,545	$4,305	$9,850	$150	$0.00	$150	$10,000
Three Quarters	Displacement	1.0	1	1.0	$5,545	$4,305	$9,850	$150	$0.00	$150	$10,000
One Inch	Displacement	2.5		2.5	$13,863	$4,305	$18,168	$150	$0.00	$150	$18,318
One & a Half Inch	Displacement	5.0		5.0	$27,725	$4,305	$32,031	$150	$0.00	$150	$32,181
Two Inch	Displacement	8.0		8.0	$44,360	$4,305	$48,666	$150	$0.00	$150	$48,816
Two & a Half Inch	Displacement	12.5	2	12.5	$69,313	$4,305	$73,618	$150	$0.00	$150	$73,768
Three Inch	Singlet	16.0		16.0	$88,721	$4,305	$93,026	$150	$0.00	$150	$93,176
Three Inch	Compound, Class I	16.0		16.0	$88,721	$4,305	$93,026	$150	$0.00	$150	$93,176
Three Inch	Turbine, Class I	17.5		17.5	$97,038	$4,305	$101,344	$150	$0.00	$150	$101,494
Four Inch	Singlet	25.0		25.0	$138,626	$4,305	$142,932	$150	$0.00	$150	$143,082
Four Inch	Compound, Class I	25.0		25.0	$138,626	$4,305	$142,932	$150	$0.00	$150	$143,082
Four Inch	Turbine, Class I	31.0		31.0	$171,897	$4,305	$176,202	$150	$0.00	$150	$176,352
Out of Town Meters											
Five Eighths	Displacement	1.0		1.0	$11,090	$8,611	$19,701	$150	$0.00	$150	$19,851
Three Quarters	Displacement	1.0	1	1.0	$11,090	$8,611	$19,701	$150	$0.00	$150	$19,851
One Inch	Displacement	2.5		2.5	$27,725	$8,611	$36,336	$150	$0.00	$150	$36,486
One & a Half Inch	Displacement	5.0		5.0	$55,451	$8,611	$64,061	$150	$0.00	$150	$64,211
Two Inch	Displacement	8.0		8.0	$88,721	$8,611	$97,331	$150	$0.00	$150	$97,481
Two & a Half Inch	Displacement	12.5	2	12.5	$138,626	$8,611	$147,237	$150	$0.00	$150	$147,387
Three Inch	Singlet	16.0		16.0	$177,442	$8,611	$186,052	$150	$0.00	$150	$186,202
Three Inch	Compound, Class I	16.0		16.0	$177,442	$8,611	$186,052	$150	$0.00	$150	$186,202
Three Inch	Turbine, Class I	17.5		17.5	$194,077	$8,611	$202,687	$150	$0.00	$150	$202,837
Four Inch	Singlet	25.0		25.0	$277,253	$8,611	$285,863	$150	$0.00	$150	$286,013
Four Inch	Compound, Class I	25.0		25.0	$277,253	$8,611	$285,863	$150	$0.00	$150	$286,013
Four Inch	Turbine, Class I	31.0		31.0	$343,793	$8,611	$352,404	$150	$0.00	$150	$352,554

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

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

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

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

Table 14 - Revenues From System Development Fees

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Meter Size	Meter Type	Mix of New Taps in a Typical Year	Capacity Shares, Including Out of Town Multiplier and Economy of Scale Adjustments	Projected Annual Growth in Capacity Shares, Adjusted for Economy of Scale	Adjusted Peak Capacity Cost Fees for One Full Year	Base Capacity Cost Fees for One Full Year	Combined Capacity-only Fee Revenues to Collect in One Year	Adjusted Admin and Field Cost Fees to Collect in One Year	**System Development Fee Revenues for One Full Year**
In-Town Meters									
Five Eighths	Displacement	0.0	1.0	0.0	$0	$0	$0	$0	**$0**
Three Quarters	Displacement	6.0	1.0	6.0	$33,067	$25,674	$58,740	$894	**$59,635**
One Inch	Displacement	0.0	2.5	0.0	$255	$79	$334	$3	**$336**
One & a Half Inch	Displacement	0.0	5.0	0.1	$339	$53	$392	$2	**$394**
Two Inch	Displacement	0.0	8.0	0.0	$272	$26	$298	$1	**$299**
Two & a Half Inch	Displacement	0.0	12.5	0.0	$0	$0	$0	$0	**$0**
Three Inch	Singlet	0.0	16.0	0.0	$0	$0	$0	$0	**$0**
Three Inch	Compound, Class I	0.0	16.0	0.0	$0	$0	$0	$0	**$0**
Three Inch	Turbine, Class I	0.0	17.5	0.0	$0	$0	$0	$0	**$0**
Four Inch	Singlet	0.0	25.0	0.0	$0	$0	$0	$0	**$0**
Four Inch	Compound, Class I	0.0	25.0	0.0	$0	$0	$0	$0	**$0**
Four Inch	Turbine, Class I	0.0	31.0	0.0	$0	$0	$0	$0	**$0**
	Subtotal:	6.0		6.1	$33,932	$25,832	$59,764	$900	**$60,664**
Out of Town Meters									
Five Eighths	Displacement	0.0	1.0	0.0	$0	$0	$0	$0	**$0**
Three Quarters	Displacement	0.0	1.0	0.0	$0	$0	$0	$0	**$0**
One Inch	Displacement	0.0	2.5	0.0	$0	$0	$0	$0	**$0**
One & a Half Inch	Displacement	0.0	5.0	0.0	$0	$0	$0	$0	**$0**
Two Inch	Displacement	0.0	8.0	0.0	$0	$0	$0	$0	**$0**
Two & a Half Inch	Displacement	0.0	12.5	0.0	$0	$0	$0	$0	**$0**
Three Inch	Singlet	0.0	16.0	0.0	$0	$0	$0	$0	**$0**
Three Inch	Compound, Class I	0.0	16.0	0.0	$0	$0	$0	$0	**$0**
Three Inch	Turbine, Class I	0.0	17.5	0.0	$0	$0	$0	$0	**$0**
Four Inch	Singlet	0.0	25.0	0.0	$0	$0	$0	$0	**$0**
Four Inch	Compound, Class I	0.0	25.0	0.0	$0	$0	$0	$0	**$0**
Four Inch	Turbine, Class I	0.0	31.0	0.0	$0	$0	$0	$0	**$0**
	Subtotal:	0.0		0.0	$0	$0	$0	$0	**$0**
	Total:	6.0		6.1	$33,932	$25,832	$59,764	$900	**$60,664**

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

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Meter Size	Meter Type	Monthly Peak Capacity-only Costs (Surcharge per Capacity Share, Including Out of Town Multiplier)	Uniform Adjustment to Peak Capacity Cost	Capacity-only Cost (Fee)	Monthly Base Capacity-only Costs (Surcharge per Customer, Including Out of Town Multiplier)	Uniform Adjustment to Base Capacity Cost	Adjusted Field and Admin Costs (Fee) per New Connection	Monthly Minimum Charge	Monthly Snowbird Fee
In-Town Meters									
Five Eighths	Displacement	$12.89	$0.00	$12.89	$13.83	$0.00	$13.83	$62.41	$50.05
Three Quarters	Displacement	$12.89	$0.00	$12.89	$13.83	$0.00	$13.83	$62.41	$50.05
One Inch	Displacement	$32.22	$0.00	$32.22	$13.83	$0.00	$13.83	$81.74	$65.55
One & a Half Inch	Displacement	$64.44	$0.00	$64.44	$13.83	$0.00	$13.83	$113.96	$91.38
Two Inch	Displacement	$103.11	$0.00	$103.11	$13.83	$0.00	$13.83	$152.63	$122.39
Two & a Half Inch	Displacement	$161.10	$0.00	$161.10	$13.83	$0.00	$13.83	$210.63	$168.89
Three Inch	Singlet	$206.21	$0.00	$206.21	$13.83	$0.00	$13.83	$255.73	$205.06
Three Inch	Compound, Class I	$206.21	$0.00	$206.21	$13.83	$0.00	$13.83	$255.73	$205.06
Three Inch	Turbine, Class I	$225.54	$0.00	$225.54	$13.83	$0.00	$13.83	$275.07	$220.56
Four Inch	Singlet	$322.20	$0.00	$322.20	$13.83	$0.00	$13.83	$371.73	$298.07
Four Inch	Compound, Class I	$322.20	$0.00	$322.20	$13.83	$0.00	$13.83	$371.73	$298.07
Four Inch	Turbine, Class I	$399.53	$0.00	$399.53	$13.83	$0.00	$13.83	$449.06	$360.08
Out of Town Meters									
Five Eighths	Displacement	$25.78	$0.00	$25.78	$27.67	$0.00	$27.67	$89.13	$71.47
Three Quarters	Displacement	$25.78	$0.00	$25.78	$27.67	$0.00	$27.67	$89.13	$71.47
One Inch	Displacement	$64.44	$0.00	$64.44	$27.67	$0.00	$27.67	$127.80	$102.48
One & a Half Inch	Displacement	$128.88	$0.00	$128.88	$27.67	$0.00	$27.67	$192.24	$154.15
Two Inch	Displacement	$206.21	$0.00	$206.21	$27.67	$0.00	$27.67	$269.57	$216.15
Two & a Half Inch	Displacement	$322.20	$0.00	$322.20	$27.67	$0.00	$27.67	$385.56	$309.16
Three Inch	Singlet	$412.42	$0.00	$412.42	$27.67	$0.00	$27.67	$475.78	$381.50
Three Inch	Compound, Class I	$412.42	$0.00	$412.42	$27.67	$0.00	$27.67	$475.78	$381.50
Three Inch	Turbine, Class I	$451.09	$0.00	$451.09	$27.67	$0.00	$27.67	$514.44	$412.51
Four Inch	Singlet	$644.41	$0.00	$644.41	$27.67	$0.00	$27.67	$707.76	$567.52
Four Inch	Compound, Class I	$644.41	$0.00	$644.41	$27.67	$0.00	$27.67	$707.76	$567.52
Four Inch	Turbine, Class I	$799.07	$0.00	$799.07	$27.67	$0.00	$27.67	$862.42	$691.54

Table 16 - Revenues From Minimum Charges

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Uniform Adjustment to Peak Capacity Cost $0.00

Uniform Adjustment to Base Capacity Cost $0.00

Meter Size	Meter Type	Capacity Shares, Including Out of Town Multiplier and Economy of Scale Adjustments	Current Number Meters This Size	Total Adjusted Capacity Shares	Adjusted Annual Peak Capacity-only Surcharge Revenues	Annual Base Capacity-only Surcharge Revenues	Capacity Surcharges for One Full Year
In-Town Meters							
Five Eighths	Displacement	1.0	0	0	$0	$0	$0
Three Quarters	Displacement	1.0	974	974	$150,637	$161,685	$312,322
One Inch	Displacement	2.5	3	8	$1,160	$498	$1,658
One & a Half Inch	Displacement	5.0	2	10	$1,547	$332	$1,879
Two Inch	Displacement	8.0	1	8	$1,237	$166	$1,403
Two & a Half Inch	Displacement	12.5	0	0	$0	$0	$0
Three Inch	Singlet	16.0	0	0	$0	$0	$0
Three Inch	Compound, Class I	16.0	0	0	$0	$0	$0
Three Inch	Turbine, Class I	17.5	0	0	$0	$0	$0
Four Inch	Singlet	25.0	0	0	$0	$0	$0
Four Inch	Compound, Class I	25.0	0	0	$0	$0	$0
Four Inch	Turbine, Class I	31.0	0	0	$0	$0	$0
		Total:	980	1,000	$154,581	$162,681	$317,262

Table 17 - Financial Capacity Indicators and Reserves

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

Capacity Indicators	Test Year Starting 1/1/17	Analysis (This) Year Starting 1/1/18	1st Year Starting 1/1/19	2nd Year Starting 1/1/20	3rd Year Starting 1/1/21	4th Year Starting 1/1/22	5th Year Starting 1/1/23	6th Year Starting 1/1/24	7th Year Starting 1/1/25	8th Year Starting 1/1/26	9th Year Starting 1/1/27	10th Year Starting 1/1/28
The Normal Affordability Index: Equivalent Final Monthly Bill for a 5,000 gal per Month Residential Customer	$79.95	$100.89	$100.89	$103.92	$107.04	$110.25	$113.55	$116.96	$120.47	$124.08	$127.81	$131.64
Annual Median Household Income (AMHI) Within Service Area (Projected from last available Census survey or estimated income data)	$61,889	$62,546	$63,211	$63,882	$64,561	$65,247	$65,940	$66,641	$67,349	$68,065	$68,788	$69,519
Affordability Index: Current Rates First Column, Then Proposed Rates	1.55%	1.94%	1.92%	1.95%	1.99%	2.03%	2.07%	2.11%	2.15%	2.19%	2.23%	2.27%

Affordability Index (AI) goes to the willingness and ability of customers to pay. AI is the percent of AMHI needed by a 5,000 gallon per month residential user to pay their bill. Rates near 1.0% are common in the U.S. and are generally considered affordable. Federal grant agencies generally will not consider awarding grants if this indicator is less than 2.0%. The above index is only for a 1 share customers but it should be fairly representative of all residential customers.

Low-income, Low-volume Affordability Index												
Equivalent Final Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	$68.28	$77.21	$77.21	$79.53	$81.91	$84.37	$86.90	$89.51	$92.19	$94.96	$97.81	$100.74
Income at One-half the AMHI Above	$30,944	$31,109	$31,274	$31,440	$31,607	$31,775	$31,944	$32,114	$32,284	$32,456	$32,628	$32,801
Affordability for Low-income, Low-volume: Current Rates First Column, Then Proposed Rates	2.65%	2.98%	2.96%	3.04%	3.11%	3.19%	3.26%	3.34%	3.43%	3.51%	3.60%	3.69%

This additional indicator of affordability assumes a residential customer with income at one-half of the median household income above, that income is growing at one-half the rate of the median household income and the customer uses 2,000 gallons per month. Such a customer is likely either a minimum wage, or near-minimum wage worker or is retired and living on Social Security-only.

Estimated Operating Ratio: Current Rates First Column, Then Proposed Rates	1.17	1.32	1.30	1.18	1.18	1.19	1.26	1.18	1.20	1.21	1.21	1.23

Operating ratio (OR) goes to the ability of the utility to pay its operating expenses. 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 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, Then Proposed Rates	0.00	0.23	1.20	0.70	0.83	0.77	1.06	0.62	0.90	0.96	0.99	1.14

Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments. 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 (below,) it has more ability to make debt payments than the CR implies.

Reserves	Balance Ending on 12/31/16	Balance Ending on 12/31/17	Balance Ending on 12/31/18	Balance Ending on 12/31/19	Balance Ending on 12/31/20	Balance Ending on 12/31/21	Balance Ending on 12/31/22	Balance Ending on 12/31/23	Balance Ending on 12/31/24	Balance Ending on 12/31/25	Balance Ending on 12/31/26	Balance Ending on 12/31/27	Balance Ending on 12/31/28
Cash and Cash Equivalents	$50,519	$182,237	$367,545	$469,356	$506,665	$522,047	$531,303	$544,464	$601,691	$613,296	$628,943	$649,014	$661,689
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$50,519	$182,237	$367,545	$469,356	$506,665	$522,047	$531,303	$544,464	$601,691	$613,296	$628,943	$649,014	$661,689
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$50,519	$182,237	$367,545	$455,275	$476,721	$476,458	$470,358	$467,550	$501,192	$495,532	$492,930	$493,400	$503,036
Repair & Replacement	$0	$0	$204,207	$200,318	$244,622	$284,895	$320,909	$352,426	$379,200	$400,975	$417,486	$428,455	$433,596
Debt and CIP Reserves	$305,106	$257,462	$139,045	$203,765	$174,961	$172,468	$146,984	$194,081	$131,119	$138,891	$162,285	$194,162	$263,138
Sum of All Reserves	$355,625	$439,699	$710,797	$873,439	$926,248	$979,410	$999,196	$1,090,971	$1,112,009	$1,153,162	$1,208,714	$1,271,630	$1,358,423

Table 18 - Comparison of Bills Before and After Rate Adjustments

Palmer Lake, CO; Water Rates, Scenario 2019-2

The weighted-average revenue (bill) increase, as compared to the test year rates, for all customers combined will be 41.3%

Note: Rates were increased in 2018, after the test year closed. Therefore, bill increases shown below are in comparison to the now current rates, not the test year rates.

Note: The bill increases in this table are for 3/4 inch meter customers only, they include meter size-based capacity surcharges calculated in Table 13, and they include the current loan repayment surcharges.

Customer or Rate Class, or Meter Size	Gallons of Use	Customers at or Above This Volume and Below Next	Cumulative Customers	Current Bill for This Volume, Including D.S. Surcharges	Modeled Bill for This Volume, Including Now Current D.S. Surcharges	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
Customers With 3/4 Inch Meters	0	159	159	$60.50	$62.41	$1.91	3%
	1,000	139	298	$64.39	$69.81	$5.42	8%
	2,000	181	479	$68.28	$77.21	$8.93	13%
	3,000	156	635	$72.17	$84.61	$12.44	17%
	4,000	106	741	$76.06	$92.01	$15.95	21%
	5,000	66	806	$79.95	$100.89	$20.94	26%
	6,000	44	850	$83.84	$109.77	$25.93	31%
	7,000	26	876	$87.73	$118.65	$30.92	35%
	8,000	19	895	$91.62	$127.53	$35.91	39%
	9,000	15	910	$95.51	$136.41	$40.90	43%
	10,000	29	939	$99.40	$147.07	$47.67	48%
	15,000	3	942	$131.20	$200.35	$69.15	53%
	16,000	3	945	$137.56	$211.00	$73.44	53%
	17,000	2	946	$143.92	$221.66	$77.74	54%
	18,000	2	948	$150.28	$232.32	$82.04	55%
	19,000	2	950	$156.64	$242.97	$86.33	55%
	20,000	6.08	956	$163.99	$253.63	$89.64	55%
	25,000	4.17	960	$200.74	$306.91	$106.17	53%
	30,000	4.67	965	$237.49	$360.19	$122.70	52%
	50,000	0.42	965	$384.49	$573.31	$188.82	49%
	75,000	0.25	965	$568.24	$839.71	$271.47	48%
	100,000	0.08	965	$751.99	$1,106.11	$354.12	47%
	150,000	0.17	965	$1,119.49	$1,638.91	$519.42	46%
	200,000	0.25	966	$1,486.99	$2,171.71	$684.72	46%
	300,000	0.08	966	$2,221.99	$3,237.31	$1,015.32	46%
	400,000	0.00	966	$2,956.99	$4,302.91	$1,345.92	46%
	500,000	0.00	966	$3,691.99	$5,368.51	$1,676.52	45%

Table 19 - User Statistics

Palmer Lake, CO; Water Rates, Scenario 2019-2

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

If your rates are absolutely proportional to use on a volumetric basis, your % of usage and % of revenues figures will be the same within all the classes. That is not possible if you have any minimum charge and having no minimum charge is almost unheard of.

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 in mind:

4,065 Gallons: This is the average residential customer's usage per Monthly billing cycle.

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

47,104,995 Gallons: This is the volume metered through customer meters that was available to be sold by the utility during the test year.

0 Gallons: This is the volume metered through customer meters that was given away as a usage allowance during the test year.

$0 Loss: At the unit charge rate in effect during the test year, the utility failed to collect this much revenue due to the usage allowance.

$0 Loss: At the modeled (recommended) unit charge rates and usage allowance (if any), over a full year this is the amount of revenue the utility would fail to collect due to the usage allowance as modeled (if any).

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates, Not Including D.S. Surcharges	% Revenue at Modeled Rates, Not Including D.S. Surcharges
All Customers	0	999	0.868	373,595	158.8	16.4%	0.8%	0.8%	100.0%	17.5%	17.5%
	1,000	1,999	0.912	2,492,200	139.3	14.4%	5.3%	6.1%	99.2%	15.3%	15.4%
	2,000	2,999	0.850	5,309,800	180.9	18.7%	11.3%	17.4%	93.9%	17.1%	16.8%
	3,000	3,999	0.816	6,398,800	155.7	16.1%	13.6%	30.9%	82.6%	14.1%	13.8%
	4,000	4,999	0.815	5,613,800	105.8	11.0%	11.9%	42.9%	69.1%	9.6%	9.4%
	5,000	5,999	0.829	4,283,300	65.9	6.8%	9.1%	52.0%	57.1%	6.1%	6.3%
	6,000	6,999	0.844	3,369,400	43.7	4.5%	7.2%	59.1%	48.0%	4.1%	4.3%
	7,000	7,999	0.877	2,324,800	26.0	2.7%	4.9%	64.0%	40.9%	2.6%	2.7%
	8,000	8,999	0.877	1,866,100	18.5	1.9%	4.0%	68.0%	36.0%	1.9%	2.0%
	9,000	9,999	0.882	1,689,300	14.9	1.5%	3.6%	71.6%	32.0%	1.5%	1.6%
	10,000	14,999	3.407	4,189,400	29.3	3.0%	8.9%	80.5%	28.4%	3.5%	4.2%
	15,000	15,999	0.933	538,300	2.9	0.3%	1.1%	81.6%	19.5%	0.5%	0.5%
	16,000	16,999	0.933	575,700	2.9	0.3%	1.2%	82.8%	18.4%	0.5%	0.5%
	17,000	17,999	0.953	366,100	1.8	0.2%	0.8%	83.6%	17.2%	0.4%	0.4%
	18,000	18,999	0.949	368,100	1.7	0.2%	0.8%	84.4%	16.4%	0.3%	0.3%
	19,000	19,999	0.950	369,400	1.6	0.2%	0.8%	85.2%	15.6%	0.3%	0.3%
	20,000	24,999	3.901	1,611,700	6.1	0.6%	3.4%	88.6%	14.8%	1.3%	1.1%
	25,000	29,999	3.933	1,370,900	4.2	0.4%	2.9%	91.5%	11.4%	0.8%	0.7%
	30,000	49,999	8.944	2,015,000	4.7	0.5%	4.3%	95.8%	8.5%	1.1%	0.9%
	50,000	74,999	19.073	286,100	0.4	0.0%	0.6%	96.4%	4.2%	0.4%	0.3%
	75,000	99,999	20.150	251,500	0.3	0.0%	0.5%	96.9%	3.6%	0.2%	0.2%
	100,000	149,999	43.043	101,300	0.1	0.0%	0.2%	97.2%	3.1%	0.3%	0.3%
	150,000	199,999	37.883	327,300	0.2	0.0%	0.7%	97.8%	2.8%	0.3%	0.2%
	200,000	299,999	45.325	681,300	0.3	0.0%	1.4%	99.3%	2.2%	0.2%	0.2%
	300,000	399,999	31.800	331,800	0.1	0.0%	0.7%	100.0%	0.7%	0.0%	0.0%
	400,000	499,999	0.000	0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	500,000	331,800	0.000	0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
		Grand Totals		47,104,995		100.00%	100.00%			100.00%	100.00%

Chart 1 - Operating Ratio

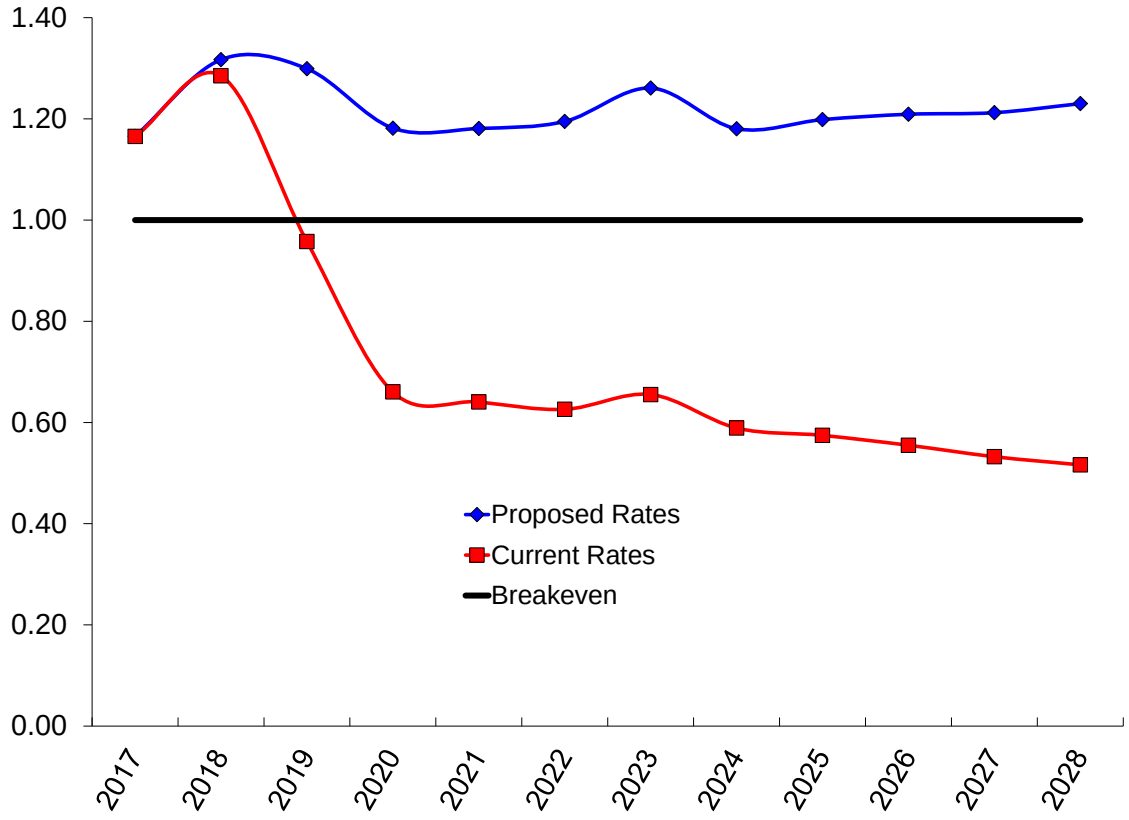


Chart 2 - Coverage Ratio

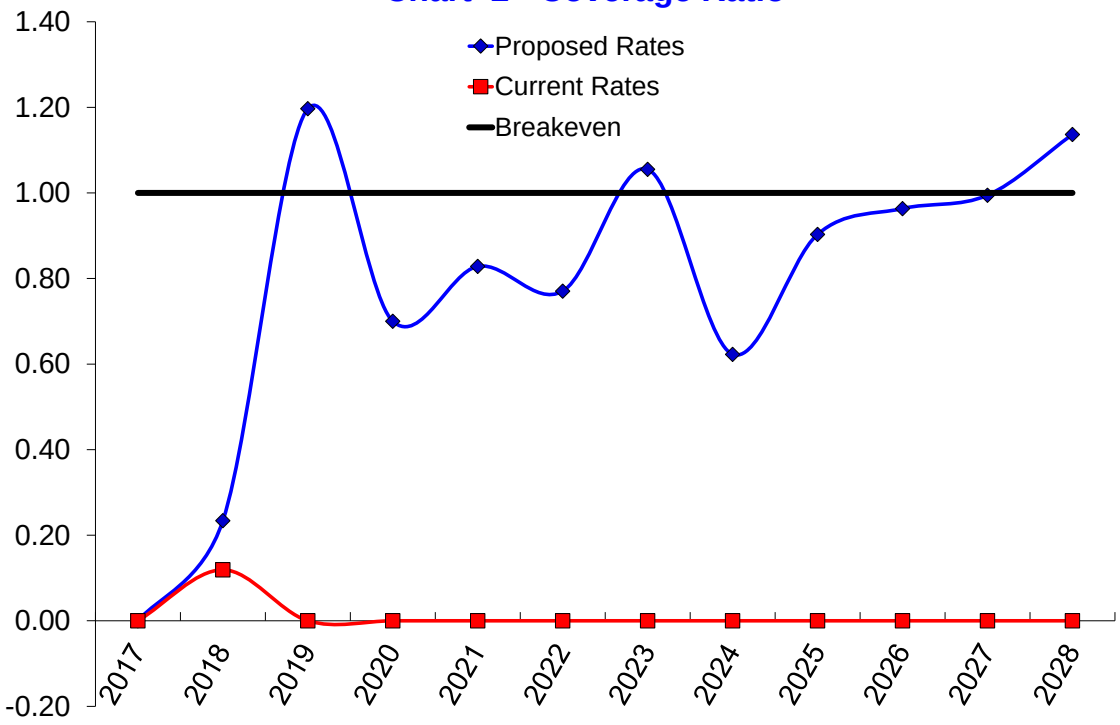


Chart 3 - Residential Users' Bills

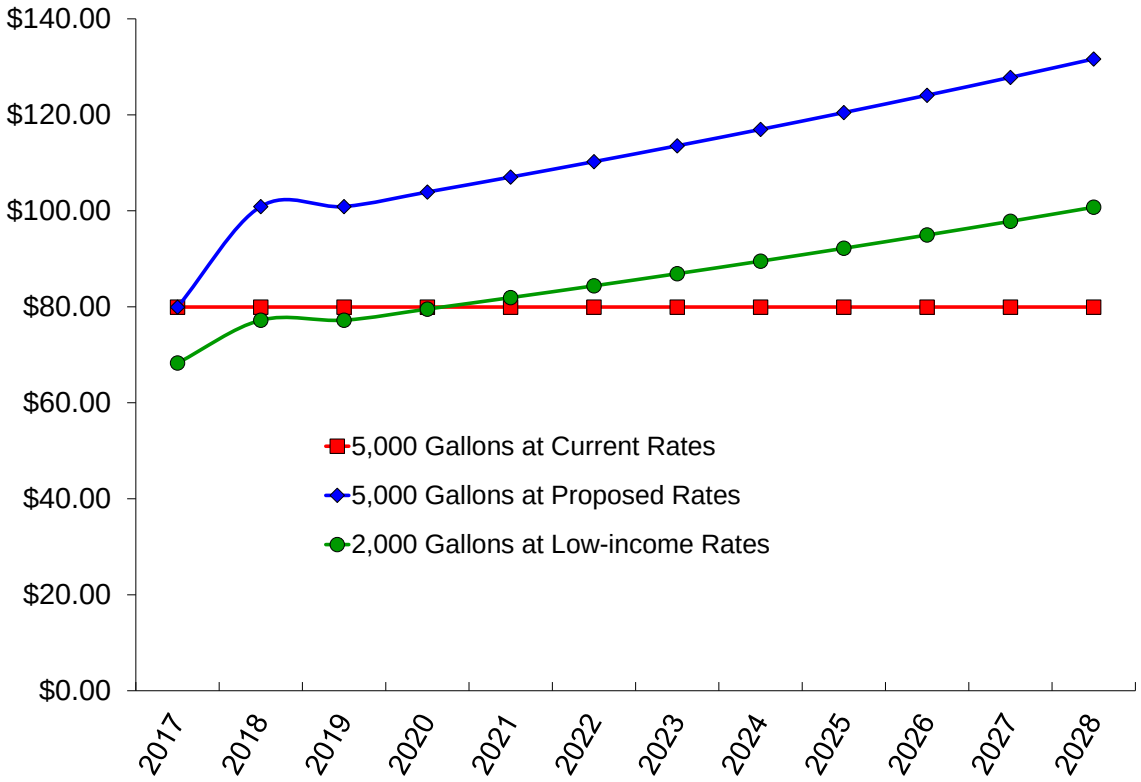


Chart 4 - Affordability

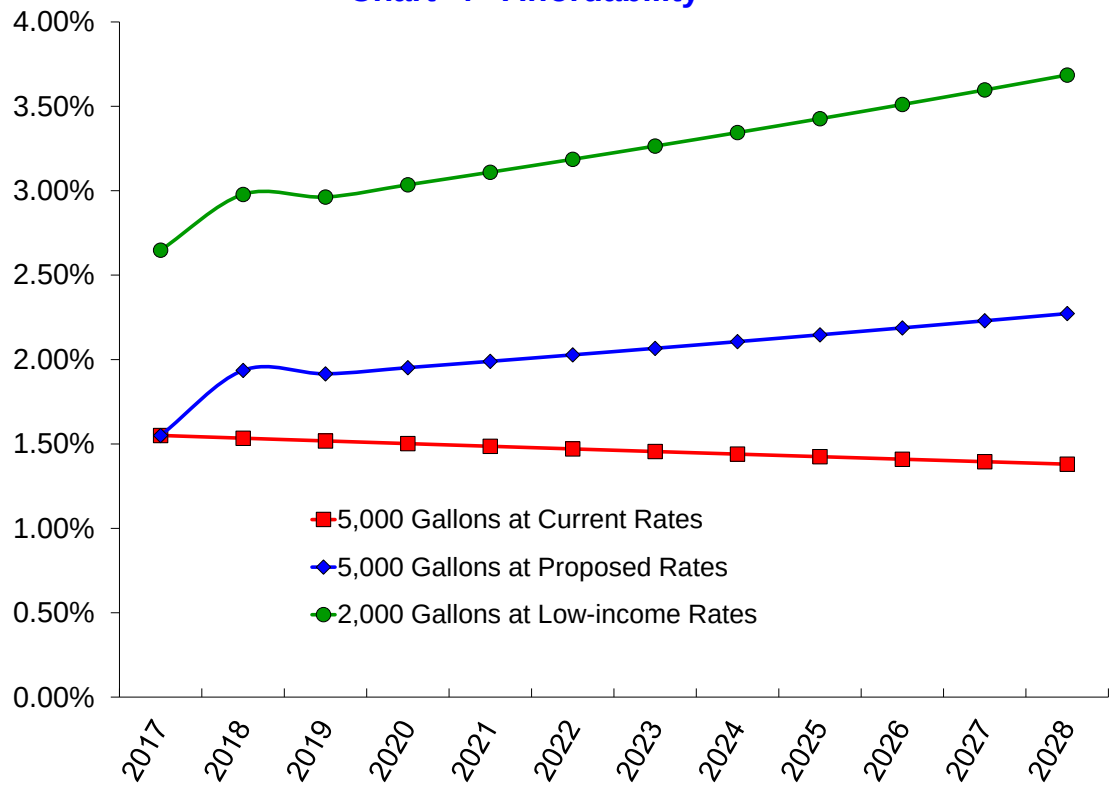


Chart 5 - Working Capital vs Goal

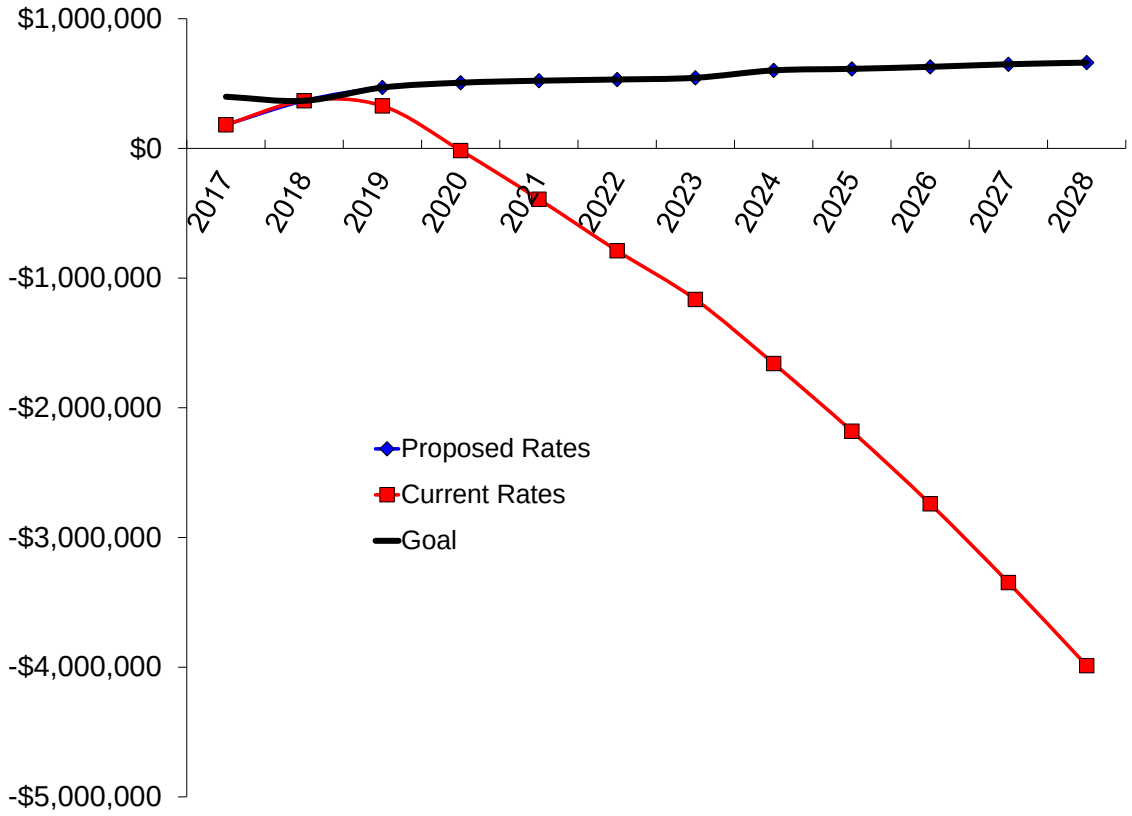


Chart 6 - Value of Cash Assets Before Inflation

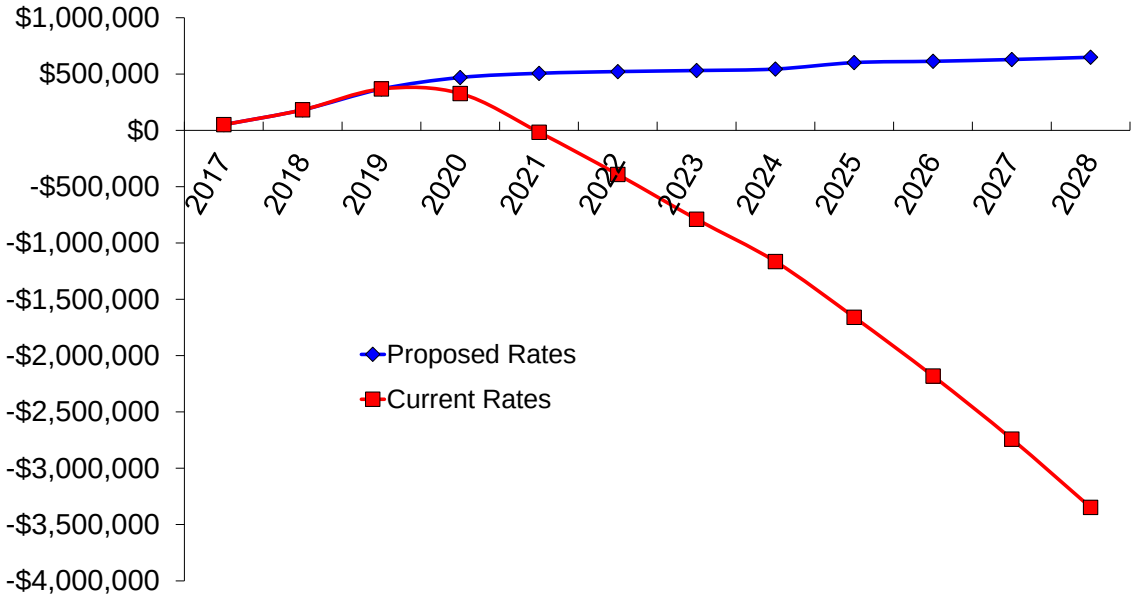


Chart 7 - Value of Cash Assets After Inflation

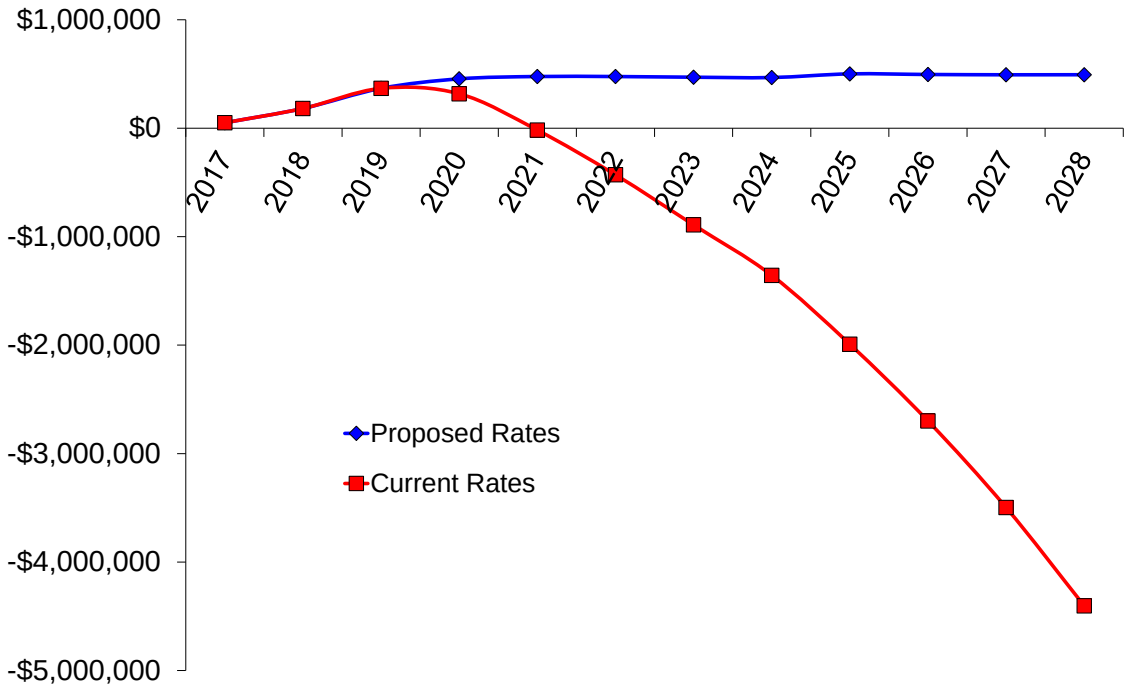
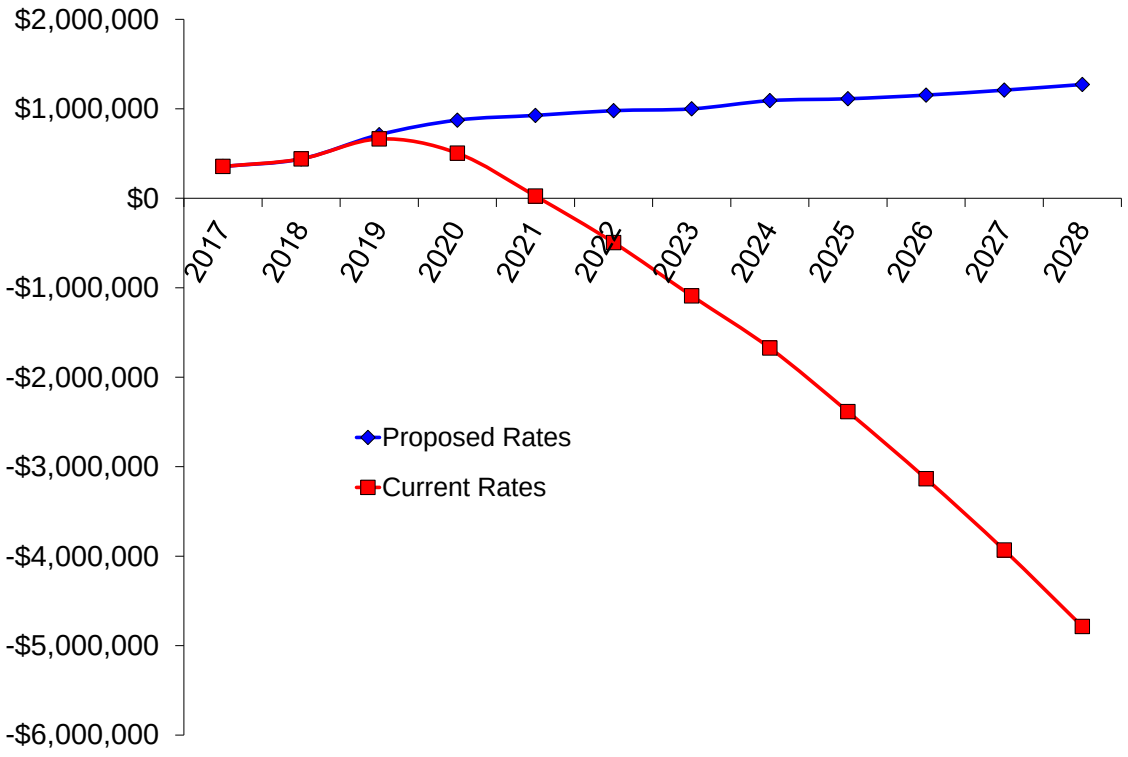


Chart 8 - Sum of All Reserves



Palmer Lake, CO; Water Rates, Scenario 2019-3

This model is the same as "Scenario 2019-2" except that the initial rate adjustments would be phased in over two years.

March 4, 2019

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

Table 3 - Operating Incomes
(and Basic User Data)
Palmer Lake, CO; Water Rates, Scenario 2019-3

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

Annual Median Household Income (AMHI)

$61,238 Census Bureau estimate of AMHI for the year: 2016

$52,340 Census Bureau estimate of AMHI for the year: 2000

$8,898 AMHI growth during this time period

1.06% Simple annual income growth rate during this time period (used to project incomes into the future)

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

7 Number of new connections made during the test year

$10,000 Average tap or installation fee assessed during the test year

This model is programmed to assume that rates will be reset in the "Analysis (This) 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. The change-over from the current rates to new rates is modeled to happen on the date near the top of Table 10. Thus, the revenues shown in the last column of that table are "blended" revenues; part collected at the old rates and part collected at the new rates. It was then assumed that all rate adjustments made after the initial (major) adjustment will be done annually on approximately the anniversary of the first adjustment.

Basic User (Customer) Data

(First year balances and incomes are actual, subsequent years are projected.)	Inflation or Deflation (–) Factor	Test Year	Analysis (This) Year	Years Following the Analysis Year (for Which Results Have Been Projected)									
				1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
		1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.	0.0%	15.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Average Number of Customers for the Year	N.A.	966	972	972	972	972	972	977	982	987	992	997	1,002
Customers Added or Lost (-) During the Year	N.A.	7.0	6.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0	5.0	5.0
Customer Growth or Loss (-) Rate	N.A.	0.72%	0.62%	0.00%	0.00%	0.00%	0.00%	0.51%	0.51%	0.51%	0.50%	0.50%	0.50%
Actual (Test Year) and Projected Volumes, in Gallons	N.A.	47,104,995	47,397,648	47,397,648	47,397,648	47,397,648	47,397,648	47,641,526	47,885,404	48,129,282	48,373,160	48,617,037	48,860,915

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.

Operating Incomes

User Charge Fees	N.A.	$672,011	$673,003	$1,029,878	$1,184,360	$1,219,891	$1,256,488	$1,300,807	$1,346,655	$1,394,083	$1,443,145	$1,493,896	$1,546,393
Late Payment Charge	N.A.	$14,295	$14,383	$14,383	$14,383	$14,383	$14,383	$14,457	$14,531	$14,604	$14,678	$14,751	$14,825
New Taps or Connections (Current Rate Structure)	% Above	$70,000	$59,836	$0	$0	$0	$0	$0	$0	$0	$0	$1	$2
Meter Size-based System Development Fees (Table 14)	% Above	$0	$166	$0	$0	$0	$0	$63,527	$65,433	$67,396	$69,418	$71,501	$73,646
Interest Income	N.A.	$4,531	$1,822	$3,675	$4,694	$5,067	$5,220	$5,313	$5,445	$6,017	$6,133	$6,289	$6,490
Water Meter Sales/Parts	N.A.	$3,470	$2,974	$0	$0	$0	$0	$2,478	$2,478	$2,478	$2,478	$2,478	$2,478
Water Improvement Fee, From $3.89 D.S. Surcharge	N.A.	$41,641	$45,746	$34,310	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Loan Revenue/WELL, From $11.42 D.S. Surcharge (Since Raised to $17.76)	N.A.	$122,798	$169,913	$197,178	$0	$0	$0	$0	$0	$0	$0	$0	$0
Revenue Loss Because Rate Adjustments Made # Months Late	4.0	$0	$0	-$114,893	$0	$0	$0	$0	$0	$0	$0	$0	$0
Revenue Loss (-) Due to Conservation	5.0%	$0	-$50	-$17,844	-$7,724	-$1,777	-$1,830	-$2,216	-$2,292	-$2,371	-$2,453	-$2,538	-$2,625
Total Operating Incomes		**$928,746**	**$967,794**	**$1,146,688**	**$1,195,713**	**$1,237,564**	**$1,274,261**	**$1,384,367**	**$1,432,249**	**$1,482,207**	**$1,533,399**	**$1,586,379**	**$1,641,209**

Table 10 - Initial Rate Adjustments and Resulting Revenues

Palmer Lake, CO; Water Rates, Scenario 2019-3

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

Out of Town Multiplier	200%	Conservation Rate Block Multiplier	120%	Other Multiplier	100%

If there are no special costs to consider and before capacity costs are added, if appropriate, rates for a 5/8" meter would be in a "cost to serve" structure when: there is no usage allowance,

the base minimum charge is $30.67 Monthly, and the unit charge is $6.36 per 1,000 Gallons.

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

Sales to be billed this year: 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 if the modeled rates are adopted. The grand total "blended" sales revenues are the total revenues generated by the two different sets of rates. Those 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	Customers Within This Volume Range	New Minimum Charge Including Surcharges1	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
All Customers	0	999	$112,823	159	$57.40	0.000	$6.36	$475	$113,298
	1,000	1,999	$99,042	139	$57.40	0.000	$6.36	$417	$99,459
	2,000	2,999	$110,526	181	$57.40	0.000	$6.36	$460	$110,986
	3,000	3,999	$90,869	156	$57.40	0.000	$6.36	$377	$91,246
	4,000	4,999	$61,761	106	$57.40	0.000	$6.36	$256	$62,017
	5,000	5,999	$39,337	66	$57.40	0.000	$7.63	$171	$39,508
	6,000	6,999	$26,561	44	$57.40	0.000	$7.63	$116	$26,677
	7,000	7,999	$16,808	26	$57.40	0.000	$7.63	$75	$16,883
	8,000	8,999	$12,264	19	$57.40	0.000	$7.63	$55	$12,318
	9,000	9,999	$9,857	15	$57.40	0.000	$7.63	$44	$9,901
	10,000	14,999	$22,519	29	$57.40	0.000	$9.16	$113	$22,632
	15,000	15,999	$3,273	3	$57.40	0.000	$9.16	$13	$3,286
	16,000	16,999	$3,067	3	$57.40	0.000	$9.16	$12	$3,079
	17,000	17,999	$2,349	2	$57.40	0.000	$9.16	$9	$2,359
	18,000	18,999	$2,177	2	$57.40	0.000	$9.16	$9	$2,186
	19,000	19,999	$2,020	2	$57.40	0.000	$9.16	$8	$2,028
	20,000	24,999	$8,375	6	$57.40	0.000	$9.16	$30	$8,405
	25,000	29,999	$5,425	4	$57.40	0.000	$9.16	$20	$5,445
	30,000	49,999	$6,824	5	$57.40	0.000	$9.16	$25	$6,849
	50,000	74,999	$2,291	0	$57.40	0.000	$9.16	$8	$2,299
	75,000	99,999	$1,593	0	$57.40	0.000	$9.16	$6	$1,599
	100,000	149,999	$2,247	0	$57.40	0.000	$9.16	$8	$2,255
	150,000	199,999	$1,744	0	$57.40	0.000	$9.16	$6	$1,750
	200,000	299,999	$1,445	0	$57.40	0.000	$9.16	$5	$1,450
	300,000	399,999	$272	0	$57.40	0.000	$9.16	$1	$273
	400,000	499,999	$0	0	$57.40	0.000	$9.16	$0	$0
	500,000	331,800	$0	0	$57.40	0.000	$9.16	$0	$0
Total Rate Revenue at Current Rates			$645,470		Total Rate Revenue at Modeled Rates			$2,718	
Total Blended Rate Revenues for the Year [2]									$648,188

Note 1, New Minimum Charge Base Rates: If meter or connection 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 or connection size surcharges as calculated in Table 16. Either way, the narrative report includes the rates and surcharges to assess.

Note 2, Blended Rate Revenues: During the year when rates will be adjusted, rate revenues generated will be "blended" revenues - part collected at the current rates and part collected at the adjusted rates. The table above calculates both kinds of revenue and totals them in the right-most column. Therefore, the anticipated timing of rate adjustment shown at the top of this table will cause rates to be charged as follows:

Table 15 - Minimum Charge Fees, Including Capacity Surcharges

Palmer Lake, CO; Water Rates, Scenario 2019-3

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

Meter Size	Meter Type	Monthly Peak Capacity-only Costs (Surcharge per Capacity Share, Including Out of Town Multiplier)	Uniform Adjustment to Peak Capacity Cost	Capacity-only Cost (Fee)	Monthly Base Capacity-only Costs (Surcharge per Customer, Including Out of Town Multiplier)	Uniform Adjustment to Base Capacity Cost	Adjusted Field and Admin Costs (Fee) per New Connection	Monthly Minimum Charge	Monthly Snowbird Fee
In-Town Meters									
Five Eighths	Displacement	$12.89	$0.00	$12.89	$13.83	$0.00	$13.83	$57.40	$46.02
Three Quarters	Displacement	$12.89	$0.00	$12.89	$13.83	$0.00	$13.83	$57.40	$46.02
One Inch	Displacement	$32.22	$0.00	$32.22	$13.83	$0.00	$13.83	$76.73	$61.52
One & a Half Inch	Displacement	$64.44	$0.00	$64.44	$13.83	$0.00	$13.83	$108.95	$87.36
Two Inch	Displacement	$103.11	$0.00	$103.11	$13.83	$0.00	$13.83	$147.61	$118.36
Two & a Half Inch	Displacement	$161.10	$0.00	$161.10	$13.83	$0.00	$13.83	$205.61	$164.87
Three Inch	Singlet	$206.21	$0.00	$206.21	$13.83	$0.00	$13.83	$250.72	$201.04
Three Inch	Compound, Class I	$206.21	$0.00	$206.21	$13.83	$0.00	$13.83	$250.72	$201.04
Three Inch	Turbine, Class I	$225.54	$0.00	$225.54	$13.83	$0.00	$13.83	$270.05	$216.54
Four Inch	Singlet	$322.20	$0.00	$322.20	$13.83	$0.00	$13.83	$366.71	$294.05
Four Inch	Compound, Class I	$322.20	$0.00	$322.20	$13.83	$0.00	$13.83	$366.71	$294.05
Four Inch	Turbine, Class I	$399.53	$0.00	$399.53	$13.83	$0.00	$13.83	$444.04	$356.06
Out of Town Meters									
Five Eighths	Displacement	$25.78	$0.00	$25.78	$27.67	$0.00	$27.67	$84.12	$67.45
Three Quarters	Displacement	$25.78	$0.00	$25.78	$27.67	$0.00	$27.67	$84.12	$67.45
One Inch	Displacement	$64.44	$0.00	$64.44	$27.67	$0.00	$27.67	$122.78	$98.45
One & a Half Inch	Displacement	$128.88	$0.00	$128.88	$27.67	$0.00	$27.67	$187.22	$150.13
Two Inch	Displacement	$206.21	$0.00	$206.21	$27.67	$0.00	$27.67	$264.55	$212.13
Two & a Half Inch	Displacement	$322.20	$0.00	$322.20	$27.67	$0.00	$27.67	$380.55	$305.14
Three Inch	Singlet	$412.42	$0.00	$412.42	$27.67	$0.00	$27.67	$470.76	$377.48
Three Inch	Compound, Class I	$412.42	$0.00	$412.42	$27.67	$0.00	$27.67	$470.76	$377.48
Three Inch	Turbine, Class I	$451.09	$0.00	$451.09	$27.67	$0.00	$27.67	$509.43	$408.49
Four Inch	Singlet	$644.41	$0.00	$644.41	$27.67	$0.00	$27.67	$702.75	$563.50
Four Inch	Compound, Class I	$644.41	$0.00	$644.41	$27.67	$0.00	$27.67	$702.75	$563.50
Four Inch	Turbine, Class I	$799.07	$0.00	$799.07	$27.67	$0.00	$27.67	$857.41	$687.52

Table 17 - Financial Capacity Indicators and Reserves

Palmer Lake, CO; Water Rates, Scenario 2019-3

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

Capacity Indicators	Test Year Starting 1/1/17	Analysis (This) Year Starting 1/1/18	1st Year Starting 1/1/19	2nd Year Starting 1/1/20	3rd Year Starting 1/1/21	4th Year Starting 1/1/22	5th Year Starting 1/1/23	6th Year Starting 1/1/24	7th Year Starting 1/1/25	8th Year Starting 1/1/26	9th Year Starting 1/1/27	10th Year Starting 1/1/28
The Normal Affordability Index: Equivalent Final Monthly Bill for a 5,000 gal per Month Residential Customer	$79.95	$90.47	$90.47	$104.04	$107.16	$110.37	$113.69	$117.10	$120.61	$124.23	$127.95	$131.79
Annual Median Household Income (AMHI) Within Service Area (Projected from last available Census survey or estimated income data)	$61,889	$62,546	$63,211	$63,882	$64,561	$65,247	$65,940	$66,641	$67,349	$68,065	$68,788	$69,519
Affordability Index: Current Rates First Column, Then Proposed Rates	1.55%	1.74%	1.72%	1.95%	1.99%	2.03%	2.07%	2.11%	2.15%	2.19%	2.23%	2.27%

Affordability Index (AI) goes to the willingness and ability of customers to pay. AI is the percent of AMHI needed by a 5,000 gallon per month residential user to pay their bill. Rates near 1.0% are common in the U.S. and are generally considered affordable. Federal grant agencies generally will not consider awarding grants if this indicator is less than 2.0%. The above index is only for a 1 share customers but it should be fairly representative of all residential customers.

Low-income, Low-volume Affordability Index												
Equivalent Final Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	$68.28	$70.12	$70.12	$80.63	$83.05	$85.54	$88.11	$90.75	$93.48	$96.28	$99.17	$102.14
Income at One-half the AMHI Above	$30,944	$31,109	$31,274	$31,440	$31,607	$31,775	$31,944	$32,114	$32,284	$32,456	$32,628	$32,801
Affordability for Low-income, Low-volume: Current Rates First Column, Then Proposed Rates	2.65%	2.70%	2.69%	3.08%	3.15%	3.23%	3.31%	3.39%	3.47%	3.56%	3.65%	3.74%

This additional indicator of affordability assumes a residential customer with income at one-half of the median household income above, that income is growing at one-half the rate of the median household income and the customer uses 2,000 gallons per month. Such a customer is likely either a minimum wage, or near-minimum wage worker or is retired and living on Social Security-only.

Estimated Operating Ratio: Current Rates First Column, Then Proposed Rates	1.17	1.32	1.22	1.18	1.19	1.20	1.27	1.19	1.21	1.22	1.22	1.24

Operating ratio (OR) goes to the ability of the utility to pay its operating expenses. 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 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, Then Proposed Rates	0.00	0.23	0.71	0.69	0.85	0.79	1.10	0.67	0.95	1.01	1.04	1.19

Coverage Ratio (CR) goes to the ability of the utility to pay its debt payments. 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 (below,) it has more ability to make debt payments than the CR implies.

Reserves	Balance Ending on 12/31/16	Balance Ending on 12/31/17	Balance Ending on 12/31/18	Balance Ending on 12/31/19	Balance Ending on 12/31/20	Balance Ending on 12/31/21	Balance Ending on 12/31/22	Balance Ending on 12/31/23	Balance Ending on 12/31/24	Balance Ending on 12/31/25	Balance Ending on 12/31/26	Balance Ending on 12/31/27	Balance Ending on 12/31/28
Cash and Cash Equivalents	$50,519	$182,237	$367,545	$469,356	$506,665	$522,047	$531,303	$544,464	$601,691	$613,296	$628,943	$649,014	$661,689
Other Liquid Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Undedicated Cash Assets	$50,519	$182,237	$367,545	$469,356	$506,665	$522,047	$531,303	$544,464	$601,691	$613,296	$628,943	$649,014	$661,689
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	$50,519	$182,237	$367,545	$455,275	$476,721	$476,458	$470,358	$467,550	$501,192	$495,532	$492,930	$493,400	$503,036
Repair & Replacement	$0	$0	$204,207	$200,318	$244,622	$284,895	$320,909	$352,426	$379,200	$400,975	$417,486	$428,455	$433,596
Debt and CIP Reserves	$305,106	$257,462	$138,744	$130,590	$98,596	$98,977	$76,557	$133,566	$81,078	$99,911	$134,975	$179,155	$261,094
Sum of All Reserves	$355,625	$439,699	$710,495	$800,263	$849,883	$905,919	$928,768	$1,030,455	$1,061,969	$1,114,182	$1,181,404	$1,256,623	$1,356,379

Table 18 - Comparison of Bills Before and After Rate Adjustments

Palmer Lake, CO; Water Rates, Scenario 2019-3

The weighted-average revenue (bill) increase, as compared to the test year rates, for all customers combined will be 34.7%

Note: Rates were increased in 2018, after the test year closed. Therefore, bill increases shown below are in comparison to the now current rates, not the test year rates.

Note: The bill increases in this table are for 3/4 inch meter customers only, they include meter size-based capacity surcharges calculated in Table 13, and they include the current loan repayment surcharges.

Customer or Rate Class, or Meter Size	Gallons of Use	Customers at or Above This Volume and Below Next	Cumulative Customers	Current Bill for This Volume, Including D.S. Surcharges	Modeled Bill for This Volume, Including Now Current D.S. Surcharges	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
Customers With 3/4 Inch Meters	0	159	159	$60.50	$57.40	-$3.10	-5%
	1,000	139	298	$64.39	$63.76	-$0.63	-1%
	2,000	181	479	$68.28	$70.12	$1.84	3%
	3,000	156	635	$72.17	$76.48	$4.31	6%
	4,000	106	741	$76.06	$82.84	$6.78	9%
	5,000	66	806	$79.95	$90.47	$10.52	13%
	6,000	44	850	$83.84	$98.10	$14.26	17%
	7,000	26	876	$87.73	$105.73	$18.00	21%
	8,000	19	895	$91.62	$113.36	$21.74	24%
	9,000	15	910	$95.51	$121.00	$25.49	27%
	10,000	29	939	$99.40	$130.15	$30.75	31%
	15,000	3	942	$131.20	$175.95	$44.75	34%
	16,000	3	945	$137.56	$185.10	$47.54	35%
	17,000	2	946	$143.92	$194.26	$50.34	35%
	18,000	2	948	$150.28	$203.42	$53.14	35%
	19,000	2	950	$156.64	$212.58	$55.94	36%
	20,000	6.08	956	$163.99	$221.74	$57.75	35%
	25,000	4.17	960	$200.74	$267.53	$66.79	33%
	30,000	4.67	965	$237.49	$313.32	$75.83	32%
	50,000	0.42	965	$384.49	$496.49	$112.00	29%
	75,000	0.25	965	$568.24	$725.45	$157.21	28%
	100,000	0.08	965	$751.99	$954.41	$202.42	27%
	150,000	0.17	965	$1,119.49	$1,412.33	$292.84	26%
	200,000	0.25	966	$1,486.99	$1,870.25	$383.26	26%
	300,000	0.08	966	$2,221.99	$2,786.09	$564.10	25%
	400,000	0.00	966	$2,956.99	$3,701.93	$744.94	25%
	500,000	0.00	966	$3,691.99	$4,617.77	$925.78	25%

Chart 1 - Operating Ratio

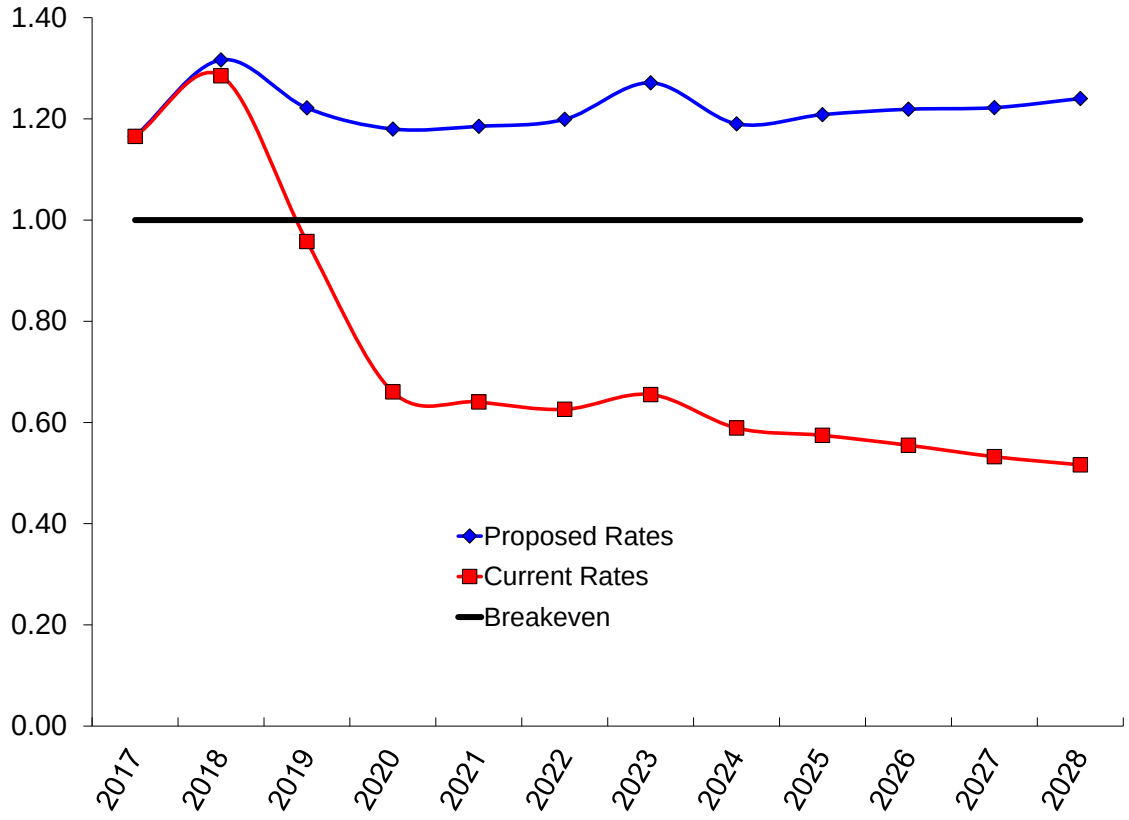

Chart 2 - Coverage Ratio

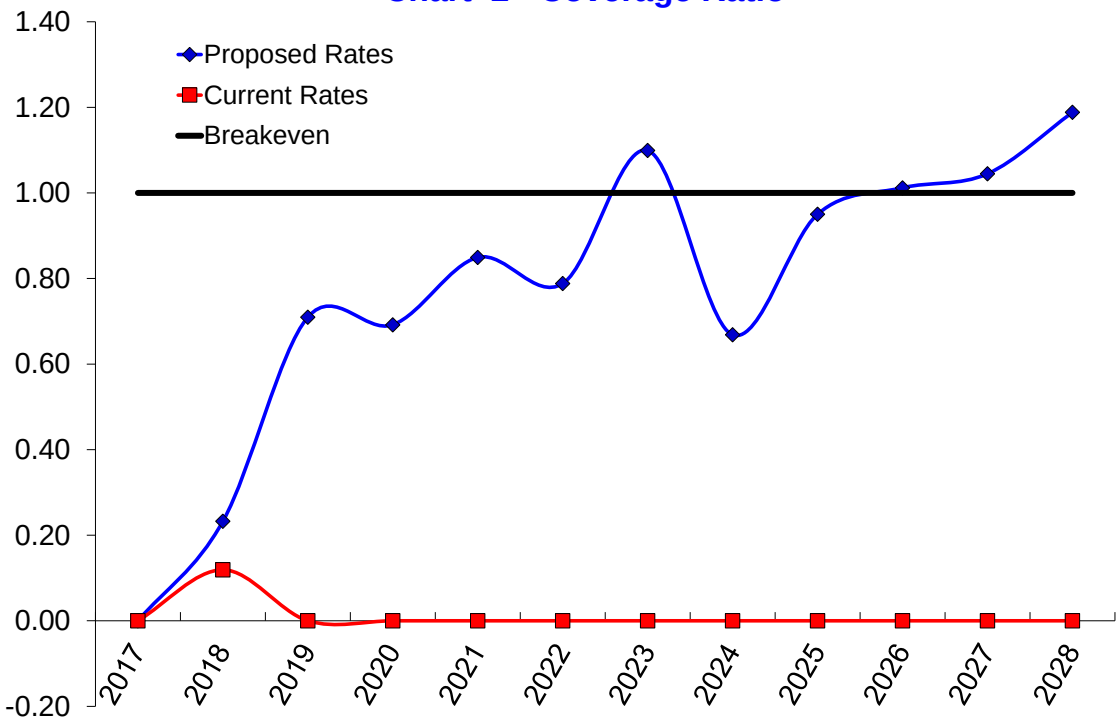

Chart 3 - Residential Users' Bills

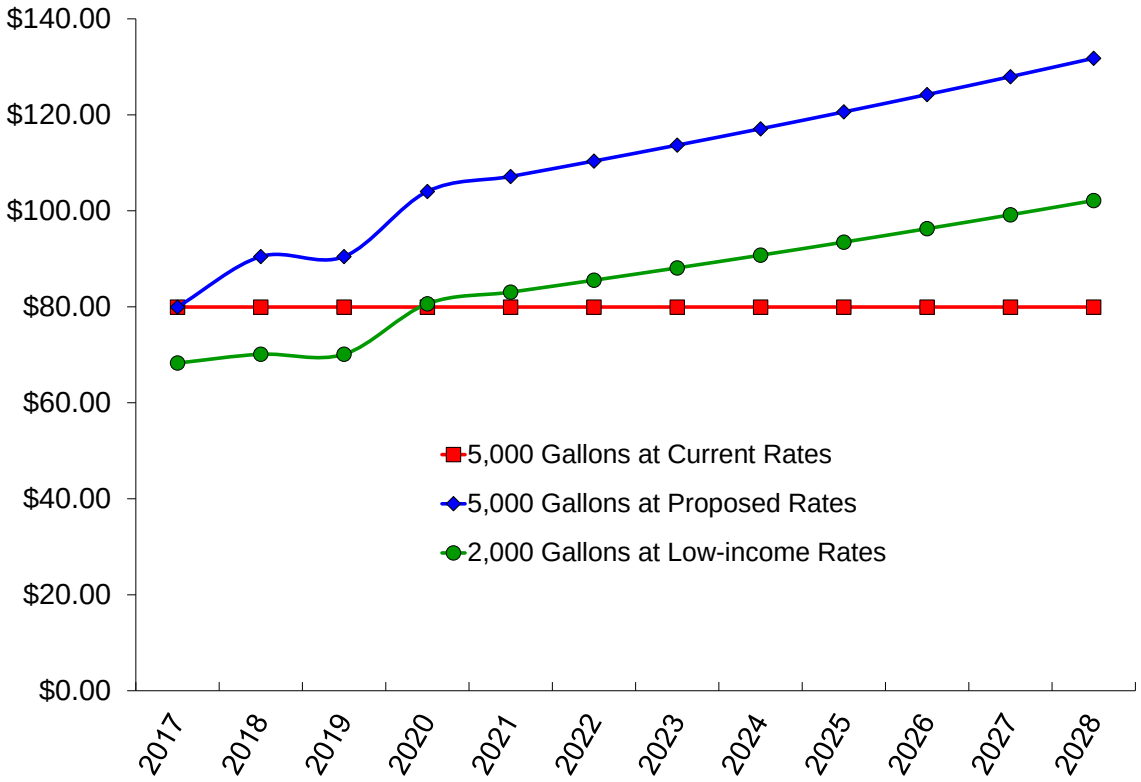

Chart 4 - Affordability

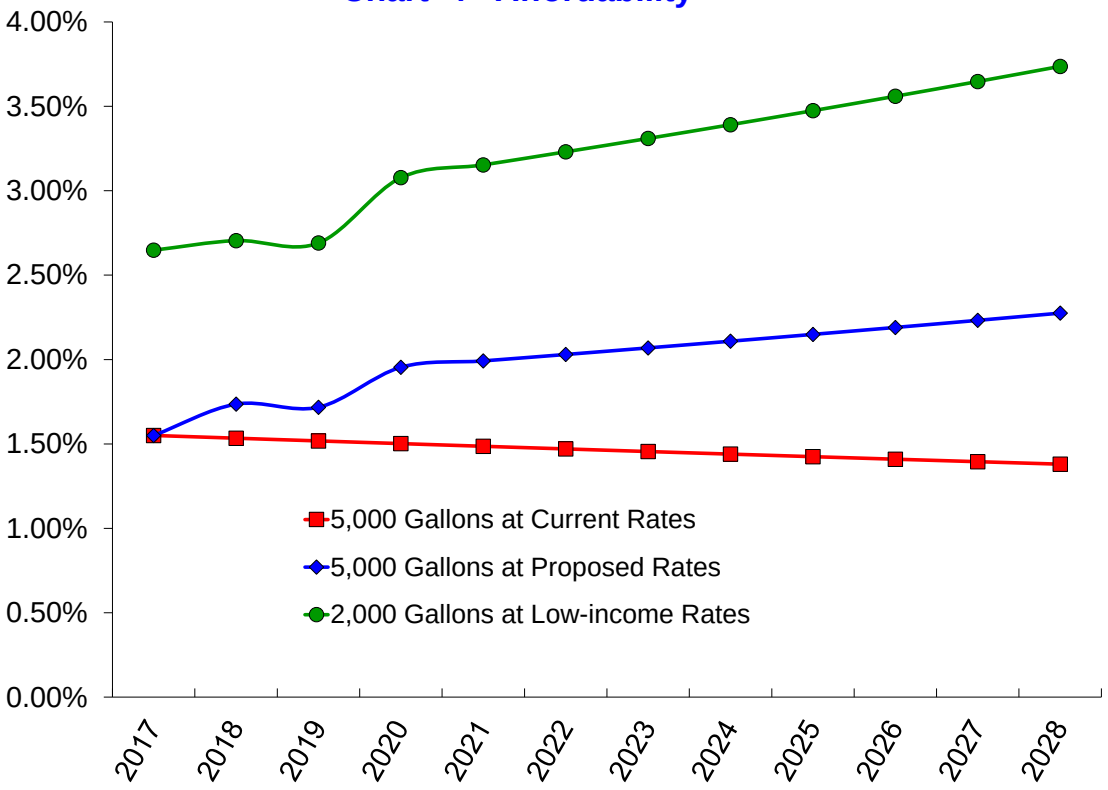

Chart 5 - Working Capital vs Goal

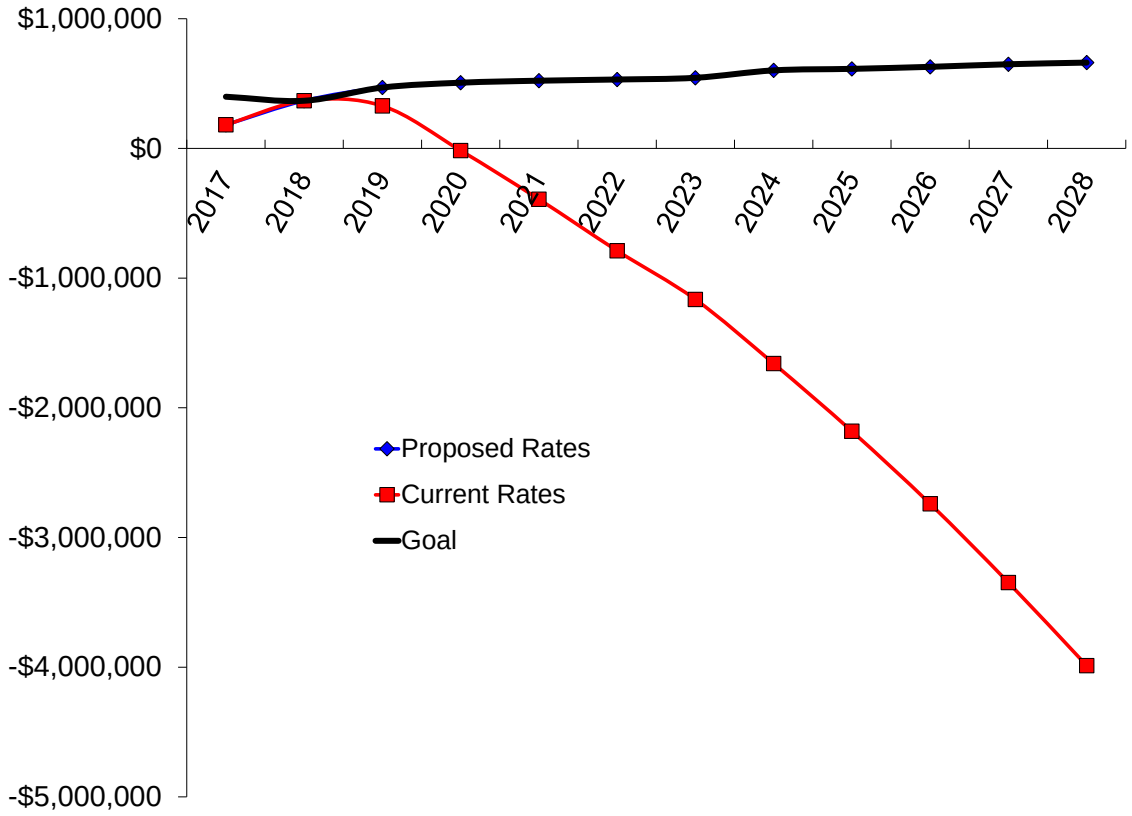

Chart 6 - Value of Cash Assets Before Inflation

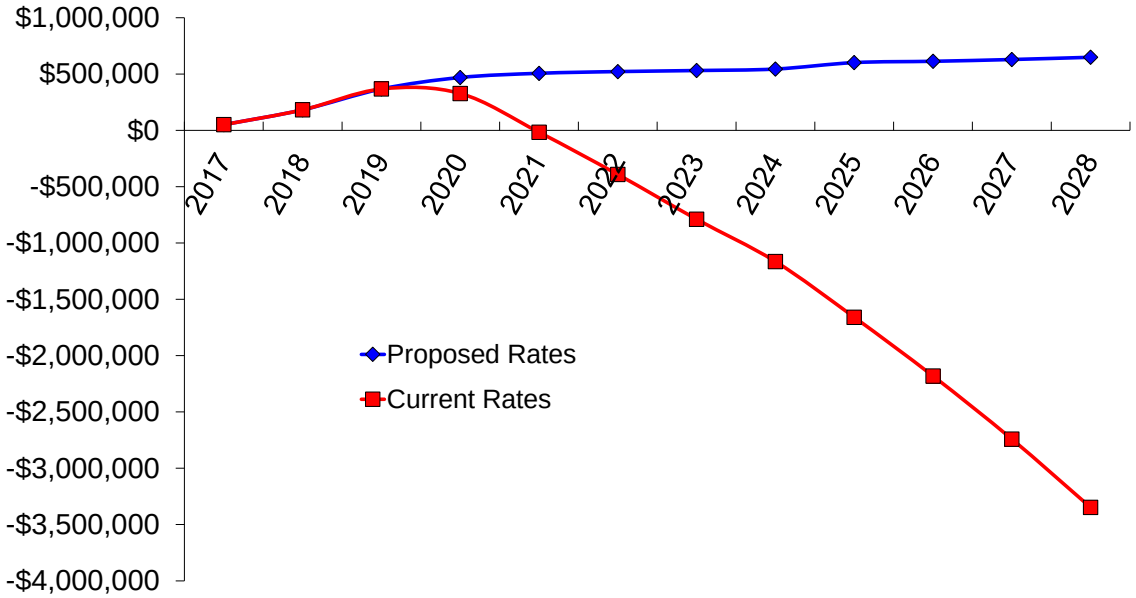

Chart 7 - Value of Cash Assets After Inflation

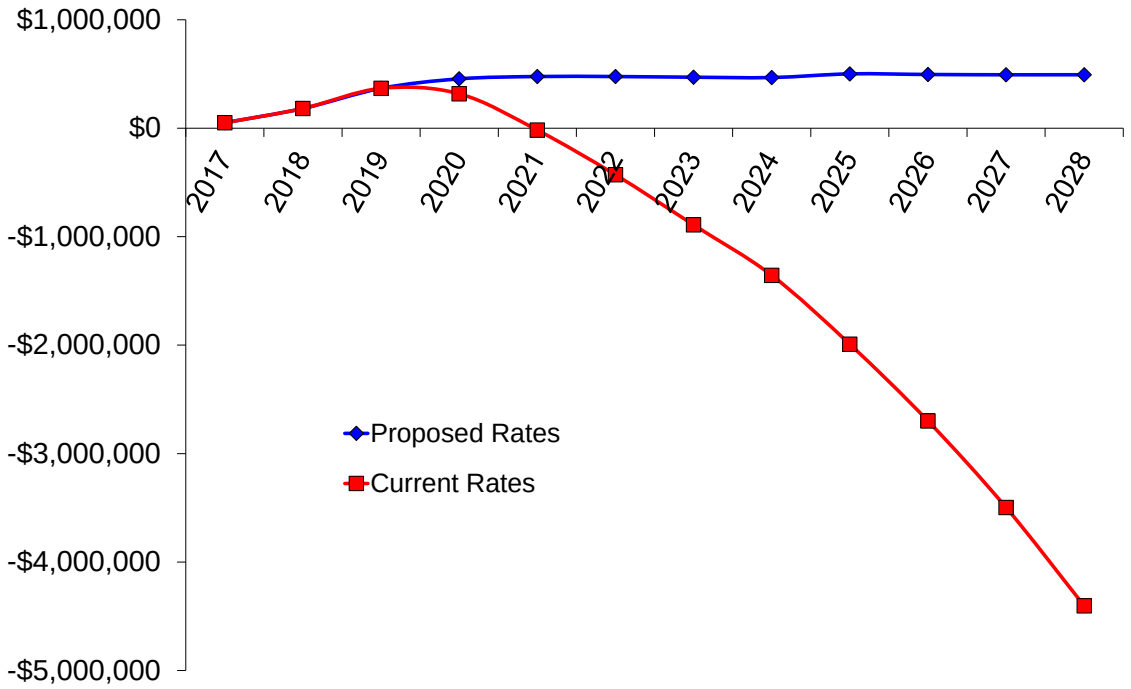

Chart 8 - Sum of All Reserves