

September 20, 2017

The Honorable Chris Taylor, President
Terrace Water Company
P O Box 640
Colton, CA 92324

Subject: Water User Charge Analysis Report

Dear Mr. Taylor:

Attached is your water rate analysis report package. Before I address the report, I have some important housekeeping to do.

Rate analysis is data intensive, using large volumes of information and many kinds of data. Data for your analysis were especially critical because you are preparing to switch from a flat fees rate structure to metered rates. That switch has been done a few tens of thousands of times by other water and sewer systems but it is a first for your system. It will be a big deal, for a short time.

To get through that change successfully, I needed the help of your staff. I'm happy to tell you, they did a great job and they were always great to work with.

Abby Flores was my main contact with the Company. She gathered data. We rogued through it. She gathered more and different data. We repeated this process a few times and Abby was always patient with us.

We did the same thing with Carol Warfield a few times. Carol was wonderful to work with, too.

We did not work with Dan Villanueva until the very end of the project because most of the early work in rate analysis is strictly data gathering. But I know Dan performed a thorough review of the final report to make sure it is accurate and the rates are doable for the Company.

I appreciate the good help these staff provided. We couldn't do this without them.

As to the report, the report itself is not very complex, but the analysis was. Please have everyone who needs to, read the full report. Discuss it. If anyone has questions, funnel them back to me through Dan or Abby. I will be glad to answer questions, clarify or do a bit of rate setting education in writing or by phone.

You may find that the need is great enough that having me visit with the board at a public meeting would be the best way to get everyone on the same rate setting page. Just let me know if you want to do that and we will get it scheduled soon. My charge was not to just prepare a report. It was and is to get you started down the road to great rates. I'm with you until we accomplish that.

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

Best regards,
GettingGreatRates.com



Carl E. Brown
President

Enclosure

Water Rate Analysis Report

Terrace Water Company

Colton, California

Prepared September 20, 2017

Carl Brown, President
GettingGreatRates.com, LLC

Executive Summary

The Terrace Water Company engaged GettingGreatRates.com to provide cost of service rate analysis for the Company's water rates. The Company currently assesses flat rates, which are quite rare these days for water service. It also assesses fees for extra "units." The rates recommended here include a monthly minimum charge to recover fixed costs and a level unit charge to recover variable costs. These rates also eliminate the extra "units" charge. These are large rate structure changes and there are others described in the full report. These changes will markedly increase the bills of higher volume customers while lowering those of low-volume customers, but that is appropriate in your case.

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Introduction

The Terrace Water Company, Colton, California, later called “the Company” 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 you with guidance on rate setting.

This report is the culmination of a process where I submitted information and data inquiries to Company staff. Staff replied. I subsequently modeled the Company’s finances and rates using that data and submitted those items for review and feedback. Company staff reviewed those draft submittals to assure accuracy and in some instances, they corrected data. With that feedback, I prepared and now submit this final report package.

Cost to serve rates (described later) will cause most water bills to go up. Sub-customers (called “units” by the Company), such as apartments in multi-unit facilities, would see “unit” fees go away entirely. All customers would be assessed a minimum charge based on meter size and level unit charges for all water volume used.

As to the structure of this report, basic issues are covered first, followed by more specific issues and rate recommendations later. The report package is composed of two parts.

- The first is a narrative report that tells readers what should be done to the utility’s rates and why.
- The second part is a printout of the scenario spreadsheet model. This is a set of integrated calculations that mathematically depict or “model” the utility’s situation to arrive at the recommended rates.

The model is called, “Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1.” Later in this report it will simply be called, “the Model.”

As you read this report, please keep this in mind. This report does not *direct* the Company 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 model are not legal recommendations. For legal issues consult your attorney.

Cost-based Rate Calculations

To give you the “bigger picture” of rate analysis, as I do it, and to make it easier for you to read and understand the rest of this narrative report and the Model, a tutorial on my methodology is in order.

When I analyze rates for government-owned water utilities, and other utilities that are empowered to assess cost of service rates, I use the cost-needs approach. The approach is exhaustively described in the American Water Works 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 results in rates that are called, “cost to serve” or “cost of service” rates. Simply stated, the costs for a targeted time period, usually in the near future, are classified as “fixed,” “variable,” “capacity to serve” or some combination of the three. Fixed costs are converted to a minimum charge. Variable costs are converted to a unit charge. Capacity costs are converted to some combination of system development fees and surcharges to the minimum charge.

The first cut of this classification process is done in Table 8 of the model. Your rates situation is complex so the “Average Fixed Cost/User/Month” from Table 8 of the model is used for calculating the base minimum charge. To that is added a surcharge to recover some of the peak flow capacity costs. That will be described later. The “Average Variable Cost to Produce/100 Cu Ft” is the basis for calculating unit charges. I did not use the capacity cost-related columns for calculating capacity surcharges. I instead used Tables 11 and 13 to calculate those fees.

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. (In your case, meter charges and share assessments are usual and customary, so I left those fees intact.) Thus, a cost-based rate analysis often is just the starting point for calculating the rates that a utility may eventually decide to adopt.

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.” Billing, general administration and similar costs that are the same for all customers, regardless of “size,” make up this part of the minimum charge. To make it easier to understand this, and related concepts, I use catch phrases. For this type of cost, the phrase is: *These costs are related to the fact that you have customers.*

Rate Analysis, in a Nutshell

At its simplest, rate analysis helps a utility arrive at rates and fees that are adequate – they will pay all the utility’s costs. The next level of complexity is to arrive at rates that, on an average cost basis, will enable the utility to recover fixed and variable costs “fairly.” Most small water and sewer utilities need analysis only to this level of complexity – doing more 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 utilities 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 other part of the minimum charge is a surcharge intended to recover all or part of excess or unusual capacity costs. These are almost always based upon water meter size because the ability of the different water meter sizes to sustainably pass peak flows (as determined by American Water Works Association studies) relate 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.

With this structure, the smallest meter size customers end up paying the lowest minimum charge. As meter size goes up, a larger capacity surcharge is added to the basic 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 it has to 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 utilities that are bumping up against their capacity to produce water.
- 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, everyone is assessed unit charges at the average unit cost. 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 Company currently assesses flat rates. I recommend you switch to a minimum charge plus a level unit charge rate structure. Assessing any unit charge when customers are used to using all the volume they want for no additional cost will cause many to conserve. Once customers have become accustomed to paying some amount for volume they use, I would likely recommend you move to a conservation rate structure. But, I do not recommend you do that immediately because predicting volume use, and rate revenues from that volume, is risky just going to level unit charges. To go directly to a conservation rate structure from flat rates would make revenue prediction a “shot in the dark.” It would also create even more complaints about increasing bills than you will already get by going to a level unit charge.

- 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; preparing for expensive capital improvements; catching up on needed equipment repair, refurbishment and replacement; 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 model 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 to be 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. Such modeling enables me to do dynamic “what-if” scenario calculations. That enables me to arrive quickly at the “best fit” rates for each utility.

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 larger utilities 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.

Coincidentally, such a dynamic model makes it easy to calculate rate and other changes over the next two or three years, too. For example, when I did the original rate modeling for a system, I may have assumed the system would get a 25 percent grant on a capital improvement project that was approaching in three years. Fast forward three years. Now, the system has just been told that grant is not going to happen. The system must borrow the entire amount instead. It is a simple matter for me to go back to the original model, switch the grant to loan and re-run new rates. As long as a change does not affect the cost structure drastically, I can do the same for almost any other change. Keep that in mind as the months and years go by.

As you read through this report and examine the modeling, you will probably be struck by the complexity of it all. Please keep the above summary of cost-based rate calculations in mind as you read on. At their heart, the calculations are aimed at producing adequate and fairly structured rates. Having the math done for you, you can focus on the important things that you need to do – adopt adequate and fair rate structures. These will serve your ratepayers and your utility well.

Please keep two more things in mind:

- Time is money, often very big money, when it comes to rate setting. 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 pretty 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. We find that the typical residential customer's bill increase usually works out to a few dollars per month initially and a few dimes per month each following year. None of us wants to pay more, but costs go up and they need to be paid.

Principles

I use several guiding principles when I help systems set their utility rates, fees and policies. As you read the report and the Model, 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 actually 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 model, it was built to match the system’s actual financial statements 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 10 years, build and maintain responsible reserves and collect fees from customers on a fair basis. Because incomes and expenses in your financial statements were not always grouped in such a way as to enable the required rate calculation methodology, the model does 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 model accounts for funds in a more simplified way than you probably do. When it comes to segregating funds, staff knows best how to do that so the model does little in this regard and leaves the segregating up to staff.

Several line graph charts in the Model graphically depict some things which would be difficult to pick out of the tables. In all the charts, the **blue line** represents what would happen under the **recommended** rates and the **red line** under the **current** rates. Financial trends for the red lines are (generally) bad. Those for the blue lines are (generally) good. Review the definitions section of the model 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 the modeled rates' net revenues are adequate to satisfy the goal, so those two lines are hidden by the line for the goal. That is because, in the Model, 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 in each model 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 Abby Flores so check with her about reviewing it. You may also want to consider using the “Replacement Scheduler” spreadsheet for future equipment replacement scheduling. Send me an e-mail request and I will e-mail one to you.

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 your actual financial performance and my projection of future performance dramatically diverge. That may be up to five years from now; whenever a new, large financial upset or change is looming – typically, a large capital improvement project, or when you want to consider switching rate structures again, this time to a conservation rate structure.
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 utilities, especially those looking to build new facilities or replace existing facilities soon, which is a critical issue for your utilities.
5. Continue to track your volume usage, incomes and expenses on a regular basis so the data and information you generate will support future rate adjustments as well as they did this one.
6. As a reminder, check with your attorney for language and legality of all charges and issues discussed.

Water Rate Setting Issues

Current water rate revenues are adequate to pay those costs you currently are incurring. But, substantial recent capital improvements, with more to come in a few years, will increase costs dramatically. Therefore, overall, rates need to go up dramatically, too.

On the positive side, that should make your expected rates high enough that the Company should be eligible for substantial grants, too. I assumed grants at 50 percent of project costs for two groups of improvements approaching in the next five years. I assumed low-interest rate loans will cover the balance of those projects.

Along with a general increase, rates should be restructured to be closer to cost to serve, as previously described. I did not model rates that are all the way to cost to serve in structure this time because to do so would cause marked increases in many customers’ bills. That would cause many to dramatically conserve on water use. And, that would reduce rate revenues very unpredictably.

I modeled water rates using the costs projected for fiscal year 2024 as the cost basis. I did that because, as scheduled, by that year the second wave of new debt service will have started. That way, the rate structure you would set now will be in a structure that takes all anticipated debt into account. That will enable you to do simple, across the board rate and fee increases in the future to keep rates adequate and move them closer to the cost to serve structure as you approach 2024. Setting the rate structure this way makes future rate adjustments simple and cheap for the Company to do and for ratepayers to budget for.

Water Conservation

Water conservation is the big wildcard in restructuring your user charge rates. It is simply a hurdle you will need to clear to get to metered use billing. But, you will clear it. Thousands of other systems have done it before you.

Whenever unit charges are initiated, or even just increased, some customers will seek to conserve on their water volume use. Concerning water conservation, you are in the extreme situation. You currently do not sell water on a metered basis. You have flat rates. Thus, there is no price incentive for customers to conserve right now. Consequently, many are now using water quite freely, figuratively and literally.

When you switch to a metered water billing basis, some customers will begin to conserve. No one can know exactly how much your water volume sales will go down, but I have made an estimate based on the following criteria:

- As shown near the top of Table 16, page 50, your average three-quarter inch meter residential customer used 1,883 cubic feet of water per month during the test year. That is the equivalent of 14,088 gallons. The one-inch meter residential customers averaged 16,548 gallons. Thus, your residential customers are averaging about 15,000 gallons of water use per month. (Most water volume in the U.S. is measured in gallons.)
- The average use rate for most households in the U.S. is approximately 5,000 gallons, so your use rate is far higher than the average. Higher than average income customers tend to use more and low-income customers less. Importantly, yours is a dry area so, due to more outside water use for irrigation of lawns, gardens and such, even under metered use rates, your use will run higher than average. But it probably will not exceed the average by a factor of three, as it does now. Your use rate will come down.
- I expect your water volume use to drop by 25 percent initially and more as you apply inflationary increases in the future. In the model, I applied the unit charge rate to that volume to arrive at the cumulative dollar loss due to conservation in the years to come. Those amounts appear at the bottom of Table 3, page 32, as a deduct to income.

As mentioned before, you can't take this estimate to the bank. But, it should give you a heads-up of what to expect as you adjust rates. Your first year or two after making the initial rate adjustments will be a matter of adjusting, seeing how revenues respond and perhaps adjusting by more or less than the inflationary increases I calculated to reach the revenue targets for the system. There simply is no getting around a trial and error period when going from flat rates to metered rates.

Finally, I know that "conservation rates;" unit charges that go up as volume use goes up, are common in California. That is for good reason. Much of California, including your region, is dry with limited water supplies.

While you may want to “graduate” to conservation rates in the future, I do not recommend you do that now. Going to any metered rate from flat rates will cause a great deal of conservation. The volume and dollar amount of conservation is unknown right now. If you went directly to conservation rates now, you may jeopardize the financial wellbeing of the utility. Instead, I recommend you move from flat rates to level unit charges and then maybe to conservation rates in a deliberate, measured way in the future.

Bills for “Sub-customers”

The Company currently assesses a full flat rate charge to “units” that I call, “sub-customers.” A typical sub-customer situation may be this. A four-plex has one meter to meter all water used by the four-plex. The Company, therefore, assesses to the metered account (probably the four-plex owner) one flat fee for each of the living units in the four-plex; four flat fees. In a rough math sort of way, this somewhat equates the bill with the water volume used by these four “units.” However, billing in this way excessively assesses fixed costs, such as the cost of billing and general administration, to such a customer. This customer is only causing one increment of most fixed costs but they are being billed for four increments. That is a rate structure fairness problem.

To say the above another way, if you required water meters for each “unit” in a four-plex, and you read those meters and sent bills to each one, then, yes, you would have four customers. But, having multiple living units, or multiple leased spaces in a strip mall, does not make those extra “units” into customers.

The better way to think of this situation is, extra units are not customers of the Company. They are just where and how the volume gets used downstream of the actual customer’s meter. Thus, the Company should assess bills to the person or company that “owns” the meter, but not beyond that point.

The rate structure I designed eliminates sub-customer billing and only bills actual customers. However, do not be concerned that those extra units are getting off Scott-free. They will not. The recommended structure includes unit charges to recover variable costs. Thus, in the above situation, such a customer would use more volume and be billed for it.

“Snow Bird” Billing

Some customers, commonly called “snow birds,” only live in the area for part of the year. You may have few such customers, in which case, you may want to disregard this Subsection. Otherwise, consider this approach with snow birds.

It is common for such customers to discontinue water service while they are gone, if you allow them to. That eliminates their water bills during their time away, which is good for them. However, that is not good for full-year customers because they end up paying the unavoidable fixed costs for snow birds while the snow birds are away.

While it is true that snow birds are not using any volume during their time away, they still cause the town to incur various fixed and capacity-related costs. Prominent among these are the costs of debt service paid to build system capacity to serve them and the cost of basic administration and maintenance required to keep the system in working order so when these customers return there will be water service available for them to resume consuming.

The analogy of home mortgage payments and property taxes applies to a utility's unavoidable fixed costs. The banker and the county do not forgive debt and taxes during the time the homeowner is not in the house. Neither should the town forgive their unavoidable fixed and capital costs while the customer is away.

Many systems require snow birds to continue paying the full minimum charge. If that is your policy and you want to continue that way, you need not read the rest of this Subsection. Otherwise, continue.

In my view assessing the full minimum charge to snow birds is excessive because snow birds do not cause the system to incur a full share of fixed costs while they are away; only the unavoidable fixed costs.

Therefore, I recommend the Company assess relevant fixed costs to snow birds as a capacity maintenance fee, which will be only part of the minimum charge. That fee was calculated as follows.

Table 9, page 39, calculates the average fixed cost basis for snow birds and further calculates the percentage of average snow bird fixed costs compared to the average fixed costs of active customers from Table 8, page 38. This percentage is then applied to the meter size-based minimum charges calculated in Table 13, page 45, to arrive at the snow bird fee for each meter size in the last column of that table.

If a snow bird simply goes away and returns but does not notify you that they will be away, they simply have not identified themselves as snow birds. Thus, their account should remain in active status. In that case, they would continue to be billed based upon their rate class rates. Almost all snow birds handle their utility accounts in this way. But, if they notify you they will be away, you can offer them this billing service:

- You can disconnect their meter, for which they would pay a disconnect fee, and place their account in "snow bird" status while they are gone.
- They would be assessed the appropriate snow bird fee each billing period and pay that fee, if they give you the address to which you would send their snow bird bills. Otherwise, if you allow this option, their bills would accrue until they return.
- When they return, you would reconnect their meter, assess the meter reconnection fee plus any accrued bills and resume billing them as an active customer.

Unless water line freeze-up is a concern, I suspect the simplest and cheapest alternative for most customers would be to remain in active customer status. For small meter customers, the minimum charge is slightly higher than the snow bird fee, but by remaining in active status they would avoid the cost of meter disconnection and reconnection and come out ahead if they are not gone for long. This status also makes billing and administration simpler because Company staff would not have to change the customer's status in the billing program, disconnect their meter and reconnect it again when they return.

Capital Improvements

The capital improvements plan (CIP) and debt to fund those improvements will become an important rates factor, equivalent to about 22 percent of your operating costs. Table 5, page 34, lays out coming and assumed CIP and debt service. I assumed that CIP costs will be paid 50 percent with loan proceeds and 50 percent with grants. That level of grant funding would still make the bill for a residential customer high enough that, based on rate affordability, you should qualify for most federal needs-based grants.

I built Table 5, using a capital improvement projects schedule and costs sent to me by Company staff. I am not an engineer. I know no details about the projects or why the engineering fees rate was set at 25 percent of project costs (this is the first time I have seen engineering fees that high). But, having seen many other CIPs, I suspect yours may come in lower than the current schedule suggests.

How to Make Special Rate Adjustments "On the Fly"

With the above described situation in mind, I ran an additional rate model scenario that assumes your annual costs will be higher than currently assumed in the Model. These cost increases could be for CIP, to pay the contractor a settlement in the lawsuit that is going on now or something else. As long as the total annual cost increase does not exceed \$100,000, the nature of the costs should not be critical.

System Development Fees

In this report and elsewhere, you will see the terms "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 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.

To calculate the special rate and fee increase amounts, I assumed an annual cost increase of \$100,000 over what the Model predicts. Said another way, costs would be higher than modeled by \$100,000 in each of the following years. This special adjustment will work for the next few years. (I assumed the cost increase would occur in 2018. Therefore, over the next 10 years, the sum of the extra costs would be \$1,000,000.)

Therefore, if annual costs turned out to be \$100,000 higher, your minimum charges would need to be \$7.59 higher and unit charges would need to be \$0.35 higher than projected, starting in the year the costs will be higher. These and other increases are shown in Table B, page 21. If the annual costs ran \$50,000 higher than modeled, you would cut these increases in half, and so on. This special rate and fee adjustment would need to be made in addition to the 3.0 percent inflationary increase already assumed by the Model.

Two cautions:

1. If costs turn out to be higher, you should increase rates to match. But, if costs turn out to be lower, you may be better served by reducing or eliminating future planned rate increases until costs catch up to the rates, and
2. If the cost variance exceeds \$100,000, the minimum and unit charge factors will not work so accurately because larger increases will change the cost structure significantly. When you change rates by much, behaviors and other things change, too. That offsets some of the effect of larger rate adjustments. Plus, there is more risk when making large rate adjustments without specific modeling to fit the situation.

If, and when you approach such a situation, and the cost increase is small, just make the adjustment on your own. But if the cost increase will be large, I suggest you give me a call to discuss the situation and I will give you more specific guidance then.

Equipment Repair and Replacement

Equipment repair and replacement (R&R) costs were not sent to me as a separate set of costs. I suspect R&R is simply handled on an annual, as-needed basis. To move you in the direction of more formalized R&R scheduling and funding, I assumed R&R annual costs will average 15 percent of operating costs, shown in Table 6, page 36. That is a common rate for R&R for water and sewer systems with a few decades of age on them.

The annual annuity, or annual deposit amount needed to fund the R&R schedule is calculated in Table 7, page 37. I suggest you ask me for a copy of the spreadsheet (free) that I call, "ReplacementScheduler." That application is basically the same as Tables 6 and 7, from the model. You could use the application for developing your own replacement schedule over time.

Debt, System Development Fees and Capacity Surcharges

As shown in Table 5, page 34, you will pick up some new debt, increasing your overall annual capital improvement costs. This new debt will be a significant driver of higher rates.

To pay for part of the coming CIP and debt costs, I assumed you would assess and collect system development fees and minimum charge surcharges. When combined, these fees should recover 24 percent of capacity costs, and do it based upon water meter size, as further described in the following:

1. You should assess system development fees that recover as much of the peak capacity costs as possible, but at the same time they should be at least somewhat competitive with system development fees of nearby, similar utilities. (In your case, the latter is probably controlling so I calculated your system development fees so that the fee for five-eighths, three-quarter and one-inch water meters, the most common residential meter sizes, would be \$1,500. That means, no change for most new customers.) This fee level, coupled with your expected slow growth rate will only recover 4.2 percent (bottom of Table 11, page 43) of your expected peak flow system improvement costs so this is a very minimal fee and it should be conducive to growth.
2. Larger meter sizes would be assessed higher system development fees based upon the maximum sustainable flow rate of each meter as determined by flow studies done by the American Water Works Association.
3. Revenues generated by system development fees would be low because the rates will be low and your growth rate is low. But the important reason for moving closer to full-cost system development fees is to charge each new customer or developer proportionately for whatever it is they get from the utility. Some of that will be actual service – metered water volume. Some of it is simply the capacity to provide service which is related to the size of the 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.
4. You should assess part of the capacity costs through a minimum charge surcharge, again, based upon water meter size. Surcharges recover capacity costs over time as customers use the system. These fees were calculated to recover 20 percent of the peak flow capacity-related part of the system's capacity costs, as shown on the bottom of Table 11, page 43. Therefore, over time, you will collect the balance of the peak flow system development costs from these surcharges.

The model calculated system development fees from the smallest customer meter to a 4-inch meter. (If you need the fees for larger meter sizes, let me know.) While only a small part of the costs to develop and redevelop the system will be recovered by system development fees and surcharges, I recommend you adopt this set of fees and, as a matter of policy, you should let the standard fees for all meter sizes below a chosen size be controlling. In other words, let Company staff handle the “retail stuff” of small meter new connections. I suggest that all connections with meters of two inches or less be paid for off the system development fees table. Almost all larger meter connections should be handled that way, as well.

However, the board has the authority and should, when warranted, exercise its prerogative to accept (grant a variance for) new connections for some other system development fee amount and/or for other considerations offered by a potential new customer. Most commonly, the issue will be economic development and job creation by a new customer needing a large meter size. There are Company-wide benefits to allowing such new customers to build or expand in the service area that outweigh the possible loss in system development fee revenues. Just be careful about giving too much in the hope that it will bring greater benefits to all other customers. Often, the discounting for economic development strategy does not pan out.

I recommend you assess the same system development fee to five-eighths, three-quarter and one-inch meters because these are the most common meter sizes for residential customers in your system and almost all these meters are in use by residential customers. Setting the same system development fee for these meter sizes will simplify administration of the system development fee program. To make minimum charges consistent with the system development fee structure, you should assess the same minimum charge for the three smallest meter sizes, as well.

Target Reserve Levels

Your current water reserves are only slightly below the target for your current level of costs – congratulations. However, costs will rise markedly soon so reserves also need to rise markedly. Fortunately, you can do that gradually over the next ten years.

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 (I recommend 50 percent in your case) of the annual operating costs, not including debt service;
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 reserves at the end of the tenth year, after debt is paid, equal to that year’s debt payments.

I modeled your rates to generate these reserve levels 10 years from now. The lines on the bottom of Table 14, page 46, and several of the charts starting on page 53, show your reserve balances expected for the next 10 years. The last line of the table, the “Sum of All Reserves,” is the critical one. By the tenth year you should achieve the targeted reserves level goal.

If you are reading the Model’s tables and charts carefully, you will notice that, in Table 3, page 32, near the top, I assumed “Rate Increases Projected for Future Years” will be 3.0 percent. That means, you will increase all rates and fees by 3.0 percent across the board each year in the future.

However, in Table 4, page 33, in the column called, “Inflation or Deflation (–) Factor,” I assumed inflation for most costs will be 4.0 percent. Raising rates by 3.0 percent when I assumed 4.0 percent inflation means that I “front-loaded” your initial rate increases. I modeled rates to increase a bit more than “needed” initially, and then I plan to allow cost inflation to catch up with incomes over the years.

I did that because there is substantial risk that rate revenues will not materialize as modeled. You are making a very big rate structure change.

The higher initial increase is a hedge against a revenue shortfall. If revenues come in as modeled, after a year or two when you can determine that situation is permanent, you can slow down future increases and allow the system’s reserves to glide in to the target balance. You will arrive at the same reserves goal. You will just do it a bit more cautiously than if you assumed all will happen as modeled.

Front-loaded increases will end up being the minor effect of the new rates. Overall, rates only need to go up by 16.5 percent, as shown at the top of Table 15, page 47. The bigger issue for most ratepayers will be rate restructuring. Many customers bills will go down while others will go up.

A Technical Note About How Reserves Are Shown in the Model

In Table 14 you will see some negative reserves. Here’s why.

The repair and replacement reserve, which covers replacement of rolling stock, will be negative for a few years. That is because (I assumed) it has no balance right now and the cost of doing these replacements will be greater than the annual payment into this reserve during the early years. However, other system reserves are ample to cover these shortfalls. Thus, the repair and replacement reserve will be in the “red” for a few ten years but then it will go positive.

The take-away is this. The “Sum of All Reserves” is the key balance to track and you can see that it is strong and will remain strong through the tenth year.

Minimum Charge, Unit Charge and Usage Allowance Rate Structures

Your current rate structure is simple but unfair. I recommend you make it fairer.

As shown in Table 3, page 32, you have several sources of incomes (rates, fees and taxes). Some of these are quite normal and customary in the West. I do not recommend you change these, mainly because changing to a metered volume unit charge will be enough shock for many customers all by itself. To change lots of other things at the same time would be overload for many. Therefore, I suggest you:

- Keep the meter charge, share assessments and franchise tax in place, but
- Eliminate the "Excess Units" charge of \$50 per month.

Assess a minimum charge that recovers basic fixed costs. Surcharge the minimum, based on water meter size, to recover some peak flow capacity costs. Do not give customers a usage allowance. And, assess level unit charges to recover variable costs.

The recommended rates are included in Table A, page 21, of this narrative report.

Rate Affordability

As shown near the top of Table 14, page 46 and graphically in Chart 4, page 54, the affordability index of your current rates, at 1.43 percent, is higher than the approximate national average of 1.0 percent. The rates I think you should adopt from the Model would be a bit lower, with an affordability index of 1.37 percent. With inflationary increases to future rates at slightly greater than the rate at which incomes are projected to rise, the affordability index would gradually rise to 1.61 percent by the tenth year. Affordability would deteriorate.

Rate affordability, as a condition of eligibility for federal grants, is changing. I suspect the same is true for California state-sponsored grants, too. In recent years, when the affordability index for water rates alone exceeded 2.0 percent, federal grant programs looked favorably on such a system for grants. When the combined water and sewer bills' affordability index exceeded 3.0 percent, again, grant eligibility was strong. You probably have a better feel for your grant eligibility but because you qualified for grants for your last project, I have assumed in my analysis that you will qualify for grants at 50 percent of the future projects' costs, too. If you get more, and by a great enough margin, your future rates will not need to increase as rapidly as I have modeled. If you get less or none, rates would need to go the other way.

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 a primary factor in determining grant and loan eligibility and grant amount.

Recommendations for Water Rates

The Model contains all my rates-related recommendations and shows what they are built upon. However, the Model is complex, plus it does not cover policy issues. Therefore, I have summarized most of my recommendations as follows:

1. You should assess the system development fees, monthly minimum charges, unit charge and snow bird charges shown in Table A, that follows this list.
2. As to system development fees:
 - a) I recommend that almost all new connections, especially all those made with water meters two inches in diameter or less, be paid for at the rates included in your system development fee rate table. However, the board retains the authority to waive the standard system development fee or adjust that charge for certain larger meter size customers that, due to other offsetting values they would bring to the service area (primarily economic development) that would substantially benefit the Company and its customers.
 - b) Continue to bill for equipment and services that the Company provides to facilitate making new connections. Call these whatever you want, but be clear that these charges are separate from system development fees.
3. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates for the January 1, 2018, billing. You would need to satisfy all State requirements for making rate adjustments in advance of the adjustment date.
4. If you do not already do so, assess a late payment fee of \$10.00 or ten percent of the outstanding total bill amount owed to the Company, whichever is greater, each month.
5. Assuming you make the recommended rate and fee adjustments around January 1, 2018, you should not begin making across the board inflationary increases until that time the following year, 2019. At that time, and for several years thereafter, raise all rates and fees across the board by 3.0 percent, or one percentage point of whatever the budget inflation factor ends up being each year. If balances do not accrue as rapidly as shown at the bottom of Table 14, page 46, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" to adjust this inflationary factor appropriately.

Table A: Recommended Fees and Charges

Table A: Terrace Water Co, Colton, CA: Water System Development Fees, Monthly Minimum Charge, Usage Allowance, Unit Charge and Snow Bird Charge					
Water Meter Size in Inches	System Development Fee	Minimum per Month	Usage Allowance, in 100 Cu. Ft.	Unit Charge, per 100 Cu. Ft.	Snow Bird Fee per Month
0.625	\$1,500	\$37.21	0	\$1.64	\$18.69
0.750	\$1,500	\$37.21	0	\$1.64	\$18.69
1.000	\$1,500	\$37.21	0	\$1.64	\$18.69
1.500	\$3,205	\$38.36	0	\$1.64	\$19.27
2.000	\$10,091	\$43.00	0	\$1.64	\$21.60
2.500	\$18,698	\$48.80	0	\$1.64	\$24.51
3.000	\$27,305	\$54.60	0	\$1.64	\$27.43
4.000	\$47,023	\$67.90	0	\$1.64	\$34.10

6. Should costs in a near-future year be \$100,000 higher than the costs anticipated in this analysis for that year, use the following table to calculate a special one-time rate and fee increase to make.

Table B: Additional Rate Increases Needed, Should Annual Costs be \$100,000 Higher Than Anticipated

Table B: Additional Rate Increases Needed, Should Annual Costs be \$100,000 Higher Than Anticipated					
One-time Increases to Make to Each of the Named Fees Below:					
Water Meter Size in Inches	System Development Fee	Minimum per Month		Unit Charge, per 100 Cu. Ft.	Snow Bird Fee per Month
0.750	\$0	\$7.59		\$0.35	\$6.16
1.000	\$0	\$7.59		\$0.35	\$6.16
1.500	\$0	\$7.59		\$0.35	\$6.16
2.000	\$0	\$7.59		\$0.35	\$6.23
2.500	\$0	\$7.59		\$0.35	\$6.47
3.000	\$0	\$7.59		\$0.35	\$6.77
4.000	\$0	\$7.59		\$0.35	\$7.08

Closing

I recommend you adopt the rates calculated in the Model and shown in Table A, above. Except for retaining the meter charges, share assessments and franchise tax, which I understand are customary in your region, the rates I have recommended are in a cost to serve structure. They will enable you to build appropriately strong reserves, cover increasing costs, repay debt, be prepared for contingencies and do so using rates that are markedly fairer than the current flat fees and extra unit charges.

As you address issues raised in this report and the analysis, you will have questions. Ask them. My goal is to help you set and keep adequate, fair and appropriately simple or complex rates. That takes time and effort and it may stretch out beyond the “conclusion” of the project.

At the beginning of the project, you declined an on-site visit. On such visits, I inform the board and the public about my results and recommendations and answer questions. I have covered many issues in the written report. If you are clear about what you need to do and how to explain it to ratepayers and others, you do not need an on-site visit from me.

However, in moving away from flat rates you are making some complex rate changes and many folks will not understand what is about to happen to their water bills and why. A face to face meeting with the analyst is the best way for many to come to an understanding of and (grudging) acceptance of the changes.

If you want to change your mind and have me appear at a board meeting, just let me know. Truthfully, answering questions and handling issues at such meetings is my favorite part of rate analysis, but to meet or not to meet is all up to you.

This report provides information upon which the Company can make decisions. Thus, it only begins the process of adjusting rates and taking other actions.

Consider the report carefully and when you are ready to move to the next steps, keep the following in mind.

Everyone impacted by the 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 it 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 Company 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.

The bottom line is this. Inform ratepayers and others about the rate analysis as much as they care to absorb. That will not make you or the new rates popular with most folks. But, they will at least appreciate that you went the extra mile to get them fully informed.

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1 Modeling Results

September 20, 2017

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

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Index of Tables and Charts

Note: When a numbered table or chart is not described below and it is missing from this model package, that was not a mistake. It simply means that

Name	What Each is or Does
Definitions (List)	The meaning of terms used in this report and in rate setting generally
Return on Investment (Calculation)	A summary of financial outcomes produced by the proposed rates
Table 1 - Rates	User rates calculated and recommended in this model for each user class are on the left, the current rates are on the right
Table 2 - Test Year Usage	Compilation of actual volume of service used by customers during the test year
Table 3 - User Base Data and Operating Incomes	Basic user statistics and operating revenues, projected for 10 years, based on the assumption the modeled rates and future inflationary increases will be adopted
Table 4 - Operating Costs and Net Income	Operating costs projected for 10 years
Table 5 - Capital Improvement Program (CIP)	Capital improvements and how they will be paid over next 10 years, including debt service
Table 6 - Equipment Replacement Schedule (R&R)	Detailed schedule of equipment replacements for next 20 years, if applicable
Table 7 - Equipment Replacement Annuity Calculation	Calculation of the annual annuity (yearly savings amount) needed to pay for all equipment replacements as they come due and end with a desired balance
Table 8 - Classification of Costs	Sumation of a target year's costs and calculation of the "cost of service" rate structure basis for recovery of fixed costs and variable costs
Table 9 - Classification of Marginal Costs	Calculation of costs incurred to serve a specified type of customer, if applicable
Table 10 - Initial Rate Adjustments and Resulting Revenues	These are the modeled user rates and the resulting revenues they will generate
Table 11 - Capacity Cost; Its Amount and How it May be Recovered	Calculation of the cost to build the capacity to serve customers, if applicable
Table 12 - Tap Fees Based on Meter Size	Calculation of meter size-based tap fees (hook-up fees) to recover costs calculated in Table 11, if applicable
Table 13 - Capacity Charges Based on Meter Size	Calculation of meter sized-based capacity surcharges (to the minimum charge) to recover costs calculated in Table 11, if applicable
Table 14 - Financial Capacity Indicators and Reserves	Shows the financial effects of the modeled rates, costs, etc. on the utility and on the benchmark 5,000 gallon per month residential customer
Table 15 - Comparison of Bills Before and After Rate Adjustments	Bills at the modeled rates are compared to those under the current rates
Table 16 - User Statistics	For volume ranges within each rate class, this table shows volumes and percentages of use, revenue generated and other statistics
<i>Chart 1 - Operating Ratio</i>	<i>Graph of operating ratio for 10 years as a result of the modeled rates and the current rates</i>
<i>Chart 2 - Coverage Ratio</i>	<i>Graph of coverage ratios for 10 years of the modeled rates and the current rates</i>
<i>Chart 3 - 5,000 Gallon Residential User's Bill</i>	<i>Graph of the bill for the benchmark 5,000 gallon per month residential user, with smallest available meter size (used in grant and loan eligibility determinations) as a result of the modeled rates and the current rates</i>
<i>Chart 4 - Affordability Index</i>	<i>Graph of the affordability index for 10 years of the benchmark residential user's bill (used in grant and loan eligibility determinations)</i>
<i>Chart 5 - Working Capital vs Goal</i>	<i>Graph for 10 years of total (unobligated) cash assets at modeled rates compared to the goal for total cash assets</i>
<i>Chart 6 - Value of Cash Assets Before Inflation</i>	<i>Graph for 10 years of unobligated cash assets NOT adjusted for inflation at modeled rates and current rates</i>
<i>Chart 7 - Value of Cash Assets After Inflation</i>	<i>Graph for 10 years of unobligated cash assets adjusted for inflation at modeled rates and current rates. This is the real buying power of cash reserves.</i>
<i>Chart 8 - Sum of All Reserves</i>	<i>Graph of all reserves of all kinds and the modeled rates and the current rates.</i>

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 a primary 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 initial 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 hook-up 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 <u>average</u> 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.
Hook-up Fee, Tap Fee, Impact Fee, Availability Charge, Capacity Charge	There are many terms and many and varied definitions of terms in use that are related to fees charged to connect new customers. For purposes of this model, all charges related to connecting new customers will be "rolled together" into a tap fee, 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.
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.

Definitions

Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts, plus leaks in manholes and sewer lines (infiltration)
Infrastructure	Most commonly thought of as the hard assets, such as buildings, treatment plants and lines needed to provide service to customers connected to the system. In reality, staff, software and other "soft" assets should be thought of as infrastructure, as well.
Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of 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.
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 include tap, capacity or connection fees, 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

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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 unexpected 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

\$7,969 Fees to GettingGreatRates.com

\$500 Estimated value of system staff time and incidentals to assemble needed information

\$8,469 Total Investment for This Analysis

\$723,832 Five-year Increase in Revenue Due at Least Partly to This Analysis

8547% Five-year Return on Investment (increase in revenues / investment)

\$2,326,807 Ten-year Improvement in Cash Position Due at Least Partly to This Analysis

27476% Ten-year Return on Investment (increase in revenues / investment)

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Table 1 - Rates; Recommended Left and Current Right

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

Rates Recommended by GettingGreatRates.com

To achieve the financial performance shown throughout this model, adopt the minimum and unit charges shown in this table. If minimum charges do not appear in this table, that means the modeled minimum charges are based upon meter size. In that case, adopt the meter size-based minimum charges from Table 13.

Rates That Were in Effect at End of Test Year

For comparison purposes, this table shows user rates in effect at the end of the test year. Rates for volume ranges that are not shown are the same as the next lowest volume range rates.

Customer Type, Rate Class or Meter Size	Bottom of Volume Range in Cu Ft	Billing Cycle Minimum Charge	Usage Allowance in 100 Cu Ft	Unit Charge per 100 Cu Ft	Customer Type, Rate Class or Meter Size	Bottom of Volume Range in Cu Ft	Billing Cycle Minimum Charge	Usage Allowance in 100 Cu Ft	Unit Charge per 100 Cu Ft
3/4 Inch Residential	0	\$37.21	0.000	\$1.64	3/4 Inch Residential	0	\$50.00	0.000	\$0.00
	100	\$37.21	0.000	\$1.64		100	\$50.00	0.000	\$0.00
	200	\$37.21	0.000	\$1.64		200	\$50.00	0.000	\$0.00
	300	\$37.21	0.000	\$1.64		300	\$50.00	0.000	\$0.00
	400	\$37.21	0.000	\$1.64		400	\$50.00	0.000	\$0.00
	500	\$37.21	0.000	\$1.64		500	\$50.00	0.000	\$0.00
	40,000	\$37.21	0.000	\$1.64		40,000	\$50.00	0.000	\$0.00
1 Inch Residential	0	\$37.21	0.000	\$1.64	1 Inch Residential	0	\$50.00	0.000	\$0.00
	100	\$37.21	0.000	\$1.64		100	\$50.00	0.000	\$0.00
	200	\$37.21	0.000	\$1.64		200	\$50.00	0.000	\$0.00
	300	\$37.21	0.000	\$1.64		300	\$50.00	0.000	\$0.00
	400	\$37.21	0.000	\$1.64		400	\$50.00	0.000	\$0.00
	500	\$37.21	0.000	\$1.64		500	\$50.00	0.000	\$0.00
	40,000	\$37.21	0.000	\$1.64		40,000	\$50.00	0.000	\$0.00
2 Inch Residential	0	\$43.00	0.000	\$1.64	2 Inch Residential	0	\$50.00	0.000	\$0.00
	100	\$43.00	0.000	\$1.64		100	\$50.00	0.000	\$0.00
	200	\$43.00	0.000	\$1.64		200	\$50.00	0.000	\$0.00
	300	\$43.00	0.000	\$1.64		300	\$50.00	0.000	\$0.00
	400	\$43.00	0.000	\$1.64		400	\$50.00	0.000	\$0.00
	500	\$43.00	0.000	\$1.64		500	\$50.00	0.000	\$0.00
	40,000	\$43.00	0.000	\$1.64		40,000	\$50.00	0.000	\$0.00
3/4 Inch Commercial	0	\$37.21	0.000	\$1.64	3/4 Inch Commercial	0	\$50.00	0.000	\$0.00
	100	\$37.21	0.000	\$1.64		100	\$50.00	0.000	\$0.00
	200	\$37.21	0.000	\$1.64		200	\$50.00	0.000	\$0.00
	300	\$37.21	0.000	\$1.64		300	\$50.00	0.000	\$0.00
	400	\$37.21	0.000	\$1.64		400	\$50.00	0.000	\$0.00
	500	\$37.21	0.000	\$1.64		500	\$50.00	0.000	\$0.00
	40,000	\$37.21	0.000	\$1.64		40,000	\$50.00	0.000	\$0.00
1 Inch Commercial	0	\$37.21	0.000	\$1.64	1 Inch Commercial	0	\$50.00	0.000	\$0.00
	100	\$37.21	0.000	\$1.64		100	\$50.00	0.000	\$0.00
	200	\$37.21	0.000	\$1.64		200	\$50.00	0.000	\$0.00
	300	\$37.21	0.000	\$1.64		300	\$50.00	0.000	\$0.00
	400	\$37.21	0.000	\$1.64		400	\$50.00	0.000	\$0.00
	500	\$37.21	0.000	\$1.64		500	\$50.00	0.000	\$0.00
	40,000	\$37.21	0.000	\$1.64		40,000	\$50.00	0.000	\$0.00
2 Inch Commercial	0	\$43.00	0.000	\$1.64	2 Inch Commercial	0	\$50.00	0.000	\$0.00
	100	\$43.00	0.000	\$1.64		100	\$50.00	0.000	\$0.00
	200	\$43.00	0.000	\$1.64		200	\$50.00	0.000	\$0.00
	300	\$43.00	0.000	\$1.64		300	\$50.00	0.000	\$0.00
	400	\$43.00	0.000	\$1.64		400	\$50.00	0.000	\$0.00
	500	\$43.00	0.000	\$1.64		500	\$50.00	0.000	\$0.00
	40,000	\$43.00	0.000	\$1.64		40,000	\$50.00	0.000	\$0.00
Excess Units	0	\$0.00	0.000	\$0.00	Excess Units	0	\$50.00	0.000	\$0.00

Table 2 - Test Year Usage

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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

Residential meter readings per year: 12

Date this scenario created: 9/20/2017

Test year, the one-year period being analyzed starts: 1/1/2016

Other customer meter readings per year: 12

Bills sent per year: 12

Customer or Rate Class, or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Average Volume Used Within Each Volume Range in 100 Cu Ft	Count of Bills With ANY Volume in Each Range	Annual Use in Each Volume Range in Cu Ft	Count of Bills Only Where Volume "Maxed Out" Within Each Range	Volume of Only Those Bills Where Volume "Maxed Out" Within Each Range	Number of Customers With Volume That "Maxed Out" Within Each Range	% of Customers That Averaged This Volume of Use	% of Total Use This Volume Represents
	0	99	0.960	1,529	146,800	61	0	5	0.7%	1.0%
	100	199	0.986	1,468	144,800	20	2,000	2	0.2%	1.0%
	200	299	0.979	1,448	141,700	31	6,200	3	0.4%	0.9%
	300	399	0.965	1,417	136,800	49	14,700	4	0.6%	0.9%
	400	499	0.957	1,368	130,900	59	23,600	5	0.7%	0.9%
	500	599	0.966	1,309	126,400	45	22,500	4	0.5%	0.8%
	600	699	0.945	1,264	119,500	69	41,400	6	0.8%	0.8%
	700	799	0.943	1,195	112,700	68	47,600	6	0.8%	0.7%
	800	899	0.928	1,127	104,600	81	64,800	7	0.9%	0.7%
	900	999	0.936	1,046	97,900	67	60,300	6	0.8%	0.6%
	1,000	1,499	4.148	979	406,100	260	306,600	22	3.0%	2.7%
	1,500	1,999	4.181	719	300,600	191	323,100	16	2.2%	2.0%
	2,000	2,999	6.852	528	361,800	266	631,800	22	3.0%	2.4%
	3,000	3,999	7.240	262	189,700	118	399,700	10	1.3%	1.2%
3/4 Inch Residential	4,000	4,999	7.736	144	111,400	53	232,400	4	0.6%	0.7%
	5,000	5,999	7.835	91	71,300	37	202,300	3	0.4%	0.5%
	6,000	6,999	8.407	54	45,400	15	96,400	1	0.2%	0.3%
	7,000	7,999	8.538	39	33,300	13	98,300	1	0.1%	0.2%
	8,000	8,999	6.885	26	17,900	12	99,900	1	0.1%	0.1%
	9,000	9,999	7.714	14	10,800	5	46,800	0	0.1%	0.1%
	10,000	14,999	37.556	9	33,800	4	48,800	0	0.0%	0.2%
	15,000	19,999	44.400	5	22,200	1	17,200	0	0.0%	0.1%
	20,000	24,999	29.000	4	11,600	3	66,600	0	0.0%	0.1%
	25,000	29,999	17.000	1	1,700	1	26,700	0	0.0%	0.0%
	30,000	34,999	0.000	0	0	0	0	0	0.0%	0.0%
	35,000	39,999	0.000	0	0	0	0	0	0.0%	0.0%
	40,000	999,999	0.000	0	0	0	0	0	0.0%	0.0%
Monthly and Annual Subtotals:				16,046	2,879,700	1,529	2,879,700	127	17.4%	18.9%
	0	99	0.982	5,170	507,700	93	0	8	1.1%	3.3%
	100	199	0.991	5,077	503,000	47	4,700	4	0.5%	3.3%
	200	299	0.979	5,030	492,600	104	20,800	9	1.2%	3.2%
	300	399	0.970	4,926	477,600	150	45,000	13	1.7%	3.1%
	400	499	0.967	4,776	461,900	157	62,800	13	1.8%	3.0%
	500	599	0.966	4,619	446,200	157	78,500	13	1.8%	2.9%
	600	699	0.962	4,462	429,300	169	101,400	14	1.9%	2.8%
	700	799	0.957	4,293	410,700	186	130,200	16	2.1%	2.7%
	800	899	0.956	4,107	392,600	181	144,800	15	2.1%	2.6%
	900	999	0.956	3,926	375,500	171	153,900	14	1.9%	2.5%
	1,000	1,499	4.332	3,755	1,626,700	832	997,200	69	9.5%	10.7%
	1,500	1,999	4.243	2,923	1,240,200	708	1,194,700	59	8.1%	8.1%
	2,000	2,999	7.246	2,215	1,605,000	1,009	2,417,000	84	11.5%	10.5%
	3,000	3,999	7.369	1,206	888,700	516	1,746,700	43	5.9%	5.8%
1 Inch Residential	4,000	4,999	7.599	690	524,300	279	1,229,300	23	3.2%	3.4%
	5,000	5,999	8.019	411	329,600	144	782,600	12	1.6%	2.2%
	6,000	6,999	7.906	267	211,100	92	588,100	8	1.0%	1.4%
	7,000	7,999	7.497	175	131,200	70	516,200	6	0.8%	0.9%
	8,000	8,999	7.971	105	83,700	33	275,700	3	0.4%	0.5%
	9,000	9,999	8.389	72	60,400	20	188,400	2	0.2%	0.4%
	10,000	14,999	29.462	52	153,200	37	448,200	3	0.4%	1.0%
	15,000	19,999	30.533	15	45,800	9	150,800	1	0.1%	0.3%
	20,000	24,999	19.167	6	11,500	5	106,500	0	0.1%	0.1%
	25,000	29,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	30,000	34,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	35,000	39,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	40,000	999,999	141.000	1	14,100	1	54,100	0	0.0%	0.1%
Monthly and Annual Subtotals:				58,282	11,437,600	5,170	11,437,600	431	58.9%	75.1%

Table 2 - Test Year Usage

Customer or Rate Class, or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Average Volume Used Within Each Volume Range in 100 Cu Ft	Count of Bills With ANY Volume in Each Range	Annual Use in Each Volume Range in Cu Ft	Count of Bills Only Where Volume "Maxed Out" Within Each Range	Volume of Only Those Bills Where Volume "Maxed Out" Within Each Range	Number of Customers With Volume That "Maxed Out" Within Each Range	% of Customers That Averaged This Volume of Use	% of Total Use This Volume Represents
2 Inch Residential	0	99	0.852	54	4,600	8	0	1	0.1%	0.0%
	100	199	0.891	46	4,100	5	500	0	0.1%	0.0%
	200	299	0.902	41	3,700	4	800	0	0.0%	0.0%
	300	399	0.784	37	2,900	8	2,400	1	0.1%	0.0%
	400	499	0.931	29	2,700	2	800	0	0.0%	0.0%
	500	599	0.815	27	2,200	5	2,500	0	0.1%	0.0%
	600	699	0.909	22	2,000	2	1,200	0	0.0%	0.0%
	700	799	0.900	20	1,800	2	1,400	0	0.0%	0.0%
	800	899	0.944	18	1,700	1	800	0	0.0%	0.0%
	900	999	0.882	17	1,500	2	1,800	0	0.0%	0.0%
	1,000	1,499	4.267	15	6,400	3	3,400	0	0.0%	0.0%
	1,500	1,999	3.917	12	4,700	4	6,700	0	0.0%	0.0%
	2,000	2,999	6.875	8	5,500	3	6,500	0	0.0%	0.0%
	3,000	3,999	8.400	5	4,200	1	3,200	0	0.0%	0.0%
	4,000	4,999	10.000	4	4,000	0	0	0	0.0%	0.0%
	5,000	5,999	10.000	4	4,000	0	0	0	0.0%	0.0%
	6,000	6,999	10.000	4	4,000	0	0	0	0.0%	0.0%
	7,000	7,999	10.000	4	4,000	0	0	0	0.0%	0.0%
	8,000	8,999	10.000	4	4,000	0	0	0	0.0%	0.0%
	9,000	9,999	8.000	4	3,200	1	9,200	0	0.0%	0.0%
10,000	14,999	33.333	3	10,000	1	10,000	0	0.0%	0.1%	
15,000	19,999	41.000	2	8,200	1	18,200	0	0.0%	0.1%	
20,000	24,999	50.000	1	5,000	0	0	0	0.0%	0.0%	
25,000	29,999	0.000	0	0	0	0	0	0.0%	0.0%	
30,000	34,999	0.000	1	0	1	30,000	0	0.0%	0.0%	
35,000	39,999	0.000	0	0	0	0	0	0.0%	0.0%	
40,000	999,999	0.000	0	0	0	0	0	0.0%	0.0%	
Monthly and Annual Subtotals:				382	94,400	54	99,400	5	0.6%	0.6%
3/4 Inch Commercial	0	99	1.000	12	1,200	0	0	0	0.0%	0.0%
	100	199	1.000	12	1,200	0	0	0	0.0%	0.0%
	200	299	1.000	12	1,200	0	0	0	0.0%	0.0%
	300	399	1.000	12	1,200	0	0	0	0.0%	0.0%
	400	499	1.000	12	1,200	0	0	0	0.0%	0.0%
	500	599	1.000	12	1,200	0	0	0	0.0%	0.0%
	600	699	0.917	12	1,100	1	600	0	0.0%	0.0%
	700	799	0.909	11	1,000	1	700	0	0.0%	0.0%
	800	899	1.000	10	1,000	0	0	0	0.0%	0.0%
	900	999	0.800	10	800	2	1,800	0	0.0%	0.0%
	1,000	1,499	2.250	8	1,800	8	9,800	1	0.1%	0.0%
	1,500	1,999	0.000	0	0	0	0	0	0.0%	0.0%
	2,000	2,999	0.000	0	0	0	0	0	0.0%	0.0%
	3,000	3,999	0.000	0	0	0	0	0	0.0%	0.0%
	4,000	4,999	0.000	0	0	0	0	0	0.0%	0.0%
	5,000	5,999	0.000	0	0	0	0	0	0.0%	0.0%
	6,000	6,999	0.000	0	0	0	0	0	0.0%	0.0%
	7,000	7,999	0.000	0	0	0	0	0	0.0%	0.0%
	8,000	8,999	0.000	0	0	0	0	0	0.0%	0.0%
	9,000	9,999	0.000	0	0	0	0	0	0.0%	0.0%
10,000	14,999	0.000	0	0	0	0	0	0.0%	0.0%	
15,000	19,999	0.000	0	0	0	0	0	0.0%	0.0%	
20,000	24,999	0.000	0	0	0	0	0	0.0%	0.0%	
25,000	29,999	0.000	0	0	0	0	0	0.0%	0.0%	
30,000	34,999	0.000	0	0	0	0	0	0.0%	0.0%	
35,000	39,999	0.000	0	0	0	0	0	0.0%	0.0%	
40,000	999,999	0.000	0	0	0	0	0	0.0%	0.0%	
Monthly and Annual Subtotals:				123	12,900	12	12,900	1	0.1%	0.1%

Table 2 - Test Year Usage

Customer or Rate Class, or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Average Volume Used Within Each Volume Range in 100 Cu Ft	Count of Bills With ANY Volume in Each Range	Annual Use in Each Volume Range in Cu Ft	Count of Bills Only Where Volume "Maxed Out" Within Each Range	Volume of Only Those Bills Where Volume "Maxed Out" Within Each Range	Number of Customers With Volume That "Maxed Out" Within Each Range	% of Customers That Averaged This Volume of Use	% of Total Use This Volume Represents
	0	99	0.983	180	17,700	3	0	0	0.0%	0.1%
	100	199	0.972	177	17,200	5	500	0	0.1%	0.1%
	200	299	0.924	172	15,900	13	2,600	1	0.1%	0.1%
	300	399	0.969	159	15,400	5	1,500	0	0.1%	0.1%
	400	499	0.961	154	14,800	6	2,400	1	0.1%	0.1%
	500	599	0.980	148	14,500	3	1,500	0	0.0%	0.1%
	600	699	0.966	145	14,000	5	3,000	0	0.1%	0.1%
	700	799	0.971	140	13,600	4	2,800	0	0.0%	0.1%
	800	899	0.934	136	12,700	9	7,200	1	0.1%	0.1%
	900	999	0.961	127	12,200	5	4,500	0	0.1%	0.1%
	1,000	1,499	4.262	122	52,000	30	36,000	3	0.3%	0.3%
	1,500	1,999	4.283	92	39,400	19	31,400	2	0.2%	0.3%
	2,000	2,999	8.781	73	64,100	17	42,100	1	0.2%	0.4%
	3,000	3,999	9.161	56	51,300	10	35,300	1	0.1%	0.3%
	4,000	4,999	9.391	46	43,200	5	22,200	0	0.1%	0.3%
	5,000	5,999	8.707	41	35,700	12	66,700	1	0.1%	0.2%
	6,000	6,999	9.586	29	27,800	3	19,800	0	0.0%	0.2%
	7,000	7,999	9.269	26	24,100	5	38,100	0	0.1%	0.2%
	8,000	8,999	8.857	21	18,600	3	24,600	0	0.0%	0.1%
	9,000	9,999	9.500	18	17,100	1	9,100	0	0.0%	0.1%
	10,000	14,999	42.059	17	71,500	6	76,500	1	0.1%	0.5%
	15,000	19,999	17.000	11	18,700	9	143,700	1	0.1%	0.1%
	20,000	24,999	34.000	2	6,800	2	46,800	0	0.0%	0.0%
	25,000	29,999	0.000	0	0	0	0	0	0.0%	0.0%
	30,000	34,999	0.000	0	0	0	0	0	0.0%	0.0%
	35,000	39,999	0.000	0	0	0	0	0	0.0%	0.0%
	40,000	999,999	0.000	0	0	0	0	0	0.0%	0.0%
	Monthly and Annual Subtotals:			2,092	618,300	180	618,300	15	2.1%	4.1%
1 Inch Commercial	0	99	1.000	67	6,700	0	0	0	0.0%	0.0%
	100	199	1.000	67	6,700	0	0	0	0.0%	0.0%
	200	299	1.000	67	6,700	0	0	0	0.0%	0.0%
	300	399	0.910	67	6,100	6	1,800	1	0.1%	0.0%
	400	499	0.918	61	5,600	5	2,000	0	0.1%	0.0%
	500	599	0.929	56	5,200	4	2,000	0	0.0%	0.0%
	600	699	1.000	52	5,200	0	0	0	0.0%	0.0%
	700	799	0.981	52	5,100	1	700	0	0.0%	0.0%
	800	899	0.980	51	5,000	1	800	0	0.0%	0.0%
	900	999	0.980	50	4,900	1	900	0	0.0%	0.0%
	1,000	1,499	4.735	49	23,200	5	6,200	0	0.1%	0.2%
	1,500	1,999	4.750	44	20,900	5	8,900	0	0.1%	0.1%
	2,000	2,999	5.154	39	20,100	30	71,100	3	0.3%	0.1%
	3,000	3,999	7.778	9	7,000	5	18,000	0	0.1%	0.0%
	4,000	4,999	9.500	4	3,800	1	4,800	0	0.0%	0.0%
	5,000	5,999	10.000	3	3,000	0	0	0	0.0%	0.0%
	6,000	6,999	10.000	3	3,000	0	0	0	0.0%	0.0%
	7,000	7,999	10.000	3	3,000	0	0	0	0.0%	0.0%
	8,000	8,999	7.667	3	2,300	1	8,300	0	0.0%	0.0%
	9,000	9,999	10.000	2	2,000	0	0	0	0.0%	0.0%
	10,000	14,999	37.500	2	7,500	1	12,500	0	0.0%	0.0%
	15,000	19,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	20,000	24,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	25,000	29,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	30,000	34,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	35,000	39,999	50.000	1	5,000	0	0	0	0.0%	0.0%
	40,000	999,999	60.000	1	6,000	1	46,000	0	0.0%	0.0%
	Monthly and Annual Subtotals:			757	184,000	67	184,000	6	0.8%	1.2%
2 Inch Commercial	0	0	0.000	1,767	0	1,767	0	147	20.1%	0.0%
	Monthly and Annual Subtotals:			1,767	0	1,767	0	147	20.1%	0.0%
Excess Units										
	Grand Totals:			79,449	15,226,900	8,779		732	100%	100%

Table 3 - User Base Data and Operating Incomes

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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

Annual Median Household Income (AMHI)

\$41,853 Census Bureau estimate of AMHI for the year: 2015

\$35,777 Census Bureau estimate of AMHI for the year: 2000

\$6,076 AMHI growth during this time period

1.13% 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

1 Number of new taps or installations made during the test year

\$1,500 Average tap or installation fee assessed during the test year

The gray highlighted row below shows the rate revenue increase for each year beyond the initial rate adjustment year. In the initial rate adjustment year each customer's bill will go up or down based upon how the new rates apply to their actual use and demand.

In the "This Year" column below (heading highlighted blue), revenues will be collected at the now-current rates for the first part of the year and the modeled rates for the last part of the year starting on the date near the top of Table 12. Thus, the revenues shown in the last column of the table are "blended" revenues; part collected at the old rates and part collected at the new rates. It was then assumed that all rate adjustments made after the initial (major) adjustment will be done in time each year so fees can be collected from the first day of each new year at the (annually) adjusted rates.

User Base

(First year balances and incomes are <u>actual</u> , subsequent years are <u>projected</u> .)	Inflation or Deflation (-) Factor	Test Year	Analysis Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
		1/1/16	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
Average Users for the Year	N.A.	732	733	734	735	736	737	738	739	740	741	742	743
Users Added/Lost During the Year	N.A.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
User Growth or Loss Rate	N.A.	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%	0.13%	0.13%
Rate Increases Projected for Future Years	N.A.	NA	NA	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

How User Charge Fees Were Calculated, Accounting for New Customers and Future Rate Increases

Actual or Calculated Sales Revenues	\$357,595	\$439,128	\$511,319	\$527,376	\$543,938	\$561,018	\$578,633	\$596,800	\$615,536	\$634,860	\$654,789	\$675,342
Additional Sales Revenues From New Customers		\$599	\$697	\$719	\$739	\$762	\$785	\$808	\$832	\$857	\$883	\$909
Total Calculated Revenues (User Charge Fees)	\$357,595	\$439,728	\$512,016	\$528,095	\$544,678	\$561,780	\$579,418	\$597,608	\$616,369	\$635,717	\$655,672	\$676,251

Operating Incomes

Water Service Charges, Not Including Excess Units Fees	N.A.	\$357,595	\$367,670	\$512,016	\$528,095	\$544,678	\$561,780	\$579,418	\$597,608	\$616,369	\$635,717	\$655,672	\$676,251
Late Payment Charge	N.A.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Taps or Connections (Current Rate Structure)	% Above	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1	\$2
Meter-size Based Tap Fees (Table 12)	% Above	\$0	\$5	\$1,648	\$1,698	\$1,749	\$1,801	\$1,855	\$1,911	\$1,968	\$2,027	\$2,088	\$2,088
Interest Income	N.A.	\$0	\$2,941	\$3,683	\$4,221	\$4,376	\$4,603	\$4,705	\$4,879	\$5,133	\$5,249	\$5,389	\$5,226
Meter Charge	N.A.	\$0	\$36,000	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000
Share Assessment Income	N.A.	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839
Franchise Tax Income	N.A.	\$6,885	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955	\$6,955
Miscellaneous Fees Income	N.A.	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115	\$14,115
Income From Excess "Units" at \$50 per Unit	N.A.	\$88,330	\$88,330	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Initial Sales Volume % Loss, and Cumulative Revenue Losses, Due to Conservation by Customers	25.0%	\$0	\$0	-\$62,430	-\$64,391	-\$66,413	-\$68,498	-\$70,649	-\$72,867	-\$75,154	-\$77,513	-\$79,946	-\$82,456
Total Operating Incomes		\$543,765	\$592,855	\$624,827	\$639,533	\$654,299	\$669,596	\$685,239	\$701,441	\$718,226	\$735,390	\$753,113	\$771,022

Table 4 - Operating Costs and Net Income

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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

	Inflation or Deflation (-) Factor	Test Year	Analysis Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
		Starting 1/1/16	Starting 1/1/17	Starting 1/1/18	Starting 1/1/19	Starting 1/1/20	Starting 1/1/21	Starting 1/1/22	Starting 1/1/23	Starting 1/1/24	Starting 1/1/25	Starting 1/1/26	Starting 1/1/27
O&M, Salaries and Benefits	4.0%	\$128,382	\$178,000	\$236,000	\$245,440	\$255,258	\$265,468	\$276,087	\$287,130	\$298,615	\$310,560	\$322,982	\$335,902
O&M, Power for Wells	4.0%	\$40,792	\$50,000	\$50,000	\$52,000	\$54,080	\$56,243	\$58,493	\$60,833	\$63,266	\$65,797	\$68,428	\$71,166
O&M, Lab Fees	4.0%	\$1,686	\$1,700	\$2,000	\$2,080	\$2,163	\$2,250	\$2,340	\$2,433	\$2,531	\$2,632	\$2,737	\$2,847
O&M, Meter Installation	4.0%	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
O&M, Well Maintenance and Repairs	4.0%	\$1,962	\$5,000	\$5,000	\$5,200	\$5,408	\$5,624	\$5,849	\$6,083	\$6,327	\$6,580	\$6,843	\$7,117
O&M, Supplies	4.0%	\$2,054	\$3,500	\$3,500	\$3,640	\$3,786	\$3,937	\$4,095	\$4,258	\$4,429	\$4,606	\$4,790	\$4,982
O&M, Licenses, Permits and Fees	4.0%	\$8,815	\$10,000	\$10,000	\$10,400	\$10,816	\$11,249	\$11,699	\$12,167	\$12,653	\$13,159	\$13,686	\$14,233
O&M, System Maintenance and Repairs	4.0%	\$37,268	\$60,000	\$75,000	\$78,000	\$81,120	\$84,365	\$87,739	\$91,249	\$94,899	\$98,695	\$102,643	\$106,748
O&M, Truck	4.0%	\$4,987	\$6,000	\$20,000	\$20,800	\$21,632	\$22,497	\$23,397	\$24,333	\$25,306	\$26,319	\$27,371	\$28,466
O&M, Other Repairs	4.0%	\$95	\$200	\$500	\$520	\$541	\$562	\$585	\$608	\$633	\$658	\$684	\$712
O&M, Miscellaneous	4.0%	\$5,215	\$5,500	\$6,000	\$6,240	\$6,490	\$6,749	\$7,019	\$7,300	\$7,592	\$7,896	\$8,211	\$8,540
ADMIN & GENERAL, Bank Fees	4.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ADMIN & GENERAL, Computer Repairs	4.0%	\$100	\$100	\$200	\$208	\$216	\$225	\$234	\$243	\$253	\$263	\$274	\$285
ADMIN & GENERAL, Dues and Subscriptions	4.0%	\$1,589	\$1,500	\$1,500	\$1,560	\$1,622	\$1,687	\$1,755	\$1,825	\$1,898	\$1,974	\$2,053	\$2,135
ADMIN & GENERAL, Insurance	4.0%	\$27,843	\$30,000	\$30,000	\$31,200	\$32,448	\$33,746	\$35,096	\$36,500	\$37,960	\$39,478	\$41,057	\$42,699
ADMIN & GENERAL, Education and Training	4.0%	\$475	\$2,000	\$2,000	\$2,080	\$2,163	\$2,250	\$2,340	\$2,433	\$2,531	\$2,632	\$2,737	\$2,847
ADMIN & GENERAL, Office Supplies	4.0%	\$1,404	\$1,500	\$2,000	\$2,080	\$2,163	\$2,250	\$2,340	\$2,433	\$2,531	\$2,632	\$2,737	\$2,847
ADMIN & GENERAL, Postage	4.0%	\$4,197	\$3,500	\$3,500	\$3,640	\$3,786	\$3,937	\$4,095	\$4,258	\$4,429	\$4,606	\$4,790	\$4,982
ADMIN & GENERAL, Printing	4.0%	\$1,313	\$2,000	\$2,500	\$2,600	\$2,704	\$2,812	\$2,925	\$3,042	\$3,163	\$3,290	\$3,421	\$3,558
ADMIN & GENERAL, Professional Fees	4.0%	\$111,491	\$110,000	\$50,000	\$52,000	\$54,080	\$56,243	\$58,493	\$60,833	\$63,266	\$65,797	\$68,428	\$71,166
ADMIN & GENERAL, Utilities	4.0%	\$5,877	\$6,000	\$6,000	\$6,240	\$6,490	\$6,749	\$7,019	\$7,300	\$7,592	\$7,896	\$8,211	\$8,540
ADMIN & GENERAL, Property Taxes	4.0%	\$801	\$900	\$1,000	\$1,040	\$1,082	\$1,125	\$1,170	\$1,217	\$1,265	\$1,316	\$1,369	\$1,423
ADMIN & GENERAL, Miscellaneous	4.0%	\$5,761	\$5,000	\$5,000	\$5,200	\$5,408	\$5,624	\$5,849	\$6,083	\$6,327	\$6,580	\$6,843	\$7,117
ADMIN & GENERAL, Retirement Plan	4.0%	\$0	\$750	\$5,000	\$5,200	\$5,408	\$5,624	\$5,849	\$6,083	\$6,327	\$6,580	\$6,843	\$7,117
Interest Expense	4.0%	\$54	\$0	\$100	\$104	\$108	\$112	\$117	\$122	\$127	\$132	\$137	\$142
Transfer from Assessments to Capital Improvement Fund	0.0%	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
One-time Reduction of R&R Annuity	4.0%	-\$46,004	-\$46,004	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Payment to Repair & Replacement (Table 7)	0.0%	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004	\$46,004
User Charge Analysis Services	5.0%	\$0	\$7,969	\$0	\$0	\$8,785	\$0	\$0	\$9,686	\$0	\$0	\$10,679	\$0
CIP Spending Plan	N.A.	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4	Table 4
Total Operating Costs		\$392,160	\$491,119	\$562,804	\$583,476	\$613,760	\$627,333	\$650,587	\$684,456	\$699,921	\$726,077	\$763,959	\$781,571
Net Income (or Loss)		\$151,605	\$101,737	\$62,023	\$56,057	\$40,539	\$42,262	\$34,652	\$16,986	\$18,305	\$9,313	-\$10,846	-\$10,550
Working Capital Goal: 50%	In Dollars, That is:	\$196,080	\$245,559	\$281,402	\$291,738	\$306,880	\$313,667	\$325,293	\$342,228	\$349,960	\$363,039	\$381,979	\$390,786

Table 5 - Capital Improvement Program

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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

	Test Year	Analysis Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
	1/1/16	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
Debt-paid Capital Improvements												
<i>(The portion of improvements that will be funded with loans are shown in this section. The balance of each of these improvements will be funded with grants and/or utility reserves. That is shown in the next section.)</i>												
Complete Well 1 and 2 Upgrades	\$0	\$0	\$68,850	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Well Replacement	\$0	\$0	\$688,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Reservoir	\$0	\$0	\$826,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Operational Improvements	\$0	\$0	\$68,850	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upgrade Transmission Main N. Rancho Ave. Segment Replacement	\$0	\$0	\$468,180	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Install New Chlorination System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$38,008	\$0	\$0	\$0	\$0
Booster Pump Replacement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$304,064	\$0	\$0	\$0	\$0
Upgrade Transmission Main N. Rancho Ave. and Citrus Relocation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$91,219	\$0	\$0	\$0	\$0
Elementary School Relocation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$273,657	\$0	\$0	\$0	\$0
Distribution System Replacement (To start after 2028)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 1 -H & G Streets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 2-Rancho Ave(Olive to H St)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 3-F St & C St/Tejon Ave	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 4-Cypress Ave	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 5-Walnut Cove/Latham/Orange	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 6-Olive St	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 7- Laurel Loop	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 8-Stevenson Street	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Capital Improvements to be Paid With Debt	\$0	\$0	\$2,120,580	\$0	\$0	\$0	\$0	\$706,948	\$0	\$0	\$0	\$0
Cash and Grant-paid Capital Improvements												
<i>(This section includes the grant and reserves-funded portion of each improvement project. The actual grant amounts expected are shown in the CIP Funding Plan section that follows.)</i>												
Complete Well 1 and 2 Upgrades	\$0	\$0	\$68,850	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Well Replacement	\$0	\$0	\$688,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Reservoir	\$0	\$0	\$826,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Operational Improvements	\$0	\$0	\$68,850	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upgrade Transmission Main N. Rancho Ave. Segment Replacement	\$0	\$0	\$468,180	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Install New Chlorination System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$38,008	\$0	\$0	\$0	\$0
Booster Pump Replacement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$304,064	\$0	\$0	\$0	\$0
Upgrade Transmission Main N. Rancho Ave. and Citrus Relocation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$91,219	\$0	\$0	\$0	\$0
Elementary School Relocation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$273,657	\$0	\$0	\$0	\$0
Distribution System Replacement (To start after 2028)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 1 -H & G Streets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 2-Rancho Ave(Olive to H St)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 3-F St & C St/Tejon Ave	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 4-Cypress Ave	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 5-Walnut Cove/Latham/Orange	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 6-Olive St	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 7- Laurel Loop	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project 8-Stevenson Street	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Meter Installation (Finishing Previous Project)	\$14	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Cash and Grant-paid Capital Improvements	\$14	\$30,000	\$2,120,580	\$0	\$0	\$0	\$0	\$706,948	\$0	\$0	\$0	\$0
Total CIP Planned Spending	\$14	\$30,000	\$4,241,160	\$0	\$0	\$0	\$0	\$1,413,897	\$0	\$0	\$0	\$0

Table 5 - Capital Improvement Program

CIP Funding Plan

Cash Reserves (Internal Funds)

Debt Service and CIP Reserves Starting Balance	\$0	\$278,758	\$416,217	\$531,723	\$544,727	\$537,796	\$540,736	\$531,315	\$498,636	\$433,657	\$356,156	\$276,330
Working Capital Transferred to Debt Service and CIP Reserves	\$178,926	\$52,257	\$26,181	\$45,721	\$25,397	\$35,475	\$23,026	\$51	\$10,573	\$0	\$0	\$0
Debt Service and CIP Reserves Interest Earned (or Paid)	\$0	\$8,363	\$12,487	\$15,952	\$16,342	\$16,134	\$16,222	\$15,939	\$14,959	\$13,010	\$10,685	\$8,290
Transfer from Assessments to Capital Improvement Fund	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839	\$76,839
Cash Total	\$255,766	\$416,217	\$531,723	\$670,235	\$663,305	\$666,245	\$656,823	\$624,144	\$601,007	\$523,506	\$443,680	\$361,459

Grant and Loan Proceeds (External Funds)

Grant Income (at 50% of later project costs)	\$23,006	\$30,000	\$2,120,580	\$0	\$0	\$0	\$0	\$706,948	\$0	\$0	\$0	\$0
Loan Originated in 1st Year			\$2,120,580	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan Originated in 6th Year								\$706,948	\$0	\$0	\$0	\$0
Grant and Loan Proceeds Total	\$23,006	\$30,000	\$4,241,160	\$0	\$0	\$0	\$0	\$1,413,897	\$0	\$0	\$0	\$0

Total Cash Reserves, Grant and Loan Proceeds **\$278,772** **\$446,217** **\$4,772,883** **\$670,235** **\$663,305** **\$666,245** **\$656,823** **\$2,038,041** **\$601,007** **\$523,506** **\$443,680** **\$361,459**

Debt Payment Plan

	Payments for future loans assume 100 percent financing for projects, term of: 20 years and 1.663% interest												
Loan Originated in 1st Year				\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508
Loan Originated in 6th Year										\$41,841	\$41,841	\$41,841	\$41,841
Total Debt Payments	\$0	\$0	\$0	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$167,350	\$167,350	\$167,350	\$167,350
CIP Spending Net of Grant and Loan Proceeds	-\$22,992	\$0	\$0	\$125,508	\$125,508	\$125,508	\$125,508	\$125,508	\$167,350	\$167,350	\$167,350	\$167,350	\$167,350
Debt Service and CIP Reserves Ending Balance	\$278,758	\$416,217	\$531,723	\$544,727	\$537,796	\$540,736	\$531,315	\$498,636	\$433,657	\$356,156	\$276,330	\$194,109	

Notes: The company plans many expensive system improvements over the next two decades. For this rates scenario, it is assumed that half of project costs will be funded with debt and half with grants.

Table 6 - Equipment Replacement Schedule

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This schedule depicts detailed equipment replacement and refurbishment needed during the next 20 years. Total annual expenses from this table are used in Table 7 to calculate the annuity (savings deposit) needed to pay for these expenses as they come due.

Year Beginning	Average annual R&R cost for operating equipment, estimated at 15 percent of operating costs. Does not include admin, billing and similar costs.										Total Annual Replacement Costs	
1/1/17	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/18	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/19	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/20	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/21	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/22	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/23	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/24	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/25	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/26	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/27	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/28	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/29	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/30	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/31	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/32	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/33	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/34	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/35	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/36	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/37	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/38	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/39	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/40	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688
1/1/41	\$34,688	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,688

Table 7- Equipment Replacement Annuity Calculation

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This schedule calculates the annual annuity (savings deposit) needed to build reserves that will fund all replacement and refurbishment scheduled in Table 6, the detailed replacement schedule.

2.00% Average Inflation Rate for the Following Water System Equipment for the Term of This Replacement Schedule

3.00% Average Interest Rate on Balances Invested for the Term of This Replacement Schedule

3.00% 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
1/1/17	Analysis Year	\$34,688	\$34,688	\$0	-\$34,688	\$32,954
1/1/18	1st Year	\$34,688	\$35,382	-\$1,041	-\$25,107	\$33,613
1/1/19	2nd Year	\$34,688	\$36,090	-\$753	-\$15,947	\$34,285
1/1/20	3rd Year	\$34,688	\$36,811	-\$478	-\$7,233	\$34,971
1/1/21	4th Year	\$34,688	\$37,548	-\$217	\$1,006	\$35,670
1/1/22	5th Year	\$34,688	\$38,299	\$30	\$8,741	\$36,384
1/1/23	6th Year	\$34,688	\$39,065	\$262	\$15,943	\$37,111
1/1/24	7th Year	\$34,688	\$39,846	\$478	\$22,579	\$37,854
1/1/25	8th Year	\$34,688	\$40,643	\$677	\$28,617	\$38,611
1/1/26	9th Year	\$34,688	\$41,456	\$859	\$34,023	\$39,383
1/1/27	10th Year	\$34,688	\$42,285	\$1,021	\$38,763	\$40,171
1/1/28	11th Year	\$34,688	\$43,130	\$1,163	\$42,799	\$40,974
1/1/29	12th Year	\$34,688	\$43,993	\$1,284	\$46,093	\$41,793
1/1/30	13th Year	\$34,688	\$44,873	\$1,383	\$48,607	\$42,629
1/1/31	14th Year	\$34,688	\$45,770	\$1,458	\$50,298	\$43,482
1/1/32	15th Year	\$34,688	\$46,686	\$1,509	\$51,125	\$44,352
1/1/33	16th Year	\$34,688	\$47,620	\$1,534	\$51,043	\$45,239
1/1/34	17th Year	\$34,688	\$48,572	\$1,531	\$50,006	\$46,143
1/1/35	18th Year	\$34,688	\$49,543	\$1,500	\$47,966	\$47,066
1/1/36	19th Year	\$34,688	\$50,534	\$1,439	\$44,875	\$48,008

Notes: This schedule only estimates R&R costs as an assumed percentage of operating costs. A Discretionary Annuity amount was added so that at the end of the 20-year modeling period, the balance will (almost) equal the average of the annual replacement cost amounts.

Starting Account Balance	\$0	\$32,954
Minimum Annual Annuity	\$44,217	Minimum Desired Balance in Today's Dollars
Discretionary Annuity	\$1,787	

Required Annual Deposit (Annuity) to Replacement Account \$46,004

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

Table 8 - Classification of Costs

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This table distributes costs from a representative year (the "target" year) to fixed and variable categories (see Definitions) in order to calculate the "proportional to use" or "cost of service" rate structure based upon the cost breakdown for that year.

The rate structure target year runs from 1/1/2024 through 12/31/2024						Fixed Cost	Variable	Capacity
Operating Costs	Amount	Fixed Cost %	Variable Cost %	Capacity Cost %	Fixed Cost Amount	Cost Amount	Capacity Cost Amount	
O&M, Salaries and Benefits	\$298,615	50.0%	50.0%	0.0%	\$149,308	\$149,308	\$0	
O&M, Power for Wells	\$63,266	50.0%	50.0%	0.0%	\$31,633	\$31,633	\$0	
O&M, Lab Fees	\$2,531	50.0%	50.0%	0.0%	\$1,265	\$1,265	\$0	
O&M, Meter Installation	Table 5	50.0%	50.0%	0.0%	\$0	\$0	\$0	
O&M, Well Maintenance and Repairs	\$6,327	50.0%	50.0%	0.0%	\$3,163	\$3,163	\$0	
O&M, Supplies	\$4,429	50.0%	50.0%	0.0%	\$2,214	\$2,214	\$0	
O&M, Licenses, Permits and Fees	\$12,653	50.0%	50.0%	0.0%	\$6,327	\$6,327	\$0	
O&M, System Maintenance and Repairs	\$94,899	50.0%	50.0%	0.0%	\$47,449	\$47,449	\$0	
O&M, Truck	\$25,306	50.0%	50.0%	0.0%	\$12,653	\$12,653	\$0	
O&M, Other Repairs	\$633	50.0%	50.0%	0.0%	\$316	\$316	\$0	
O&M, Miscellaneous	\$7,592	50.0%	50.0%	0.0%	\$3,796	\$3,796	\$0	
ADMIN & GENERAL, Bank Fees	\$0	100.0%	0.0%	0.0%	\$0	\$0	\$0	
ADMIN & GENERAL, Computer Repairs	\$253	100.0%	0.0%	0.0%	\$253	\$0	\$0	
ADMIN & GENERAL, Dues and Subscriptions	\$1,898	100.0%	0.0%	0.0%	\$1,898	\$0	\$0	
ADMIN & GENERAL, Insurance	\$37,960	100.0%	0.0%	0.0%	\$37,960	\$0	\$0	
ADMIN & GENERAL, Education and Training	\$2,531	100.0%	0.0%	0.0%	\$2,531	\$0	\$0	
ADMIN & GENERAL, Office Supplies	\$2,531	100.0%	0.0%	0.0%	\$2,531	\$0	\$0	
ADMIN & GENERAL, Postage	\$4,429	100.0%	0.0%	0.0%	\$4,429	\$0	\$0	
ADMIN & GENERAL, Printing	\$3,163	100.0%	0.0%	0.0%	\$3,163	\$0	\$0	
ADMIN & GENERAL, Professional Fees	\$63,266	100.0%	0.0%	0.0%	\$63,266	\$0	\$0	
ADMIN & GENERAL, Utilities	\$7,592	100.0%	0.0%	0.0%	\$7,592	\$0	\$0	
ADMIN & GENERAL, Property Taxes	\$1,265	100.0%	0.0%	0.0%	\$1,265	\$0	\$0	
ADMIN & GENERAL, Miscellaneous	\$6,327	100.0%	0.0%	0.0%	\$6,327	\$0	\$0	
ADMIN & GENERAL, Retirement Plan	\$6,327	100.0%	0.0%	0.0%	\$6,327	\$0	\$0	
Interest Expense	\$127	100.0%	0.0%	0.0%	\$127	\$0	\$0	
Transfer from Assessments to Capital Improvement Fund	\$0	75.0%	25.0%	0.0%	\$0	\$0	\$0	
Annual Payment to Repair & Replacement (Table 7)	\$46,004	50.0%	50.0%	0.0%	\$23,002	\$23,002	\$0	
User Charge Analysis Services	\$0	50.0%	50.0%	0.0%	\$0	\$0	\$0	
CIP Spending Net of Grant and Loan Proceeds (Table 5) and Tap-on Fees (Table 12)	\$165,382	25.0%	50.0%	25.0%	\$41,345	\$82,691	\$41,345	
Offset for Capacity Surcharges (Table 13), Inflated to This Year	-\$8,880	25.0%	50.0%	25.0%	-\$2,220	-\$4,440	-\$2,220	
Grand Total Costs, Weighted Avg Percentages	\$856,423	53.5%	42.0%	4.6%	\$457,919	\$359,378	\$39,126	

"Proportional to Use" Rate Structure Cost Basis	
Average Fixed Cost/User/Month =	\$52.73
Average Variable Cost to Produce/100 Cu Ft =	\$2.39
Cu Ft/Billing Cycle Used by Average Residential Customer =	1,883

100%	\$856,423
Following Volumes are in Cu Ft:	
Water Loss is Estimated at	17%
Cost of Water Loss is Estimated at (Table 9)	40%
Resulting Cost of Water Loss	\$28,869
Test Year Customer Metered Usage	15,226,900
+ Test Year Water Loss	3,050,222
Total Test Year Volume From Master Meter Readings	18,277,122

Table 9 - Classification of Marginal Costs

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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

In the calculations below, it is assumed that marginal costs are being calculated for: **Snowbirds**

The rate structure target year runs from **1/1/2017** through **12/31/2017**

Operating Costs	Amount	Marginal Fixed Cost %	Marginal Variable Cost %	Marginal Capacity Cost %	Marginal Fixed Cost Amount	Marginal Variable Cost Amount	Marginal Capacity Cost Amount
O&M, Salaries and Benefits	\$178,000	0%	0%	0%	\$0	\$0	\$0
O&M, Power for Wells	\$50,000	0%	0%	0%	\$0	\$0	\$0
O&M, Lab Fees	\$1,700	100%	100%	0%	\$1,265	\$1,265	\$0
O&M, Meter Installation	Table 5	0%	0%	0%	\$0	\$0	\$0
O&M, Well Maintenance and Repairs	\$5,000	100%	100%	0%	\$3,163	\$3,163	\$0
O&M, Supplies	\$3,500	0%	0%	0%	\$0	\$0	\$0
O&M, Licenses, Permits and Fees	\$10,000	100%	100%	0%	\$6,327	\$6,327	\$0
O&M, System Maintenance and Repairs	\$60,000	50%	50%	0%	\$23,725	\$23,725	\$0
O&M, Truck	\$6,000	50%	50%	0%	\$6,327	\$6,327	\$0
O&M, Other Repairs	\$200	50%	50%	0%	\$158	\$158	\$0
O&M, Miscellaneous	\$5,500	50%	50%	0%	\$1,898	\$1,898	\$0
ADMIN & GENERAL, Bank Fees	\$0	100%	100%	0%	\$0	\$0	\$0
ADMIN & GENERAL, Computer Repairs	\$100	100%	100%	0%	\$253	\$0	\$0
ADMIN & GENERAL, Dues and Subscriptions	\$1,500	100%	100%	0%	\$1,898	\$0	\$0
ADMIN & GENERAL, Insurance	\$30,000	100%	100%	0%	\$37,960	\$0	\$0
ADMIN & GENERAL, Education and Training	\$2,000	100%	100%	0%	\$2,531	\$0	\$0
ADMIN & GENERAL, Office Supplies	\$1,500	0%	0%	0%	\$0	\$0	\$0
ADMIN & GENERAL, Postage	\$3,500	0%	0%	0%	\$0	\$0	\$0
ADMIN & GENERAL, Printing	\$2,000	0%	0%	0%	\$0	\$0	\$0
ADMIN & GENERAL, Professional Fees	\$110,000	100%	100%	0%	\$63,266	\$0	\$0
ADMIN & GENERAL, Utilities	\$6,000	100%	100%	0%	\$7,592	\$0	\$0
ADMIN & GENERAL, Property Taxes	\$900	100%	100%	0%	\$1,265	\$0	\$0
ADMIN & GENERAL, Miscellaneous	\$5,000	100%	100%	0%	\$6,327	\$0	\$0
ADMIN & GENERAL, Retirement Plan	\$750	100%	100%	0%	\$6,327	\$0	\$0
Interest Expense	\$0	100%	100%	0%	\$127	\$0	\$0
Transfer from Assessments to Capital Improvement Fund	Table 5	100%	100%	0%	\$0	\$0	\$0
One-time Reduction of R&R Annuity	-\$46,004	100%	100%	0%	\$0	\$0	\$0
Annual Payment to Repair & Replacement (Table 7)	\$46,004	100%	100%	0%	\$23,002	\$23,002	\$0
User Charge Analysis Services	\$7,969	100%	100%	0%	\$0	\$0	\$0
CIP Spending Net of Grant and Loan Proceeds (Table 5) and Tap-on Fees (Table 12)	-\$5	100%	100%	0%	\$41,345	\$82,691	\$0
Offset for Capacity Surcharges (Table 13), Inflated to This Year	-\$7,436	100%	100%	0%	-\$2,220	-\$4,440	\$0
Grand Total All Costs	\$483,678				\$232,534	\$144,116	\$0

Marginal Costs per Customer

The system would suffer a net revenue loss if it set minimum and unit charges lower than the marginal costs at the right. It would make a "profit" on a marginal cost basis if it charged more. Capacity costs, however, are a bit different. They can be recovered over time, as modeled here, or all at once in the case of connection (tap-on) fees or by using a combination of both methods. Using the cost basis in Table 10, marginal capacity costs may be even higher than modeled here.

Number of Customers	Volume in 100s of Cu Ft	Marginal Fixed Cost per Customer	Marginal Variable Cost per 100 Cu Ft	Marginal Capacity Cost per AWWA Capacity Share Monthly
732	152,269	\$26.49		
Marginal Fixed Cost as a Percent of Average Fixed Cost (Table 14):		51%	\$0.95	
Marginal Variable Cost as a Percent of Average Variable Cost (Table 14):			40%	\$0.00
Marginal Capacity Cost as a Percent of Average Capacity Cost (Table 10):				0%

Table 10 - Initial Rate Adjustments and Resulting Revenues

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This table depicts how rates would be set and the revenues they would generate.

If there are no special costs to consider and before capacity costs are added, if appropriate, rates for a 5/8" meter would be "proportional to use" when there is no usage allowance, the base minimum charge is \$36.25 Monthly, and the unit charge is \$1.64 per 100 Cu Ft.

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	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Sales This Year at Current Rates	Customers Above This Volume and Below Next	Minimum Charge Including Surcharges ¹	New Usage Allowance in 100 Cu Ft	New Unit Charge per 100 Cu Ft	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
3/4 Inch Residential	0	99	\$3,042	5	\$37.21	0.000	\$1.64	\$13	\$3,054
	100	199	\$997	2	\$37.21	0.000	\$1.64	\$9	\$1,006
	200	299	\$1,546	3	\$37.21	0.000	\$1.64	\$10	\$1,555
	300	399	\$2,443	4	\$37.21	0.000	\$1.64	\$11	\$2,454
	400	499	\$2,942	5	\$37.21	0.000	\$1.64	\$12	\$2,954
	500	599	\$2,244	4	\$37.21	0.000	\$1.64	\$10	\$2,254
	600	699	\$3,441	6	\$37.21	0.000	\$1.64	\$12	\$3,453
	700	799	\$3,391	6	\$37.21	0.000	\$1.64	\$12	\$3,403
	800	899	\$4,039	7	\$37.21	0.000	\$1.64	\$13	\$4,052
	900	999	\$3,341	6	\$37.21	0.000	\$1.64	\$11	\$3,352
	1,000	1,499	\$12,964	22	\$37.21	0.000	\$1.64	\$45	\$13,009
	1,500	1,999	\$9,524	16	\$37.21	0.000	\$1.64	\$33	\$9,557
	2,000	2,999	\$13,264	22	\$37.21	0.000	\$1.64	\$43	\$13,307
	3,000	3,999	\$5,884	10	\$37.21	0.000	\$1.64	\$21	\$5,904
	4,000	4,999	\$2,643	4	\$37.21	0.000	\$1.64	\$10	\$2,653
	5,000	5,999	\$1,845	3	\$37.21	0.000	\$1.64	\$7	\$1,852
	6,000	6,999	\$748	1	\$37.21	0.000	\$1.64	\$4	\$752
	7,000	7,999	\$648	1	\$37.21	0.000	\$1.64	\$3	\$651
	8,000	8,999	\$598	1	\$37.21	0.000	\$1.64	\$2	\$600
	9,000	9,999	\$249	0	\$37.21	0.000	\$1.64	\$1	\$250
10,000	14,999	\$199	0	\$37.21	0.000	\$1.64	\$2	\$201	
15,000	19,999	\$50	0	\$37.21	0.000	\$1.64	\$1	\$51	
20,000	24,999	\$150	0	\$37.21	0.000	\$1.64	\$1	\$150	
25,000	29,999	\$50	0	\$37.21	0.000	\$1.64	\$0	\$50	
30,000	34,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
35,000	39,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
40,000	999,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
1 Inch Residential	0	99	\$4,637	8	\$37.21	0.000	\$1.64	\$32	\$4,670
	100	199	\$2,344	4	\$37.21	0.000	\$1.64	\$27	\$2,371
	200	299	\$5,186	9	\$37.21	0.000	\$1.64	\$33	\$5,218
	300	399	\$7,479	13	\$37.21	0.000	\$1.64	\$37	\$7,516
	400	499	\$7,828	13	\$37.21	0.000	\$1.64	\$37	\$7,865
	500	599	\$7,828	13	\$37.21	0.000	\$1.64	\$36	\$7,865
	600	699	\$8,427	14	\$37.21	0.000	\$1.64	\$37	\$8,463
	700	799	\$9,275	16	\$37.21	0.000	\$1.64	\$37	\$9,312
	800	899	\$9,025	15	\$37.21	0.000	\$1.64	\$36	\$9,061
	900	999	\$8,527	14	\$37.21	0.000	\$1.64	\$34	\$8,561
	1,000	1,499	\$41,486	69	\$37.21	0.000	\$1.64	\$158	\$41,644
	1,500	1,999	\$35,303	59	\$37.21	0.000	\$1.64	\$128	\$35,431
	2,000	2,999	\$50,312	84	\$37.21	0.000	\$1.64	\$175	\$50,487
	3,000	3,999	\$25,729	43	\$37.21	0.000	\$1.64	\$93	\$25,822
	4,000	4,999	\$13,912	23	\$37.21	0.000	\$1.64	\$52	\$13,964
	5,000	5,999	\$7,180	12	\$37.21	0.000	\$1.64	\$29	\$7,210
	6,000	6,999	\$4,587	8	\$37.21	0.000	\$1.64	\$19	\$4,606
	7,000	7,999	\$3,490	6	\$37.21	0.000	\$1.64	\$13	\$3,503
	8,000	8,999	\$1,645	3	\$37.21	0.000	\$1.64	\$7	\$1,653
	9,000	9,999	\$997	2	\$37.21	0.000	\$1.64	\$5	\$1,002
10,000	14,999	\$1,845	3	\$37.21	0.000	\$1.64	\$11	\$1,856	
15,000	19,999	\$449	1	\$37.21	0.000	\$1.64	\$3	\$452	
20,000	24,999	\$249	0	\$37.21	0.000	\$1.64	\$1	\$250	
25,000	29,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
30,000	34,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
35,000	39,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
40,000	999,999	\$50	0	\$37.21	0.000	\$1.64	\$1	\$51	

Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Sales This Year at Current Rates	Customers Above This Volume and Below Next	Minimum Charge Including Surcharges ¹	New Usage Allowance in 100 Cu Ft	New Unit Charge per 100 Cu Ft	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
2 Inch Residential	0	99	\$399	1	\$43.00	0.000	\$1.64	\$1	\$400
	100	199	\$249	0	\$43.00	0.000	\$1.64	\$1	\$250
	200	299	\$199	0	\$43.00	0.000	\$1.64	\$1	\$200
	300	399	\$399	1	\$43.00	0.000	\$1.64	\$1	\$400
	400	499	\$100	0	\$43.00	0.000	\$1.64	\$0	\$100
	500	599	\$249	0	\$43.00	0.000	\$1.64	\$1	\$250
	600	699	\$100	0	\$43.00	0.000	\$1.64	\$0	\$100
	700	799	\$100	0	\$43.00	0.000	\$1.64	\$0	\$100
	800	899	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50
	900	999	\$100	0	\$43.00	0.000	\$1.64	\$0	\$100
	1,000	1,499	\$150	0	\$43.00	0.000	\$1.64	\$1	\$150
	1,500	1,999	\$199	0	\$43.00	0.000	\$1.64	\$1	\$200
	2,000	2,999	\$150	0	\$43.00	0.000	\$1.64	\$1	\$150
	3,000	3,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50
	4,000	4,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0
	5,000	5,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0
	6,000	6,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0
	7,000	7,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0
	8,000	8,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0
	9,000	9,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50
10,000	14,999	\$50	0	\$43.00	0.000	\$1.64	\$1	\$50	
15,000	19,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
20,000	24,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
25,000	29,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
30,000	34,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
35,000	39,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
40,000	999,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
3/4 Inch Commercial	0	99	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	100	199	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	200	299	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	300	399	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	400	499	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	500	599	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	600	699	\$50	0	\$37.21	0.000	\$1.64	\$0	\$50
	700	799	\$50	0	\$37.21	0.000	\$1.64	\$0	\$50
	800	899	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	900	999	\$100	0	\$37.21	0.000	\$1.64	\$0	\$100
	1,000	1,499	\$399	1	\$37.21	0.000	\$1.64	\$1	\$400
	1,500	1,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	2,000	2,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	3,000	3,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	4,000	4,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	5,000	5,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	6,000	6,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	7,000	7,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	8,000	8,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
	9,000	9,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0
10,000	14,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
15,000	19,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
20,000	24,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
25,000	29,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
30,000	34,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
35,000	39,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	
40,000	999,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0	

Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Sales This Year at Current Rates	Customers Above This Volume and Below Next	Minimum Charge Including Surcharges ¹	New Usage Allowance in 100 Cu Ft	New Unit Charge per 100 Cu Ft	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year	
1 Inch Commercial	0	99	\$150	0	\$37.21	0.000	\$1.64	\$1	\$151	
	100	199	\$249	0	\$37.21	0.000	\$1.64	\$1	\$251	
	200	299	\$648	1	\$37.21	0.000	\$1.64	\$2	\$650	
	300	399	\$249	0	\$37.21	0.000	\$1.64	\$1	\$251	
	400	499	\$299	1	\$37.21	0.000	\$1.64	\$1	\$300	
	500	599	\$150	0	\$37.21	0.000	\$1.64	\$1	\$151	
	600	699	\$249	0	\$37.21	0.000	\$1.64	\$1	\$250	
	700	799	\$199	0	\$37.21	0.000	\$1.64	\$1	\$200	
	800	899	\$449	1	\$37.21	0.000	\$1.64	\$1	\$450	
	900	999	\$249	0	\$37.21	0.000	\$1.64	\$1	\$250	
	1,000	1,499	\$1,496	3	\$37.21	0.000	\$1.64	\$5	\$1,501	
	1,500	1,999	\$947	2	\$37.21	0.000	\$1.64	\$4	\$951	
	2,000	2,999	\$848	1	\$37.21	0.000	\$1.64	\$5	\$852	
	3,000	3,999	\$499	1	\$37.21	0.000	\$1.64	\$3	\$502	
	4,000	4,999	\$249	0	\$37.21	0.000	\$1.64	\$2	\$252	
	5,000	5,999	\$598	1	\$37.21	0.000	\$1.64	\$3	\$601	
	6,000	6,999	\$150	0	\$37.21	0.000	\$1.64	\$2	\$151	
	7,000	7,999	\$249	0	\$37.21	0.000	\$1.64	\$2	\$251	
	8,000	8,999	\$150	0	\$37.21	0.000	\$1.64	\$1	\$151	
	9,000	9,999	\$50	0	\$37.21	0.000	\$1.64	\$1	\$51	
10,000	14,999	\$299	1	\$37.21	0.000	\$1.64	\$4	\$303		
15,000	19,999	\$449	1	\$37.21	0.000	\$1.64	\$2	\$451		
20,000	24,999	\$100	0	\$37.21	0.000	\$1.64	\$1	\$100		
25,000	29,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0		
30,000	34,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0		
35,000	39,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0		
40,000	999,999	\$0	0	\$37.21	0.000	\$1.64	\$0	\$0		
2 Inch Commercial	0	99	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	100	199	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	200	299	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	300	399	\$299	1	\$43.00	0.000	\$1.64	\$1	\$300	
	400	499	\$249	0	\$43.00	0.000	\$1.64	\$1	\$250	
	500	599	\$199	0	\$43.00	0.000	\$1.64	\$1	\$200	
	600	699	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	700	799	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
	800	899	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
	900	999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
	1,000	1,499	\$249	0	\$43.00	0.000	\$1.64	\$2	\$251	
	1,500	1,999	\$249	0	\$43.00	0.000	\$1.64	\$2	\$251	
	2,000	2,999	\$1,496	3	\$43.00	0.000	\$1.64	\$4	\$1,500	
	3,000	3,999	\$249	0	\$43.00	0.000	\$1.64	\$1	\$250	
	4,000	4,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
	5,000	5,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	6,000	6,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	7,000	7,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
	8,000	8,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50	
	9,000	9,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0	
10,000	14,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50		
15,000	19,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0		
20,000	24,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0		
25,000	29,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0		
30,000	34,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0		
35,000	39,999	\$0	0	\$43.00	0.000	\$1.64	\$0	\$0		
40,000	999,999	\$50	0	\$43.00	0.000	\$1.64	\$0	\$50		
Excess Units	0	0	\$88,088	147	\$0.00	0.000	\$0.00	\$0	\$88,088	
Total Rate Revenue at Current Rates			\$437,727	Total Rate Revenue at Modeled Rates			\$1,401			
			Total Blended Rate Revenues for the Year ²			\$439,128				

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 13. Otherwise, use the rates in the "Total Minimum Charge per Billing Period" column of Table 13 when setting minimum charges for each customer when their minimums will be based upon meter or connection size.

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:

12.0 months at the old user charge rates	and	0.0 months at the new user charge rates.
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Table 11 - Capacity Cost; Its Amount and How it May be Recovered

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This table shows tap and capacity costs to expect. From these costs, tap fees and capacity demand charges will be developed in Table 5 and Table 8, respectively.

(First year figures are <u>actual</u> , subsequent years are <u>projected</u> .)	Test Year	Analysis Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
	Starting 1/1/16	Starting 1/1/17	Starting 1/1/18	Starting 1/1/19	Starting 1/1/20	Starting 1/1/21	Starting 1/1/22	Starting 1/1/23	Starting 1/1/24	Starting 1/1/25	Starting 1/1/26	Starting 1/1/27
Expected New Taps Each Year	1	1	1	1	1	1	1	1	1	1	1	1

Calculation of Annualized Capacity Cost

Fixed Assets Book Value	% of Total Attributable to Capacity	Capacity Cost	Average Annual Capacity Cost (Depreciation)
\$2,552,070	25.0%	\$638,018	\$37,182

Costs Associated With Making New Connections

	Estimated Non-capital Costs	Test Year	Analysis Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
Average Annual Capacity Cost (Depreciation)		\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182	\$37,182
Field Costs for New Connections	\$50	\$50	\$50	\$51	\$52	\$53	\$54	\$55	\$56	\$57	\$59	\$60	\$61
Administration Costs	\$25	\$25	\$25	\$26	\$26	\$27	\$27	\$28	\$28	\$29	\$29	\$30	\$30
Total Costs for New Connections		\$37,257	\$37,257	\$37,259	\$37,261	\$37,262	\$37,264	\$37,265	\$37,267	\$37,269	\$37,270	\$37,272	\$37,274

Note: These costs should be recovered by fees charged for making new taps (usually called, "tap fees"). This table only calculates the maximum level of those revenues. Table 12 calculates the structure of those fees.

Note: Connection charges should almost always cover at least the operating costs to make connections.

Target Amount to Recover From Tap Fees Calculated in Table 9	4.23%	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573	\$1,573
Target Amount to Recover From Capacity Charges Calculated in Table 10	20.0%	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436	\$7,436

Note: Capacity and connection costs WILL be recovered in one way by default, or a combination of ways by design: through regular user fees, in which case existing customers pay the costs to bring on new customers; through "tap" or connection fees, in which case new customers pay "up front" for the costs they cause the system to incur; through on-going demand or capacity charges, preferably based upon meter or connection size, in which case all customers pay for the capacity costs they cause over time; or some combination of these.

Table 12 - Tap Fees Based on Meter Size

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This table calculates tap fees to charge each meter size and total tap fee revenues that would be generated during one full year following initial adjustment. This table only covers meter size-based installation fees. Share purchase is not included in this calculation.

In-Jurisdiction Customers

Meter Size	Meter Size in Square Inches	Mix of New Taps in a Typical Year	AWWA Capacity Multiplier for Each Meter Size	Total AWWA Capacity "Shares" Attributable to Each Meter Size Group	AWWA-based Capacity Cost Each Meter Size	Meter Installation and Sign-up Fee	New Tap Fees Each Meter Size	Full-year Tap Fee Income From Each Size Class
Five Eighths	0.31	0.0	1.0	0.0	\$626	\$75	\$1,500	\$0
Three Quarters	0.44	0.2	1.5	0.3	\$939	\$75	\$1,500	\$330
One Inch	0.79	0.8	2.5	1.9	\$1,565	\$75	\$1,500	\$1,144
One & a Half Inch	1.77	0.0	5.0	0.0	\$3,130	\$75	\$3,205	\$0
Two Inch	3.14	0.0	16.0	0.3	\$10,016	\$75	\$10,091	\$174
Two & a Half Inch	4.91	0.0	29.8 *	0.0	\$18,623	\$75	\$18,698	\$0
Three Inch	7.07	0.0	43.5	0.0	\$27,230	\$75	\$27,305	\$0
Four Inch	12.57	0.0	75.0	0.0	\$46,948	\$75	\$47,023	\$0
Total:		1.0		2.5	Projected Tap Fees for One Full Year Following Initial Adjustment			\$1,648
Economy of Scale Factor:	0.0%	Capacity Cost to Recover per AWWA Capacity Multiplier Unit:			\$626	Prorated Tap Fees to Collect This Year		\$5
(This amount is the full-year tap fee prorated to account for time of year when rates will be adjusted initially. This amount is included in Table 3 where it is called, "Meter-size Based Tap Fees.")								

Notes:

Because growth rates and meter sizes to be installed in future years cannot be predicted with certainty, tap fee revenues are also uncertain. However, the projections above are based upon historical growth and meter sizes so they should be reasonable estimates. Generally, tap fees should only be used to pay for capital improvements so there is usually time to make adjustments in fee levels.

Economy of Scale Discount Rate - Generally the cost of infrastructure to serve a customer does not go up as quickly as their capacity (meter size) goes up. That is called economy of scale. This value is an estimate of the economy of scale the system enjoys as meter size goes up. Generally this factor should be no more than about 7%.

In the interest of simplicity, 3/4 inch meters, which are usually residential meters, may have been calculated at the 5/8 inch meter capacity for tap fee calculation purposes.

Table 13 - Capacity Charges Based on Meter Size

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This table depicts minimum charges that are commensurate with the potential of each customer, based on their connection or meter size, to place flow demands on the system.

In-Jurisdiction Customers

Meter Size	Meter Size in Inches	Number Meters This Size	AWWA Capacity Multiplier for Each Meter Size	Total AWWA Capacity "Shares" Attributable to Each Meter Size Group	AWWA-based Annual Capacity Cost Each Meter Size	Capacity Charge per Meter per Billing Period	Adjusted Capacity Costs per Meter per Billing Period	New Proportional Base Minimum Charge Rate	Total Surcharged Minimum Charge per Billing Period ¹	Total Annual Capacity Surcharges for Each Meter Size ²	"Snow Bird" Fee by Meter Size
Five Eighths	0.625	0	1.0	0	\$5	\$0.42	\$0.96	\$36.25	\$37.21	\$0	\$18.69
Three Quarters	0.750	128	1.5	193	\$8	\$0.63	\$0.96	\$36.25	\$37.21	\$1,480	\$18.69
One Inch	1.000	446	2.5	1,115	\$13	\$1.05	\$0.96	\$36.25	\$37.21	\$5,139	\$18.69
One & a Half Inch	1.500	0	5.0	0	\$25	\$2.11	\$2.11	\$36.25	\$38.36	\$0	\$19.27
Two Inch	2.000	10	16.0	161	\$81	\$6.75	\$6.75	\$36.25	\$43.00	\$817	\$21.60
Two & a Half Inch	2.500	0	29.8 *	0	\$151	\$12.55	\$12.55	\$36.25	\$48.80	\$0	\$24.51
Three Inch	3.000	0	43.5	0	\$220	\$18.36	\$18.36	\$36.25	\$54.60	\$0	\$27.43
Four Inch	4.000	0	75.0	0	\$380	\$31.65	\$31.65	\$36.25	\$67.90	\$0	\$34.10
Total:		584		1,469							
Economy of Scale Factor: 0.0%										Full Year of Capacity Surcharges \$7,436	
Prorated Capacity Surcharges										\$20	
<p>The prorated minimum and capacity surcharges amount immediately above is the amount to be collected after rates are adjusted. If rates in Table 12 are meter sized-based, this amount is filtered into the calculated rate revenues of Table 12 for each rate class. Otherwise, it is included as a separate amount at the bottom of that table.</p>											

¹ Total Surcharged Minimum Charge per Billing Period - If minimum charge fees are to be based upon meter size, use the charges in this column if different from those in Table 1.

² Total Annual Capacity Surcharges for Each Meter Size - The sum at the bottom of this column is the dollar amount that meter size based surcharges will generate in one full year.

Table 14 - Financial Capacity Indicators and Reserves

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

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

	Test Year	Analysis Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
	1/1/16	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
Capacity Indicators												
Equivalent Final Monthly Bill for a 5,000 gal per Month Residential Customer With One-Inch or Smaller Meter	\$50.00	\$48.17	\$48.17	\$49.61	\$51.10	\$52.64	\$54.22	\$55.84	\$57.52	\$59.24	\$61.02	\$62.85
Annual Median Household Income (AMHI)	\$41,853	\$42,327	\$42,806	\$43,291	\$43,781	\$44,277	\$44,778	\$45,285	\$45,798	\$46,316	\$46,840	\$46,840
Affordability Index: Current Rates First Column, Then Proposed Rates	1.43%	1.37%	1.35%	1.38%	1.40%	1.43%	1.45%	1.48%	1.51%	1.53%	1.56%	1.61%
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.												
Estimated Operating Ratio: Current Rates First Column, Then Proposed Rates	1.39	1.21	1.11	0.88	0.86	0.87	0.86	0.84	0.79	0.78	0.77	0.77
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	N.A.	N.A.	N.A.	0.36	0.20	0.28	0.18	0.00	0.06	0.00	0.00	0.00
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	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on	Balance Ending on
	12/31/15	12/31/16	12/31/17	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26
Cash and Cash Equivalents	\$223,401	\$196,080	\$245,559	\$281,402	\$291,738	\$306,880	\$313,667	\$325,293	\$342,228	\$349,960	\$359,273	\$348,427
Total Undedicated Cash Assets, Before Inflation	\$223,401	\$196,080	\$245,559	\$281,402	\$291,738	\$306,880	\$313,667	\$325,293	\$342,228	\$349,960	\$359,273	\$348,427
Total Cash Assets (Excluding Dedicated Reserves) Discounted for Inflation (Future Unrestricted Purchasing Power)	\$223,401	\$196,080	\$245,559	\$275,774	\$280,185	\$288,833	\$289,316	\$294,039	\$303,160	\$303,809	\$305,656	\$290,500
Repair & Replacement	\$0	-\$34,688	-\$25,107	-\$15,947	-\$7,233	\$1,006	\$8,741	\$15,943	\$22,579	\$28,617	\$34,023	\$39,383
Debt Service and CIP Reserves	\$0	\$278,758	\$416,217	\$531,723	\$544,727	\$537,796	\$540,736	\$531,315	\$498,636	\$433,657	\$356,156	\$276,330
Sum of All Reserves	\$223,401	\$440,149	\$636,669	\$797,178	\$829,232	\$845,682	\$863,144	\$872,551	\$863,442	\$812,234	\$749,452	\$581,596

Table 15 - Comparison of Bills Before and After Rate Adjustments

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

The weighted-average bill increase for all customers combined will be 16.5%
 Bill changes for individual customers and volumes of use are as shown below.

Customer or Rate Class, or Meter Size	Cu Ft of Use	Customers Above This Volume and Below Next	Cumulative Customers	Current Bill	Modeled Bill	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
	0	5	5	\$50.00	\$37.21	-\$12.79	-26%
	100	2	7	\$50.00	\$38.85	-\$11.15	-22%
	200	3	9	\$50.00	\$40.49	-\$9.51	-19%
	300	4	13	\$50.00	\$42.13	-\$7.87	-16%
	400	5	18	\$50.00	\$43.77	-\$6.23	-12%
	500	4	22	\$50.00	\$45.41	-\$4.59	-9%
	600	6	28	\$50.00	\$47.05	-\$2.95	-6%
	700	6	34	\$50.00	\$48.69	-\$1.31	-3%
	800	7	40	\$50.00	\$50.33	\$0.33	1%
	900	6	46	\$50.00	\$51.97	\$1.97	4%
	1,000	22	68	\$50.00	\$53.61	\$3.61	7%
	1,500	16	83	\$50.00	\$61.81	\$11.81	24%
	2,000	22	106	\$50.00	\$70.01	\$20.01	40%
3/4 Inch Residential or Commercial	3,000	10	115	\$50.00	\$86.41	\$36.41	73%
	4,000	4	120	\$50.00	\$102.81	\$52.81	106%
	5,000	3	123	\$50.00	\$119.21	\$69.21	138%
	6,000	1	124	\$50.00	\$135.61	\$85.61	171%
	7,000	1	125	\$50.00	\$152.01	\$102.01	204%
	8,000	1	126	\$50.00	\$168.41	\$118.41	237%
	9,000	0	127	\$50.00	\$184.81	\$134.81	270%
	10,000	0	127	\$50.00	\$201.21	\$151.21	302%
	15,000	0	127	\$50.00	\$283.21	\$233.21	466%
	20,000	0	127	\$50.00	\$365.21	\$315.21	630%
	25,000	0	127	\$50.00	\$447.21	\$397.21	794%
	30,000	0	127	\$50.00	\$529.21	\$479.21	958%
	35,000	0	127	\$50.00	\$611.21	\$561.21	1122%
	40,000	0	127	\$50.00	\$693.21	\$643.21	1286%

Table 15 - Comparison of Bills Before and After Rate Adjustments

Customer or Rate Class, or Meter Size	Cu Ft of Use	Customers Above This Volume and Below Next	Cumulative Customers	Current Bill	Modeled Bill	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
1 Inch Residential or Commercial	0	8	8	\$50.00	\$37.21	-\$12.79	-26%
	100	4	12	\$50.00	\$38.85	-\$11.15	-22%
	200	9	20	\$50.00	\$40.49	-\$9.51	-19%
	300	13	33	\$50.00	\$42.13	-\$7.87	-16%
	400	13	46	\$50.00	\$43.77	-\$6.23	-12%
	500	13	59	\$50.00	\$45.41	-\$4.59	-9%
	600	14	73	\$50.00	\$47.05	-\$2.95	-6%
	700	16	89	\$50.00	\$48.69	-\$1.31	-3%
	800	15	104	\$50.00	\$50.33	\$0.33	1%
	900	14	118	\$50.00	\$51.97	\$1.97	4%
	1,000	69	187	\$50.00	\$53.61	\$3.61	7%
	1,500	59	246	\$50.00	\$61.81	\$11.81	24%
	2,000	84	330	\$50.00	\$70.01	\$20.01	40%
	3,000	43	373	\$50.00	\$86.41	\$36.41	73%
	4,000	23	397	\$50.00	\$102.81	\$52.81	106%
	5,000	12	409	\$50.00	\$119.21	\$69.21	138%
	6,000	8	416	\$50.00	\$135.61	\$85.61	171%
	7,000	6	422	\$50.00	\$152.01	\$102.01	204%
	8,000	3	425	\$50.00	\$168.41	\$118.41	237%
	9,000	2	427	\$50.00	\$184.81	\$134.81	270%
	10,000	3	430	\$50.00	\$201.21	\$151.21	302%
	15,000	1	430	\$50.00	\$283.21	\$233.21	466%
	20,000	0	431	\$50.00	\$365.21	\$315.21	630%
	25,000	0	431	\$50.00	\$447.21	\$397.21	794%
	30,000	0	431	\$50.00	\$529.21	\$479.21	958%
	35,000	0	431	\$50.00	\$611.21	\$561.21	1122%
	40,000	0	431	\$50.00	\$693.21	\$643.21	1286%

Table 15 - Comparison of Bills Before and After Rate Adjustments

Customer or Rate Class, or Meter Size	Cu Ft of Use	Customers Above This Volume and Below Next	Cumulative Customers	Current Bill	Modeled Bill	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
	0	1	1	\$50.00	\$43.00	-\$7.00	-14%
	100	0	1	\$50.00	\$44.64	-\$5.36	-11%
	200	0	1	\$50.00	\$46.28	-\$3.72	-7%
	300	1	2	\$50.00	\$47.92	-\$2.08	-4%
	400	0	2	\$50.00	\$49.56	-\$0.44	-1%
	500	0	3	\$50.00	\$51.20	\$1.20	2%
	600	0	3	\$50.00	\$52.84	\$2.84	6%
	700	0	3	\$50.00	\$54.48	\$4.48	9%
	800	0	3	\$50.00	\$56.12	\$6.12	12%
	900	0	3	\$50.00	\$57.76	\$7.76	16%
	1,000	0	4	\$50.00	\$59.40	\$9.40	19%
	1,500	0	4	\$50.00	\$67.60	\$17.60	35%
	2,000	0	4	\$50.00	\$75.80	\$25.80	52%
2 Inch Residential or Commercial	3,000	0	4	\$50.00	\$92.20	\$42.20	84%
	4,000	0	4	\$50.00	\$108.60	\$58.60	117%
	5,000	0	4	\$50.00	\$125.00	\$75.00	150%
	6,000	0	4	\$50.00	\$141.40	\$91.40	183%
	7,000	0	4	\$50.00	\$157.80	\$107.80	216%
	8,000	0	4	\$50.00	\$174.20	\$124.20	248%
	9,000	0	4	\$50.00	\$190.60	\$140.60	281%
	10,000	0	4	\$50.00	\$207.00	\$157.00	314%
	15,000	0	4	\$50.00	\$289.00	\$239.00	478%
	20,000	0	4	\$50.00	\$371.00	\$321.00	642%
	25,000	0	4	\$50.00	\$453.00	\$403.00	806%
	30,000	0	5	\$50.00	\$535.00	\$485.00	970%
	35,000	0	5	\$50.00	\$617.00	\$567.00	1134%
	40,000	0	5	\$50.00	\$699.00	\$649.00	1298%
Excess Units	0	147	147	\$50.00	\$0.00	-\$50.00	-100%

Table 16 - User Statistics

Terrace Water Co, Colton, CA; Water Rates Scenario 2017-1

This table shows measures of equitability of the rates as modeled in Table 11.

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:

1,883 Cu Ft: 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.

15,226,900 Cu Ft: This is the volume metered through customer meters that was available to be sold by the utility during the test year.

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

\$0 At the unit charge rate in effect during the test year, this was what it cost the utility to give away this volume.

\$0 At the unit charge rates modeled, this is what the current usage allowance (if any is included in the modeled rates) would cost the utility for a full year.

Customer or Rate Class, or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Average Volume Used Within Each Volume Range in 100 Cu Ft	Annual Use in Each Volume Range in Cu Ft	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	% Revenue at Modeled Rates
	0	99	0.960	146,800.0	5.1	0.7%	1.0%	5.1%	100.0%	0.7%	0.9%
	100	199	0.986	144,800.0	1.7	0.2%	1.0%	10.1%	94.9%	0.2%	0.6%
	200	299	0.979	141,700.0	2.6	0.4%	0.9%	15.0%	89.9%	0.4%	0.7%
	300	399	0.965	136,800.0	4.1	0.6%	0.9%	19.8%	85.0%	0.6%	0.8%
	400	499	0.957	130,900.0	4.9	0.7%	0.9%	24.3%	80.2%	0.7%	0.8%
	500	599	0.966	126,400.0	3.8	0.5%	0.8%	28.7%	75.7%	0.5%	0.7%
	600	699	0.945	119,500.0	5.8	0.8%	0.8%	32.9%	71.3%	0.8%	0.9%
	700	799	0.943	112,700.0	5.7	0.8%	0.7%	36.8%	67.1%	0.8%	0.9%
	800	899	0.928	104,600.0	6.8	0.9%	0.7%	40.4%	63.2%	0.9%	0.9%
	900	999	0.936	97,900.0	5.6	0.8%	0.6%	43.8%	59.6%	0.8%	0.8%
	1,000	1,499	4.148	406,100.0	21.7	3.0%	2.7%	57.9%	56.2%	3.0%	3.2%
	1,500	1,999	4.181	300,600.0	15.9	2.2%	2.0%	68.4%	42.1%	2.2%	2.4%
	2,000	2,999	6.852	361,800.0	22.2	3.0%	2.4%	80.9%	31.6%	3.0%	3.1%
3/4 Inch Residential	3,000	3,999	7.240	189,700.0	9.8	1.3%	1.2%	87.5%	19.1%	1.3%	1.5%
	4,000	4,999	7.736	111,400.0	4.4	0.6%	0.7%	91.4%	12.5%	0.6%	0.7%
	5,000	5,999	7.835	71,300.0	3.1	0.4%	0.5%	93.9%	8.6%	0.4%	0.5%
	6,000	6,999	8.407	45,400.0	1.3	0.2%	0.3%	95.4%	6.1%	0.2%	0.3%
	7,000	7,999	8.538	33,300.0	1.1	0.1%	0.2%	96.6%	4.6%	0.1%	0.2%
	8,000	8,999	6.885	17,900.0	1.0	0.1%	0.1%	97.2%	3.4%	0.1%	0.1%
	9,000	9,999	7.714	10,800.0	0.4	0.1%	0.1%	97.6%	2.8%	0.1%	0.1%
	10,000	14,999	37.556	33,800.0	0.3	0.0%	0.2%	98.8%	2.4%	0.0%	0.1%
	15,000	19,999	44.400	22,200.0	0.1	0.0%	0.1%	99.5%	1.2%	0.0%	0.1%
	20,000	24,999	29.000	11,600.0	0.3	0.0%	0.1%	99.9%	0.5%	0.0%	0.1%
	25,000	29,999	17.000	1,700.0	0.1	0.0%	0.0%	100.0%	0.1%	0.0%	0.0%
	30,000	34,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	35,000	39,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	40,000	999,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Totals for Class				2,879,700.0	127.4	17.4%	18.9%			17.4%	20.4%
	0	99	0.982	507,700.0	7.8	1.1%	3.3%	4.4%	100.0%	1.1%	2.3%
	100	199	0.991	503,000.0	3.9	0.5%	3.3%	8.8%	95.6%	0.5%	2.0%
	200	299	0.979	492,600.0	8.7	1.2%	3.2%	13.1%	91.2%	1.2%	2.3%
	300	399	0.970	477,600.0	12.5	1.7%	3.1%	17.3%	86.9%	1.7%	2.6%
	400	499	0.967	461,900.0	13.1	1.8%	3.0%	21.4%	82.7%	1.8%	2.6%
	500	599	0.966	446,200.0	13.1	1.8%	2.9%	25.3%	78.6%	1.8%	2.6%
	600	699	0.962	429,300.0	14.1	1.9%	2.8%	29.0%	74.7%	1.9%	2.6%
	700	799	0.957	410,700.0	15.5	2.1%	2.7%	32.6%	71.0%	2.1%	2.7%
	800	899	0.956	392,600.0	15.1	2.1%	2.6%	36.0%	67.4%	2.1%	2.6%
	900	999	0.956	375,500.0	14.3	1.9%	2.5%	39.3%	64.0%	1.9%	2.4%
	1,000	1,499	4.332	1,626,700.0	69.3	9.5%	10.7%	53.5%	60.7%	9.5%	11.3%
	1,500	1,999	4.243	1,240,200.0	59.0	8.1%	8.1%	64.4%	46.5%	8.1%	9.1%
	2,000	2,999	7.246	1,605,000.0	84.1	11.5%	10.5%	78.4%	35.6%	11.5%	12.5%
1 Inch Residential	3,000	3,999	7.369	888,700.0	43.0	5.9%	5.8%	86.2%	21.6%	5.9%	6.6%
	4,000	4,999	7.599	524,300.0	23.3	3.2%	3.4%	90.8%	13.8%	3.2%	3.7%
	5,000	5,999	8.019	329,600.0	12.0	1.6%	2.2%	93.7%	9.2%	1.6%	2.1%
	6,000	6,999	7.906	211,100.0	7.7	1.0%	1.4%	95.5%	6.3%	1.0%	1.3%
	7,000	7,999	7.497	131,200.0	5.8	0.8%	0.9%	96.6%	4.5%	0.8%	0.9%
	8,000	8,999	7.971	83,700.0	2.8	0.4%	0.5%	97.4%	3.4%	0.4%	0.5%
	9,000	9,999	8.389	60,400.0	1.7	0.2%	0.4%	97.9%	2.6%	0.2%	0.3%
	10,000	14,999	28.462	153,200.0	3.1	0.4%	1.0%	99.2%	2.1%	0.4%	0.8%
	15,000	19,999	30.533	45,800.0	0.8	0.1%	0.3%	99.6%	0.8%	0.1%	0.2%
	20,000	24,999	19.167	11,500.0	0.4	0.1%	0.1%	99.7%	0.4%	0.1%	0.1%
	25,000	29,999	50.000	5,000.0	0.0	0.0%	0.0%	99.8%	0.3%	0.0%	0.0%
	30,000	34,999	50.000	5,000.0	0.0	0.0%	0.0%	99.8%	0.2%	0.0%	0.0%
	35,000	39,999	50.000	5,000.0	0.0	0.0%	0.0%	99.9%	0.2%	0.0%	0.0%
	40,000	999,999	141.000	14,100.0	0.1	0.0%	0.1%	100.0%	0.1%	0.0%	0.1%
Totals for Class				11,437,600.0	430.8	58.9%	75.1%			58.9%	74.3%

Table 16 - User Statistics

Customer or Rate Class, or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Average Volume Used Within Each Volume Range in 100 Cu Ft	Annual Use in Each Volume Range in Cu Ft	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	% Revenue at Modeled Rates
	0	99	0.852	4,600.0	0.7	0.1%	0.0%	4.9%	100.0%	0.1%	0.1%
	100	199	0.891	4,100.0	0.4	0.1%	0.0%	9.2%	95.1%	0.1%	0.1%
	200	299	0.902	3,700.0	0.3	0.0%	0.0%	13.1%	90.8%	0.0%	0.0%
	300	399	0.784	2,900.0	0.7	0.1%	0.0%	16.2%	86.9%	0.1%	0.1%
	400	499	0.931	2,700.0	0.2	0.0%	0.0%	19.1%	83.8%	0.0%	0.0%
	500	599	0.815	2,200.0	0.4	0.1%	0.0%	21.4%	80.9%	0.1%	0.0%
	600	699	0.909	2,000.0	0.2	0.0%	0.0%	23.5%	78.6%	0.0%	0.0%
	700	799	0.900	1,800.0	0.2	0.0%	0.0%	25.4%	76.5%	0.0%	0.0%
	800	899	0.944	1,700.0	0.1	0.0%	0.0%	27.2%	74.8%	0.0%	0.0%
	900	999	0.882	1,500.0	0.2	0.0%	0.0%	28.8%	72.8%	0.0%	0.0%
	1,000	1,499	4.267	6,400.0	0.3	0.0%	0.0%	35.6%	71.2%	0.0%	0.0%
	1,500	1,999	3.917	4,700.0	0.3	0.0%	0.0%	40.6%	64.4%	0.0%	0.0%
	2,000	2,999	6.875	5,500.0	0.3	0.0%	0.0%	46.4%	59.4%	0.0%	0.0%
2 Inch Residential	3,000	3,999	8.400	4,200.0	0.1	0.0%	0.0%	50.8%	53.6%	0.0%	0.0%
	4,000	4,999	10.000	4,000.0	0.0	0.0%	0.0%	55.1%	49.2%	0.0%	0.0%
	5,000	5,999	10.000	4,000.0	0.0	0.0%	0.0%	59.3%	44.9%	0.0%	0.0%
	6,000	6,999	10.000	4,000.0	0.0	0.0%	0.0%	63.6%	40.7%	0.0%	0.0%
	7,000	7,999	10.000	4,000.0	0.0	0.0%	0.0%	67.8%	36.4%	0.0%	0.0%
	8,000	8,999	10.000	4,000.0	0.0	0.0%	0.0%	72.0%	32.2%	0.0%	0.0%
	9,000	9,999	8.000	3,200.0	0.1	0.0%	0.0%	75.4%	28.0%	0.0%	0.0%
	10,000	14,999	33.333	10,000.0	0.1	0.0%	0.1%	86.0%	24.6%	0.0%	0.0%
	15,000	19,999	41.000	8,200.0	0.1	0.0%	0.1%	94.7%	14.0%	0.0%	0.0%
	20,000	24,999	50.000	5,000.0	0.0	0.0%	0.0%	100.0%	5.3%	0.0%	0.0%
	25,000	29,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	30,000	34,999	0.000	0.0	0.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	35,000	39,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	40,000	999,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			94,400.0	4.5	0.6%	0.6%			0.6%	0.8%
	0	99	1.000	1,200.0	0.0	0.0%	0.0%	9.3%	100.0%	0.0%	0.0%
	100	199	1.000	1,200.0	0.0	0.0%	0.0%	18.6%	90.7%	0.0%	0.0%
	200	299	1.000	1,200.0	0.0	0.0%	0.0%	27.9%	81.4%	0.0%	0.0%
	300	399	1.000	1,200.0	0.0	0.0%	0.0%	37.2%	72.1%	0.0%	0.0%
	400	499	1.000	1,200.0	0.0	0.0%	0.0%	46.5%	62.8%	0.0%	0.0%
	500	599	1.000	1,200.0	0.0	0.0%	0.0%	55.8%	53.5%	0.0%	0.0%
	600	699	0.917	1,100.0	0.1	0.0%	0.0%	64.3%	44.2%	0.0%	0.0%
	700	799	0.909	1,000.0	0.1	0.0%	0.0%	72.1%	35.7%	0.0%	0.0%
	800	899	1.000	1,000.0	0.0	0.0%	0.0%	79.8%	27.9%	0.0%	0.0%
	900	999	0.800	800.0	0.2	0.0%	0.0%	86.0%	20.2%	0.0%	0.0%
	1,000	1,499	2.250	1,800.0	0.7	0.1%	0.0%	100.0%	14.0%	0.1%	0.1%
	1,500	1,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	2,000	2,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
3/4 Inch Commercial	3,000	3,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	4,000	4,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	5,000	5,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	6,000	6,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	7,000	7,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	8,000	8,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	9,000	9,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	10,000	14,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	15,000	19,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	20,000	24,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	25,000	29,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	30,000	34,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	35,000	39,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	40,000	999,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			12,900.0	1.0	0.1%	0.1%			0.1%	0.1%

Table 16 - User Statistics

Customer or Rate Class, or Meter Size	Bottom of Volume Range in Cu Ft	Top of Volume Range in Cu Ft	Average Volume Used Within Each Volume Range in 100 Cu Ft	Annual Use in Each Volume Range in Cu Ft	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	% Revenue at Modeled Rates
	0	99	0.983	17,700.0	0.3	0.0%	0.1%	2.9%	100.0%	0.0%	0.1%
	100	199	0.972	17,200.0	0.4	0.1%	0.1%	5.6%	97.1%	0.1%	0.1%
	200	299	0.924	15,900.0	1.1	0.1%	0.1%	8.2%	94.4%	0.1%	0.1%
	300	399	0.969	15,400.0	0.4	0.1%	0.1%	10.7%	91.8%	0.1%	0.1%
	400	499	0.961	14,800.0	0.5	0.1%	0.1%	13.1%	89.3%	0.1%	0.1%
	500	599	0.980	14,500.0	0.3	0.0%	0.1%	15.4%	86.9%	0.0%	0.1%
	600	699	0.966	14,000.0	0.4	0.1%	0.1%	17.7%	84.6%	0.1%	0.1%
	700	799	0.971	13,600.0	0.3	0.0%	0.1%	19.9%	82.3%	0.0%	0.1%
	800	899	0.934	12,700.0	0.8	0.1%	0.1%	22.0%	80.1%	0.1%	0.1%
	900	999	0.961	12,200.0	0.4	0.1%	0.1%	23.9%	78.0%	0.1%	0.1%
	1,000	1,499	4.262	52,000.0	2.5	0.3%	0.3%	32.3%	76.1%	0.3%	0.4%
	1,500	1,999	4.283	39,400.0	1.6	0.2%	0.3%	38.7%	67.7%	0.2%	0.3%
	2,000	2,999	8.781	64,100.0	1.4	0.2%	0.4%	49.1%	61.3%	0.2%	0.3%
1 Inch Commercial	3,000	3,999	9.161	51,300.0	0.8	0.1%	0.3%	57.4%	50.9%	0.1%	0.2%
	4,000	4,999	9.391	43,200.0	0.4	0.1%	0.3%	64.4%	42.6%	0.1%	0.2%
	5,000	5,999	8.707	35,700.0	1.0	0.1%	0.2%	70.1%	35.6%	0.1%	0.2%
	6,000	6,999	9.586	27,800.0	0.3	0.0%	0.2%	74.6%	29.9%	0.0%	0.1%
	7,000	7,999	9.269	24,100.0	0.4	0.1%	0.2%	78.5%	25.4%	0.1%	0.1%
	8,000	8,999	8.857	18,600.0	0.3	0.0%	0.1%	81.5%	21.5%	0.0%	0.1%
	9,000	9,999	9.500	17,100.0	0.1	0.0%	0.1%	84.3%	18.5%	0.0%	0.1%
	10,000	14,999	42.059	71,500.0	0.5	0.1%	0.5%	95.9%	15.7%	0.1%	0.3%
	15,000	19,999	17.000	18,700.0	0.8	0.1%	0.1%	98.9%	4.1%	0.1%	0.1%
	20,000	24,999	34.000	6,800.0	0.2	0.0%	0.0%	100.0%	1.1%	0.0%	0.0%
	25,000	29,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	30,000	34,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	35,000	39,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	40,000	999,999	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			618,300.0	15.0	2.1%	4.1%			2.1%	3.3%
	0	99	1.000	6,700.0	0.0	0.0%	0.0%	3.6%	100.0%	0.0%	0.0%
	100	199	1.000	6,700.0	0.0	0.0%	0.0%	7.3%	96.4%	0.0%	0.0%
	200	299	1.000	6,700.0	0.0	0.0%	0.0%	10.9%	92.7%	0.0%	0.0%
	300	399	0.910	6,100.0	0.5	0.1%	0.0%	14.2%	89.1%	0.1%	0.1%
	400	499	0.918	5,600.0	0.4	0.1%	0.0%	17.3%	85.8%	0.1%	0.1%
	500	599	0.929	5,200.0	0.3	0.0%	0.0%	20.1%	82.7%	0.0%	0.1%
	600	699	1.000	5,200.0	0.0	0.0%	0.0%	22.9%	79.9%	0.0%	0.0%
	700	799	0.981	5,100.0	0.1	0.0%	0.0%	25.7%	77.1%	0.0%	0.0%
	800	899	0.980	5,000.0	0.1	0.0%	0.0%	28.4%	74.3%	0.0%	0.0%
	900	999	0.980	4,900.0	0.1	0.0%	0.0%	31.1%	71.6%	0.0%	0.0%
	1,000	1,499	4.735	23,200.0	0.4	0.1%	0.2%	43.7%	68.9%	0.1%	0.1%
	1,500	1,999	4.750	20,900.0	0.4	0.1%	0.1%	55.1%	56.3%	0.1%	0.1%
	2,000	2,999	5.154	20,100.0	2.5	0.3%	0.1%	66.0%	44.9%	0.3%	0.3%
2 Inch Commercial	3,000	3,999	7.778	7,000.0	0.4	0.1%	0.0%	69.8%	34.0%	0.1%	0.1%
	4,000	4,999	9.500	3,800.0	0.1	0.0%	0.0%	71.8%	30.2%	0.0%	0.0%
	5,000	5,999	10.000	3,000.0	0.0	0.0%	0.0%	73.5%	28.2%	0.0%	0.0%
	6,000	6,999	10.000	3,000.0	0.0	0.0%	0.0%	75.1%	26.5%	0.0%	0.0%
	7,000	7,999	10.000	3,000.0	0.0	0.0%	0.0%	76.7%	24.9%	0.0%	0.0%
	8,000	8,999	7.667	2,300.0	0.1	0.0%	0.0%	78.0%	23.3%	0.0%	0.0%
	9,000	9,999	10.000	2,000.0	0.0	0.0%	0.0%	79.1%	22.0%	0.0%	0.0%
	10,000	14,999	37.500	7,500.0	0.1	0.0%	0.0%	83.2%	20.9%	0.0%	0.0%
	15,000	19,999	50.000	5,000.0	0.0	0.0%	0.0%	85.9%	16.8%	0.0%	0.0%
	20,000	24,999	50.000	5,000.0	0.0	0.0%	0.0%	88.6%	14.1%	0.0%	0.0%
	25,000	29,999	50.000	5,000.0	0.0	0.0%	0.0%	91.3%	11.4%	0.0%	0.0%
	30,000	34,999	50.000	5,000.0	0.0	0.0%	0.0%	94.0%	8.7%	0.0%	0.0%
	35,000	39,999	50.000	5,000.0	0.0	0.0%	0.0%	96.7%	6.0%	0.0%	0.0%
	40,000	999,999	60.000	6,000.0	0.1	0.0%	0.0%	100.0%	3.3%	0.0%	0.0%
	Totals for Class			184,000.0	5.6	0.8%	1.2%			0.8%	1.2%
Excess Units	0	0	0.000	0.0	147.2	20.1%	0.0%	0.0%	100.0%	20.1%	0.0%
	Totals for Class			0.0	147.2	20.1%	0.0%			20.1%	0.0%
	Grand Totals			15,226,900.0		100.0%	100.0%			100.0%	100.0%

Chart 1 - Operating Ratio

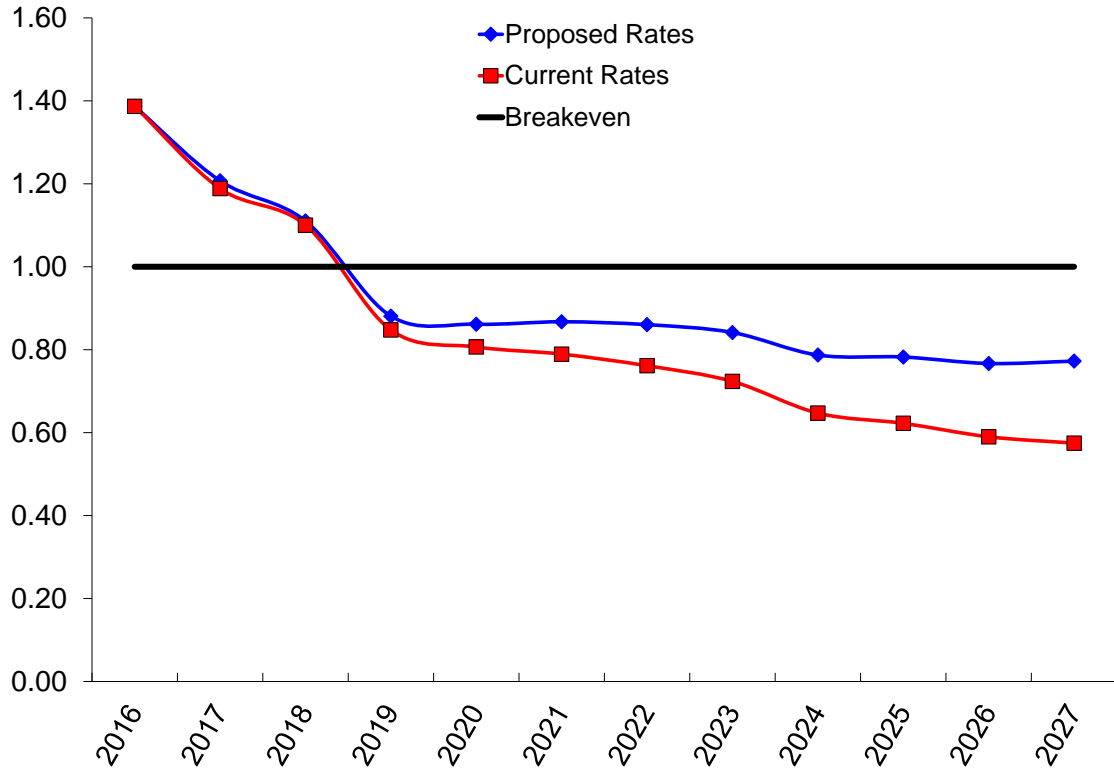


Chart 2 - Coverage Ratio

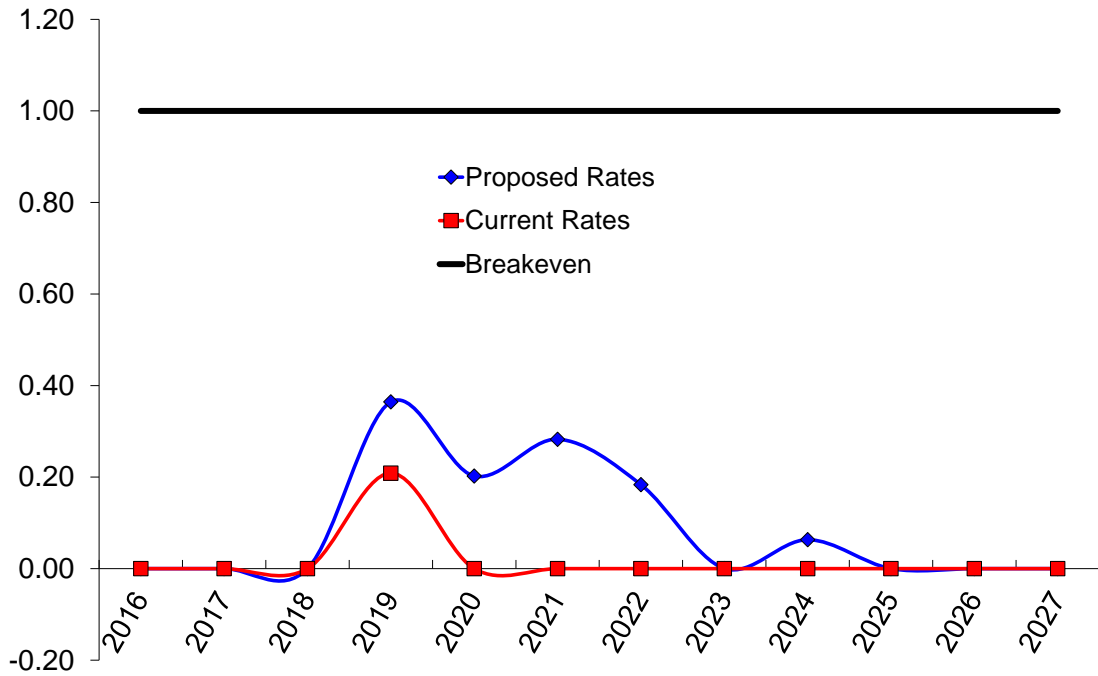


Chart 3 - 5,000 Gal Equiv. Residential User's Bill

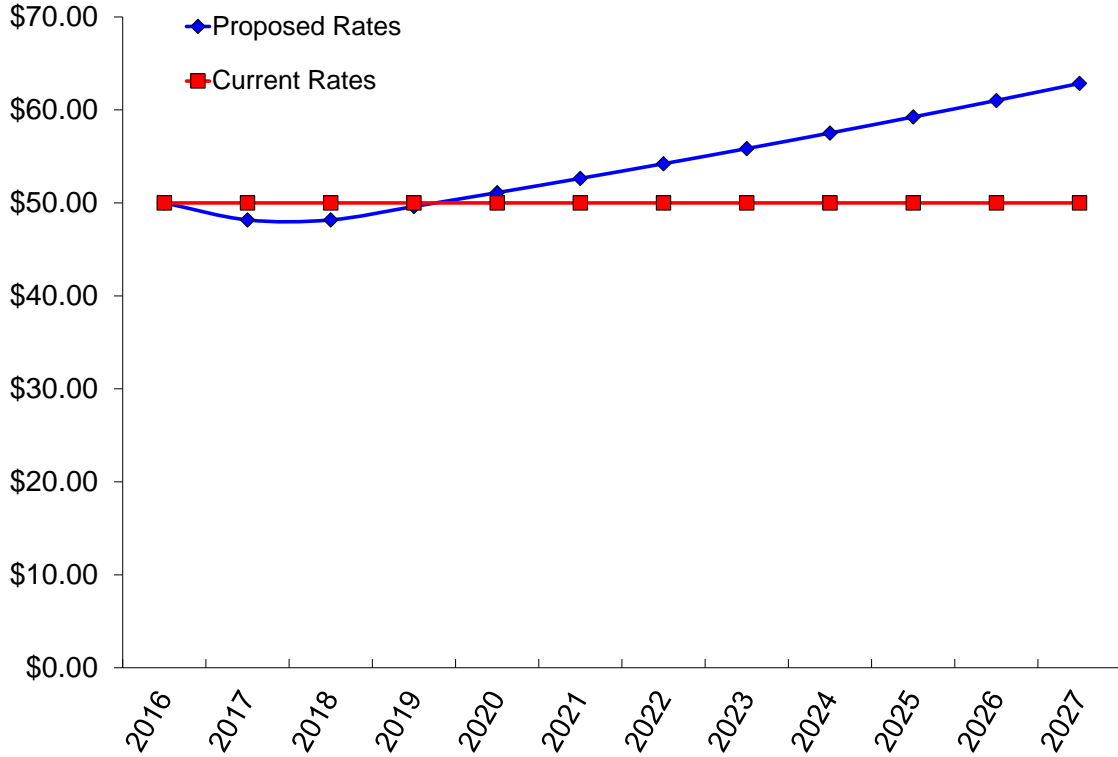


Chart 4 - Affordability Index

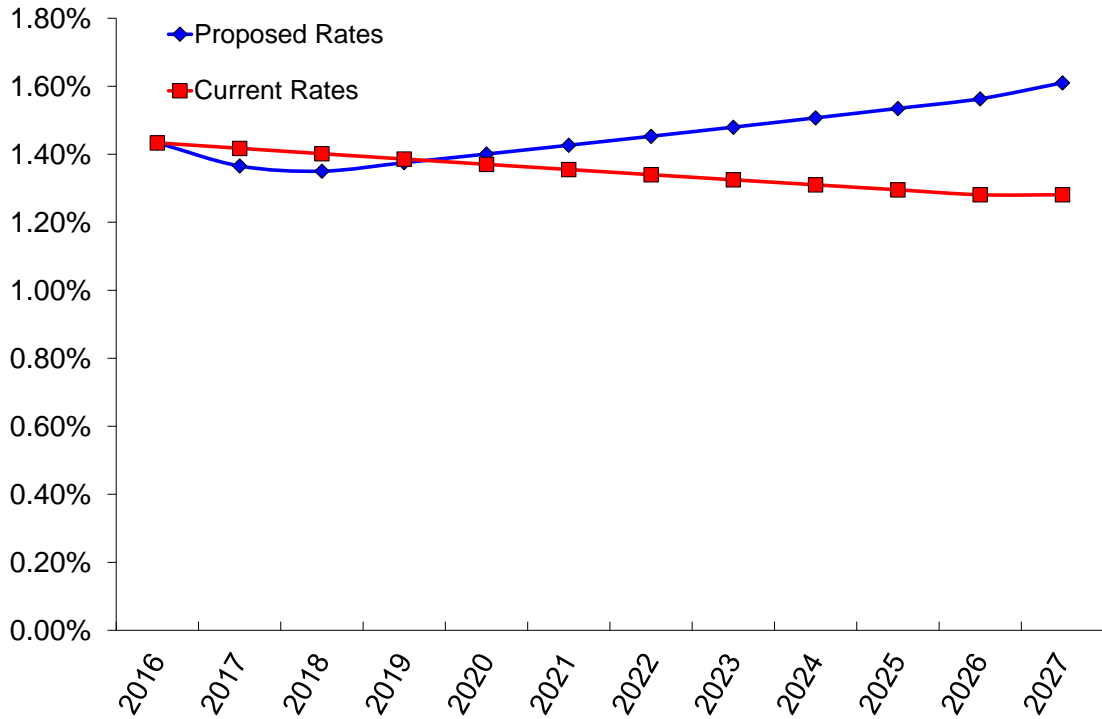


Chart 5 - Working Capital vs Goal

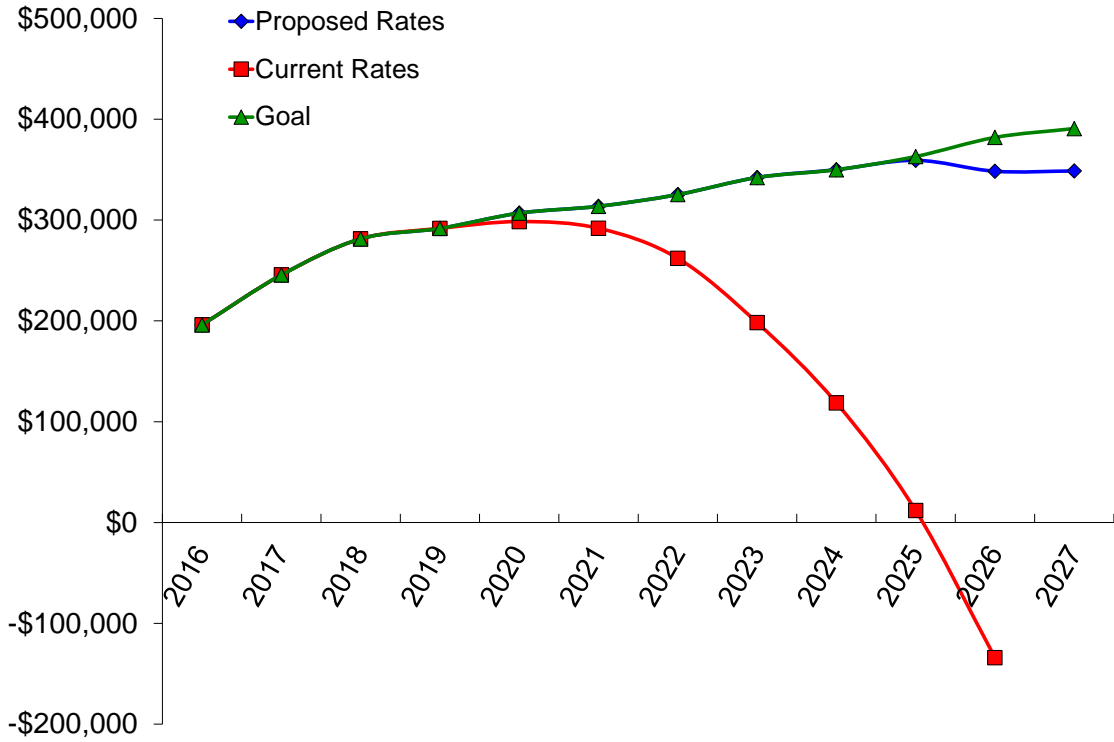


Chart 6 - Value of Cash Assets Before Inflation

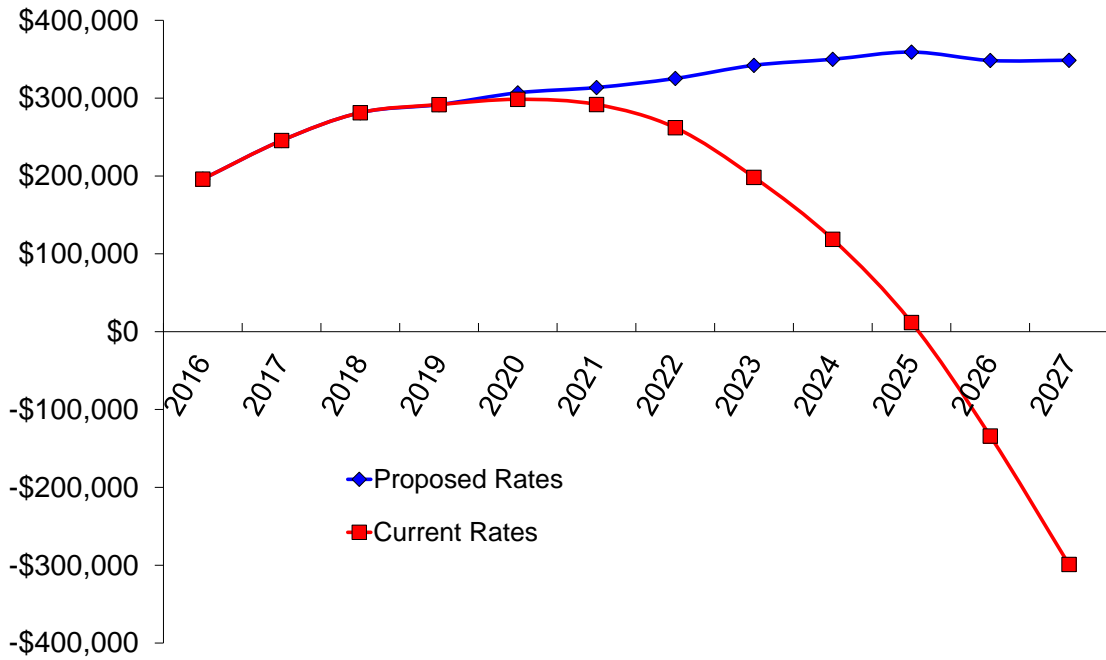


Chart 7 - Value of Cash Assets After Inflation

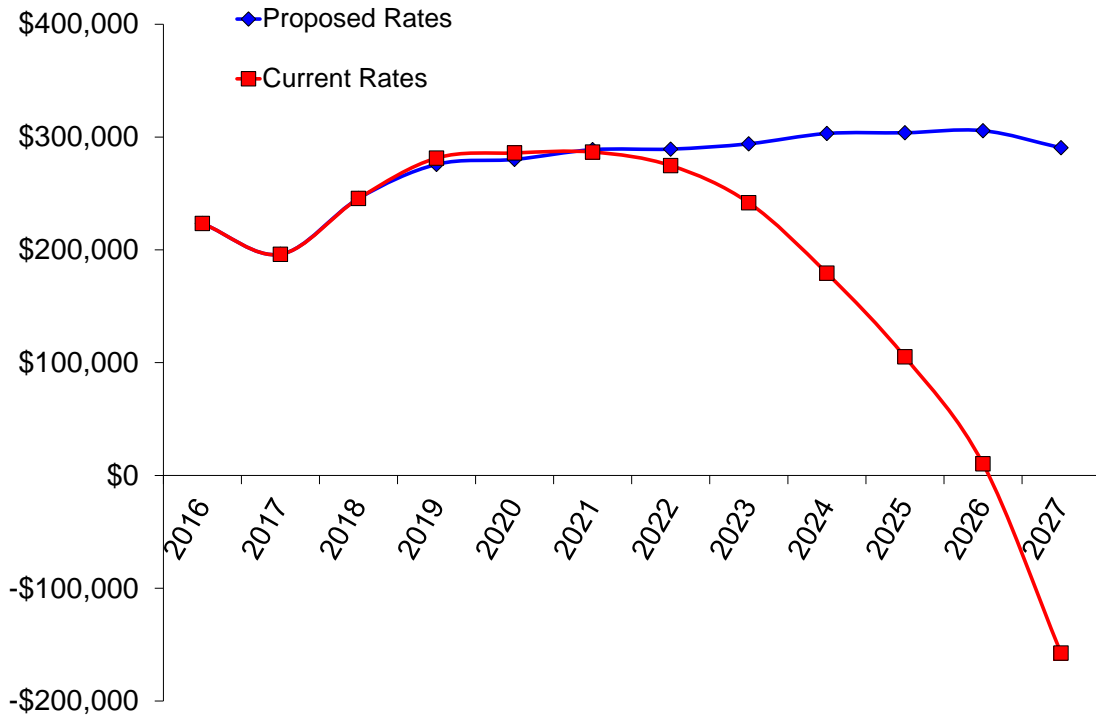


Chart 8 - Sum of All Reserves

