

October 31, 2018

Roger Bair, Chairman  
Cowley County, Kansas, Rural Water District #5  
P O Box 231  
Burden, KS 67019

Subject: Water User Charge Rate Analysis Report

Dear Mr. Bair:

Before I address the report package, I have some observations for you.

Rate analysis is data intensive, using large volumes of information and many kinds of data. I did not gather much of that data myself. Vicky Sprengeler, district business manager, and Randy Norris, operations manager, did most of that work. I must say, they did it quicker and more accurately than any of my other client systems since about 2013. They were wonderful to work with. The District and its customers are well-served by having them.

Now, to the report. It contains lots of detail. Included in that detail is modeling that, in my professional opinion, complies with the legal opinion of the District's attorney regarding how rates should be set for the cities. The rates I had already calculated before getting that opinion ended up complying with that opinion, but in cases where legality of rates is at issue, I always like to get a legal opinion to make sure my calculations comply.

As you read the report, do not feel like you must understand or pick up on everything right away. Rate analysis is complex. When the Board is ready to consider the results and my recommendations, I will attend a Board meeting to go over everything you care to. At that meeting, you, the Board, staff and the public (if that meeting ends up being open) will probably learn many things about what needs to happen to your water rates and why. Knowledge of the facts goes a long way toward doing what needs to be done, even if that means paying higher rates. I look forward to that meeting and getting the District started down that road.

Finally, I am sure you and the Board members know of other cities and districts that also need rate setting help. As you run into these folks at rural 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 District 5.

Best regards,  
GettingGreatRates.com

A handwritten signature in dark ink, appearing to read "Carl", with a stylized flourish at the end.

Carl E. Brown  
President

Enclosure

# Cowley County, Kansas

## Rural Water District #5

### Water Rate Analysis Report

Prepared October 31, 2018

Carl Brown, President  
GettingGreatRates.com, LLC

#### Executive Summary

This report covers the water rate analysis done for the District. Analysis determined that to pay for current and soon to be incurred costs, overall, water rate revenues need to go up modestly. Increased costs for purchased water, equipment repair and replacements and reduction of note repayments will be the main drivers of this need for more revenue. To establish rates that are in a cost-to-serve structure, with some modification to be described to reduce “sticker shock,” some customers’ bills would go up more than others on a percentage basis. Some would go down. In addition, wholesale rates to three cities the District supplies were calculated on two different bases, to be discussed in the report.

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## Introduction

Cowley County Rural Water District #5, Cowley County, Kansas, later called “the District” 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.

Overall, water rate revenues need to go up moderately compared to revenues that were generated by the rates that were in place during the test year that started January 1, 2017.

Please note: The District adjusted most customers’ rates effective September 1, 2018. Thus, the effect of the modeled rates as compared to the now current rates would be, some customers’ bills would go down and some would go up. That will be shown in detail.

The District did not raise rates to the three cities it supplies. However, prior to hiring me for this analysis, the District had announced its intent to raise those rates, as well. The rates for the cities from my analysis are lower than the city rates the District has been considering. I also modeled a set of rates for the cities that is in a structure similar to the rates the District has contemplated. Those are also lower than the rates the District has been considering.

Rate increases are being driven primarily by increased costs for purchased water, equipment repair and replacement costs and the gradual payoff of notes (loans) given to some customers so they could connect to the system. In addition, the District lost one operator and that position remained open for nearly a year. That position was refilled recently, so compared to the prior year, personnel costs went up markedly, too. In summary, the District is now under-funded for the new level of costs it is and will be experiencing.

Having adequate rates is rate setting job one. But, having fairly structured rates is very important, too. Cost-to-serve rates are the clearest way to achieve both goals, thus, I am recommending such rates, with a “sticker shock” adjustment and a rate modification to account for the nature of three special customers – the cities.

I differentiate the two types of customers in this way.

- A regular customer is one that is directly served by the District, and that customer uses the water they purchase.
- The cities are in a “wholesale” type of relationship with the District. They purchase water from the District, by contract, then resell that water to their “regular” customers.

Rates for the cities were calculated using cost-to-serve principles, but with a profit margin, too. That is explained later in the report.

I will now introduce the report itself.

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

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

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

- Cowley County, KS RWD #5; Water Rates, Scenario 2018-1, later just called, "Model 1," is the model that contains the rates I recommend. In the report, I will discuss this model and these rates extensively. When I discuss rate setting methodology and rate setting in general, I will do that in reference to Model 1. But, the same applies to Model 2 in almost all respects.
- Cowley County, KS RWD #5; Water Rates, Scenario 2018-2, later just called, "Model 2," depicts rates in a structure similar to those the District recently calculated. I will only discuss this model and these rates as needed to point out the differences between these rates and the recommended rates.

All data and calculation methodologies for both models are identical. The only difference between the two is the rate structure for the cities' rates. That structure has almost no effect on the rates of other customers. Therefore, in this report, I will not include copies of tables from Model 2 that are the same as, or nearly the same as, the tables in Model 1.

The models are sets of integrated calculations that mathematically depict the utility's situation to arrive at a set of rates. A few tables in Model 1, were left out of this report. That was not an oversight. Those tables were not required for the calculation of your rates.

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

Finally, a note about meter sizes and the rates.

I am recommending meter size-based minimum charges from a five-eighths inch water meter up to a four-inch meter. (I calculated rates for larger meters, too, but because you currently have no meters larger than three inches, in the interest of brevity and preventing confusion, I left larger meters out of this report.)

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

The same notion can be applied to system development costs. But, you already use a benefit unit connection charge system and growth is slow, so I chose to leave your current benefit unit new connection structure as-is.

## Cost-based Rate Calculations

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

When I analyze rates for a government-owned water-based utility, and other utilities that are empowered to assess cost-of-service rates, I use the cost-needs approach. The approach is

### Rate Analysis, in a Nutshell

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

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

Analysis can and should provide a sound basis for advising the utility to "go or don't go" concerning various actions it might take. Some of these actions are purely financial. Some, like the decision to enter into, or not enter into, a wholesale supply agreement, for example, include "hassle factor" and other non-financial issues.

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

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

The first cut of this classification process is done in Table 8, page 43. The "Average Fixed Cost/User/Month" from Table 8 of the models is used for calculating the base minimum charge. Also, from that table, the "Average Variable Cost to Produce/1,000 gallons" is the basis for calculating unit charges.

The second cut at rate structuring is to arrive at capacity costs. These were calculated in Table 11, page 52, and distributed to surcharges to the minimum charge in Table 15, page 54. The capacity "share" of costs of each meter size is based upon the calculated shares in Table 12, page 53.

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

The fourth cut is to set reserve goals and project those through the tenth year. Those goals will only be met if (primarily) rates are set high enough and/or (secondarily) grants and subsidized loans are large enough to enable the utility to generate net revenues. With no grant or loan-fundable projects envisioned, all cost increases must be covered by higher rates.

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

- The calculated bases for fixed costs and variable costs (Table 8) establish a ratio of the revenues that each rate component would generate in a cost-to-serve structure.
- To increase overall revenues to a target, each revenue stream is increased by the same percentage. Thus, the revenue streams remain in the same ratio to each other.
- Once the overall revenue increase need is established, the base minimum charge is “back calculated” from the minimum charge revenue stream. The unit charge is “back calculated” from the unit charge revenue stream. The resulting rates are the starting rates, what you will (hopefully) adopt initially. In later years, you will increase these starter rates and fees across-the-board by an inflationary factor.
- Of course, benefit unit fees, minimum charge surcharges, investment earnings, penalties and other income sources generate smaller revenues, which are added to rate revenues. And, I assumed future inflationary rate increases, so those revenues are added over the years, as well. Without explaining the details, you should have a sense that, while the math is complex, the rates are calculated to be proportionate to the costs each customer causes and the revenues will be adequate to cover all costs for the next ten years. That is, if our projection of costs and other things turn out to be accurate.

**Cost-to-serve rates are considered by many, including me, to be the most mathematically fair and defensible rate structure.** However, there are often good reasons to adopt rates that are at least somewhat different from true cost-to-serve rates. (One such variation is market-based rates (the cities), which still should start with cost classification, but also include a profit margin component.) 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 the base minimum charge. To make it easier to understand this concept, and related concepts, I use catch phrases. For this type of cost, the phrase is: *These costs are related to the fact that you have customers.* For every customer you have, you incur one increment of this type of cost.
- The other part of the minimum charge is a surcharge intended to recover all or part of peak flow or unusual capacity costs. These are almost always based upon water meter size because the larger a meter is, the greater is its capacity to sustainably pass peak flows (as determined by American Water Works Association studies). This peak flow capacity relates well to the cost of building infrastructure “big enough” to handle peak flows. *Capacity costs are related to the fact that a particular customer has a certain capacity to demand flow or service, regardless of how much flow or service they actually use.* The surcharges are added to the base minimum charge to arrive at the surcharged minimum charge for each meter size.

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 base minimum charge resulting in ever higher total minimum charges for larger meter size customers. Remember: It’s not just how much water such customers use that determines how much they cost the utility. It’s how big and robust they cause the utility to be built, because 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 utility that are bumping up against their capacity to produce water.

The District currently assesses a level unit charge. I recommend you stay with that structure, albeit, at a cost-to-serve level.

- Most systems use, and should use, level unit charges – a unit charge that is the same regardless of how much volume a customer uses. With level unit charges, customers are assessed unit charges on an average unit cost basis. Such rates are the easiest to calculate, they are the easiest for a clerk to explain to a complaining customer on the phone and the revenues such rates will produce next year are the easiest to accurately predict. I like to tell most of my clients that if they are going to err either on the side of complex rates that precisely assess costs to each customer or simpler rates that round off some of the accuracy corners but are easier to administer, choose simple rates. Most water and almost all sewer service is assessed using level unit charges.
- The last major unit charge structure is called, “declining” rates. These are the reverse of conservation rates. I often call them, “use encouragement” rates. It is popular these days for many to belittle those who do not conserve resources at every opportunity. Declining rates are often scorned for that reason. However, if a system has an ample water supply and ample infrastructure to produce and distribute it, doing so will not cause unintended bad (mostly environmental) consequences; and if the governing body wants to encourage high use (which often entails such users hiring more or better paid workers), declining rates make good sense. Declining rates are most appropriate in areas that have a high concentration of high water using industry or in an area where folks want to attract such users.

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 utility 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 utility can take around 90 minutes to run. When usage data sheet runtimes get long we usually switch to a database format application to speed up the heavy number crunching.

To complicate the aforesaid just a bit, rate setting is, indeed, about recovering costs. Job one of utility rates is to pay the utility’s costs. But usually proper rate setting is also about building adequate reserves; funding a capital improvements program (CIP); catching up on needed equipment repair and replacement (R&R), 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 for each analysis that depicts, in virtual reality, the utility's real-life financial and rates situation.

These models are dynamic. When the initial rate increase is set higher, future inflationary increases can be lower. When minimum charges are set lower, unit or other charges need to be set higher to make up the shortfall. When system development fees are assessed, the utility's other charges can be lower. When future expenses need to be higher, or lower, or of a different nature, the models adjust rates and fees accordingly. Such modeling enables me to do dynamic "what-if" scenario calculations. That enables me to arrive quickly at the "best fit" rates for the utility.

Coincidentally, such a dynamic model makes it easy to calculate rate and other changes over the next two or three years, too. As long as a change does not affect the cost structure drastically, I can do the same for almost any cost change. That may be helpful to you as time goes by.

Two final thoughts on this topic:

- Almost always, rate adjustments include bill increases. Thus, time is money, often big money, to the utility. A rate increase delayed is a rate increase that must be even higher to reach the same reserve target. Get to know this report well but do not spend months mulling it over. Time will not make your rate setting task easier. Proceed deliberately but quickly and make the needed changes. If you cannot make all the needed changes at the same time, make those that you can as soon as you can.
- You will get complaints about customers' bills going up. In my experience, most of the time, when the math is laid out for all to see, most people are understanding. Cost-to-serve rate analysis does not arrive at unfair rates. It arrives at fair rates. The degree by which some customers' bills change highlights the fact that rates are unfairly structured right now.

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

## Principles

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

1. Water, sewer and all other utilities are businesses, regardless of who owns them. Businesses must cash flow properly. Otherwise, they go out of business and your customers do not want that.

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

## General Issues

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

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

Several line graph charts in the models graphically depict some things which would be difficult to pick out of the tables. In all the charts, the **blue line** represents what would happen under the **recommended** rates and the **red line** under the **current** rates. Financial trends for the red lines are (generally) bad. Those for the blue lines are (generally) good. Review the definitions section of Model 1, 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 models, I programmed all funds that exceed what is needed to meet the working capital goal to "spill over" into the CIP and Debt Service fund reserve. When that happens, rest assured, the other two lines are underneath the goal line and that is a good thing.

Charts 6 and 7 can do the same thing, making it seem like the current rates are "just as good as" the modeled rates. But, Chart 8 will spell the difference between the two sets of rates. The modeled rates will generate more revenue and, thus, produce stronger total reserves. Since the working capital reserve gets truncated at a certain level, the differences in the total reserves show up in the CIP and Debt Service fund balances. These balances appear near the bottom of Table 6, page 40, and they are included in the Chart 8 amounts on page 66.

As you set and later reset rates, I suggest you follow the guidance I give in my book, "How to Get Great Rates." I gave a copy to Ms. Sprengeler so check with her about reviewing it.

## 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). That is not an issue now, but if you borrow, it will be.
3. Have me conduct a full rate analysis again when the actual financial performance and my projection of future performance diverge significantly. Conditions should dictate rate analysis frequency.
4. Fully adopt management strategies that are included in what is most commonly called, “advanced asset management.” These strategies can yield better service and reduced costs for utility, especially those looking to build new facilities or replace existing facilities soon, which is a critical issue for your utility.
5. Track volume usage, incomes and expenses on a regular basis so the data and information you generate will support future rate analyses.
6. As a reminder, check with your attorney for language and legality of all charges and issues discussed.

## Water Rates Discussion, Model 1

### Capital Improvements

In most systems, over a ten-year modeling period, there would be capital improvements to take on. Those would be covered in Table 5, page 39. I included that table in Model 1, so you can see how such modeling would be done and to show you that no such costs are envisioned by the District. The District plans to replace short segments of lines and other expensive items, but those are handled in the repair and replacement tables, Tables 6 and 7, starting on page 40.

### System Development Fees and Capacity Surcharges

As mentioned before, the District has a benefit unit connection fee program in place. That system of fees is not as dynamic as a meter size-based system development fee structure. However, growth is slow and the new benefit unit rate of \$4,000 is not excessive, so fees collected from either structure will not be critical. Thus, it will be fine if you stay with the benefit unit system for connection fees.



However, minimum charge surcharges, later just called, “surcharges,” should be used, so I modeled such surcharges to pay for system improvements on an on-going basis. These fees should be based upon water meter size, as further described in the following:

1. You should assess surcharges that recover peak capacity costs. I calculated these fees such that, each meter size would be assessed peak capacity costs based upon the sustainable peak flow capacity determined by the AWWA studies. Those calculations and resulting fees appear in Table 15, page 54.
2. Customers outside of the District, if there were any, would be assessed 50 percent more in capacity costs than in-District meters.
3. Revenue generated by the surcharge fees would amount to approximately ten percent of total revenues, so this is an important but not large revenue component. The bigger issue is that each customer would pay proportionately for what they get from the utility. That is, capacity-to-serve the property. That 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.

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

#### 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.

## Equipment Repair and Replacement

Ms. Sprengeler worked with the system's operators to schedule equipment repair and replacement (R&R). I modified that schedule slightly, based on later input from Ms. Sprengeler, and entered that data into my schedule. That is Table 6, page 40. The annual annuity, or annual deposit amount needed to fund the R&R schedule, calculated in Table 7, page 42, was then entered into Table 4, page 38, as an annual operating cost, with rates calculated to cover that cost, along with all others.

## Target Reserve Levels

Your current total reserves are strong; almost the same as what I commonly recommend in situations like yours. The following spells out what goes into the reserves I recommend.

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

1. Unobligated cash and cash equivalent reserves equal to at least 35 percent of the annual operating costs, not including debt service and general administration costs. *I recommend 50 percent in your case;*
2. A 20-year repair and replacement (R&R) schedule reserve, in the 20<sup>th</sup> year equal to at least one average year's cost of R&R. *In your case, I factored in a discretionary increase to the standard deposit that will enable this fund to have an inflation-adjusted balance after 20 years that would be equal to the average annual R&R cost; and*
3. Capital improvement reserves at the end of the tenth year, after debt is paid, equal to that year's debt payments plus cash-paid capital improvement expenses. *You have no such costs and anticipate none, so this is not an issue for you.*

The lines on the bottom of Table 17, page 56, and several of the charts at the end of Model 1 show your reserve balances expected for the next ten years. The last line of Table 14, the "Sum of All Reserves," is the critical one. You will have positive and strong total reserves during the next ten years and by the tenth year, you will be at the goal total reserve level.

Note: The District's starting cash and cash equivalents balance for the test year was \$517,424. The District does not currently track sub-fund balances, and it can continue to do that in the future, if desired. However, the District has several expensive repairs and replacements (R&R) to do over the years and to make paying for those costs easier to manage, I track a "R&R fund" balance. To keep that balance from dipping below zero during the early years, I "transferred" \$325,000 to the "R&R fund" from the District's general fund. The R&R fund is still projected to go negative in 2030. But, that is well into the future and you are just getting started with more formalized R&R planning. You likely will need at least two more rate analyses before 2030, so I suggest this.

Continue building your R&R schedule and see how costs shape up. Once you and your future rate analyst can see what the longer-term trend is, you can adjust the R&R fund balance and rates accordingly. Rate setting is not a "once and done" activity. It is on-going.



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

#### A Technical Note About How Reserves Are Shown in Model 1

In Table 17, page 56, at the bottom of the table, find the reserve balances. These deserve a bit of discussion.

From your balance sheet, I extracted the starting balances for three categories of reserves: operating, R&R, and CIP and debt service. (I disregard meter deposit and similar funds because those are restricted and self-funding.) As funds flow through the rate analysis Model, they first fund up the operating reserve. Funds exceeding those requirements flow into the CIP and debt service reserve.

The take-away is this. The “Sum of All Reserves” at the bottom of Table 17, is the key balance to track. That balance will remain positive and strong.

#### Rate Affordability

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

In Table 17, page 56, near the top, I show the estimated Affordability Index.

Here is an important note: You adjusted most customers’ rates in September of 2018. However, in the first column of the table I show the bill that this kind of customer would have paid during the test year of 2017. Just keep in mind, the test year rates and the rates you assess now, are different.

In the table, the Affordability Index calculation for the test year was at 1.78 percent. That means, such a customer paid 1.78 percent of their monthly household income to pay their monthly water bill.

Under the recommended rates, this customer’s bill would go up, resulting in an Affordability Index of 1.97 percent. That is not a big increase. But, you should keep this in mind. Most grant programs that have an Affordability Index eligibility criterion attempt to keep rates, after a capital improvement is completed and debt is in place, below 2.0 percent. It looks like you will be right at that threshold. If you do find need of grant and loan financing for a future capital improvement, you may well qualify for grants.

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.

The now current bill for a small meter residential customer using 5,000 gallons per month, as adjusted in September, 2018, is \$76.25. That is slightly lower than the recommended rates bill. Thus, if you adopt the recommended rates, this customer's bill would go up slightly.

The Affordability Index is also shown graphically in Chart 4, page 64.

The affordability index is useful, but it does not depict how new rates will affect customer types or those using different volumes. Table 18, page 57, shows how customers' bills at different volumes of use will be affected by the recommended rates. This table should give ratepayers an idea of what will happen to their bills.

Another important note: In Table 17, I used the current rates to compare against the recommended rates. However, in Table 18, I used the September adjusted rates as that basis. Those are the rates customers are paying now, in real time. Thus, they are a better basis of comparison to the recommended rates, which would occur in the future.

This table gives ratepayers useful information. It is one of the few from Model 1 that I recommend you copy and bring to the board meeting where we will discuss rates. Because most customers are concerned about what will happen to their bills, you should give this table to everyone who wants a copy.

## Recommended Rate Structures

### Recommended Regular Customer Rates

I almost always recommend cost-of-service based rates for minimum and unit charges with no usage allowance. However, I modified that somewhat for you, because you recently increased the regular customer minimum charge to \$40 per month. To reduce "sticker shock" of bills going up, and some going down over a short period, and to reduce the effect of rainy and dry seasons on revenues to the District, I added a flat \$11 to each minimum charge. Thus, the small meter minimum will be close to the current \$40. That, of course, reduced the unit charges needed to fund the District appropriately.

You currently assess a lower minimum charge for pasture meters. My recommendation is this. If a meter gets read and if it gets its own separate bill, it should be billed the same minimum and unit charges as all other similar meters of that size. However, if the bill for the pasture meter is combined with another regular bill, the volumes should be combined for assessing unit charges and the pasture meter should be billed at the regular minimum charge rate for that meter size, less \$10.00, to keep that minimum charge in line with your current pasture meter rate structure.

### Legal Opinion Regarding Wholesale (City) Rates

The District engaged the law firm of Fisher Patterson Sayler and Smith (FPSS), of Topeka, Kansas, to provide an opinion of how the District is allowed, by law, to set rates for the cities. FPSS rendered that opinion in a letter to the District dated October 30, 2018. The District shared that letter with me.

Based on the advice in that letter, I then calculated rates for the cities that, in my professional opinion, satisfy the requirements FPSS outlined. Furthermore, in my experience in reviewing similar water sales arrangements, I commonly see rates that are generally lower than the limits outlined by FPSS. And, I always strive to arrive at rates that serve both parties well. Based on that experience and my interest in fostering fairness, the rates I arrived at are lower than those that would be allowed, as outlined by FPSS. Those rates are not lower, simply because I set them lower. They are lower because they are based upon cost of service principles and cost of service calculations, and for the unit charges, marginal costs plus a reasonable profit margin on those marginal costs. These things will be described in the following sub-section.

Finally, FPSS advised that, based upon past practice of when and how city rates have been adjusted and collected, rate adjustments for the cities should be made on the anniversary date of when water was initially delivered, and not before then. According to FPSS, the Atlanta contract is dated June 1, 2014, and the Cambridge contract is dated June 13, 2016. Thus, you would not adjust the Atlanta rates until June 1, 2019, and the Cambridge rates until June 13, 2019. You would make successive rate adjustments in future years on those same anniversary dates, as well.

I will now speak to the rate analysis, but I cover it here because it is related to the rate adjustment dates advised by FPSS.

These rate adjustment dates will affect revenue generation because they are well past the assumed and modeled rate adjustment date of November 1, 2018. Therefore, the revenues you will collect during the first full year, due to delay in adjustments, will be lower than those calculated by Model 1. However, I made no allowances for that because Model 1 sheds some light on the issue.

In Table 19, page 59, in the last two columns, you can see the percentage of revenues each customer class accounts for at the current rates, and at the adjusted rates. The “3 Inch Atlanta” class (Atlanta, with a three-inch meter) accounts for 6.8 percent of the District’s revenue at the current rates and would account for 7.6 percent at the adjusted rates. That is a percentage increase of only 0.8 percent. Because the anniversary, or rate adjustment date for Atlanta is approximately half-way through next year, you would “lose” approximately 0.4 percent of the projected 2019 total revenues due to this delay. The extra revenues from the next rate class, Cambridge, are only 0.1 percent, an almost undetectable amount of revenue increase. And the Dexter revenues would actually go down slightly.

The key point is this. The approximately half-year delay in adjusting the city rates should not perceptibly affect the District’s total first-year revenues. As soon as you can, give notice to the cities what their rates will be adjusted to, but delay adjustment until the anniversary date for each arrives.

Again, in Table 19, in the column called, “% Usage,” you can see that, during the test year, Atlanta used 12.8 percent of the District’s sold water volume, as compared to accounting for 6.8 percent of the District’s revenue. Cambridge used 5.2 percent of the District’s volume and accounted for 3.0 percent of the District’s revenues. Now, these are not “apples to apples” comparisons, because the revenues include minimum charges, which are not directly related to flow volumes. But, it still gives you something to consider as you and the cities try to gain perspective on water sales and rates for those sales.

#### Recommended Wholesale (City) Customer Rates

The District sells water on a wholesale basis to three cities. For such sales, I recommend you assess minimum charges (excepting Dexter) based on water meter size, like those to “regular” customers. Unit charge rates were calculated on a marginal cost, plus profit margin basis. I have broached this issue before, but I will explain it a bit more here.

As to minimum charges, I have calculated all minimum charges based upon water meter size. Such minimum charges have a fixed operating cost component, that is the same for all customers, plus a capacity component that rises with water meter size. While the cities are wholesale customers, their water receiving points lie within the bounds of the District. Therefore, I applied the same calculated minimum charges to the Cities.

As to unit charges, in Table 8, page 43, I classified the cost structure of the water system. This calculation determined the average base minimum charge, mentioned above, and the average unit charge, with no usage allowance.

Table 9, page 45, is of the same structure as Table 8. In Table 9, I reclassified costs on a marginal cost basis. These apply to wholesale customers. (See the Definitions section of Model 1.)

Stated simply, marginal cost just means, as compared to the average of all customers, special customers cause the utility to incur each category of variable costs at the same (100 percent) rate, or at some lower rate. I then totaled up the marginal variable costs in the right-most column of Table 9 and calculated the overall ratio (percentage) of marginal costs compared to the average variable cost. That percentage shows in the bottom right corner of Table 9. The importance of that percentage is this.

To calculate the unit charge rate for the cities, I first calculated the unit charge rate for regular customers. I then reduced that rate by the 73 percent marginal cost rate. Thus, I lowered the cities’ starting unit charge compared to the regular or average customers’ unit charge. I then increased the cities’ unit charge rate by the profit margin of 50 percent. The cities’ unit charge rate is then ten percent more than the average customers’ unit charge rate.

Why a 50 percent profit margin? In such situations I often see pricing with a premium on the low side at 25 percent and on the high side at 100 percent. A 50 percent premium seems to be quite common, so I chose the common rate.

The regular and wholesale sets of rates both have cost-of-service as their bases.

### Recommended Dexter Rate Structure

The minimum charge for the town of Dexter should be calculated a bit different compared to the other two cities.

Dexter only uses the District's water connection as a stand-by water source. Dexter does not draw any water, but it could at any time. Thus, Dexter now, and in the future, would only pay a minimum charge to the District unless it drew water from the connection.

The District incurs capacity costs due to the fact that Dexter could use flow, if it chose to. At the calculated minimum charge for a two-inch meter, Dexter's minimum charge would only be slightly more expensive than that of a five-eighths or three-quarter inch meter customer. But, there are well more than two "regular" customers beyond Dexter's meter. Therefore, to charge Dexter such a low minimum charge would not be commensurate with the costs the District incurs to put Dexter on as a stand-by customer.

In addition, the District incurs operating costs to maintain flow and water quality standards for Dexter. To maintain the required chlorine residual level on what amounts to a dead-end line, the District must flush that line frequently, "wasting" water to keep it fresh for Dexter. That work and that flow costs money.

I do not know the capacity or maintenance costs for the Dexter connection. I do know that to charge Dexter only the regular minimum charge amount is not fair to all the other customers on the system. Therefore, if the District decides to adopt the rates recommended in this sub-section of the report, or rates that are structured in this way, I recommend you meter or estimate the volume of water flushed on the Dexter supply line. Apply the unit charge rate you adopt to that volume and bill Dexter that cost plus their minimum charge.

### Written Agreements for City (Wholesale) Sales

I suggest you work with the cities to come up with written supply agreements. As to pricing in those agreements, I recommend you agree on the basis for minimum charges and the basis for marginal costs for the unit charge, plus an agreeable profit margin. That might be what I have laid out in Model 1, or something else, but come to an agreement on those bases and get them in writing. This rate structuring approach would apply during the times you actually restructure rates; generally, when you have a rate analysis done.

I also suggest, in those agreements, you stipulate that during those years when you only increase all regular customers' rates by an across the board percentage (you are not restructuring their rates at that time, only raising them), you will also increase the cities' rates across the board by that same percentage rate. In the future you should increase rates in this fashion during most years, so doing the same to the cities' rates would markedly ease making adjustments for them, too.

If you need help arriving at such stipulations, I can do that as a service separate from this rate analysis. Of course, for this and all other aspects of preparing such agreements, depend upon your attorney.

## Recommendations for Adjusting Water Rates

Model 1 contains all my rates-related recommendations and shows what they are built upon. However, Model 1 is complex, components of the rates and fees are calculated and shown in different tables and Model 1 does not spell out policy issues. Therefore, I have summarized most of my recommendations as follows:

1. You may continue to assess the benefit unit charge that you recently adopted, shown in Table A that follows this list. In addition, continue to bill for equipment and services that the District provides to facilitate making new connections. However, if you think you may get a request for a meter larger than four inches, I suggest you consider switching to a meter size-based system development fee.
2. You should assess the monthly minimum charges and unit charges with no usage allowance for any customers, shown in Table A, that follows this list, with the exception of Dexter's minimum charge, as described previously.
3. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates for the December 1, 2018, billing. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date. That is coming up soon, so if you want to make that date, you will need to move promptly. However, you have strong reserves, so if you miss that date by a few months, your finances will still be sound.
4. If costs, incomes and balances accrue close to those I assumed in Model 1, on or about January 1, 2020, and annually thereafter, raise all rates and significant fees by 4.5 percent. Do this until you have raised rates and fees by a cumulative 20 percent or so. At that time, have me or another rate analyst of your choosing perform a new rate analysis, so rate structure and adequacy can be adjusted again. If you make a significant change to capital improvements or repair and replacements, you will need a new rate analysis sooner.
5. If balances do not accrue as shown at the bottom of Table 17, page 56, but they are not egregiously too low, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly.



Table A: Recommended Fees and Charges

Table A: Cowley County, KS RWD #5 Water Usage Allowance, Minimum and Unit Charges						
Direct Customers of the District						
Water Meter Size in Inches (and Specific Customers)	Meter Type	Benefit Unit Fee	Monthly Minimum Charge	Usage Allowance in Gallons	Unit Charge per 1,000 Gallons	
0.625	Displacement	\$4,000	\$40.80	0	\$7.33	
0.750	Displacement	\$4,000	\$40.80	0	\$7.33	
1.000	Displacement	\$4,000	\$52.38	0	\$7.33	
1.500	Displacement	\$4,000	\$71.69	0	\$7.33	
2.000	Displacement	\$4,000	\$94.85	0	\$7.33	
2.500	Displacement	\$4,000	\$129.59	0	\$7.33	
3.000	Singlet	\$4,000	\$156.61	0	\$7.33	
3.000	Compound, Class I	\$4,000	\$156.61	0	\$7.33	
3.000	Turbine, Class I	\$4,000	\$168.19	0	\$7.33	
4.000	Singlet	\$4,000	\$226.09	0	\$7.33	
4.000	Compound, Class I	\$4,000	\$226.09	0	\$7.33	
4.000	Turbine, Class I	\$4,000	\$272.41	0	\$7.33	
0.625 Inch Pasture Meter	Displacement	\$4,000	\$30.80	0	\$7.33	
Free Water	Displacement	\$4,000	\$0.00	0	\$0.00	
Ghost Meter	Displacement	\$4,000	\$8.00	0	\$0.00	
Wholesale Customers (Cities)						
3 Inch Atlanta	Turbine, Class I	N.A.	\$168.19	0	\$8.09	
2 Inch Cambridge	Displacement	N.A.	\$94.85	0	\$8.09	
0.625 Inch Cambridge Pasture	Displacement	N.A.	\$30.80	0	\$8.09	
2 Inch Dexter (this minimum, plus the value of flushing flow)	Displacement	N.A.	\$94.85	0	\$8.09	

## Model 1, Water Rates Discussion Closing

**I recommend you adopt the rates calculated in Model 1 and discussed in several sub-sections above, most of which are shown in the table immediately above.** These rates are in a cost-to-serve structure and calculated to fully fund the utility.

These rates would result in the least increase in bills to low-volume, small meter customers. As volume used increases, bills would rise more. As meter size goes up, bills would be a bit higher still. For high volumes of use, bills would be markedly higher than they are now.

Bills to the cities were calculated on a marginal variable cost, plus a profit margin basis. For Atlanta and Cambridge, for the volumes they used during the test year, those bills would go up markedly compared to the current rates. They would, however, be less than the rates the District has recently considered for the towns. Dexter uses no volume and its minimum charge would be relatively low, as modeled. However, depending upon how much flushing flow is needed to keep Dexter's stand-by water ready, Dexter's bill might rise, too. But, Dexter's bill under the recommended rates would likely be less when compared to the recently contemplated rates.

If you have questions about these recommendations, please call. My purpose is not just to do analysis, make recommendations and then walk away. It is to see you all the way through to adopting adequate and fairly structured rates.

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## Water Rates Discussion, Model 2

As mentioned before, the underlying data and calculations are the same for Model 1 and Model 2, the subject of this section of the report. The only difference is the rate structure modeled for the cities in Model 2. That difference caused a very slight change to the rates for regular customers. Therefore, I will not repeat discussion of things that remained the same or nearly the same. I will concentrate on what is different in Model 2.

Note: I am generally not in favor of usage allowances, especially large allowances. However, wholesale arrangements are different. Recovering the cost of some flow in the minimum charge insures that the District would recover at least some of its capacity and system maintenance costs, such as in the case of Dexter that uses no flow. And, recovering such costs, anecdotally, based upon a “take or pay” volume basis, simplifies minimum charge calculation markedly. When you set minimum charges in this way, you cannot know if you are over-charging or under-charging for capacity costs, but it certainly makes it easier. Simplicity has value, too.

### System Development Fees and Capacity Surcharges

As in Model 1, system development fees were not calculated in Model 2. In addition, capacity surcharges were not calculated for the cities in Model 2. That is because the minimum charge for the cities in Model 2, includes paying for the first 50,000 gallons each month, whether a city uses that volume or not. (This would apply to Dexter, too.) That is somewhat analogous to assessing a surcharge to cover the cost of capacity obligated to the cities. To assess a surcharge plus payment for the first 50,000 gallons would be at least a partial “double billing” for capacity cost.

### Rate Affordability

The difference between the Affordability Index of the Model 1 rates and the Model 2 rates is only one-one-hundredth of a percent after rate adjustment. Thus, rates for regular customers is essentially the same in either set of rates. The only important rate differences between the two models is how the cities’ rates would be structured.

### Wholesale (City) Sales

For rates on sales to the three cities, I mirrored the rate structure the District recently proposed for the cities. Specifically:

- For the minimum charge, I assessed the smallest meter size rate and added the value of the first 50,000 gallons of use at the calculated unit charge rate.
- I included a 50,000-gallon monthly usage allowance, because the first 50,000 gallons would be paid for in the minimum charge. And,
- I calculated unit charges in the same way as in Model 1, on a marginal cost, plus 50 percent profit margin basis.

Table 18, page 74, depicts what will happen to all customers' bills under the Model 2 rates. Please note: Table 18, also appears in Model 1. However, in Model 2, I modified this table to compare bills between the Model 1 and Model 2 rates. These are the results:

- There is essentially no difference for the District's regular customers.
- Atlanta's bill, at the volumes Atlanta uses, would be eight percent less under the Model 2 rates.
- Cambridge's bills would be four to five percent less under the Model 2 rates. And,
- Dexter's bill, before adding the value of flushed water in Model 1, would be four percent less under the Model 2 rates.

#### Written Agreements for City (Wholesale) Sales

I gave pricing recommendations in the previous section of the report. The pricing methodology in this section of the report is different from those in that section. I still recommend you work with the cities to put all the relevant stipulations into written agreements so future pricing can be done on an agreed-upon basis. If the pricing comes from this section, use that pricing criteria.

#### Tasks for Adopting the Model 2 Rates

1. You may continue to assess the benefit unit charge that you recently adopted, shown in Table A that follows this list. In addition, continue to bill for equipment and services that the District provides to facilitate making new connections. However, if you think you may get a request for a meter larger than four inches, I suggest you consider switching to a meter size-based system development fee.
2. Assess the monthly minimum charges and unit charges and include the usage allowances shown in Table B, that follows this list.
3. The calculations assumed you would have made these adjustments early enough to enable you to collect at these rates for the December 1, 2018, billing. You would need to satisfy all Statutory requirements for making rate adjustments in advance of the adjustment date. That is coming up soon, so if you want to make that date, you will need to move promptly. However, you have strong reserves, so if you miss that date by a few months, your finances will still be sound.
4. If costs, incomes and balances accrue close to those I assumed in Model 1, on or about January 1, 2020, and annually thereafter, raise all rates and significant fees by 4.5 percent. Do this until you have raised rates and fees by a cumulative 20 percent or so. At that time, have me or another rate analyst of your choosing perform a new rate analysis, so rate structure and adequacy can be adjusted again. If you make a significant change to capital improvements or repair and replacements, you will need a new rate analysis sooner.
5. If balances do not accrue as shown at the bottom of Table 17, page 55, but they are not egregiously too low, follow the instructions in Chapter 9 of the book, "How to Get Great Rates" for how to make inflationary increases correctly.

Table B: Fees and Charges Calculated by Model 2

Table B: Cowley County, KS RWD #5 Water Usage Allowance, Minimum and Unit Charges					
Direct Customers of the District					
Water Meter Size in Inches (and Specific Customers)	Meter Type	Benefit Unit Fee	Monthly Minimum Charge	Usage Allowance in Gallons	Unit Charge per 1,000 Gallons
0.625	Displacement	\$4,000	\$40.71	0	\$7.30
0.750	Displacement	\$4,000	\$40.71	0	\$7.30
1.000	Displacement	\$4,000	\$52.29	0	\$7.30
1.500	Displacement	\$4,000	\$71.59	0	\$7.30
2.000	Displacement	\$4,000	\$94.76	0	\$7.30
2.500	Displacement	\$4,000	\$129.50	0	\$7.30
3.000	Singlet	\$4,000	\$156.52	0	\$7.30
3.000	Compound, Class I	\$4,000	\$156.52	0	\$7.30
3.000	Turbine, Class I	\$4,000	\$168.10	0	\$7.30
4.000	Singlet	\$4,000	\$226.00	0	\$7.30
4.000	Compound, Class I	\$4,000	\$226.00	0	\$7.30
4.000	Turbine, Class I	\$4,000	\$272.32	0	\$7.30
0.625 Inch Pasture Meter	Displacement	\$4,000	\$30.71	0	\$7.30
Free Water	Displacement	\$4,000	\$0.00	0	\$0.00
Ghost Meter	Displacement	\$4,000	\$8.00	0	\$0.00
Wholesale Customers (Cities)					
3 Inch Atlanta	Turbine, Class I	N.A.	\$443.54	50,000	\$8.06
2 Inch Cambridge	Displacement	N.A.	\$443.54	50,000	\$8.06
0.625 Inch Cambridge Pasture	Displacement	N.A.	\$30.71	0	\$8.06
2 Inch Dexter	Displacement	N.A.	\$443.54	50,000	\$8.06

## Model 2, Water Rates Discussion Closing

**While I do not recommend the Model 2 rates, simply because these rates are further away from being in a cost-to-serve structure, this rate structure is quite common in high volume or wholesale situations.** There is little difference in the bills for regular customers under the Model 1 and Model 2 rates. After including the cost of flushing flow to Dexter's bills, bills for the three cities would also be close to those in the Model 1 rates. Except that Dexter's bills are unknown until flushing flows are accounted for, the only big difference for these customers is one of rate structure.

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## Conclusion

“Conclusion” is a misnomer here. This report provides information upon which the District can make decisions. Thus, it begins the process by which you will initially adjust rates and fees and take other actions. I will continue to help you as you do that.

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

As you take on the initial adjustments, keep the following in mind. Everyone impacted by the District’s water rates should at least be made aware of the results of this report.

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

You have engaged me pay one visit to the board to discuss my findings and recommendations. That should take care of this part of the rate adjustments task, but if you need me to attend more than one public meeting, we can arrange that.

I look forward to meeting with the board and helping you get on your way to the next generation of water rates.

## Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

This model assumes cost-to-serve rates for all customers except \$11 was added to all minimum charges to reduce "sticker shock," and for the cities, marginal variable costs, plus a profit margin and no usage allowance.

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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 listed below is not in the package, that was not a mistake. It simply means that table or chart from our master program was not needed in this situation so it was left out to prevent confusion.

Name	What Each is or Does
Definitions (List)	The meaning of terms used in this report and in rate setting generally
Return on Investment (Calculation)	A summary of financial outcomes enabled by the proposed rates
Table 1 - Rates	User rates in effect at the end of the test year. Unless rates were recently changed, these are the current rates.
Table 2 - Test Year Usage	Compilation of actual volume of service used by customers during the test year
Table 3 - Basic User Data and Operating Incomes	Basic user statistics and operating revenues, projected for 10 years, based on the assumption the modeled rates and future inflationary increases will be adopted
Table 4 - Operating Costs and Net Income	Operating costs projected for 10 years
Table 5 - Capital Improvements Program (CIP)	Capital improvements and how they will be paid over next 10 years, including debt service
Table 6 - Equipment Replacement Schedule - Detailed	Detailed schedule of equipment replacements for next 20 years, if applicable
Table 7 - Equipment Replacement Annuity Calculation	Calculation of the annual annuity (yearly savings amount) needed to pay for all equipment replacements as they come due and ending with the desired balance
Table 8 - Average Cost Classification	Sumation of a target year's costs and calculation of the "cost of service" rate structure basis for recovery of fixed costs and variable costs
Table 9 - Marginal Cost Classification	Calculation of costs incurred to serve a specified type of customer, if applicable
Table 10 - Initial Rate Adjustments and Resulting Revenues	These are the modeled user rates and the resulting "blended" revenues they, and the current rates, will generate during the rate adjustment year
Table 11 - Capacity Costs	Calculation of the various costs to build base and peak flow capacity to serve customers, when such fees will be based on water meter size
Table 12 - AWWA Safe Operating Capacities by Meter Size	This table calculates the meter equivalent ratio, which is used for calculating peak flow capacity-based system development surcharges and revenues in Tables 15 and 16.
Table 13 - System Development Fees	Calculation of meter size-based system development fees needed to recover costs calculated in Table 11, when such fees will be based on water meter size
Table 14 - Revenues From System Development Fees	Calculation of total fee revenues that would be generated during one full year at the fees in Table 13.
Table 15 - Minimum Charge Fees, Including Capacity Surcharges	Calculation of meter size-based capacity surcharges and minimum charges to recover costs calculated in Table 11, when such fees will be based on water meter size
Table 16 - Revenues From Minimum Charges	Calculation of total fee revenues that would be generated during one full year at the fees in Table 15.
Table 17 - Financial Capacity Indicators and Reserves	Shows the financial effects of the modeled rates, costs, etc. on the utility and on the benchmark 5,000 gallon per month residential water or sewer customer, as appropriate
Table 18 - Comparison of Bills Before and After Rate Adjustments	Bills at the modeled rates are compared to those under the current rates. Note: the modeled bills do not include capacity surcharges to the minimum charges unless they are included in the minimum charges column of Table 10.
Table 19 - User Statistics	For volume ranges within each rate class, this table shows volumes and percentages of use, revenue generated and other statistics
<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 at the modeled rates and at 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 often a factor in determining grant and loan eligibility and grant amount.
Analysis Year	The year following the "test year." Generally, rate analysis is done during the year following the "test year" and 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 system development fee
Conservation (Inclining) Rates	Unit charges that go up as the volume used goes up
Cost to Produce	There are several ways to define and calculate cost to produce. Each is acceptable for different purposes. Generally, cost to produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. This calculation will yield the <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.
Incremental Rate Increases (Inflationary Increases)	Rate increases done, generally annually, following the initial rate adjustment. The usual goal of such increases is to keep the system's incomes on track to meet reserve targets. Rate structure fairness is a small issue, if it is an issue at all. Such increases are usually small, in the two to five percent per year range.
Initial Rate Adjustments	Rate adjustments done in follow up to the comprehensive rate analysis. Generally, the goal of such adjustments is to establish rates that cover the system's short-term expected costs and do it with a structure that is fair to ratepayers. Initial adjustments should be followed in subsequent years with incremental rate increases.
Inflow & Infiltration (I&I)	In a sewer system, water that gets into the collection system by way of illicit connections (inflow) such as gutter downspouts, plus leaks in manholes and sewer lines (infiltration)
Infrastructure	Most commonly thought of as the hard assets, such as buildings, treatment plants and lines needed to provide service to customers connected to the system. In reality, staff, software and other "soft" assets should be thought of as infrastructure, as well.



## Definitions

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



## Table 1 - Rates

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

#### Rates in Effect at End of Test Year

Customer Type, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Billing Cycle Minimum Charge	Usage Allowance in 1,000 Gallons	Unit Charge per 1,000 Gallons
0.625 Inch Meters	0	\$20.00	0.000	\$9.70
	4,000	\$20.00	0.000	\$9.70
	5,000	\$20.00	0.000	\$5.32
	200,000	\$20.00	0.000	\$5.32
1 Inch Meters	0	\$20.00	0.000	\$9.70
	4,000	\$20.00	0.000	\$9.70
	5,000	\$20.00	0.000	\$5.32
	200,000	\$20.00	0.000	\$5.32
0.625 Inch Pasture Meter	0	\$10.00	0.000	\$9.70
	4,000	\$10.00	0.000	\$9.70
	5,000	\$10.00	0.000	\$5.32
	200,000	\$10.00	0.000	\$5.32
3 Inch Atlanta	0	\$155.00	0.000	\$5.32
	200,000	\$155.00	0.000	\$5.32
2 Inch Cambridge	0	\$155.00	0.000	\$5.32
	200,000	\$155.00	0.000	\$5.32
0.625 Inch Cambridge Pasture	0	\$10.00	0.000	\$9.70
	4,000	\$10.00	0.000	\$9.70
	5,000	\$10.00	0.000	\$5.32
	200,000	\$10.00	0.000	\$5.32
2 Inch Dexter	0	\$155.00	0.000	\$5.32
	200,000	\$155.00	0.000	\$5.32
Free Water	0	\$0.00	0.000	\$0.00
	200,000	\$0.00	0.000	\$0.00
Ghost Meter	0	\$8.00	0.000	\$9.70
	1,000	\$8.00	0.000	\$9.70
	180,000	\$8.00	0.000	\$3.22
	200,000	\$8.00	0.000	\$4.02

**Table 2 - Test Year Usage**  
**Cowley County, KS RWD #5; Water Rates, Scenario 2018-1**

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

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

Residential meter readings per year: 12

Other customer meter readings per year: 12

Date this scenario created: 9/21/2018

Bills sent per year: 12

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Conversion Factor for Billable Units	Avg. Use in Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Total Annual Use in Each Volume Range in Gallons	Count of Bills Where Volume "Maxed Out" in Each Range	Volume of Bills Where Volume "Maxed Out" in Each Range	# of Customers With Volume That "Maxed Out" in Each Range	% of Customers That Averaged This Volume of Use	% of Total Use at This Average Volume
0.625 Inch Meters	0	999	1,000	0.763	7,730	5,900,000	2,138	308,000	178	26.6%	12.6%
	1,000	1,999	1,000	0.915	5,592	5,118,400	889	1,304,400	74	11.0%	10.9%
	2,000	2,999	1,000	0.903	4,703	4,248,700	836	2,053,700	70	10.4%	9.1%
	3,000	3,999	1,000	0.866	3,867	3,350,400	931	3,207,400	78	11.6%	7.2%
	4,000	4,999	1,000	0.854	2,936	2,506,000	759	3,365,000	63	9.4%	5.4%
	5,000	5,999	1,000	0.864	2,177	1,880,900	499	2,697,900	42	6.2%	4.0%
	6,000	6,999	1,000	0.874	1,678	1,466,300	364	2,336,300	30	4.5%	3.1%
	7,000	7,999	1,000	0.905	1,314	1,189,600	216	1,603,600	18	2.7%	2.5%
	8,000	8,999	1,000	0.898	1,098	986,300	196	1,652,300	16	2.4%	2.1%
	9,000	9,999	1,000	0.904	902	815,600	143	1,343,600	12	1.8%	1.7%
	10,000	14,999	1,000	3.434	759	2,606,600	394	4,721,600	33	4.9%	5.6%
	15,000	19,999	1,000	3.646	365	1,330,700	167	2,845,700	14	2.1%	2.8%
	20,000	24,999	1,000	4.016	198	795,200	72	1,605,200	6	0.9%	1.7%
	25,000	29,999	1,000	3.928	126	494,900	48	1,304,900	4	0.6%	1.1%
	30,000	39,999	1,000	6.941	78	541,400	40	1,361,400	3	0.5%	1.2%
	40,000	49,999	1,000	8.353	38	317,400	15	687,400	1	0.2%	0.7%
	50,000	59,999	1,000	8.248	23	189,700	6	319,700	1	0.1%	0.4%
	60,000	69,999	1,000	8.765	17	149,000	3	189,000	0	0.0%	0.3%
	70,000	79,999	1,000	8.993	14	125,900	3	225,900	0	0.0%	0.3%
	80,000	89,999	1,000	9.236	11	101,600	3	261,600	0	0.0%	0.2%
	90,000	99,999	1,000	9.538	8	76,300	1	96,300	0	0.0%	0.2%
	100,000	119,999	1,000	16.800	7	117,600	2	217,600	0	0.0%	0.3%
	120,000	139,999	1,000	15.060	5	75,300	3	395,300	0	0.0%	0.2%
	140,000	159,999	1,000	20.000	2	40,000	0	0	0	0.0%	0.1%
	160,000	179,999	1,000	13.050	2	26,100	1	166,100	0	0.0%	0.1%
	180,000	199,999	1,000	20.000	1	20,000	0	0	0	0.0%	0.0%
	200,000	202,200	1,000	2.200	1	2,200	1	202,200	0	0.0%	0.0%
Monthly and Annual Subtotals:					33,652	34,472,100	7,730	34,472,100	644	96.0%	73.6%

## Table 2 - Test Year Usage

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Conversion Factor for Billable Units	Avg. Use in Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Total Annual Use in Each Volume Range in Gallons	Count of Bills Where Volume "Maxed Out" in Each Range	Volume of Bills Where Volume "Maxed Out" in Each Range	# of Customers With Volume That "Maxed Out" in Each Range	% of Customers That Averaged This Volume of Use	% of Total Use at This Average Volume
1 Inch Meters	0	999	1,000	0.333	36	12,000	24	0	2	0.3%	0.0%
	1,000	1,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	2,000	2,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	3,000	3,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	4,000	4,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	5,000	5,999	1,000	0.867	12	10,400	2	10,400	0	0.0%	0.0%
	6,000	6,999	1,000	0.770	10	7,700	3	18,700	0	0.0%	0.0%
	7,000	7,999	1,000	1.000	7	7,000	0	0	0	0.0%	0.0%
	8,000	8,999	1,000	0.957	7	6,700	2	17,700	0	0.0%	0.0%
	9,000	9,999	1,000	0.820	5	4,100	1	9,100	0	0.0%	0.0%
	10,000	14,999	1,000	3.875	4	15,500	3	40,500	0	0.0%	0.0%
	15,000	19,999	1,000	5.000	1	5,000	0	0	0	0.0%	0.0%
	20,000	24,999	1,000	0.100	1	100	1	20,100	0	0.0%	0.0%
	25,000	29,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	30,000	39,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	40,000	49,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	50,000	59,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	60,000	69,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	70,000	79,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	80,000	89,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	90,000	99,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	100,000	119,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	120,000	139,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	140,000	159,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	160,000	179,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	180,000	199,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	200,000	201,000	1,000	0.000	0	0	0	0	0	0.0%	0.0%
Monthly and Annual Subtotals:					131	116,500	36	116,500	3	0.4%	0.2%

## Table 2 - Test Year Usage

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Conversion Factor for Billable Units	Avg. Use in Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Total Annual Use in Each Volume Range in Gallons	Count of Bills Where Volume "Maxed Out" in Each Range	Volume of Bills Where Volume "Maxed Out" in Each Range	# of Customers With Volume That "Maxed Out" in Each Range	% of Customers That Averaged This Volume of Use	% of Total Use at This Average Volume
0.625 Inch Pasture Meter	0	999	1,000	0.412	176	72,500	109	5,500	9	1.4%	0.2%
	1,000	1,999	1,000	0.928	67	62,200	9	13,200	1	0.1%	0.1%
	2,000	2,999	1,000	0.893	58	51,800	13	32,800	1	0.2%	0.1%
	3,000	3,999	1,000	0.924	45	41,600	8	28,600	1	0.1%	0.1%
	4,000	4,999	1,000	0.881	37	32,600	6	25,600	1	0.1%	0.1%
	5,000	5,999	1,000	0.945	31	29,300	2	10,300	0	0.0%	0.1%
	6,000	6,999	1,000	0.907	29	26,300	5	32,300	0	0.1%	0.1%
	7,000	7,999	1,000	0.979	24	23,500	2	15,500	0	0.0%	0.1%
	8,000	8,999	1,000	0.968	22	21,300	1	8,300	0	0.0%	0.0%
	9,000	9,999	1,000	0.919	21	19,300	2	18,300	0	0.0%	0.0%
	10,000	14,999	1,000	4.263	19	81,000	4	46,000	0	0.0%	0.2%
	15,000	19,999	1,000	4.753	15	71,300	1	16,300	0	0.0%	0.2%
	20,000	24,999	1,000	5.000	14	70,000	0	0	0	0.0%	0.1%
	25,000	29,999	1,000	5.000	14	70,000	0	0	0	0.0%	0.1%
	30,000	39,999	1,000	8.964	14	125,500	2	65,500	0	0.0%	0.3%
	40,000	49,999	1,000	9.875	12	118,500	1	48,500	0	0.0%	0.3%
	50,000	59,999	1,000	9.336	11	102,700	1	52,700	0	0.0%	0.2%
	60,000	69,999	1,000	9.340	10	93,400	1	63,400	0	0.0%	0.2%
	70,000	79,999	1,000	9.178	9	82,600	2	152,600	0	0.0%	0.2%
	80,000	89,999	1,000	9.257	7	64,800	2	174,800	0	0.0%	0.1%
	90,000	99,999	1,000	8.700	5	43,500	1	93,500	0	0.0%	0.1%
	100,000	119,999	1,000	13.825	4	55,300	2	215,300	0	0.0%	0.1%
	120,000	139,999	1,000	10.900	2	21,800	2	261,800	0	0.0%	0.0%
	140,000	159,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	160,000	179,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	180,000	199,999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	200,000	201,000	1,000	0.000	0	0	0	0	0	0.0%	0.0%
Monthly and Annual Subtotals:					646	1,380,800	176	1,380,800	15	2.2%	2.9%
	0	999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	1,000	1,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	2,000	2,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	3,000	3,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%

## Table 2 - Test Year Usage

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Conversion Factor for Billable Units	Avg. Use in Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Total Annual Use in Each Volume Range in Gallons	Count of Bills Where Volume "Maxed Out" in Each Range	Volume of Bills Where Volume "Maxed Out" in Each Range	# of Customers With Volume That "Maxed Out" in Each Range	% of Customers That Averaged This Volume of Use	% of Total Use at This Average Volume
3 Inch Atlanta	4,000	4,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	5,000	5,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	6,000	6,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	7,000	7,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	8,000	8,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	9,000	9,999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	10,000	14,999	1,000	5.000	12	60,000	0	0	0	0.0%	0.1%
	15,000	19,999	1,000	5.000	12	60,000	0	0	0	0.0%	0.1%
	20,000	24,999	1,000	5.000	12	60,000	0	0	0	0.0%	0.1%
	25,000	29,999	1,000	5.000	12	60,000	0	0	0	0.0%	0.1%
	30,000	39,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	40,000	49,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	50,000	59,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	60,000	69,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	70,000	79,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	80,000	89,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	90,000	99,999	1,000	10.000	12	120,000	0	0	0	0.0%	0.3%
	100,000	119,999	1,000	20.000	12	240,000	0	0	0	0.0%	0.5%
	120,000	139,999	1,000	20.000	12	240,000	0	0	0	0.0%	0.5%
	140,000	159,999	1,000	20.000	12	240,000	0	0	0	0.0%	0.5%
	160,000	179,999	1,000	20.000	12	240,000	0	0	0	0.0%	0.5%
	180,000	199,999	1,000	20.000	12	240,000	0	0	0	0.0%	0.5%
	200,000	796,400	1,000	298.008	12	3,576,100	12	5,976,100	1	0.1%	7.6%
Monthly and Annual Subtotals:					324	5,976,100	12	5,976,100	1	0.1%	12.8%

**Table 2 - Test Year Usage**

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Conversion Factor for Billable Units	Avg. Use in Each Volume Range in 1,000 Gallons	Count of Bills With ANY Volume in Each Range	Total Annual Use in Each Volume Range in Gallons	Count of Bills Where Volume "Maxed Out" in Each Range	Volume of Bills Where Volume "Maxed Out" in Each Range	# of Customers With Volume That "Maxed Out" in Each Range	% of Customers That Averaged This Volume of Use	% of Total Use at This Average Volume
2 Inch Cambridge	0	999	1,000	1.000	12	12,000	0	0	0	0.0%	0.0%
	120,000	139,999	1,000	18.017	12	216,200	4	536,200	0	0.0%	0.5%
	140,000	159,999	1,000	16.113	8	128,900	2	288,900	0	0.0%	0.3%
	160,000	179,999	1,000	17.800	6	106,800	1	166,800	0	0.0%	0.2%
	180,000	199,999	1,000	20.000	5	100,000	0	0	0	0.0%	0.2%
	200,000	310,000	1,000	84.720	5	423,600	5	1,423,600	0	0.1%	0.9%
	Monthly and Annual Subtotals:					300	2,415,500	12	2,415,500	1	0.1%
0.625 Inch Cambridge Pasture	0	999	1,000	0.000	12	0	12	0	1	0.1%	0.0%
	200,000	310,000	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	Monthly and Annual Subtotals:					12	0	12	0	1	0.1%
2 Inch Dexter	0	999	1,000	0.000	12	0	12	0	1	0.1%	0.0%
	200,000	310,000	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	Monthly and Annual Subtotals:					12	0	12	0	1	0.1%
Free Water	0	999	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	200,000	310,000	1,000	2,476.000	1	2,476,000	1	2,476,000	0	0.0%	5.3%
	Monthly and Annual Subtotals:					1	2,476,000	1	2,476,000	0	0.0%
Ghost Meter	0	999	1,000	0.000	59	0	59	0	5	0.7%	0.0%
	200,000	310,000	1,000	0.000	0	0	0	0	0	0.0%	0.0%
	Monthly and Annual Subtotals:					59	0	59	0	5	0.7%
Grand Totals:					35,137	46,837,000	8,050		671	100%	100%

**Table 3 - Operating Incomes  
(and Basic User Data)**  
Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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)**

\$44,960 Census Bureau estimate of AMHI for the year: 2016

\$43,860 Census Bureau estimate of AMHI for the year: 2015

\$1,100 AMHI growth during this time period

2.51% 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**

5 Number of new connections made during the test year

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

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

**Basic User (Customer) Data**

(First year balances and incomes are <u>actual</u> , subsequent years are projected.)	Inflation or Deflation (-) Factor	Test Year	Analysis (This) Year	Years Following the Analysis Year (for Which Results Have Been Projected)									
				1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
				Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting	Starting
		1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
Rate Increases Projected for Future Years	N.A.	N.A.	N.A.	0.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

The row above shows the rate at which user charge fees should be increased for each year beyond the initial rate adjustment year. Unless stated otherwise, these should be across-the-board increases to all rates and fees and that should continue until a new rate analysis is done.

Average Number of Customers for the Year	N.A.	671	676	681	686	691	696	701	706	711	716	721	726
Customers Added or Lost ( - ) During the Year	N.A.	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Customer Growth or Loss ( - ) Rate	N.A.	0.75%	0.74%	0.73%	0.73%	0.72%	0.72%	0.71%	0.71%	0.70%	0.70%	0.69%	0.69%
Actual (Test Year) and Projected Volumes, in Gallons	N.A.	46,837,000	47,186,096	47,535,191	47,884,287	48,233,383	48,582,478	48,931,574	49,280,670	49,629,765	49,978,861	50,327,957	50,677,052

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

Actual or Calculated Sales Revenues		\$493,178	\$507,296	\$659,403	\$694,137	\$730,700	\$769,108	\$809,493	\$851,956	\$896,600	\$943,538	\$992,884	\$1,044,761
Additional Sales Revenues From New Customers			\$319	\$4,843	\$5,098	\$5,289	\$5,527	\$5,775	\$6,035	\$6,307	\$6,590	\$6,887	\$7,197
Total Calculated Revenues (User Charge Fees)		\$493,178	\$507,615	\$664,246	\$699,235	\$735,989	\$774,635	\$815,269	\$857,991	\$902,907	\$950,128	\$999,771	\$1,051,958

**Operating Incomes**

4000 - Water Sold + 4550 - Minimum Charge	N.A.	\$493,178	\$507,615	\$664,246	\$699,235	\$735,989	\$774,635	\$815,269	\$857,991	\$902,907	\$950,128	\$999,771	\$1,051,958
4675 - Penalty Charge	N.A.	\$11,792	\$11,674	\$11,557	\$11,442	\$11,327	\$11,214	\$11,102	\$10,991	\$10,881	\$10,772	\$10,664	\$10,558
8100 - BU & PU Sold (Current Fee)	% Above	\$7,500	\$5,625	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1	\$2
8100 - BU & PU Sold (Fee Adjusted as of 9-18)	% Above	\$0	\$5,000	\$20,000	\$20,900	\$21,841	\$22,823	\$23,850	\$24,924	\$26,045	\$27,217	\$28,442	\$29,722
8500 - Interest	N.A.	\$1,901	\$4,000	\$2,385	\$2,207	\$2,056	\$1,935	\$2,023	\$2,257	\$2,564	\$3,117	\$3,782	\$4,516
4800 - Prin Pmts on Notes Receivable + 8550 - Deferred Interest - Pmt Plan	N.A.	\$50,870	\$37,824	\$34,713	\$25,809	\$23,969	\$23,969	\$23,969	\$23,096	\$21,973	\$13,836	\$8,805	\$7,529
4900 - Meter Repair Charge	N.A.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4990 - Miscellaneous Income	N.A.	\$15,398	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
4150 - Connection Charge	N.A.	\$14,039	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Rate Revenues That Exceeded, or May Exceed, Calculated Revenues in the Future	N.A.	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378	\$83,378
Revenue Loss ( - ) Due to Conservation	2.5%	\$0	-\$361	-\$3,916	-\$875	-\$919	-\$966	-\$1,016	-\$1,068	-\$1,123	-\$1,181	-\$1,241	-\$1,305
<b>Total Operating Incomes</b>		<b>\$678,057</b>	<b>\$684,755</b>	<b>\$842,363</b>	<b>\$872,095</b>	<b>\$907,641</b>	<b>\$946,989</b>	<b>\$988,575</b>	<b>\$1,031,568</b>	<b>\$1,076,626</b>	<b>\$1,117,269</b>	<b>\$1,163,603</b>	<b>\$1,216,358</b>

# Table 4 - Operating Costs (and Net Income) Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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 Starting 1/1/17	Analysis (This) Year Starting 1/1/18	Years Following the Analysis Year (for Which Results Have Been Projected)									
				1st Year Starting 1/1/19	2nd Year Starting 1/1/20	3rd Year Starting 1/1/21	4th Year Starting 1/1/22	5th Year Starting 1/1/23	6th Year Starting 1/1/24	7th Year Starting 1/1/25	8th Year Starting 1/1/26	9th Year Starting 1/1/27	10th Year Starting 1/1/28
6000 · Accounting & Auditing	3.0%	\$11,556	\$6,500	\$7,103	\$7,316	\$7,536	\$7,762	\$7,994	\$8,234	\$8,481	\$8,736	\$8,998	\$9,268
6050 · Bank Charge	3.0%	\$25	\$26	\$26	\$27	\$27	\$28	\$29	\$30	\$31	\$32	\$33	\$34
6100 · Chemical	3.0%	\$1,424	\$2,000	\$2,075	\$2,153	\$2,234	\$2,317	\$2,404	\$2,493	\$2,586	\$2,683	\$2,782	\$2,885
6210 · Contract Labor	3.0%	\$4,247	\$5,000	\$5,150	\$5,305	\$5,464	\$5,628	\$5,796	\$5,970	\$6,149	\$6,334	\$6,524	\$6,720
6250 · Freight - Shipping	3.0%	\$317	\$300	\$328	\$338	\$348	\$358	\$369	\$380	\$392	\$403	\$416	\$428
6275 · GPS Processing	3.0%	\$841	\$12,000	\$2,122	\$2,186	\$2,251	\$2,319	\$2,388	\$2,460	\$2,534	\$2,610	\$2,688	\$2,769
6310 · Insurance	3.0%	\$8,673	\$14,561	\$14,998	\$15,448	\$15,911	\$16,389	\$16,880	\$17,387	\$17,908	\$18,445	\$18,999	\$19,569
6325 · KS One Call	3.0%	\$389	\$450	\$492	\$507	\$522	\$538	\$554	\$570	\$587	\$605	\$623	\$642
6330 · Leak Reward	3.0%	\$10	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6335 · Legal	3.0%	\$299	\$1,000	\$1,093	\$1,126	\$1,160	\$1,194	\$1,230	\$1,267	\$1,305	\$1,344	\$1,385	\$1,426
6340 · License, Subscription & Dues	3.0%	\$2,476	\$2,500	\$2,732	\$2,814	\$2,898	\$2,985	\$3,075	\$3,167	\$3,262	\$3,360	\$3,461	\$3,565
6345 · Machine Hire	3.0%	\$41,832	\$46,500	\$56,275	\$57,963	\$59,702	\$61,493	\$63,338	\$65,238	\$67,195	\$69,211	\$71,287	\$73,426
6350 · Burden Man Hours	3.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6375 · Meeting	3.0%	\$929	\$1,200	\$1,311	\$1,350	\$1,391	\$1,433	\$1,476	\$1,520	\$1,565	\$1,612	\$1,661	\$1,711
6380 · Miscellaneous	3.0%	\$18,819	\$750	\$4,205	\$4,331	\$4,461	\$4,595	\$4,733	\$4,875	\$5,021	\$5,172	\$5,327	\$5,487
6390 · Office Supply	3.0%	\$7,748	\$5,000	\$5,464	\$5,628	\$5,797	\$5,971	\$6,150	\$6,334	\$6,524	\$6,720	\$6,922	\$7,129
6400 · Operating Supply	3.0%	\$20,950	\$21,000	\$22,947	\$23,635	\$24,344	\$25,075	\$25,827	\$26,602	\$27,400	\$28,222	\$29,069	\$29,941
6475 · Postage	3.0%	\$4,365	\$3,650	\$3,988	\$4,138	\$4,293	\$4,453	\$4,620	\$4,792	\$4,970	\$5,155	\$5,347	\$5,545
6500 · Equipment - Mtr - Tool	3.0%	\$8,331	\$8,581	\$8,838	\$9,103	\$9,376	\$9,658	\$9,947	\$10,246	\$10,553	\$10,870	\$11,196	\$11,532
6503 · Print & Copy	3.0%	\$795	\$1,000	\$1,093	\$1,126	\$1,160	\$1,194	\$1,230	\$1,267	\$1,305	\$1,344	\$1,385	\$1,426
6575 · Repair & Maintenance	3.0%	\$23,616	\$29,000	\$31,689	\$32,640	\$33,619	\$34,627	\$35,666	\$36,736	\$37,838	\$38,973	\$40,143	\$41,347
6577 · Software	3.0%	\$2,360	\$3,500	\$3,825	\$3,940	\$4,058	\$4,180	\$4,305	\$4,434	\$4,567	\$4,704	\$4,845	\$4,991
6580 · Telephone	3.0%	\$2,695	\$3,060	\$3,344	\$3,444	\$3,548	\$3,654	\$3,764	\$3,877	\$3,993	\$4,113	\$4,236	\$4,363
6582 · Training & Travel	3.0%	\$1,444	\$2,500	\$2,732	\$2,814	\$2,898	\$2,985	\$3,075	\$3,167	\$3,262	\$3,360	\$3,461	\$3,565
6584 · Burden Line	3.0%	\$3,297	\$5,421	\$5,584	\$5,751	\$5,924	\$6,101	\$6,284	\$6,473	\$6,667	\$6,867	\$7,073	\$7,285
6585 · Tower Maintenance	3.0%	\$2,684	Table 6	Table 6	\$2,764	\$2,847	\$2,932	\$3,020	\$3,111	\$3,204	\$3,300	\$3,399	\$3,501
6586 · Burden Pump House Insurance	3.0%	\$201	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6600 · Utility	3.0%	\$29,336	\$32,045	\$35,016	\$36,331	\$37,692	\$39,102	\$40,562	\$42,075	\$43,642	\$45,265	\$46,947	\$48,688
6625 · Water Protection Fee	1.0%	\$2,572	\$2,700	\$2,950	\$3,001	\$3,053	\$3,106	\$3,159	\$3,214	\$3,269	\$3,324	\$3,381	\$3,438
6700 · Water Testing	3.0%	\$1,456	\$1,500	\$1,545	\$1,591	\$1,639	\$1,688	\$1,739	\$1,791	\$1,844	\$1,900	\$1,957	\$2,015
7100 · Wage	3.0%	\$124,890	\$198,000	\$216,360	\$222,851	\$229,536	\$236,422	\$243,515	\$250,821	\$258,345	\$266,096	\$274,078	\$282,301
7120 · Payroll Tax	3.0%	\$8,742	\$15,246	\$16,660	\$17,160	\$17,675	\$18,205	\$18,751	\$19,314	\$19,893	\$20,490	\$21,104	\$21,738
7150 · Mileage	3.0%	\$24,567	\$35,000	\$38,245	\$39,392	\$40,574	\$41,791	\$43,045	\$44,336	\$45,667	\$47,037	\$48,448	\$49,901
7200 · KPERS	3.0%	\$10,455	\$16,600	\$18,139	\$18,683	\$19,244	\$19,821	\$20,416	\$21,028	\$21,659	\$22,309	\$22,978	\$23,667
7250 · KS NSEHP	5.0%	\$31,759	\$45,500	\$49,719	\$52,205	\$54,815	\$57,556	\$60,434	\$63,455	\$66,628	\$69,960	\$73,458	\$77,130
7450 · Payroll Penalty	3.0%	\$31	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Purchased From Winfield	3.0%	\$166,357	\$195,000	\$200,850	\$206,876	\$213,082	\$219,474	\$226,058	\$232,840	\$239,825	\$247,020	\$254,431	\$262,064
One-time Reduction of R&R Annuity	0.0%	-\$93,249	-\$85,478	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Annual Payment to Repair & Replacement (Table 7)	0.0%	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249	\$93,249
User Charge Analysis Services	5.0%	\$0	\$6,675	\$0	\$0	\$7,359	\$0	\$0	\$8,114	\$0	\$0	\$8,945	\$0
Total, All CIP-related Payouts	N.A.	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5	Table 5
<b>Total Operating Costs</b>		<b>\$570,487</b>	<b>\$731,535</b>	<b>\$860,146</b>	<b>\$887,185</b>	<b>\$919,686</b>	<b>\$938,284</b>	<b>\$965,083</b>	<b>\$1,000,867</b>	<b>\$1,021,324</b>	<b>\$1,050,825</b>	<b>\$1,090,233</b>	<b>\$1,112,744</b>
Net Income (or Loss)		\$107,569	-\$46,780	-\$17,783	-\$15,090	-\$12,045	\$8,705	\$23,492	\$30,701	\$55,302	\$66,444	\$73,370	\$103,613
Working Capital Goal: 50%		In Dollars, That is:	\$285,244	\$365,767	\$430,073	\$443,592	\$459,843	\$469,142	\$482,542	\$500,433	\$510,662	\$525,412	\$545,116

Notes: Some tower maintenance costs are for routine work. During the next two years, the towers will be washed, sand blasted and painted inside and out. That work appears in Table 6. Those, and other costs were estimates of utility staff. In addition, payroll costs appeared to spike in 2018, but the utility was down one employee the prior year and that position was finally filled in 2018, raising that cost back up to a normal level.



## Table 5 - Capital Improvement Program (CIP)

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

Years Following the Analysis Year (for Which Improvement Projects, Costs, Funding, etc. Have Been Projected)

	Test Year Starting	Analysis (This) Year Starting	1st Year Starting	2nd Year Starting	3rd Year Starting	4th Year Starting	5th Year Starting	6th Year Starting	7th Year Starting	8th Year Starting	9th Year Starting	10th Year Starting
	1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
<b>Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)</b>												
None Anticipated	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan Closing Costs, Estimated at: 2.50%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Debt-paid Portion of Projects</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Planned Spending, Grant-paid Portion of Projects (CIP costs to be grant-funded are shown here.)</b>												
None Anticipated	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Grant-paid Portion of Projects</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)</b>												
None Anticipated	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Cash-paid Portion of Projects</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Total CIP Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Debt Repayment</b>												
<b>Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)</b>												
No Existing Debt	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>New Debt Payments (Following are payments for projects to be paid with new debt. It is assumed these will be loan/lease-financed for a term of: 20 years at a 2.0% interest rate.)</b>												
Total Debt Payments	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total, All CIP-related Payouts</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
(This is the total cash required for this CIP and debt payment schedule. These amounts must come from utility income, reserves or outside sources, as shown in the next section.)												
<b>CIP Fund Sources (Following are the sources and amounts of funds expected to pay for the above CIP schedule.)</b>												
<b>Cash Reserves (Internal Funds)</b>												
Debt and CIP Reserves Starting Balance	\$0	\$14,750	\$15,045	\$15,345	\$15,652	\$15,965	\$16,285	\$16,610	\$16,943	\$17,281	\$17,627	\$17,980
Working Capital Transferred in	\$14,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt and CIP Reserves Interest Earned (or Paid)	\$0	\$295	\$301	\$307	\$313	\$319	\$326	\$332	\$339	\$346	\$353	\$360
<b>Total Available Internal Funds</b>	<b>\$14,750</b>	<b>\$15,045</b>	<b>\$15,345</b>	<b>\$15,652</b>	<b>\$15,965</b>	<b>\$16,285</b>	<b>\$16,610</b>	<b>\$16,943</b>	<b>\$17,281</b>	<b>\$17,627</b>	<b>\$17,980</b>	<b>\$18,339</b>
<b>Grant and Loan Proceeds (External Funds)</b>												
Total Available External Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Available Funds</b>	<b>\$14,750</b>	<b>\$15,045</b>	<b>\$15,345</b>	<b>\$15,652</b>	<b>\$15,965</b>	<b>\$16,285</b>	<b>\$16,610</b>	<b>\$16,943</b>	<b>\$17,281</b>	<b>\$17,627</b>	<b>\$17,980</b>	<b>\$18,339</b>
<b>Outcomes</b>												
(This CIP spending and funding plan will result in the following cash needs and ending balances each year.)												
<b>Total Available Funds</b>	<b>\$14,750</b>	<b>\$15,045</b>	<b>\$15,345</b>	<b>\$15,652</b>	<b>\$15,965</b>	<b>\$16,285</b>	<b>\$16,610</b>	<b>\$16,943</b>	<b>\$17,281</b>	<b>\$17,627</b>	<b>\$17,980</b>	<b>\$18,339</b>
<b>Total, All CIP-related Payouts</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Debt and CIP Reserves Ending Balances</b>	<b>\$14,750</b>	<b>\$15,045</b>	<b>\$15,345</b>	<b>\$15,652</b>	<b>\$15,965</b>	<b>\$16,285</b>	<b>\$16,610</b>	<b>\$16,943</b>	<b>\$17,281</b>	<b>\$17,627</b>	<b>\$17,980</b>	<b>\$18,339</b>

Notes: There is no existing debt and no new major system improvements are anticipated for the next 10 years.

## Table 6 - Equipment Replacement Schedule - Detailed

Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

Year Beginning	Pipe rack	Line & valve replacement, 5,400' @ 7.50/ft	Meter replacement, Benefit units, replace 8%/yr = 64 @ \$206 ea	Meter replacement, Area meters, 4 @ \$2,500 ea	Meter replacement, Laptop, software & equipment for meter reading	Towers; Clean & inspect every 3 yrs.	Line & valve replacement, \$2,000 for valves	Towers, Interior (sandblast & paint)	Towers, Exterior (wash & overcoat)	Tower valve pits	Towers; Anti- access ladder	Booster stations, Pumps, 400 GPM, type 411 BF, size 3x4x14, 2 @ \$18,000 each
1/1/18	\$4,000	\$8,100	\$13,184	\$0	\$0	\$10,200	\$2,000	\$51,000	\$51,000	\$0	\$0	\$0
1/1/19	\$0	\$8,100	\$13,184	\$2,500	\$0	\$0	\$0	\$135,000	\$36,000	\$0	\$0	\$0
1/1/20	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$36,000
1/1/21	\$0	\$8,100	\$13,184	\$2,500	\$0	\$10,200	\$0	\$0	\$0	\$0	\$0	\$0
1/1/22	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/23	\$0	\$8,100	\$13,184	\$2,500	\$35,000	\$0	\$0	\$0	\$0	\$36,000	\$45,000	\$0
1/1/24	\$0	\$8,100	\$13,184	\$0	\$0	\$10,200	\$0	\$0	\$0	\$0	\$0	\$0
1/1/25	\$0	\$8,100	\$13,184	\$2,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/26	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/27	\$0	\$8,100	\$13,184	\$0	\$0	\$10,200	\$0	\$0	\$0	\$0	\$0	\$0
1/1/28	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$2,000	\$51,000	\$51,000	\$0	\$0	\$0
1/1/29	\$0	\$8,100	\$13,184	\$2,500	\$0	\$0	\$0	\$135,000	\$36,000	\$0	\$0	\$0
1/1/30	\$0	\$8,100	\$13,184	\$0	\$0	\$10,200	\$0	\$0	\$0	\$0	\$0	\$36,000
1/1/31	\$0	\$8,100	\$13,184	\$2,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/32	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/33	\$0	\$8,100	\$13,184	\$2,500	\$35,000	\$10,200	\$0	\$0	\$0	\$36,000	\$0	\$0
1/1/34	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/35	\$0	\$8,100	\$13,184	\$2,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/36	\$0	\$8,100	\$13,184	\$0	\$0	\$10,200	\$0	\$0	\$0	\$0	\$0	\$0
1/1/37	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/38	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$2,000	\$51,000	\$51,000	\$0	\$0	\$0
1/1/39	\$0	\$8,100	\$13,184	\$2,500	\$0	\$10,200	\$0	\$135,000	\$36,000	\$0	\$0	\$0
1/1/40	\$0	\$8,100	\$13,184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$36,000
1/1/41	\$0	\$8,100	\$13,184	\$2,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1/1/42	\$0	\$8,100	\$13,184	\$0	\$0	\$10,200	\$0	\$0	\$0	\$0	\$0	\$0

## Table 6 - Equipment Replacement Schedule - Detailed

Year Beginning	Booster stations, 40 HP motors, 220V 3 Phase, 1765 rpm 2 @ \$2,500	Booster stations, Telemetry controls (upgrade system)	Booster stations, VFD Drive, 2 drives @ \$4,500 ea	Booster stations, Chlorinator, 3 @ \$1,200 ea	6550 - Vehicle Replacement ; Maintenance In-between Years	Booster Station #1, Generator - permanent	Booster Station #1, Building, housing for generator	Booster Station #1, Cables & switches	Booster Station # 2,4 & 5, Generator - mobile	Booster Station # 2,4 & 5, Switches & cables	BS #5 By- pass	System Hydraulic audit	Total Annual Replacement Costs
1/1/18	\$0	\$0	\$0	\$0	\$16,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$155,484
1/1/19	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$6,000	\$5,000	\$5,300	\$30,000	\$245,581
1/1/20	\$5,000	\$26,000	\$9,000	\$3,600	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$105,381
1/1/21	\$0	\$0	\$0	\$0	\$4,497	\$8,000	\$3,000	\$2,700	\$0	\$0	\$0	\$0	\$52,181
1/1/22	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,781
1/1/23	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$144,281
1/1/24	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$35,981
1/1/25	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,281
1/1/26	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,781
1/1/27	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$35,981
1/1/28	\$0	\$0	\$0	\$0	\$16,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$141,284
1/1/29	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$199,281
1/1/30	\$5,000	\$26,000	\$9,000	\$3,600	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$115,581
1/1/31	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,281
1/1/32	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,781
1/1/33	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$109,481
1/1/34	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,781
1/1/35	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,281
1/1/36	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$35,981
1/1/37	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,781
1/1/38	\$0	\$0	\$0	\$0	\$16,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$141,284
1/1/39	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$6,000	\$5,000	\$5,300	\$30,000	\$255,781
1/1/40	\$5,000	\$26,000	\$9,000	\$3,600	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$105,381
1/1/41	\$0	\$0	\$0	\$0	\$4,497	\$8,000	\$3,000	\$2,700	\$0	\$0	\$0	\$0	\$41,981
1/1/42	\$0	\$0	\$0	\$0	\$4,497	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$35,981

## Table 7 - Equipment Replacement Annuity Calculation

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

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

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

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

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

Year Beginning	Schedule Year	This Year's Costs in Current Dollars	Future Annual Inflated Net Costs	Interest Earned on Prior Balance	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
1/1/18	Analysis Year	\$155,484	\$155,484	\$6,500	\$176,016	\$71,737
1/1/19	1st Year	\$245,581	\$252,948	\$3,520	\$19,837	\$73,889
1/1/20	2nd Year	\$105,381	\$111,799	\$397	\$1,684	\$76,106
1/1/21	3rd Year	\$52,181	\$57,020	\$34	\$37,946	\$78,389
1/1/22	4th Year	\$25,781	\$29,017	\$759	\$102,937	\$80,741
1/1/23	5th Year	\$144,281	\$167,261	\$2,059	\$30,984	\$83,163
1/1/24	6th Year	\$35,981	\$42,963	\$620	\$81,889	\$85,658
1/1/25	7th Year	\$28,281	\$34,782	\$1,638	\$141,994	\$88,228
1/1/26	8th Year	\$25,781	\$32,659	\$2,840	\$205,424	\$90,874
1/1/27	9th Year	\$35,981	\$46,947	\$4,108	\$255,834	\$93,601
1/1/28	10th Year	\$141,284	\$189,874	\$5,117	\$164,325	\$96,409
1/1/29	11th Year	\$199,281	\$275,852	\$3,287	-\$14,991	\$99,301
1/1/30	12th Year	\$115,581	\$164,791	-\$300	-\$86,833	\$102,280
1/1/31	13th Year	\$28,281	\$41,532	-\$1,737	-\$36,852	\$105,348
1/1/32	14th Year	\$25,781	\$38,996	-\$737	\$16,664	\$108,509
1/1/33	15th Year	\$109,481	\$170,568	\$333	-\$60,322	\$111,764
1/1/34	16th Year	\$25,781	\$41,371	-\$1,206	-\$9,651	\$115,117
1/1/35	17th Year	\$28,281	\$46,744	-\$193	\$36,661	\$118,570
1/1/36	18th Year	\$35,981	\$61,255	\$733	\$69,388	\$122,128
1/1/37	19th Year	\$25,781	\$45,207	\$1,388	\$118,817	\$125,791
Notes: District staff developed an R&R schedule, which is shown in Table 6. The annuity (savings amount) needed to pay those costs is calculated in this table. A Discretionary Annuity amount was added so that at the end of the 20-year modeling period, the balance will approach the average of the annual replacement cost amounts.			Starting Account Balance		\$325,000	\$71,737
			Minimum Annual Annuity		\$88,461	Minimum Desired
			Discretionary Annuity		\$4,787	Balance in Today's Dollars

**Required Annual Deposit (Annuity) to Replacement Account \$93,249**

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

## Table 8 - Average Cost Classification

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

The average rate structure basis year runs from: 1/1/2022 through 12/31/2022					Average Fixed Cost	Average Variable Cost
Cost Items	Cost During Average Rate Structure Basis Year	Fixed Cost Percentage	Variable Cost Percentage			
6000 · Accounting & Auditing	\$7,762	100.0%	0.0%		\$7,762	\$0
6050 · Bank Charge	\$28	100.0%	0.0%		\$28	\$0
6100 · Chemical	\$2,317	0.0%	100.0%		\$0	\$2,317
6210 · Contract Labor	\$5,628	100.0%	0.0%		\$5,628	\$0
6250 · Freight - Shipping	\$358	100.0%	0.0%		\$358	\$0
6275 · GPS Processing	\$2,319	100.0%	0.0%		\$2,319	\$0
6310 · Insurance	\$16,389	100.0%	0.0%		\$16,389	\$0
6325 · KS One Call	\$538	100.0%	0.0%		\$538	\$0
6330 · Leak Reward	\$0	100.0%	0.0%		\$0	\$0
6335 · Legal	\$1,194	100.0%	0.0%		\$1,194	\$0
6340 · License, Subscription & Dues	\$2,985	34.2%	65.8%		\$1,021	\$1,964
6345 · Machine Hire	\$61,493	100.0%	0.0%		\$61,493	\$0
6350 · Burden Man Hours	\$0	34.2%	65.8%		\$0	\$0
6375 · Meeting	\$1,433	100.0%	0.0%		\$1,433	\$0
6380 · Miscellaneous	\$4,595	34.2%	65.8%		\$1,571	\$3,023
6390 · Office Supply	\$5,971	100.0%	0.0%		\$5,971	\$0
6400 · Operating Supply	\$25,075	40.4%	59.6%		\$10,126	\$14,949
6475 · Postage	\$4,453	100.0%	0.0%		\$4,453	\$0
6500 · Equipment - Mtr - Tool	\$9,658	40.4%	59.6%		\$3,900	\$5,757
6503 · Print & Copy	\$1,194	100.0%	0.0%		\$1,194	\$0
6575 · Repair & Maintenance	\$34,627	40.4%	59.6%		\$13,984	\$20,644
6577 · Software	\$4,180	100.0%	0.0%		\$4,180	\$0
6580 · Telephone	\$3,654	100.0%	0.0%		\$3,654	\$0
6582 · Training & Travel	\$2,985	34.2%	65.8%		\$1,021	\$1,964
6584 · Burden Line	\$6,101	40.4%	59.6%		\$2,464	\$3,637

**Table 8 - Average Cost Classification**

Cost Items	Cost During Average Rate Structure Basis Year	Fixed Cost Percentage	Variable Cost Percentage	Average Fixed Cost	Average Variable Cost
6585 · Tower Maintenance	\$2,932	40.4%	59.6%	\$1,184	\$1,748
6586 · Burden Pump House Insurance	\$0	100.0%	0.0%	\$0	\$0
6600 · Utility	\$39,102	0.0%	100.0%	\$0	\$39,102
6625 · Water Protection Fee	\$3,106	34.2%	65.8%	\$1,062	\$2,044
6700 · Water Testing	\$1,688	100.0%	0.0%	\$1,688	\$0
7100 · Wage	\$236,422	34.2%	65.8%	\$80,856	\$155,566
7120 · Payroll Tax	\$18,205	34.2%	65.8%	\$6,226	\$11,979
7150 · Mileage	\$41,791	34.2%	65.8%	\$14,293	\$27,499
7200 · KPERS	\$19,821	34.2%	65.8%	\$6,779	\$13,042
7250 · KS NSEHP	\$57,556	34.2%	65.8%	\$19,684	\$37,872
7450 · Payroll Penalty	\$0	34.2%	65.8%	\$0	\$0
Water Purchased From Winfield	\$219,474	0.0%	100.0%	\$0	\$219,474
Annual Payment to Repair & Replacement (Table 7)	\$93,249	40.4%	59.6%	\$37,657	\$55,591
User Charge Analysis Services	\$0	34.2%	65.8%	\$0	\$0
Total, All CIP-related Payouts	\$0	40.4%	59.6%	\$0	\$0
Grand Total Costs, Weighted Avg Percentages	\$938,284	34.1%	65.9%	\$320,110	\$618,173

<b>Bases for Cost to Serve Rate Structure</b>		100%	\$938,284
Number of Customers During Year Defined Above =	696	Unbilled-for Water is Estimated at	24%
Billed Volume, in Gallons, During Year Defined Above =	48,582,478	Unbilled-for Water is Estimated at This Percentage of Average Cost	74%
Average Fixed Cost per User per Month During Year Defined Above =	\$38.34	Resulting Cost of Unbilled-for Water	\$143,641
Average Variable Cost to Produce per 1,000 Gallons During Year Defined Above =	\$12.72	Test Year Customer Metered Volume, in Gallons	46,837,000
Gallons per Billing Cycle Used by Average Residential Customer =	4,460	+ Test Year Unbilled-for Water, in Gallons	14,792,000
		Total Test Year Volume, in Gallons, From Master Meter Readings	61,629,000

## Table 9 - Marginal Cost Classification

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

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

And, marginal variable costs are being calculated for: **Cities**

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

Cost Items	Cost During Marginal Cost Structure Basis Year	Fixed Cost Percentage	Variable Cost Percentage	Average Fixed Cost	Average Variable Cost	Marginal Fixed Cost Percentage	Marginal Variable Cost Percentage	Marginal Fixed Cost	Marginal Variable Cost
6000 · Accounting & Auditing	\$7,762	100.0%	0.0%	\$7,762	\$0	100%	100%	\$7,762	\$0
6050 · Bank Charge	\$28	100.0%	0.0%	\$28	\$0	100%	100%	\$28	\$0
6100 · Chemical	\$2,317	0.0%	100.0%	\$0	\$2,317	100%	100%	\$0	\$2,317
6210 · Contract Labor	\$5,628	100.0%	0.0%	\$5,628	\$0	50%	50%	\$2,814	\$0
6250 · Freight - Shipping	\$358	100.0%	0.0%	\$358	\$0	100%	100%	\$358	\$0
6275 · GPS Processing	\$2,319	100.0%	0.0%	\$2,319	\$0	100%	100%	\$2,319	\$0
6310 · Insurance	\$16,389	100.0%	0.0%	\$16,389	\$0	100%	100%	\$16,389	\$0
6325 · KS One Call	\$538	100.0%	0.0%	\$538	\$0	100%	100%	\$538	\$0
6330 · Leak Reward	\$0	100.0%	0.0%	\$0	\$0	100%	100%	\$0	\$0
6335 · Legal	\$1,194	100.0%	0.0%	\$1,194	\$0	100%	100%	\$1,194	\$0
6340 · License, Subscription & Dues	\$2,985	34.2%	65.8%	\$1,021	\$1,964	50%	50%	\$510	\$982
6345 · Machine Hire	\$61,493	100.0%	0.0%	\$61,493	\$0	50%	50%	\$30,747	\$0
6350 · Burden Man Hours	\$0	34.2%	65.8%	\$0	\$0	50%	50%	\$0	\$0
6375 · Meeting	\$1,433	100.0%	0.0%	\$1,433	\$0	100%	100%	\$1,433	\$0
6380 · Miscellaneous	\$4,595	34.2%	65.8%	\$1,571	\$3,023	100%	100%	\$1,571	\$3,023
6390 · Office Supply	\$5,971	100.0%	0.0%	\$5,971	\$0	100%	100%	\$5,971	\$0
6400 · Operating Supply	\$25,075	40.4%	59.6%	\$10,126	\$14,949	100%	100%	\$10,126	\$14,949
6475 · Postage	\$4,453	100.0%	0.0%	\$4,453	\$0	100%	100%	\$4,453	\$0
6500 · Equipment - Mtr - Tool	\$9,658	40.4%	59.6%	\$3,900	\$5,757	50%	50%	\$1,950	\$2,879
6503 · Print & Copy	\$1,194	100.0%	0.0%	\$1,194	\$0	100%	100%	\$1,194	\$0
6575 · Repair & Maintenance	\$0	40.4%	59.6%	\$0	\$0	50%	50%	\$0	\$0
6577 · Software	\$4,180	100.0%	0.0%	\$4,180	\$0	100%	100%	\$4,180	\$0
6580 · Telephone	\$3,654	100.0%	0.0%	\$3,654	\$0	100%	100%	\$3,654	\$0



**Table 9 - Marginal Cost Classification**

Cost Items	Cost During Marginal Cost Structure Basis Year	Fixed Cost Percentage	Variable Cost Percentage	Average Fixed Cost	Average Variable Cost	Marginal Fixed Cost Percentage	Marginal Variable Cost Percentage	Marginal Fixed Cost	Marginal Variable Cost
6582 · Training & Travel	\$2,985	34.2%	65.8%	\$1,021	\$1,964	50%	50%	\$510	\$982
6584 · Burden Line	\$6,101	40.4%	59.6%	\$2,464	\$3,637	50%	50%	\$1,232	\$1,819
6585 · Tower Maintenance	\$0	40.4%	59.6%	\$0	\$0	100%	100%	\$0	\$0
6586 · Burden Pump House Insurance	\$0	100.0%	0.0%	\$0	\$0	100%	100%	\$0	\$0
6600 · Utility	\$39,102	0.0%	100.0%	\$0	\$39,102	100%	100%	\$0	\$39,102
6625 · Water Protection Fee	\$3,106	34.2%	65.8%	\$1,062	\$2,044	100%	100%	\$1,062	\$2,044
6700 · Water Testing	\$1,688	100.0%	0.0%	\$1,688	\$0	100%	100%	\$1,688	\$0
7100 · Wage	\$236,422	34.2%	65.8%	\$80,856	\$155,566	50%	50%	\$40,428	\$77,783
7120 · Payroll Tax	\$18,205	34.2%	65.8%	\$6,226	\$11,979	50%	50%	\$3,113	\$5,989
7150 · Mileage	\$41,791	34.2%	65.8%	\$14,293	\$27,499	50%	50%	\$7,146	\$13,749
7200 · KPERS	\$19,821	34.2%	65.8%	\$6,779	\$13,042	50%	50%	\$3,389	\$6,521
7250 · KS NSEHP	\$57,556	34.2%	65.8%	\$19,684	\$37,872	50%	50%	\$9,842	\$18,936
7450 · Payroll Penalty	\$0	34.2%	65.8%	\$0	\$0	50%	50%	\$0	\$0
Water Purchased From Winfield	\$219,474	0.0%	100.0%	\$0	\$219,474	100%	100%	\$0	\$219,474
Annual Payment to Repair & Replacement (Table 7)	\$93,249	40.4%	59.6%	\$37,657	\$55,591	50%	50%	\$18,829	\$27,796
User Charge Analysis Services	\$0	34.2%	65.8%	\$0	\$0	100%	100%	\$0	\$0
Total, All CIP-related Payouts	\$0	40.4%	59.6%	\$0	\$0	50%	50%	\$0	\$0
Grand Total All Costs	\$900,724	33.9%	66.1%	\$304,942	\$595,782			\$184,431	\$438,345
		100%		\$900,724				\$622,776	
								Monthly Marginal Fixed Cost per Customer	Marginal Variable Cost per 1,000 Gallons
								\$22.09	
Marginal Fixed Cost as a Percent of Total Fixed Cost:								60%	\$9.02
Marginal Variable Cost as a Percent of Total Variable Cost:									74%

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

# Table 10 - Initial Rate Adjustments and Resulting Revenues

## Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

**Out of District Multiplier 150%**

**12/1/18 Date when fees will first be collected at adjusted rates. Actual adjustment should occur one billing cycle earlier.**

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

Sales to be billed this year: Sales at the current (Test Year) rates (gray highlighted column) will apply until rates are adjusted. Sales at the modeled rates (yellow highlighted column) would apply if the modeled rates are adopted. The grand total "blended" sales revenues are the total revenues generated by the two different sets of rates. Those revenues show in the right-most column.

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
0.625 Inch Meters	0	999	\$91,498	178	\$40.80	0.000	\$7.33	\$11,082	\$102,580
	1,000	1,999	\$61,702	74	\$40.80	0.000	\$7.33	\$6,267	\$67,969
	2,000	2,999	\$53,012	70	\$40.80	0.000	\$7.33	\$5,542	\$58,554
	3,000	3,999	\$46,777	78	\$40.80	0.000	\$7.33	\$5,312	\$52,090
	4,000	4,999	\$36,134	63	\$40.80	0.000	\$7.33	\$4,190	\$40,325
	5,000	5,999	\$18,289	42	\$40.80	0.000	\$7.33	\$2,900	\$21,189
	6,000	6,999	\$13,800	30	\$40.80	0.000	\$7.33	\$2,174	\$15,974
	7,000	7,999	\$9,744	18	\$40.80	0.000	\$7.33	\$1,489	\$11,233
	8,000	8,999	\$8,389	16	\$40.80	0.000	\$7.33	\$1,293	\$9,682
	9,000	9,999	\$6,588	12	\$40.80	0.000	\$7.33	\$1,003	\$7,591
	10,000	14,999	\$19,900	33	\$40.80	0.000	\$7.33	\$2,988	\$22,888
	15,000	19,999	\$9,534	14	\$40.80	0.000	\$7.33	\$1,407	\$10,942
	20,000	24,999	\$5,189	6	\$40.80	0.000	\$7.33	\$745	\$5,933
	25,000	29,999	\$3,288	4	\$40.80	0.000	\$7.33	\$474	\$3,762
	30,000	39,999	\$3,368	3	\$40.80	0.000	\$7.33	\$476	\$3,843
	40,000	49,999	\$1,820	1	\$40.80	0.000	\$7.33	\$250	\$2,069
	50,000	59,999	\$1,033	1	\$40.80	0.000	\$7.33	\$139	\$1,172
	60,000	69,999	\$780	0	\$40.80	0.000	\$7.33	\$103	\$883
	70,000	79,999	\$668	0	\$40.80	0.000	\$7.33	\$89	\$757
	80,000	89,999	\$550	0	\$40.80	0.000	\$7.33	\$74	\$623
	90,000	99,999	\$390	0	\$40.80	0.000	\$7.33	\$51	\$441
	100,000	119,999	\$609	0	\$40.80	0.000	\$7.33	\$80	\$689
	120,000	139,999	\$421	0	\$40.80	0.000	\$7.33	\$57	\$479
	140,000	159,999	\$195	0	\$40.80	0.000	\$7.33	\$25	\$220
	160,000	179,999	\$145	0	\$40.80	0.000	\$7.33	\$20	\$165
	180,000	199,999	\$97	0	\$40.80	0.000	\$7.33	\$12	\$110
	200,000	202,200	\$29	0	\$40.80	0.000	\$7.33	\$5	\$34

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
1 Inch Meters	0	999	\$546	2	\$52.38	0.000	\$7.33	\$114	\$660
	1,000	1,999	\$107	0	\$52.38	0.000	\$7.33	\$7	\$114
	2,000	2,999	\$107	0	\$52.38	0.000	\$7.33	\$7	\$114
	3,000	3,999	\$107	0	\$52.38	0.000	\$7.33	\$7	\$114
	4,000	4,999	\$107	0	\$52.38	0.000	\$7.33	\$7	\$114
	5,000	5,999	\$87	0	\$52.38	0.000	\$7.33	\$15	\$103
	6,000	6,999	\$92	0	\$52.38	0.000	\$7.33	\$18	\$111
	7,000	7,999	\$34	0	\$52.38	0.000	\$7.33	\$4	\$38
	8,000	8,999	\$69	0	\$52.38	0.000	\$7.33	\$13	\$82
	9,000	9,999	\$38	0	\$52.38	0.000	\$7.33	\$7	\$45
	10,000	14,999	\$130	0	\$52.38	0.000	\$7.33	\$23	\$153
	15,000	19,999	\$24	0	\$52.38	0.000	\$7.33	\$3	\$27
	20,000	24,999	\$19	0	\$52.38	0.000	\$7.33	\$5	\$23
	25,000	29,999	\$0	0	\$52.38	0.000	\$7.33	\$0	\$0
	200,000	201,000	\$0	0	\$52.38	0.000	\$7.33	\$0	\$0
0.625 Inch Pasture Meter	0	999	\$1,641	9	\$30.80	0.000	\$7.33	\$330	\$1,971
	1,000	1,999	\$634	1	\$30.80	0.000	\$7.33	\$62	\$697
	2,000	2,999	\$579	1	\$30.80	0.000	\$7.33	\$66	\$645
	3,000	3,999	\$442	1	\$30.80	0.000	\$7.33	\$47	\$489
	4,000	4,999	\$344	1	\$30.80	0.000	\$7.33	\$36	\$380
	5,000	5,999	\$161	0	\$30.80	0.000	\$7.33	\$23	\$184
	6,000	6,999	\$174	0	\$30.80	0.000	\$7.33	\$29	\$203
	7,000	7,999	\$133	0	\$30.80	0.000	\$7.33	\$20	\$153
	8,000	8,999	\$113	0	\$30.80	0.000	\$7.33	\$16	\$129
	9,000	9,999	\$112	0	\$30.80	0.000	\$7.33	\$17	\$130
	10,000	14,999	\$431	0	\$30.80	0.000	\$7.33	\$61	\$492
	15,000	19,999	\$356	0	\$30.80	0.000	\$7.33	\$47	\$403
	20,000	24,999	\$341	0	\$30.80	0.000	\$7.33	\$44	\$384
	25,000	29,999	\$341	0	\$30.80	0.000	\$7.33	\$44	\$384
	30,000	39,999	\$629	0	\$30.80	0.000	\$7.33	\$83	\$713
	40,000	49,999	\$586	0	\$30.80	0.000	\$7.33	\$76	\$662
	50,000	59,999	\$509	0	\$30.80	0.000	\$7.33	\$67	\$576
	60,000	69,999	\$464	0	\$30.80	0.000	\$7.33	\$61	\$525
	70,000	79,999	\$420	0	\$30.80	0.000	\$7.33	\$57	\$477
	80,000	89,999	\$334	0	\$30.80	0.000	\$7.33	\$46	\$379
	90,000	99,999	\$221	0	\$30.80	0.000	\$7.33	\$30	\$251
	100,000	119,999	\$288	0	\$30.80	0.000	\$7.33	\$40	\$327
	120,000	139,999	\$124	0	\$30.80	0.000	\$7.33	\$19	\$143
	140,000	159,999	\$0	0	\$30.80	0.000	\$7.33	\$0	\$0
	160,000	179,999	\$0	0	\$30.80	0.000	\$7.33	\$0	\$0
	180,000	199,999	\$0	0	\$30.80	0.000	\$7.33	\$0	\$0
	200,000	201,000	\$0	0	\$30.80	0.000	\$7.33	\$0	\$0

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
3 Inch Atlanta	0	999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	1,000	1,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	2,000	2,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	3,000	3,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	4,000	4,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	5,000	5,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	6,000	6,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	7,000	7,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	8,000	8,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	9,000	9,999	\$58	0	\$168.19	0.000	\$8.09	\$8	\$67
	10,000	14,999	\$292	0	\$168.19	0.000	\$8.09	\$41	\$333
	15,000	19,999	\$292	0	\$168.19	0.000	\$8.09	\$41	\$333
	20,000	24,999	\$292	0	\$168.19	0.000	\$8.09	\$41	\$333
	25,000	29,999	\$292	0	\$168.19	0.000	\$8.09	\$41	\$333
	30,000	39,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	40,000	49,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	50,000	59,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	60,000	69,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	70,000	79,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	80,000	89,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	90,000	99,999	\$584	0	\$168.19	0.000	\$8.09	\$82	\$667
	100,000	119,999	\$1,168	0	\$168.19	0.000	\$8.09	\$165	\$1,333
	120,000	139,999	\$1,168	0	\$168.19	0.000	\$8.09	\$165	\$1,333
	140,000	159,999	\$1,168	0	\$168.19	0.000	\$8.09	\$165	\$1,333
	160,000	179,999	\$1,168	0	\$168.19	0.000	\$8.09	\$165	\$1,333
	180,000	199,999	\$1,168	0	\$168.19	0.000	\$8.09	\$165	\$1,333
	200,000	796,400	\$19,111	1	\$168.19	0.000	\$8.09	\$2,628	\$21,739

**Table 10 - Initial Rate Adjustments and Resulting Revenues**

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
2 Inch Cambridge	0	999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	1,000	1,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	2,000	2,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	3,000	3,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	4,000	4,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	5,000	5,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	6,000	6,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	7,000	7,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	8,000	8,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	9,000	9,999	\$58	0	\$94.85	0.000	\$8.09	\$8	\$67
	10,000	14,999	\$292	0	\$94.85	0.000	\$8.09	\$41	\$333
	15,000	19,999	\$292	0	\$94.85	0.000	\$8.09	\$41	\$333
	20,000	24,999	\$292	0	\$94.85	0.000	\$8.09	\$41	\$333
	25,000	29,999	\$292	0	\$94.85	0.000	\$8.09	\$41	\$333
	30,000	39,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	40,000	49,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	50,000	59,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	60,000	69,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	70,000	79,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	80,000	89,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	90,000	99,999	\$584	0	\$94.85	0.000	\$8.09	\$82	\$667
	100,000	119,999	\$1,168	0	\$94.85	0.000	\$8.09	\$165	\$1,333
	120,000	139,999	\$1,620	0	\$94.85	0.000	\$8.09	\$181	\$1,801
	140,000	159,999	\$911	0	\$94.85	0.000	\$8.09	\$105	\$1,016
	160,000	179,999	\$662	0	\$94.85	0.000	\$8.09	\$81	\$743
	180,000	199,999	\$487	0	\$94.85	0.000	\$8.09	\$69	\$556
	200,000	310,000	\$2,771	0	\$94.85	0.000	\$8.09	\$331	\$3,103

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
0.625 Inch Cambridge Pasture	0	999	\$110	1	\$30.80	0.000	\$8.09	\$31	\$141
	1,000	1,999	\$0	0	\$30.80	0.000	\$8.09	\$0	\$0
	200,000	310,000	\$0	0	\$30.80	0.000	\$8.09	\$0	\$0
2 Inch Dexter	0	999	\$1,702	1	\$94.85	0.000	\$8.09	\$97	\$1,799
	200,000	310,000	\$0	0	\$94.85	0.000	\$8.09	\$0	\$0
Free Water	0	999	\$0	0	\$0.00	0.000	\$0.00	\$0	\$0
	200,000	310,000	\$0	0	\$0.00	0.000	\$0.00	\$0	\$0
Ghost Meter	0	999	\$432	5	\$8.00	0.000	\$0.00	\$40	\$472
	200,000	310,000	\$0	0	\$8.00	0.000	\$0.00	\$0	\$0
Total Rate Revenue at Current Rates			\$451,292	Total Rate Revenue at Modeled Rates				\$56,004	
Total Blended Rate Revenues for the Year <sup>2</sup>									\$507,296

Note 1, New Minimum Charge Base Rates: If meter or connection size-based minimum charges are to be used, and the user classes modeled above include meter or connection sizes, the amounts shown in this column include meter or connection size surcharges as calculated in Table 16. Either way, the narrative report includes the rates and surcharges to assess.

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

11.0	months at the old user charge rates	and	1.0	months at the new user charge rates.
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## Table 11 - Capacity Costs

Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

### Peak and Base Flow Capacity Costs

	Fixed Assets Original Value (Capacity Cost Assumed at \$4,000 per Connection)	% of Value Attributable to Peak Flow Capacity	Peak Flow Capacity Cost	Annual Peak Flow Capacity Cost (40-year Depreciation)	% of Value Attributable to Base Flow Capacity	Base Flow Capacity Cost	Annual Base Flow Capacity Cost (40-year Depreciation)
	\$2,683,333	50.0%	\$1,341,667	\$78,190	50.0%	\$1,341,667	\$78,190
Totals	\$2,683,333		\$1,341,667	\$78,190		\$1,341,667	\$78,190

### How Capacity Costs Will Be Recovered

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

Peak Flow Capacity Costs to be Recovered by System Development Fees

- 0.0% Target Percentage of Costs to Recover
- \$0 Target Portion of Costs to Recover
- \$0 Cost per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by System Development Fees

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

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

- \$0 Average Field Cost per New Connection
- \$0 Average Administration Cost per New Connection
- \$0 Field and Admin Cost per New Connection
- \$0 Base Cost to Recover per New Connection

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

Peak Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

- 100.0% Target Percentage of Costs to Recover
- \$78,190 Target Portion of Costs to Recover in One Full Year
- \$6,516 Target Portion of Costs to Recover in Monthly Surcharges
- \$7.72 Monthly Surcharge per Peak Flow Capacity Share

Base Flow Capacity Costs to be Recovered by Minimum Charge Surcharges

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



## Table 12 - AWWA Safe Operating Capacities by Meter Size

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

This table calculates the meter equivalent ratio, which is used for calculating peak flow capacity-based system development surcharges and revenues in Tables 15 and 16.

Meter Size, in Inches	Meter Type	Maximum-Rated Safe Operating Flow, in gallons per minute	Meter Equivalent Ratio (Capacity Shares)
Five Eighths	Displacement	20	1.0
Three Quarters	Displacement	30	1.5
One Inch	Displacement	50	2.5
One & a Half Inch	Displacement	100	5.0
Two Inch	Displacement	160	8.0
Three	Singlet	320	16.0
Three	Compound, Class I	320	16.0
Three	Turbine, Class I	350	17.5
Four	Singlet	500	25.0
Four	Compound, Class I	500	25.0
Four	Turbine, Class I	630	31.0

Table 15 - Minimum Charge Fees, Including Capacity Surcharges

Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

Meter Size	Meter Type	Uniform Adjustment to Base Capacity Cost			\$11.00	Adjusted Field and Admin Costs (Fee) per New Connection	Annual Base Capacity-only Surcharge Revenues	Cost to Serve Minimum Calculated in Table 10	Monthly Minimum Charge
		Capacity-only Cost (Fee)	Adjusted Annual Peak Capacity-only Surcharge	Monthly Base Capacity-only Costs (Surcharge per Customer, Including Out of District Multiplier)	Uniform Adjustment to Base Capacity Cost				
In-District Meters									
Five Eighths	Displacement	\$7.72	\$73,465	\$0.00	\$11.00	\$11.00	\$104,676	\$22.08	\$40.80
Three Quarters	Displacement	\$7.72	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$40.80
One Inch	Displacement	\$19.30	\$1,621	\$0.00	\$11.00	\$11.00	\$924	\$22.08	\$52.38
One & a Half Inch	Displacement	\$38.60	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$71.69
Two Inch	Displacement	\$61.76	\$1,482	\$0.00	\$11.00	\$11.00	\$264	\$22.08	\$94.85
Two & a Half Inch	Displacement	\$96.50	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$129.59
Three Inch	Singlet	\$123.52	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$156.61
Three Inch	Compound, Class I	\$123.52	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$156.61
Three Inch	Turbine, Class I	\$135.10	\$1,621	\$0.00	\$11.00	\$11.00	\$132	\$22.08	\$168.19
Four Inch	Singlet	\$193.00	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$226.09
Four Inch	Compound, Class I	\$193.00	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$226.09
Four Inch	Turbine, Class I	\$239.33	\$0	\$0.00	\$11.00	\$11.00	\$0	\$22.08	\$272.41
Total:			\$78,190				\$105,996		

# Table 16 - Revenues From Minimum Charges

## Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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

Meter Size	Meter Type	Capacity Shares, Including Out of District Multiplier and Economy of Scale Adjustments	Current Number Meters This Size	Total Adjusted Capacity Shares	Adjusted Annual Peak Capacity-only Surcharge Revenues	Annual Base Capacity-only Surcharge Revenues	Capacity Surcharges for One Full Year
<b>In-District Meters</b>							
Five Eighths	Displacement	1.0	793	793	\$73,465	\$104,676	\$178,141
Three Quarters	Displacement	1.0	0	0	\$0	\$0	\$0
One Inch	Displacement	2.5	7	18	\$1,621	\$924	\$2,545
One & a Half Inch	Displacement	5.0	0	0	\$0	\$0	\$0
Two Inch	Displacement	8.0	2	16	\$1,482	\$264	\$1,746
Two & a Half Inch	Displacement	12.5	0	0	\$0	\$0	\$0
Three Inch	Singlet	16.0	0	0	\$0	\$0	\$0
Three Inch	Compound, Class I	16.0	0	0	\$0	\$0	\$0
Three Inch	Turbine, Class I	17.5	1	18	\$1,621	\$132	\$1,753
Four Inch	Singlet	25.0	0	0	\$0	\$0	\$0
Four Inch	Compound, Class I	25.0	0	0	\$0	\$0	\$0
Four Inch	Turbine, Class I	31.0	0	0	\$0	\$0	\$0
Total:			803	844	\$78,190	\$105,996	\$184,186

## Table 17 - Financial Capacity Indicators and Reserves

Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

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 (This 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
	1/1/17	1/1/18	1/1/19	1/1/20	1/1/21	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28
<b>Capacity Indicators</b>												
Equivalent Final Monthly Bill for a 5,000 gal per Month Residential Customer	\$68.50	\$77.45	\$77.45	\$80.94	\$84.58	\$88.39	\$92.37	\$96.52	\$100.87	\$105.41	\$110.15	\$115.10
Annual Median Household Income (AMHI) Within Service Area (Projected from last available Census survey or estimated income data)	\$46,088	\$47,243	\$48,428	\$49,643	\$50,888	\$52,164	\$53,472	\$54,814	\$56,188	\$57,597	\$59,042	\$60,523
<b>Affordability Index:</b>												
Current Rates First Column, Then Proposed Rates	1.78%	1.97%	1.92%	1.96%	1.99%	2.03%	2.07%	2.11%	2.15%	2.20%	2.24%	2.28%
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.												
Equivalent Final Monthly Bill for a 2,000 gal per Month, Low-income Residential Customer	\$54.50	\$55.46	\$55.46	\$57.96	\$60.57	\$63.29	\$66.14	\$69.12	\$72.23	\$75.48	\$78.88	\$82.43
Income at One-half the AMHI Above	\$23,044	\$23,333	\$23,625	\$23,922	\$24,222	\$24,525	\$24,833	\$25,144	\$25,460	\$25,779	\$26,102	\$26,429
<b>Bill Affordability for Low-income, Low-volume Customer:</b>												
Current Rates First Column, Then Proposed Rates	2.84%	2.85%	2.82%	2.91%	3.00%	3.10%	3.20%	3.30%	3.40%	3.51%	3.63%	3.74%
This additional indicator of affordability assumes a residential customer with income at one-half of the median household income above, that income is growing at one-half the rate of the median household income and the customer uses 2,000 gallons per month. Such a customer is likely either a minimum wage, or near-minimum wage worker or is living on Social Security-only.												
<b>Estimated Operating Ratio:</b>												
Current Rates First Column, Then Proposed Rates	1.19	0.94	0.98	0.98	0.99	1.01	1.02	1.03	1.05	1.06	1.07	1.09
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.												
<b>Estimated Coverage Ratio:</b>												
Current Rates First Column, Then Proposed Rates	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
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.												
<b>Reserves</b>												
	Balance Ending on 12/31/16	Balance Ending on 12/31/17	Balance Ending on 12/31/18	Balance Ending on 12/31/19	Balance Ending on 12/31/20	Balance Ending on 12/31/21	Balance Ending on 12/31/22	Balance Ending on 12/31/23	Balance Ending on 12/31/24	Balance Ending on 12/31/25	Balance Ending on 12/31/26	Balance Ending on 12/31/27
Cash and Cash Equivalents	\$192,424	\$285,244	\$238,464	\$220,681	\$205,591	\$193,547	\$202,252	\$225,743	\$256,445	\$311,747	\$378,190	\$451,561
Other Liquid Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Undedicated Cash Assets, Before Inflation	\$192,424	\$285,244	\$238,464	\$220,681	\$205,591	\$193,547	\$202,252	\$225,743	\$256,445	\$311,747	\$378,190	\$451,561
Total Cash Assets Discounted for Inflation (Future Unrestricted Purchasing Power)	\$192,424	\$285,244	\$238,464	\$214,061	\$193,441	\$176,645	\$179,052	\$193,854	\$213,611	\$251,886	\$296,404	\$343,290
Repair & Replacement	\$325,000	\$176,016	\$19,837	\$1,684	\$37,946	\$102,937	\$30,984	\$81,889	\$141,994	\$205,424	\$255,834	\$164,325
Debt and CIP Reserves	\$0	\$14,750	\$15,045	\$15,345	\$15,652	\$15,965	\$16,285	\$16,610	\$16,943	\$17,281	\$17,627	\$17,980
Sum of All Reserves	\$517,424	\$476,009	\$273,345	\$237,710	\$259,190	\$312,449	\$249,520	\$324,243	\$415,381	\$534,452	\$651,651	\$633,866

## Table 18 - Comparison of Bills Before and After Rate Adjustments

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-1

Changes to the bills for customer classes and example volumes of use are shown below. These include the effect of meter size-based minimum charge surcharges from Table 15.

Customer or Rate Class, or Meter Size	Gallons of Use	Customers at or Above This Volume and Below Next	Cumulative Customers	Current Bill (After Recent Adjustment) for This Volume	Modeled Bill for This Volume	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
0.625 Inch Meters	0	178	178	\$40.00	\$40.80	\$0.80	2%
	1,000	74	252	\$47.25	\$48.13	\$0.88	2%
	2,000	70	322	\$54.50	\$55.46	\$0.96	2%
	3,000	78	400	\$61.75	\$62.79	\$1.04	2%
	4,000	63	463	\$69.00	\$70.12	\$1.12	2%
	5,000	42	504	\$76.25	\$77.45	\$1.20	2%
	6,000	30	535	\$83.50	\$84.78	\$1.28	2%
	7,000	18	553	\$90.75	\$92.11	\$1.36	2%
	8,000	16	569	\$98.00	\$99.44	\$1.44	1%
	9,000	12	581	\$105.25	\$106.77	\$1.52	1%
	10,000	33	614	\$112.50	\$114.10	\$1.60	1%
	15,000	14	628	\$148.75	\$150.75	\$2.00	1%
	20,000	6	634	\$185.00	\$187.40	\$2.40	1%
	25,000	4	638	\$221.25	\$224.05	\$2.80	1%
	30,000	3	641	\$257.50	\$260.70	\$3.20	1%
	40,000	1	642	\$330.00	\$334.00	\$4.00	1%
	50,000	1	643	\$402.50	\$407.30	\$4.80	1%
	60,000	0	643	\$475.00	\$480.60	\$5.60	1%
	70,000	0	643	\$547.50	\$553.90	\$6.40	1%
	80,000	0	644	\$620.00	\$627.20	\$7.20	1%
	90,000	0	644	\$692.50	\$700.50	\$8.00	1%
	100,000	0	644	\$765.00	\$773.80	\$8.80	1%
	200,000	0	644	\$1,490.00	\$1,506.80	\$16.80	1%
1 Inch Meters	0	2	2	\$40.00	\$52.38	\$12.38	31%
	1,000	0	2	\$47.25	\$59.71	\$12.46	26%
	2,000	0	2	\$54.50	\$67.04	\$12.54	23%
	3,000	0	2	\$61.75	\$74.37	\$12.62	20%
	4,000	0	2	\$69.00	\$81.70	\$12.70	18%
	5,000	0	2	\$76.25	\$89.03	\$12.78	17%
	6,000	0	2	\$83.50	\$96.36	\$12.86	15%
	7,000	0	2	\$90.75	\$103.69	\$12.94	14%
	8,000	0	3	\$98.00	\$111.02	\$13.02	13%
	9,000	0	3	\$105.25	\$118.35	\$13.10	12%
	10,000	0	3	\$112.50	\$125.68	\$13.18	12%
	100,000	0	3	\$765.00	\$785.38	\$20.38	3%
	200,000	0	3	\$1,490.00	\$1,518.38	\$28.38	2%

## Table 18 - Comparison of Bills Before and After Rate Adjustments

Customer or Rate Class, or Meter Size	Gallons of Use	Customers at or Above This Volume and Below Next	Cumulative Customers	Current Bill (After Recent Adjustment) for This Volume	Modeled Bill for This Volume	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
0.625 Inch Pasture Meter	0	9	9	\$30.00	\$30.80	\$0.80	3%
	1,000	1	10	\$37.25	\$38.13	\$0.88	2%
	2,000	1	11	\$44.50	\$45.46	\$0.96	2%
	3,000	1	12	\$51.75	\$52.79	\$1.04	2%
	4,000	1	12	\$59.00	\$60.12	\$1.12	2%
	5,000	0	12	\$66.25	\$67.45	\$1.20	2%
	6,000	0	13	\$73.50	\$74.78	\$1.28	2%
	7,000	0	13	\$80.75	\$82.11	\$1.36	2%
	8,000	0	13	\$88.00	\$89.44	\$1.44	2%
	9,000	0	13	\$95.25	\$96.77	\$1.52	2%
	10,000	0	13	\$102.50	\$104.10	\$1.60	2%
	100,000	0	15	\$755.00	\$763.80	\$8.80	1%
	200,000	0	15	\$1,480.00	\$1,496.80	\$16.80	1%
3 Inch Atlanta	0	0	0	\$155.00	\$168.19	\$13.19	9%
	10,000	0	0	\$208.20	\$249.08	\$40.88	20%
	100,000	0	0	\$687.00	\$977.14	\$290.14	42%
	200,000	1	1	\$1,219.00	\$1,786.10	\$567.10	47%
2 Inch Cambridge	0	0	0	\$155.00	\$94.85	-\$60.15	-39%
	9,000	0	0	\$202.88	\$167.65	-\$35.23	-17%
	10,000	0	0	\$208.20	\$175.74	-\$32.46	-16%
	15,000	0	0	\$234.80	\$216.19	-\$18.61	-8%
	120,000	0	0	\$793.40	\$1,065.59	\$272.19	34%
	140,000	0	1	\$899.80	\$1,227.38	\$327.58	36%
	160,000	0	1	\$1,006.20	\$1,389.17	\$382.97	38%
	180,000	0	1	\$1,112.60	\$1,550.97	\$438.37	39%
0.625 Inch Cambridge Pasture	0	1	1	\$30.00	\$30.80	\$0.80	3%
	10,000	0	1	\$102.50	\$111.70	\$9.20	9%
	100,000	0	1	\$755.00	\$839.76	\$84.76	11%
	200,000	0	1	\$1,480.00	\$1,648.72	\$168.72	11%
2 Inch Dexter	0	1	1	\$155.00	\$94.85	-\$60.15	-39%
	9,000	0	1	\$202.88	\$167.65	-\$35.23	-17%
	10,000	0	1	\$208.20	\$175.74	-\$32.46	-16%
	15,000	0	1	\$234.80	\$216.19	-\$18.61	-8%
	200,000	0	1	\$1,219.00	\$1,712.76	\$493.76	41%
Free Water	0	0	0	\$0.00	\$0.00	\$0.00	N.A.
	200,000	0	0	\$0.00	\$0.00	\$0.00	N.A.
Ghost Meter	0	5	5	\$8.00	\$8.00	\$0.00	0%

**Table 19 - User Statistics**  
**Cowley County, KS RWD #5; Water Rates, Scenario 2018-1**

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

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

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

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

**4,460 Gallons: This is the average residential customer's usage per Monthly billing cycle.**

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

**46,837,000 Gallons: This is the volume metered through customer meters that was available to be sold by the utility during the test year.**

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

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

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

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
0.625 Inch Meters	0	999	0.763	5,900,000.0	178.2	26.6%	12.6%	17.1%	100.0%	20.3%	19.8%
	1,000	1,999	0.915	5,118,400.0	74.1	11.0%	10.9%	32.0%	82.9%	13.7%	11.2%
	2,000	2,999	0.903	4,248,700.0	69.7	10.4%	9.1%	44.3%	68.0%	11.7%	9.9%
	3,000	3,999	0.866	3,350,400.0	77.6	11.6%	7.2%	54.0%	55.7%	10.4%	9.5%
	4,000	4,999	0.854	2,506,000.0	63.3	9.4%	5.4%	61.3%	46.0%	8.0%	7.5%
	5,000	5,999	0.864	1,880,900.0	41.6	6.2%	4.0%	66.7%	38.7%	4.1%	5.2%
	6,000	6,999	0.874	1,466,300.0	30.3	4.5%	3.1%	71.0%	33.3%	3.1%	3.9%
	7,000	7,999	0.905	1,189,600.0	18.0	2.7%	2.5%	74.4%	29.0%	2.2%	2.7%
	8,000	8,999	0.898	986,300.0	16.3	2.4%	2.1%	77.3%	25.6%	1.9%	2.3%
	9,000	9,999	0.904	815,600.0	11.9	1.8%	1.7%	79.7%	22.7%	1.5%	1.8%
	10,000	14,999	3.434	2,606,600.0	32.8	4.9%	5.6%	87.2%	20.3%	4.4%	5.3%
	15,000	19,999	3.646	1,330,700.0	13.9	2.1%	2.8%	91.1%	12.8%	2.1%	2.5%
	20,000	24,999	4.016	795,200.0	6.0	0.9%	1.7%	93.4%	8.9%	1.1%	1.3%
	25,000	29,999	3.928	494,900.0	4.0	0.6%	1.1%	94.8%	6.6%	0.7%	0.8%
	30,000	39,999	6.941	541,400.0	3.3	0.5%	1.2%	96.4%	5.2%	0.7%	0.8%
	40,000	49,999	8.353	317,400.0	1.3	0.2%	0.7%	97.3%	3.6%	0.4%	0.4%
	50,000	59,999	8.248	189,700.0	0.5	0.1%	0.4%	97.9%	2.7%	0.2%	0.2%
	60,000	69,999	8.765	149,000.0	0.3	0.0%	0.3%	98.3%	2.1%	0.2%	0.2%
	70,000	79,999	8.993	125,900.0	0.3	0.0%	0.3%	98.7%	1.7%	0.1%	0.2%
	80,000	89,999	9.236	101,600.0	0.3	0.0%	0.2%	99.0%	1.3%	0.1%	0.1%
	90,000	99,999	9.538	76,300.0	0.1	0.0%	0.2%	99.2%	1.0%	0.1%	0.1%
	100,000	119,999	16.800	117,600.0	0.2	0.0%	0.3%	99.5%	0.8%	0.1%	0.1%
	120,000	139,999	15.060	75,300.0	0.3	0.0%	0.2%	99.7%	0.5%	0.1%	0.1%
	140,000	159,999	20.000	40,000.0	0.0	0.0%	0.1%	99.9%	0.3%	0.0%	0.0%
	160,000	179,999	13.050	26,100.0	0.1	0.0%	0.1%	99.9%	0.1%	0.0%	0.0%
	180,000	199,999	20.000	20,000.0	0.0	0.0%	0.0%	100.0%	0.1%	0.0%	0.0%
	200,000	202,200	2.200	2,200.0	0.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Totals for Class				34,472,100.0	644.2	96.0%	73.6%			87.3%	86.2%

## Table 19 - User Statistics

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
1 Inch Meters	0	999	0.333	12,000.0	2.0	0.3%	0.0%	10.3%	100.0%	0.1%	0.2%
	1,000	1,999	1.000	12,000.0	0.0	0.0%	0.0%	20.6%	89.7%	0.0%	0.0%
	2,000	2,999	1.000	12,000.0	0.0	0.0%	0.0%	30.9%	79.4%	0.0%	0.0%
	3,000	3,999	1.000	12,000.0	0.0	0.0%	0.0%	41.2%	69.1%	0.0%	0.0%
	4,000	4,999	1.000	12,000.0	0.0	0.0%	0.0%	51.5%	58.8%	0.0%	0.0%
	5,000	5,999	0.867	10,400.0	0.2	0.0%	0.0%	60.4%	48.5%	0.0%	0.0%
	6,000	6,999	0.770	7,700.0	0.3	0.0%	0.0%	67.0%	39.6%	0.0%	0.0%
	7,000	7,999	1.000	7,000.0	0.0	0.0%	0.0%	73.0%	33.0%	0.0%	0.0%
	8,000	8,999	0.957	6,700.0	0.2	0.0%	0.0%	78.8%	27.0%	0.0%	0.0%
	9,000	9,999	0.820	4,100.0	0.1	0.0%	0.0%	82.3%	21.2%	0.0%	0.0%
	10,000	14,999	3.875	15,500.0	0.3	0.0%	0.0%	95.6%	17.7%	0.0%	0.0%
	15,000	19,999	5.000	5,000.0	0.0	0.0%	0.0%	99.9%	4.4%	0.0%	0.0%
	20,000	24,999	0.100	100.0	0.1	0.0%	0.0%	100.0%	0.1%	0.0%	0.0%
	200,000	201,000	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			116,500.0	3.0	0.4%	0.2%			0.3%	0.4%
0.625 Inch Pasture Meter	0	999	0.412	72,500.0	9.1	1.4%	0.2%	5.3%	100.0%	0.4%	0.6%
	1,000	1,999	0.928	62,200.0	0.8	0.1%	0.1%	9.8%	94.7%	0.1%	0.1%
	2,000	2,999	0.893	51,800.0	1.1	0.2%	0.1%	13.5%	90.2%	0.1%	0.1%
	3,000	3,999	0.924	41,600.0	0.7	0.1%	0.1%	16.5%	86.5%	0.1%	0.1%
	4,000	4,999	0.881	32,600.0	0.5	0.1%	0.1%	18.9%	83.5%	0.1%	0.1%
	5,000	5,999	0.945	29,300.0	0.2	0.0%	0.1%	21.0%	81.1%	0.0%	0.0%
	6,000	6,999	0.907	26,300.0	0.4	0.1%	0.1%	22.9%	79.0%	0.0%	0.1%
	7,000	7,999	0.979	23,500.0	0.2	0.0%	0.1%	24.6%	77.1%	0.0%	0.0%
	8,000	8,999	0.968	21,300.0	0.1	0.0%	0.0%	26.2%	75.4%	0.0%	0.0%
	9,000	9,999	0.919	19,300.0	0.2	0.0%	0.0%	27.5%	73.8%	0.0%	0.0%
	10,000	14,999	4.263	81,000.0	0.3	0.0%	0.2%	33.4%	72.5%	0.1%	0.1%
	15,000	19,999	4.753	71,300.0	0.1	0.0%	0.2%	38.6%	66.6%	0.1%	0.1%
	20,000	24,999	5.000	70,000.0	0.0	0.0%	0.1%	43.6%	61.4%	0.1%	0.1%
	25,000	29,999	5.000	70,000.0	0.0	0.0%	0.1%	48.7%	56.4%	0.1%	0.1%
	30,000	39,999	8.964	125,500.0	0.2	0.0%	0.3%	57.8%	51.3%	0.1%	0.1%
	40,000	49,999	9.875	118,500.0	0.1	0.0%	0.3%	66.4%	42.2%	0.1%	0.1%
	50,000	59,999	9.336	102,700.0	0.1	0.0%	0.2%	73.8%	33.6%	0.1%	0.1%
	60,000	69,999	9.340	93,400.0	0.1	0.0%	0.2%	80.6%	26.2%	0.1%	0.1%
	70,000	79,999	9.178	82,600.0	0.2	0.0%	0.2%	86.6%	19.4%	0.1%	0.1%
	80,000	89,999	9.257	64,800.0	0.2	0.0%	0.1%	91.3%	13.4%	0.1%	0.1%
	90,000	99,999	8.700	43,500.0	0.1	0.0%	0.1%	94.4%	8.7%	0.0%	0.1%
	100,000	119,999	13.825	55,300.0	0.2	0.0%	0.1%	98.4%	5.6%	0.1%	0.1%
	120,000	139,999	10.900	21,800.0	0.2	0.0%	0.0%	100.0%	1.6%	0.0%	0.0%
	200,000	201,000	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			1,380,800.0	14.7	2.2%	2.9%			2.1%	2.4%



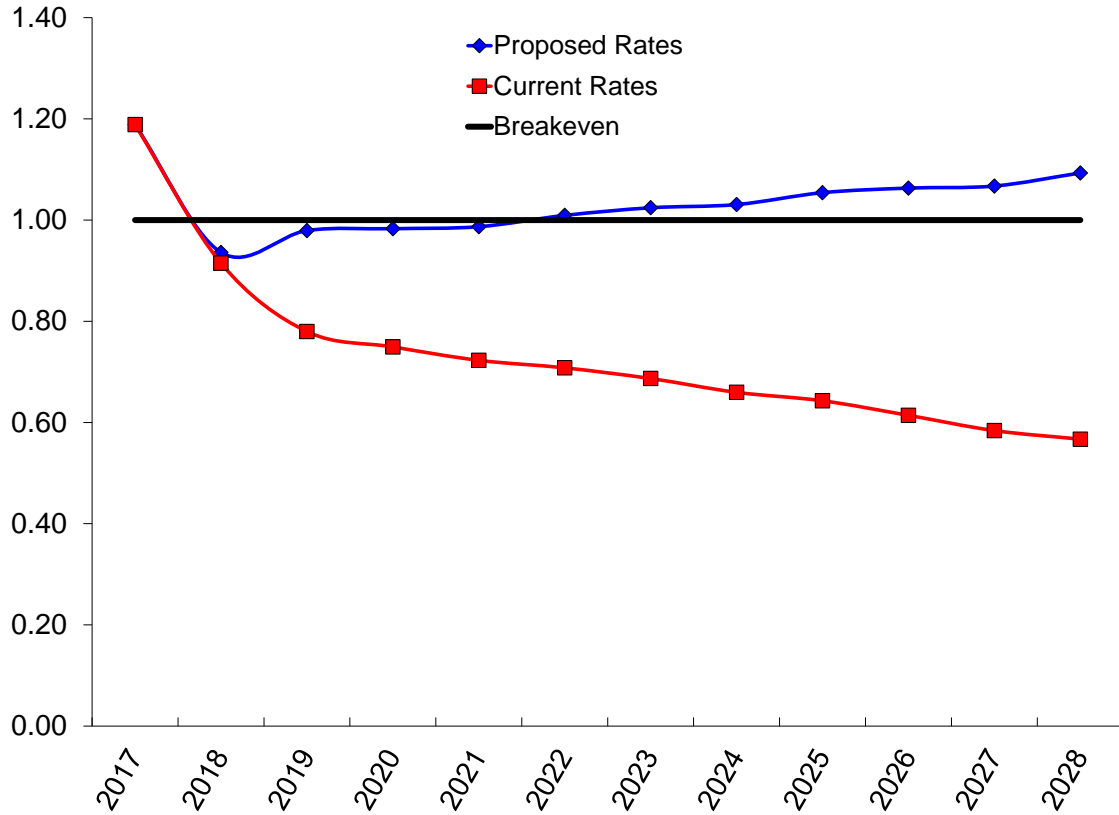
## Table 19 - User Statistics

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
3 Inch Atlanta	0	999	1.000	12,000.0	0.0	0.0%	0.0%	0.2%	100.0%	0.0%	0.0%
	1,000	1,999	1.000	12,000.0	0.0	0.0%	0.0%	0.4%	99.8%	0.0%	0.0%
	2,000	2,999	1.000	12,000.0	0.0	0.0%	0.0%	0.6%	99.6%	0.0%	0.0%
	3,000	3,999	1.000	12,000.0	0.0	0.0%	0.0%	0.8%	99.4%	0.0%	0.0%
	4,000	4,999	1.000	12,000.0	0.0	0.0%	0.0%	1.0%	99.2%	0.0%	0.0%
	5,000	5,999	1.000	12,000.0	0.0	0.0%	0.0%	1.2%	99.0%	0.0%	0.0%
	6,000	6,999	1.000	12,000.0	0.0	0.0%	0.0%	1.4%	98.8%	0.0%	0.0%
	7,000	7,999	1.000	12,000.0	0.0	0.0%	0.0%	1.6%	98.6%	0.0%	0.0%
	8,000	8,999	1.000	12,000.0	0.0	0.0%	0.0%	1.8%	98.4%	0.0%	0.0%
	9,000	9,999	1.000	12,000.0	0.0	0.0%	0.0%	2.0%	98.2%	0.0%	0.0%
	10,000	14,999	5.000	60,000.0	0.0	0.0%	0.1%	3.0%	98.0%	0.1%	0.1%
	15,000	19,999	5.000	60,000.0	0.0	0.0%	0.1%	4.0%	97.0%	0.1%	0.1%
	20,000	24,999	5.000	60,000.0	0.0	0.0%	0.1%	5.0%	96.0%	0.1%	0.1%
	25,000	29,999	5.000	60,000.0	0.0	0.0%	0.1%	6.0%	95.0%	0.1%	0.1%
	30,000	39,999	10.000	120,000.0	0.0	0.0%	0.3%	8.0%	94.0%	0.1%	0.1%
	40,000	49,999	10.000	120,000.0	0.0	0.0%	0.3%	10.0%	92.0%	0.1%	0.1%
	50,000	59,999	10.000	120,000.0	0.0	0.0%	0.3%	12.0%	90.0%	0.1%	0.1%
	60,000	69,999	10.000	120,000.0	0.0	0.0%	0.3%	14.1%	88.0%	0.1%	0.1%
	70,000	79,999	10.000	120,000.0	0.0	0.0%	0.3%	16.1%	85.9%	0.1%	0.1%
	80,000	89,999	10.000	120,000.0	0.0	0.0%	0.3%	18.1%	83.9%	0.1%	0.1%
	90,000	99,999	10.000	120,000.0	0.0	0.0%	0.3%	20.1%	81.9%	0.1%	0.1%
	100,000	119,999	20.000	240,000.0	0.0	0.0%	0.5%	24.1%	79.9%	0.3%	0.3%
	120,000	139,999	20.000	240,000.0	0.0	0.0%	0.5%	28.1%	75.9%	0.3%	0.3%
	140,000	159,999	20.000	240,000.0	0.0	0.0%	0.5%	32.1%	71.9%	0.3%	0.3%
	160,000	179,999	20.000	240,000.0	0.0	0.0%	0.5%	36.1%	67.9%	0.3%	0.3%
	180,000	199,999	20.000	240,000.0	0.0	0.0%	0.5%	40.2%	63.9%	0.3%	0.3%
	200,000	796,400	298.008	3,576,100.0	1.0	0.1%	7.6%	100.0%	59.8%	4.2%	4.7%
Totals for Class				5,976,100.0	1.0	0.1%	12.8%			6.8%	7.6%

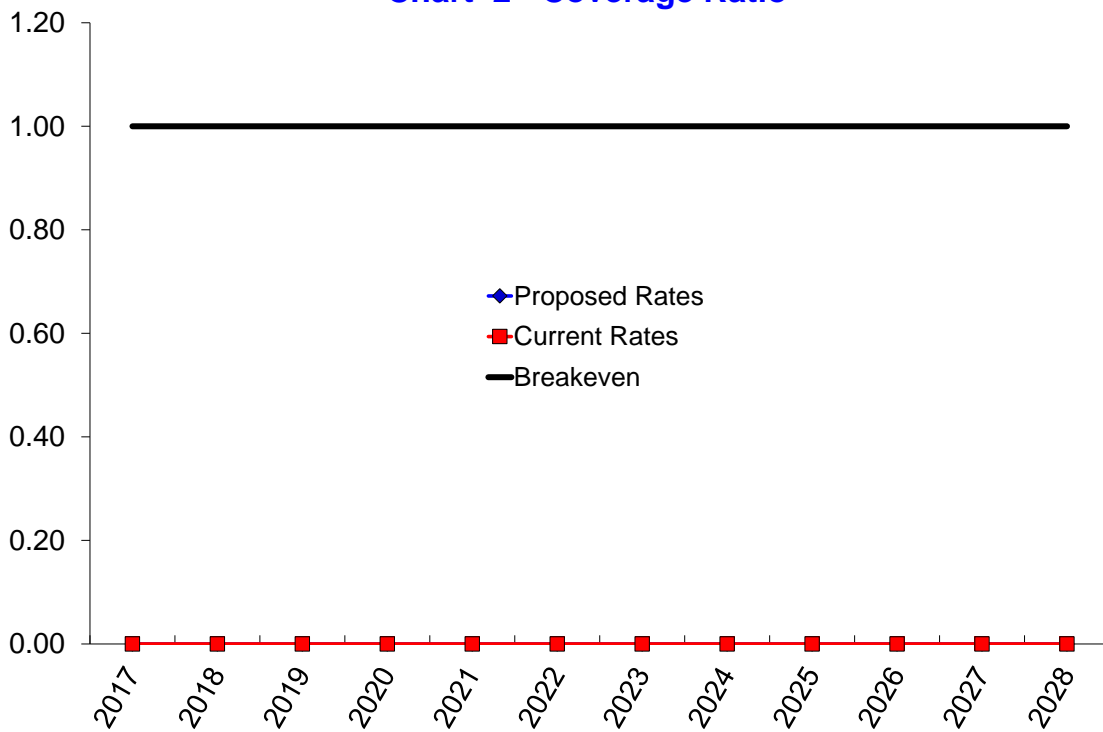
## Table 19 - User Statistics

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
2 Inch Cambridge	0	999	1.000	12,000.0	0.0	0.0%	0.0%	0.5%	100.0%	0.0%	0.0%
	1,000	1,999	1.000	12,000.0	0.0	0.0%	0.0%	1.0%	99.5%	0.0%	0.0%
	2,000	2,999	1.000	12,000.0	0.0	0.0%	0.0%	1.5%	99.0%	0.0%	0.0%
	3,000	3,999	1.000	12,000.0	0.0	0.0%	0.0%	2.0%	98.5%	0.0%	0.0%
	4,000	4,999	1.000	12,000.0	0.0	0.0%	0.0%	2.5%	98.0%	0.0%	0.0%
	5,000	5,999	1.000	12,000.0	0.0	0.0%	0.0%	3.0%	97.5%	0.0%	0.0%
	6,000	6,999	1.000	12,000.0	0.0	0.0%	0.0%	3.5%	97.0%	0.0%	0.0%
	7,000	7,999	1.000	12,000.0	0.0	0.0%	0.0%	4.0%	96.5%	0.0%	0.0%
	8,000	8,999	1.000	12,000.0	0.0	0.0%	0.0%	4.5%	96.0%	0.0%	0.0%
	9,000	9,999	1.000	12,000.0	0.0	0.0%	0.0%	5.0%	95.5%	0.0%	0.0%
	10,000	14,999	5.000	60,000.0	0.0	0.0%	0.1%	7.5%	95.0%	0.1%	0.1%
	15,000	19,999	5.000	60,000.0	0.0	0.0%	0.1%	9.9%	92.5%	0.1%	0.1%
	20,000	24,999	5.000	60,000.0	0.0	0.0%	0.1%	12.4%	90.1%	0.1%	0.1%
	25,000	29,999	5.000	60,000.0	0.0	0.0%	0.1%	14.9%	87.6%	0.1%	0.1%
	30,000	39,999	10.000	120,000.0	0.0	0.0%	0.3%	19.9%	85.1%	0.1%	0.1%
	40,000	49,999	10.000	120,000.0	0.0	0.0%	0.3%	24.8%	80.1%	0.1%	0.1%
	50,000	59,999	10.000	120,000.0	0.0	0.0%	0.3%	29.8%	75.2%	0.1%	0.1%
	60,000	69,999	10.000	120,000.0	0.0	0.0%	0.3%	34.8%	70.2%	0.1%	0.1%
	70,000	79,999	10.000	120,000.0	0.0	0.0%	0.3%	39.7%	65.2%	0.1%	0.1%
	80,000	89,999	10.000	120,000.0	0.0	0.0%	0.3%	44.7%	60.3%	0.1%	0.1%
	90,000	99,999	10.000	120,000.0	0.0	0.0%	0.3%	49.7%	55.3%	0.1%	0.1%
	100,000	119,999	20.000	240,000.0	0.0	0.0%	0.5%	59.6%	50.3%	0.3%	0.3%
	120,000	139,999	18.017	216,200.0	0.3	0.0%	0.5%	68.6%	40.4%	0.4%	0.3%
	140,000	159,999	16.113	128,900.0	0.2	0.0%	0.3%	73.9%	31.4%	0.2%	0.2%
	160,000	179,999	17.800	106,800.0	0.1	0.0%	0.2%	78.3%	26.1%	0.1%	0.1%
	180,000	199,999	20.000	100,000.0	0.0	0.0%	0.2%	82.5%	21.7%	0.1%	0.1%
	200,000	310,000	84.720	423,600.0	0.4	0.1%	0.9%	100.0%	17.5%	0.6%	0.6%
Totals for Class				2,415,500.0	1.0	0.1%	5.2%			3.0%	3.1%
0.625 Inch Cambridge Pasture	0	999	0.000	0.0	1.0	0.1%	0.0%	0.0%	100.0%	0.0%	0.1%
	200,000	310,000	0.000	0.0	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Totals for Class				0.0	1.0	0.1%	0.0%		0.0%	0.1%
2 Inch Dexter	0	999	0.000	0.0	1.0	0.1%	0.0%	0.0%	100.0%	0.4%	0.2%
	200,000	310,000	0.000	0.0	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Totals for Class				0.0	1.0	0.1%	0.0%		0.4%	0.2%
Free Water	0	999	0.000	0.0	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	200,000	310,000	2,476.000	2,476,000.0	0.1	0.0%	5.3%	100.0%	100.0%	0.0%	0.0%
	Totals for Class				2,476,000.0	0.1	0.0%	5.3%		0.0%	0.0%
Ghost Meter	0	999	0.000	0.0	4.9	0.7%	0.0%	0.0%	100.0%	0.1%	0.1%
	Totals for Class				0.0	4.9	0.7%	0.0%		0.1%	0.1%
Grand Totals				46,837,000.0		100.00%	100.00%			100.00%	100.00%

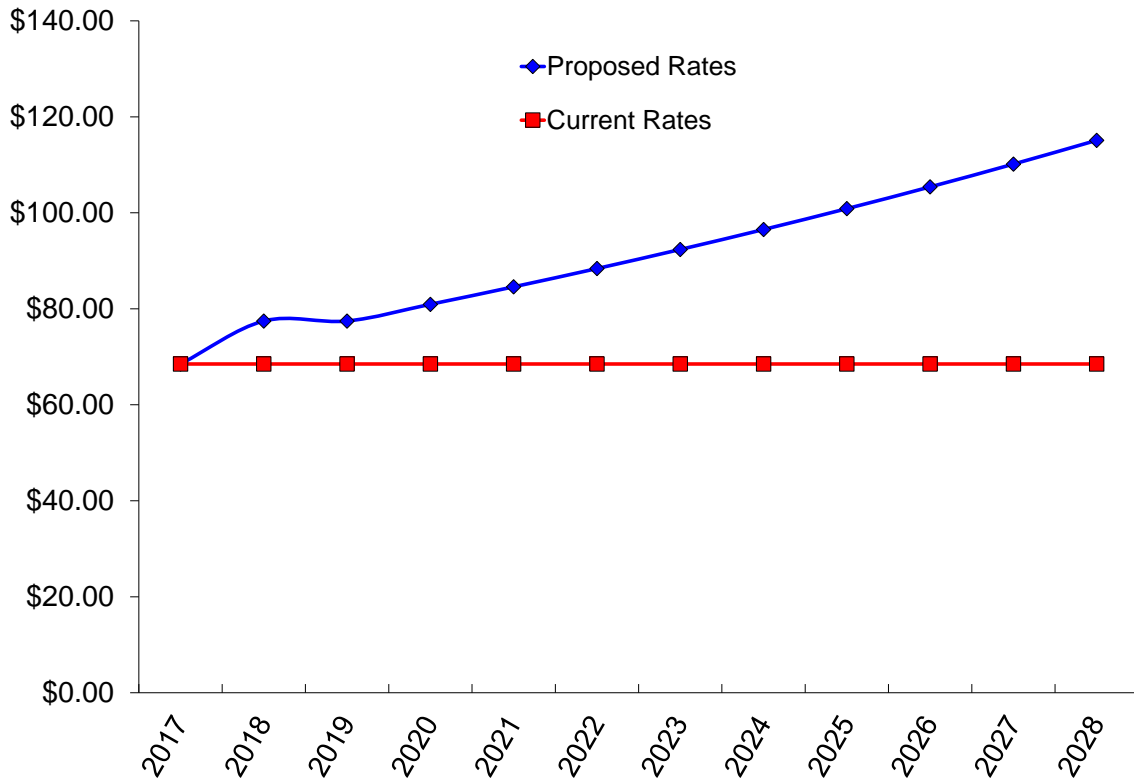
**Chart 1 - Operating Ratio**



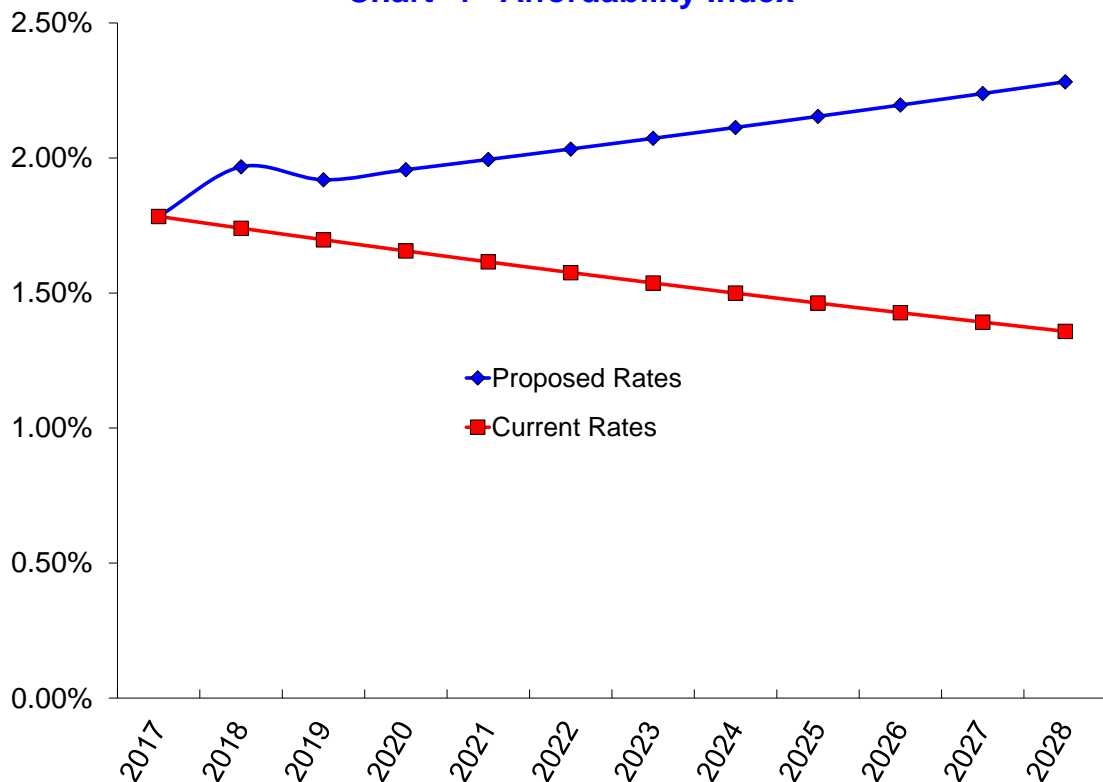
**Chart 2 - Coverage Ratio**



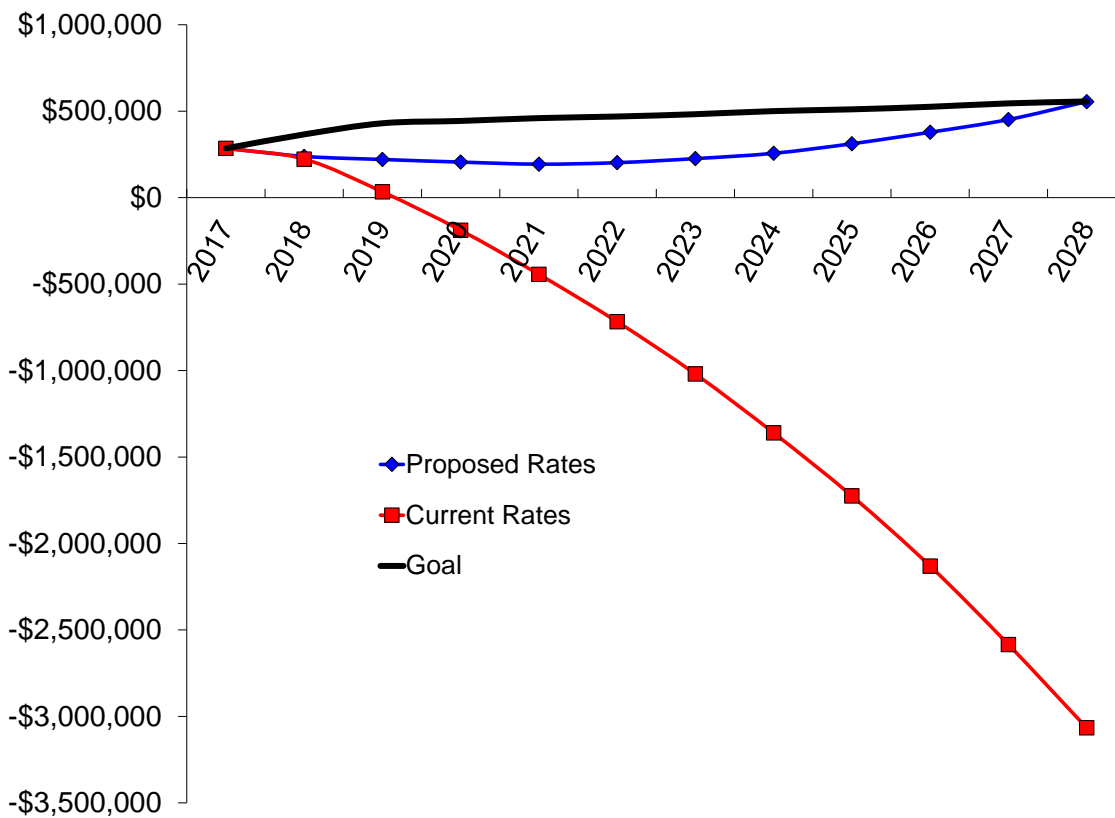
**Chart 3 - 5,000 Gal Residential User's Bill**



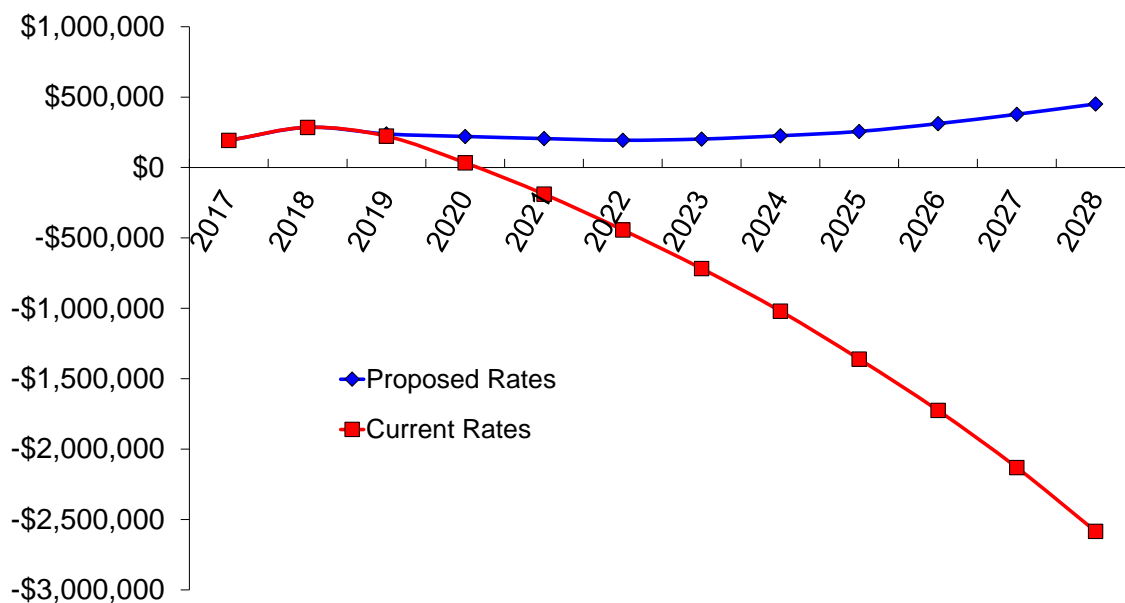
**Chart 4 - Affordability Index**



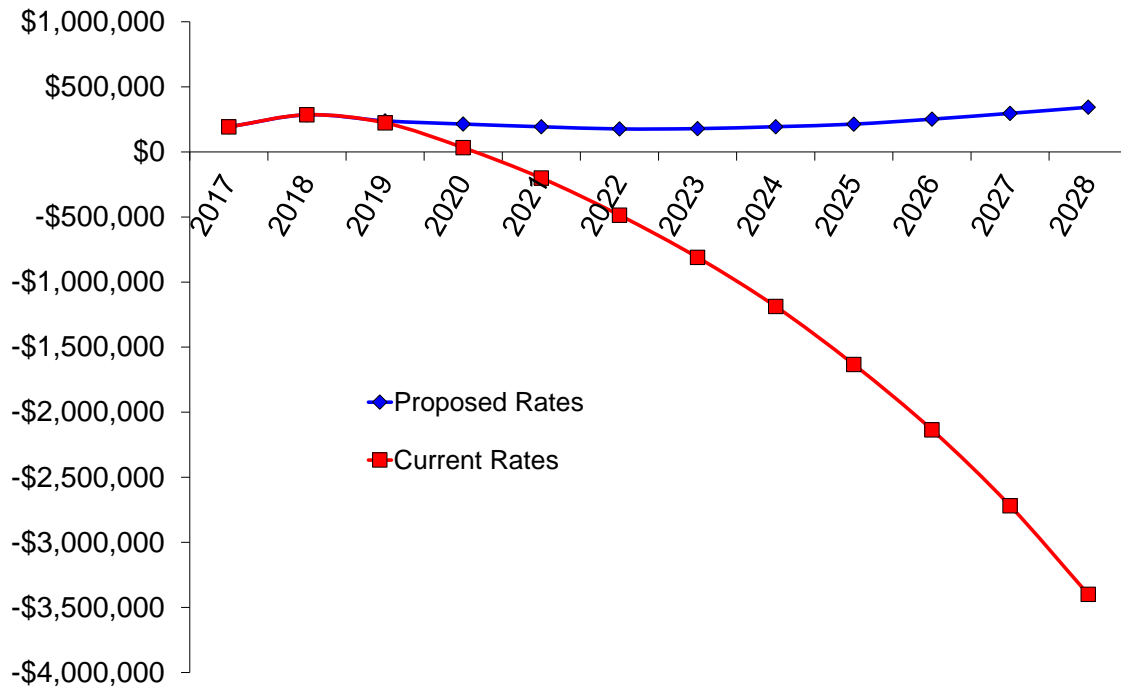
### Chart 5 - Working Capital vs Goal



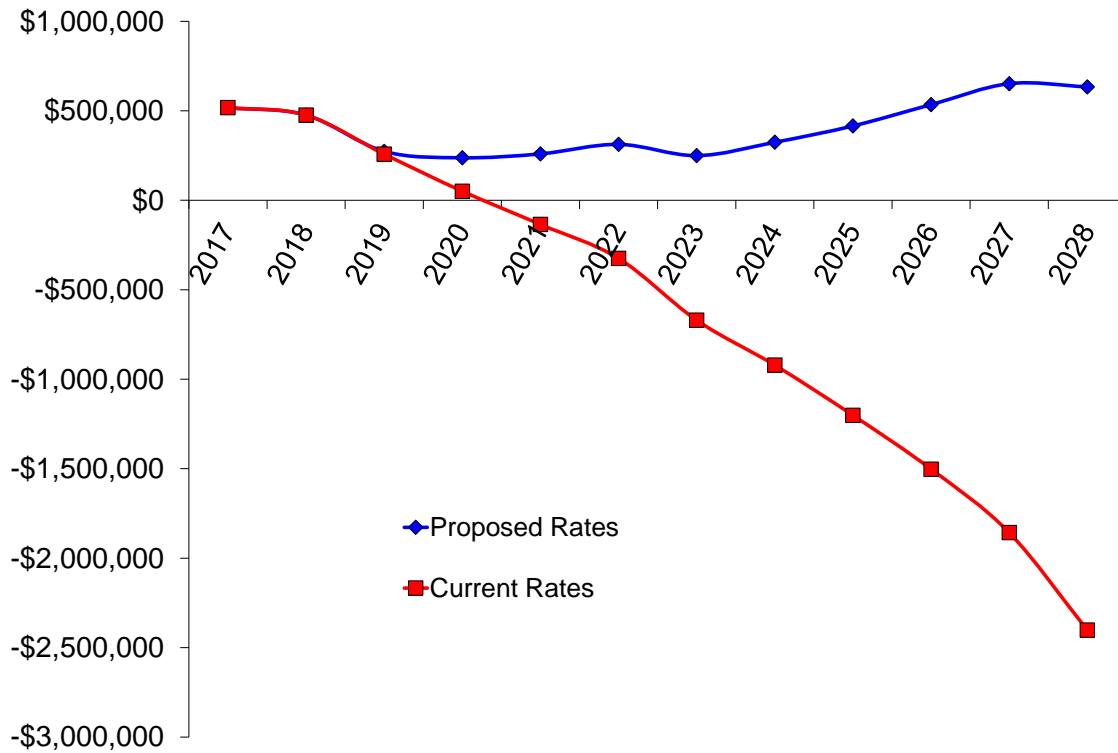
### Chart 6 - Value of Cash Assets Before Inflation



**Chart 7 - Value of Cash Assets After Inflation**



**Chart 8 - Sum of All Reserves**



## Cowley County, KS RWD #5; Water Rates, Scenario 2018-2

This model assumes cost-to-serve rates for regular customers except that it includes an \$11 addition to the minimum charges to reduce "sticker shock." For the cities, marginal variable costs, plus a profit margin; minimum charge at the "out of District" smallest meter rate, plus the \$11 addition, plus the unit charge rate for a 50,000 gallon usage allowance.

October 26, 2018

This rate analysis scenario was produced by  
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(573) 619-3411  
[www.gettinggreatrates.com](http://www.gettinggreatrates.com)  
[carl1@gettinggreatrates.com](mailto:carl1@gettinggreatrates.com)

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

CBGreatRates© Version 7.9



# Table 10 - Initial Rate Adjustments and Resulting Revenues

## Cowley County, KS RWD #5; Water Rates, Scenario 2018-2

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

**Out of District Multiplier 150%**

**12/1/18 Date when fees will first be collected at adjusted rates. Actual adjustment should occur one billing cycle earlier.**

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

Sales to be billed this year: Sales at the current (Test Year) rates (gray highlighted column) will apply until rates are adjusted. Sales at the modeled rates (yellow highlighted column) would apply if the modeled rates are adopted. The grand total "blended" sales revenues are the total revenues generated by the two different sets of rates. Those revenues show in the right-most column.

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
0.625 Inch Meters	0	999	\$91,498	178	\$40.71	0	\$7.30	\$11,051	\$102,549
	1,000	1,999	\$61,702	74	\$40.71	0	\$7.30	\$6,247	\$67,949
	2,000	2,999	\$53,012	70	\$40.71	0	\$7.30	\$5,525	\$58,537
	3,000	3,999	\$46,777	78	\$40.71	0	\$7.30	\$5,297	\$52,074
	4,000	4,999	\$36,134	63	\$40.71	0	\$7.30	\$4,178	\$40,313
	5,000	5,999	\$18,289	42	\$40.71	0	\$7.30	\$2,892	\$21,181
	6,000	6,999	\$13,800	30	\$40.71	0	\$7.30	\$2,168	\$15,968
	7,000	7,999	\$9,744	18	\$40.71	0	\$7.30	\$1,484	\$11,229
	8,000	8,999	\$8,389	16	\$40.71	0	\$7.30	\$1,289	\$9,678
	9,000	9,999	\$6,588	12	\$40.71	0	\$7.30	\$1,000	\$7,588
	10,000	14,999	\$19,900	33	\$40.71	0	\$7.30	\$2,979	\$22,879
	15,000	19,999	\$9,534	14	\$40.71	0	\$7.30	\$1,403	\$10,937
	20,000	24,999	\$5,189	6	\$40.71	0	\$7.30	\$742	\$5,931
	25,000	29,999	\$3,288	4	\$40.71	0	\$7.30	\$473	\$3,761
	30,000	39,999	\$3,368	3	\$40.71	0	\$7.30	\$474	\$3,842
	40,000	49,999	\$1,820	1	\$40.71	0	\$7.30	\$249	\$2,068
	50,000	59,999	\$1,033	1	\$40.71	0	\$7.30	\$138	\$1,172
	60,000	69,999	\$780	0	\$40.71	0	\$7.30	\$103	\$883
	70,000	79,999	\$668	0	\$40.71	0	\$7.30	\$88	\$756
	80,000	89,999	\$550	0	\$40.71	0	\$7.30	\$73	\$623
	90,000	99,999	\$390	0	\$40.71	0	\$7.30	\$51	\$441
	100,000	119,999	\$609	0	\$40.71	0	\$7.30	\$80	\$689
	120,000	139,999	\$421	0	\$40.71	0	\$7.30	\$57	\$479
	140,000	159,999	\$195	0	\$40.71	0	\$7.30	\$25	\$220
	160,000	179,999	\$145	0	\$40.71	0	\$7.30	\$20	\$165
	180,000	199,999	\$97	0	\$40.71	0	\$7.30	\$12	\$110
	200,000	202,200	\$29	0	\$40.71	0	\$7.30	\$5	\$34

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
1 Inch Meters	0	999	\$546	2	\$52.29	0	\$7.30	\$114	\$660
	1,000	1,999	\$107	0	\$52.29	0	\$7.30	\$7	\$114
	2,000	2,999	\$107	0	\$52.29	0	\$7.30	\$7	\$114
	3,000	3,999	\$107	0	\$52.29	0	\$7.30	\$7	\$114
	4,000	4,999	\$107	0	\$52.29	0	\$7.30	\$7	\$114
	5,000	5,999	\$87	0	\$52.29	0	\$7.30	\$15	\$103
	6,000	6,999	\$92	0	\$52.29	0	\$7.30	\$18	\$110
	7,000	7,999	\$34	0	\$52.29	0	\$7.30	\$4	\$38
	8,000	8,999	\$69	0	\$52.29	0	\$7.30	\$13	\$82
	9,000	9,999	\$38	0	\$52.29	0	\$7.30	\$7	\$45
	10,000	14,999	\$130	0	\$52.29	0	\$7.30	\$23	\$153
	15,000	19,999	\$24	0	\$52.29	0	\$7.30	\$3	\$27
	20,000	24,999	\$19	0	\$52.29	0	\$7.30	\$5	\$23
	25,000	29,999	\$0	0	\$52.29	0	\$7.30	\$0	\$0
	200,000	201,000	\$0	0	\$52.29	0	\$7.30	\$0	\$0
0.625 Inch Pasture Meter	0	999	\$1,641	9	\$30.71	0	\$7.30	\$329	\$1,970
	1,000	1,999	\$634	1	\$30.71	0	\$7.30	\$62	\$696
	2,000	2,999	\$579	1	\$30.71	0	\$7.30	\$66	\$645
	3,000	3,999	\$442	1	\$30.71	0	\$7.30	\$47	\$489
	4,000	4,999	\$344	1	\$30.71	0	\$7.30	\$36	\$380
	5,000	5,999	\$161	0	\$30.71	0	\$7.30	\$23	\$184
	6,000	6,999	\$174	0	\$30.71	0	\$7.30	\$29	\$203
	7,000	7,999	\$133	0	\$30.71	0	\$7.30	\$20	\$152
	8,000	8,999	\$113	0	\$30.71	0	\$7.30	\$16	\$129
	9,000	9,999	\$112	0	\$30.71	0	\$7.30	\$17	\$129
	10,000	14,999	\$431	0	\$30.71	0	\$7.30	\$61	\$492
	15,000	19,999	\$356	0	\$30.71	0	\$7.30	\$47	\$403
	20,000	24,999	\$341	0	\$30.71	0	\$7.30	\$43	\$384
	25,000	29,999	\$341	0	\$30.71	0	\$7.30	\$43	\$384
	30,000	39,999	\$629	0	\$30.71	0	\$7.30	\$83	\$712
	40,000	49,999	\$586	0	\$30.71	0	\$7.30	\$76	\$662
	50,000	59,999	\$509	0	\$30.71	0	\$7.30	\$66	\$575
	60,000	69,999	\$464	0	\$30.71	0	\$7.30	\$61	\$524
	70,000	79,999	\$420	0	\$30.71	0	\$7.30	\$56	\$477
	80,000	89,999	\$334	0	\$30.71	0	\$7.30	\$45	\$379
	90,000	99,999	\$221	0	\$30.71	0	\$7.30	\$30	\$250
	100,000	119,999	\$288	0	\$30.71	0	\$7.30	\$40	\$327
	120,000	139,999	\$124	0	\$30.71	0	\$7.30	\$19	\$143
	140,000	159,999	\$0	0	\$30.71	0	\$7.30	\$0	\$0
	160,000	179,999	\$0	0	\$30.71	0	\$7.30	\$0	\$0
	180,000	199,999	\$0	0	\$30.71	0	\$7.30	\$0	\$0
	200,000	201,000	\$0	0	\$30.71	0	\$7.30	\$0	\$0

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
3 Inch Atlanta	0	999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	1,000	1,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	2,000	2,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	3,000	3,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	4,000	4,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	5,000	5,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	6,000	6,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	7,000	7,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	8,000	8,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	9,000	9,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	10,000	14,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	15,000	19,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	20,000	24,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	25,000	29,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	30,000	39,999	\$584	0	\$443.54	50	\$8.06	\$0	\$584
	40,000	49,999	\$584	0	\$443.54	50	\$8.06	\$0	\$584
	50,000	59,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	60,000	69,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	70,000	79,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	80,000	89,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	90,000	99,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	100,000	119,999	\$1,168	0	\$443.54	50	\$8.06	\$164	\$1,333
	120,000	139,999	\$1,168	0	\$443.54	50	\$8.06	\$164	\$1,333
	140,000	159,999	\$1,168	0	\$443.54	50	\$8.06	\$164	\$1,333
	160,000	179,999	\$1,168	0	\$443.54	50	\$8.06	\$164	\$1,333
	180,000	199,999	\$1,168	0	\$443.54	50	\$8.06	\$164	\$1,333
	200,000	796,400	\$19,111	1	\$443.54	50	\$8.06	\$2,899	\$22,010

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
2 Inch Cambridge	0	999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	1,000	1,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	2,000	2,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	3,000	3,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	4,000	4,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	5,000	5,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	6,000	6,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	7,000	7,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	8,000	8,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	9,000	9,999	\$58	0	\$443.54	50	\$8.06	\$0	\$58
	10,000	14,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	15,000	19,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	20,000	24,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	25,000	29,999	\$292	0	\$443.54	50	\$8.06	\$0	\$292
	30,000	39,999	\$584	0	\$443.54	50	\$8.06	\$0	\$584
	40,000	49,999	\$584	0	\$443.54	50	\$8.06	\$0	\$584
	50,000	59,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	60,000	69,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	70,000	79,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	80,000	89,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	90,000	99,999	\$584	0	\$443.54	50	\$8.06	\$82	\$666
	100,000	119,999	\$1,168	0	\$443.54	50	\$8.06	\$164	\$1,333
	120,000	139,999	\$1,620	0	\$443.54	50	\$8.06	\$299	\$1,918
	140,000	159,999	\$911	0	\$443.54	50	\$8.06	\$164	\$1,075
	160,000	179,999	\$662	0	\$443.54	50	\$8.06	\$111	\$773
	180,000	199,999	\$487	0	\$443.54	50	\$8.06	\$68	\$555
	200,000	310,000	\$2,771	0	\$443.54	50	\$8.06	\$478	\$3,250

## Table 10 - Initial Rate Adjustments and Resulting Revenues

Customer Class, Rate Class or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Sales This Year at Current Rates	Customers Within This Volume Range	New Minimum Charge Including Surcharges <sup>1</sup>	New Usage Allowance in 1,000 Gallons	New Unit Charge per 1,000 Gallons	Sales This Year at Modeled Rates	Grand Total "Blended" Sales This Year
0.625 Inch Cambridge Pasture	0	999	\$110	1	\$30.71	0	\$8.06	\$31	\$141
	1,000	1,999	\$0	0	\$30.71	0	\$8.06	\$0	\$0
	200,000	310,000	\$0	0	\$30.71	0	\$8.06	\$0	\$0
2 Inch Dexter	0	999	\$1,702	1	\$443.54	50	\$8.06	\$452	\$2,154
	200,000	0	\$0	0	\$443.54	50	\$8.06	\$0	\$0
Free Water	0	999	\$0	0	\$0.00	0	\$0.00	\$0	\$0
	200,000	310,000	\$0	0	\$0.00	0	\$0.00	\$0	\$0
Ghost Meter	0	999	\$432	5	\$8.00	0	\$0.00	\$40	\$472
	200,000	310,000	\$0	0	\$8.00	0	\$0.00	\$0	\$0
Total Rate Revenue at Current Rates			\$451,292	Total Rate Revenue at Modeled Rates				\$55,998	

Total Blended Rate Revenues for the Year <sup>2</sup> \$507,290

Note 1, New Minimum Charge Base Rates: If meter or connection size-based minimum charges are to be used, and the user classes modeled above include meter or connection sizes, the amounts shown in this column include meter or connection size surcharges as calculated in Table 16. Either way, the narrative report includes the rates and surcharges to assess.

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

11.0	months at the old user charge rates	and	1.0	months at the new user charge rates.
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Table 15 - Minimum Charge Fees, Including Capacity Surcharges

## Cowley County, KS RWD #5; Water Rates, Scenario 2018-2

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

Uniform Adjustment to Base Capacity Cost					\$11.00					
Meter Size	Meter Type	Capacity-only Cost (Fee)	Adjusted Annual Peak Capacity-only Surcharge Revenues	Monthly Base Capacity-only Costs (Surcharge per Customer, Including Out of District Multiplier)	Uniform Adjustment to Base Capacity Cost	Adjusted Field and Admin Costs (Fee) per New Connection	Annual Base Capacity-only Surcharge Revenues	Cost to Serve Minimum Calculated in Table 10	Monthly Minimum Charge	
In-District Meters										
Five Eighths	Displacement	\$7.72	\$73,465	\$0.00	\$11.00	\$11.00	\$104,676	\$21.99	\$40.71	
Three Quarters	Displacement	\$7.72	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$40.71	
One Inch	Displacement	\$19.30	\$1,621	\$0.00	\$11.00	\$11.00	\$924	\$21.99	\$52.29	
One & a Half Inch	Displacement	\$38.60	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$71.59	
Two Inch	Displacement	\$61.76	\$1,482	\$0.00	\$11.00	\$11.00	\$264	\$21.99	\$94.76	
Two & a Half Inch	Displacement	\$96.50	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$129.50	
Three Inch	Singlet	\$123.52	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$156.52	
Three Inch	Compound, Class I	\$123.52	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$156.52	
Three Inch	Turbine, Class I	\$135.10	\$1,621	\$0.00	\$11.00	\$11.00	\$132	\$21.99	\$168.10	
Four Inch	Singlet	\$193.00	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$226.00	
Four Inch	Compound, Class I	\$193.00	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$226.00	
Four Inch	Turbine, Class I	\$239.33	\$0	\$0.00	\$11.00	\$11.00	\$0	\$21.99	\$272.32	
Total:			\$78,190				\$105,996			

## Table 18 - Comparison of Bills Before and After Rate Adjustments

### Cowley County, KS RWD #5; Water Rates, Scenario 2018-2

Changes to the bills for customer classes and example volumes of use are shown below. These include the effect of meter size-based minimum charge surcharges from Table 15.

Customer or Rate Class, or Meter Size	Gallons of Use	Customers at or Above This Volume and Below Next	Cumulative Customers	Bill Under Model 1 Rates	Bill Under Model 2 Rates	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
0.625 Inch Meters	0	178	178	\$41.11	\$40.71	-\$0.39	-1%
	1,000	74	252	\$48.54	\$48.01	-\$0.52	-1%
	2,000	70	322	\$55.97	\$55.31	-\$0.65	-1%
	3,000	78	400	\$63.40	\$62.61	-\$0.78	-1%
	4,000	63	463	\$70.83	\$69.91	-\$0.91	-1%
	5,000	42	504	\$78.26	\$77.21	-\$1.04	-1%
	6,000	30	535	\$85.69	\$84.51	-\$1.17	-1%
	7,000	18	553	\$93.12	\$91.81	-\$1.30	-1%
	8,000	16	569	\$100.55	\$99.11	-\$1.43	-1%
	9,000	12	581	\$107.98	\$106.41	-\$1.56	-1%
	10,000	33	614	\$115.41	\$113.71	-\$1.69	-1%
	15,000	14	628	\$152.56	\$150.21	-\$2.34	-2%
	20,000	6	634	\$189.71	\$186.71	-\$2.99	-2%
	25,000	4	638	\$226.86	\$223.21	-\$3.64	-2%
	30,000	3	641	\$264.01	\$259.71	-\$4.29	-2%
	40,000	1	642	\$338.31	\$332.71	-\$5.59	-2%
	50,000	1	643	\$412.61	\$405.71	-\$6.89	-2%
	60,000	0	643	\$486.91	\$478.71	-\$8.19	-2%
	70,000	0	643	\$561.21	\$551.71	-\$9.49	-2%
	80,000	0	644	\$635.51	\$624.71	-\$10.79	-2%
	90,000	0	644	\$709.81	\$697.71	-\$12.09	-2%
	100,000	0	644	\$784.11	\$770.71	-\$13.39	-2%
	200,000	0	644	\$1,527.11	\$1,500.71	-\$26.39	-2%
1 Inch Meters	0	2	2	\$52.69	\$52.29	-\$0.39	-1%
	1,000	0	2	\$60.12	\$59.59	-\$0.52	-1%
	2,000	0	2	\$67.55	\$66.89	-\$0.65	-1%
	3,000	0	2	\$74.98	\$74.19	-\$0.78	-1%
	4,000	0	2	\$82.41	\$81.49	-\$0.91	-1%
	5,000	0	2	\$89.84	\$88.79	-\$1.04	-1%
	6,000	0	2	\$97.27	\$96.09	-\$1.17	-1%
	7,000	0	2	\$104.70	\$103.39	-\$1.30	-1%
	8,000	0	3	\$112.13	\$110.69	-\$1.43	-1%
	9,000	0	3	\$119.56	\$117.99	-\$1.56	-1%
	10,000	0	3	\$126.99	\$125.29	-\$1.69	-1%
	100,000	0	3	\$795.69	\$782.29	-\$13.39	-2%
	200,000	0	3	\$1,538.69	\$1,512.29	-\$26.39	-2%

## Table 18 - Comparison of Bills Before and After Rate Adjustments

Customer or Rate Class, or Meter Size	Gallons of Use	Customers at or Above This Volume and Below Next	Cumulative Customers	Bill Under Model 1 Rates	Bill Under Model 2 Rates	Bill Increase or Decrease (-)	Percent Increase or Decrease (-)
0.625 Inch Pasture Meter	0	9	9	\$31.11	\$30.71	-\$0.39	-1%
	1,000	1	10	\$38.54	\$38.01	-\$0.52	-1%
	2,000	1	11	\$45.97	\$45.31	-\$0.65	-1%
	3,000	1	12	\$53.40	\$52.61	-\$0.78	-1%
	4,000	1	12	\$60.83	\$59.91	-\$0.91	-1%
	5,000	0	12	\$68.26	\$67.21	-\$1.04	-2%
	6,000	0	13	\$75.69	\$74.51	-\$1.17	-2%
	7,000	0	13	\$83.12	\$81.81	-\$1.30	-2%
	8,000	0	13	\$90.55	\$89.11	-\$1.43	-2%
	9,000	0	13	\$97.98	\$96.41	-\$1.56	-2%
	10,000	0	13	\$105.41	\$103.71	-\$1.69	-2%
	100,000	0	15	\$774.11	\$760.71	-\$13.39	-2%
	200,000	0	15	\$1,517.11	\$1,490.71	-\$26.39	-2%
3 Inch Atlanta	0	0	0	\$168.49	\$443.54	\$275.05	163%
	10,000	0	0	\$242.79	\$443.54	\$200.75	83%
	100,000	0	0	\$911.49	\$846.36	-\$65.13	-7%
	200,000	1	1	\$1,654.49	\$1,652.00	-\$2.49	0%
2 Inch Cambridge	0	0	0	\$95.15	\$443.54	\$348.39	366%
	9,000	0	0	\$162.02	\$443.54	\$281.52	174%
	10,000	0	0	\$169.45	\$443.54	\$274.09	162%
	15,000	0	0	\$206.60	\$443.54	\$236.94	115%
	120,000	0	0	\$986.75	\$1,007.49	\$20.74	2%
	140,000	0	1	\$1,135.35	\$1,168.62	\$33.27	3%
	160,000	0	1	\$1,283.95	\$1,329.75	\$45.80	4%
	180,000	0	1	\$1,432.55	\$1,490.87	\$58.33	4%
0.625 Inch Cambridge Pasture	0	1	1	\$31.11	\$30.71	-\$0.39	-1%
	10,000	0	1	\$105.41	\$111.28	\$5.87	6%
	100,000	0	1	\$774.11	\$836.36	\$62.25	8%
	200,000	0	1	\$1,517.11	\$1,642.00	\$124.90	8%
2 Inch Dexter	0	1	1	\$95.15	\$443.54	\$348.39	366%
	9,000	0	1	\$162.02	\$443.54	\$281.52	174%
	10,000	0	1	\$169.45	\$443.54	\$274.09	162%
	15,000	0	1	\$206.60	\$443.54	\$236.94	115%
	200,000	0	1	\$1,581.15	\$1,652.00	\$70.86	4%
Free Water	0	0	0	\$0.00	\$0.00	\$0.00	N.A.
	200,000	0	0	\$0.00	\$0.00	\$0.00	N.A.
Ghost Meter	0	5	5	\$8.00	\$8.00	\$0.00	0%



**Table 19 - User Statistics**  
**Cowley County, KS RWD #5; Water Rates, Scenario 2018-2**

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

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

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

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

**4,460 Gallons: This is the average residential customer's usage per Monthly billing cycle.**

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

**46,837,000 Gallons: This is the volume metered through customer meters that was available to be sold by the utility during the test year.**

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

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

**\$9,668 Loss: At the modeled (recommended) unit charge rates and usage allowance (if any), over a full year this is the amount of revenue the utility would fail to collect due to the usage allowance as modeled (if any).**

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
0.625 Inch Meters	0	999	0.763	5,900,000.0	178.2	26.6%	12.6%	17.1%	100.0%	20.3%	19.7%
	1,000	1,999	0.915	5,118,400.0	74.1	11.0%	10.9%	32.0%	82.9%	13.7%	11.2%
	2,000	2,999	0.903	4,248,700.0	69.7	10.4%	9.1%	44.3%	68.0%	11.7%	9.9%
	3,000	3,999	0.866	3,350,400.0	77.6	11.6%	7.2%	54.0%	55.7%	10.4%	9.5%
	4,000	4,999	0.854	2,506,000.0	63.3	9.4%	5.4%	61.3%	46.0%	8.0%	7.5%
	5,000	5,999	0.864	1,880,900.0	41.6	6.2%	4.0%	66.7%	38.7%	4.1%	5.2%
	6,000	6,999	0.874	1,466,300.0	30.3	4.5%	3.1%	71.0%	33.3%	3.1%	3.9%
	7,000	7,999	0.905	1,189,600.0	18.0	2.7%	2.5%	74.4%	29.0%	2.2%	2.7%
	8,000	8,999	0.898	986,300.0	16.3	2.4%	2.1%	77.3%	25.6%	1.9%	2.3%
	9,000	9,999	0.904	815,600.0	11.9	1.8%	1.7%	79.7%	22.7%	1.5%	1.8%
	10,000	14,999	3.434	2,606,600.0	32.8	4.9%	5.6%	87.2%	20.3%	4.4%	5.3%
	15,000	19,999	3.646	1,330,700.0	13.9	2.1%	2.8%	91.1%	12.8%	2.1%	2.5%
	20,000	24,999	4.016	795,200.0	6.0	0.9%	1.7%	93.4%	8.9%	1.1%	1.3%
	25,000	29,999	3.928	494,900.0	4.0	0.6%	1.1%	94.8%	6.6%	0.7%	0.8%
	30,000	39,999	6.941	541,400.0	3.3	0.5%	1.2%	96.4%	5.2%	0.7%	0.8%
	40,000	49,999	8.353	317,400.0	1.3	0.2%	0.7%	97.3%	3.6%	0.4%	0.4%
	50,000	59,999	8.248	189,700.0	0.5	0.1%	0.4%	97.9%	2.7%	0.2%	0.2%
	60,000	69,999	8.765	149,000.0	0.3	0.0%	0.3%	98.3%	2.1%	0.2%	0.2%
	70,000	79,999	8.993	125,900.0	0.3	0.0%	0.3%	98.7%	1.7%	0.1%	0.2%
	80,000	89,999	9.236	101,600.0	0.3	0.0%	0.2%	99.0%	1.3%	0.1%	0.1%
	90,000	99,999	9.538	76,300.0	0.1	0.0%	0.2%	99.2%	1.0%	0.1%	0.1%
	100,000	119,999	16.800	117,600.0	0.2	0.0%	0.3%	99.5%	0.8%	0.1%	0.1%
	120,000	139,999	15.060	75,300.0	0.3	0.0%	0.2%	99.7%	0.5%	0.1%	0.1%
	140,000	159,999	20.000	40,000.0	0.0	0.0%	0.1%	99.9%	0.3%	0.0%	0.0%
	160,000	179,999	13.050	26,100.0	0.1	0.0%	0.1%	99.9%	0.1%	0.0%	0.0%
	180,000	199,999	20.000	20,000.0	0.0	0.0%	0.0%	100.0%	0.1%	0.0%	0.0%
	200,000	202,200	2.200	2,200.0	0.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Totals for Class				34,472,100.0	644.2	96.0%	73.6%			87.3%	85.9%

## Table 19 - User Statistics

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
1 Inch Meters	0	999	0.333	12,000.0	2.0	0.3%	0.0%	10.3%	100.0%	0.1%	0.2%
	1,000	1,999	1.000	12,000.0	0.0	0.0%	0.0%	20.6%	89.7%	0.0%	0.0%
	2,000	2,999	1.000	12,000.0	0.0	0.0%	0.0%	30.9%	79.4%	0.0%	0.0%
	3,000	3,999	1.000	12,000.0	0.0	0.0%	0.0%	41.2%	69.1%	0.0%	0.0%
	4,000	4,999	1.000	12,000.0	0.0	0.0%	0.0%	51.5%	58.8%	0.0%	0.0%
	5,000	5,999	0.867	10,400.0	0.2	0.0%	0.0%	60.4%	48.5%	0.0%	0.0%
	6,000	6,999	0.770	7,700.0	0.3	0.0%	0.0%	67.0%	39.6%	0.0%	0.0%
	7,000	7,999	1.000	7,000.0	0.0	0.0%	0.0%	73.0%	33.0%	0.0%	0.0%
	8,000	8,999	0.957	6,700.0	0.2	0.0%	0.0%	78.8%	27.0%	0.0%	0.0%
	9,000	9,999	0.820	4,100.0	0.1	0.0%	0.0%	82.3%	21.2%	0.0%	0.0%
	10,000	14,999	3.875	15,500.0	0.3	0.0%	0.0%	95.6%	17.7%	0.0%	0.0%
	15,000	19,999	5.000	5,000.0	0.0	0.0%	0.0%	99.9%	4.4%	0.0%	0.0%
	20,000	24,999	0.100	100.0	0.1	0.0%	0.0%	100.0%	0.1%	0.0%	0.0%
	200,000	201,000	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			116,500.0	3.0	0.4%	0.2%			0.3%	0.4%
0.625 Inch Pasture Meter	0	999	0.412	72,500.0	9.1	1.4%	0.2%	5.3%	100.0%	0.4%	0.6%
	1,000	1,999	0.928	62,200.0	0.8	0.1%	0.1%	9.8%	94.7%	0.1%	0.1%
	2,000	2,999	0.893	51,800.0	1.1	0.2%	0.1%	13.5%	90.2%	0.1%	0.1%
	3,000	3,999	0.924	41,600.0	0.7	0.1%	0.1%	16.5%	86.5%	0.1%	0.1%
	4,000	4,999	0.881	32,600.0	0.5	0.1%	0.1%	18.9%	83.5%	0.1%	0.1%
	5,000	5,999	0.945	29,300.0	0.2	0.0%	0.1%	21.0%	81.1%	0.0%	0.0%
	6,000	6,999	0.907	26,300.0	0.4	0.1%	0.1%	22.9%	79.0%	0.0%	0.1%
	7,000	7,999	0.979	23,500.0	0.2	0.0%	0.1%	24.6%	77.1%	0.0%	0.0%
	8,000	8,999	0.968	21,300.0	0.1	0.0%	0.0%	26.2%	75.4%	0.0%	0.0%
	9,000	9,999	0.919	19,300.0	0.2	0.0%	0.0%	27.5%	73.8%	0.0%	0.0%
	10,000	14,999	4.263	81,000.0	0.3	0.0%	0.2%	33.4%	72.5%	0.1%	0.1%
	15,000	19,999	4.753	71,300.0	0.1	0.0%	0.2%	38.6%	66.6%	0.1%	0.1%
	20,000	24,999	5.000	70,000.0	0.0	0.0%	0.1%	43.6%	61.4%	0.1%	0.1%
	25,000	29,999	5.000	70,000.0	0.0	0.0%	0.1%	48.7%	56.4%	0.1%	0.1%
	30,000	39,999	8.964	125,500.0	0.2	0.0%	0.3%	57.8%	51.3%	0.1%	0.1%
	40,000	49,999	9.875	118,500.0	0.1	0.0%	0.3%	66.4%	42.2%	0.1%	0.1%
	50,000	59,999	9.336	102,700.0	0.1	0.0%	0.2%	73.8%	33.6%	0.1%	0.1%
	60,000	69,999	9.340	93,400.0	0.1	0.0%	0.2%	80.6%	26.2%	0.1%	0.1%
	70,000	79,999	9.178	82,600.0	0.2	0.0%	0.2%	86.6%	19.4%	0.1%	0.1%
	80,000	89,999	9.257	64,800.0	0.2	0.0%	0.1%	91.3%	13.4%	0.1%	0.1%
	90,000	99,999	8.700	43,500.0	0.1	0.0%	0.1%	94.4%	8.7%	0.0%	0.1%
	100,000	119,999	13.825	55,300.0	0.2	0.0%	0.1%	98.4%	5.6%	0.1%	0.1%
	120,000	139,999	10.900	21,800.0	0.2	0.0%	0.0%	100.0%	1.6%	0.0%	0.0%
	200,000	201,000	0.000	0.0	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	Totals for Class			1,380,800.0	14.7	2.2%	2.9%			2.1%	2.3%

## Table 19 - User Statistics

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
3 Inch Atlanta	0	999	1.000	12,000.0	0.0	0.0%	0.0%	0.2%	100.0%	0.0%	0.0%
	1,000	1,999	1.000	12,000.0	0.0	0.0%	0.0%	0.4%	99.8%	0.0%	0.0%
	2,000	2,999	1.000	12,000.0	0.0	0.0%	0.0%	0.6%	99.6%	0.0%	0.0%
	3,000	3,999	1.000	12,000.0	0.0	0.0%	0.0%	0.8%	99.4%	0.0%	0.0%
	4,000	4,999	1.000	12,000.0	0.0	0.0%	0.0%	1.0%	99.2%	0.0%	0.0%
	5,000	5,999	1.000	12,000.0	0.0	0.0%	0.0%	1.2%	99.0%	0.0%	0.0%
	6,000	6,999	1.000	12,000.0	0.0	0.0%	0.0%	1.4%	98.8%	0.0%	0.0%
	7,000	7,999	1.000	12,000.0	0.0	0.0%	0.0%	1.6%	98.6%	0.0%	0.0%
	8,000	8,999	1.000	12,000.0	0.0	0.0%	0.0%	1.8%	98.4%	0.0%	0.0%
	9,000	9,999	1.000	12,000.0	0.0	0.0%	0.0%	2.0%	98.2%	0.0%	0.0%
	10,000	14,999	5.000	60,000.0	0.0	0.0%	0.1%	3.0%	98.0%	0.1%	0.0%
	15,000	19,999	5.000	60,000.0	0.0	0.0%	0.1%	4.0%	97.0%	0.1%	0.0%
	20,000	24,999	5.000	60,000.0	0.0	0.0%	0.1%	5.0%	96.0%	0.1%	0.0%
	25,000	29,999	5.000	60,000.0	0.0	0.0%	0.1%	6.0%	95.0%	0.1%	0.0%
	30,000	39,999	10.000	120,000.0	0.0	0.0%	0.3%	8.0%	94.0%	0.1%	0.0%
	40,000	49,999	10.000	120,000.0	0.0	0.0%	0.3%	10.0%	92.0%	0.1%	0.0%
	50,000	59,999	10.000	120,000.0	0.0	0.0%	0.3%	12.0%	90.0%	0.1%	0.1%
	60,000	69,999	10.000	120,000.0	0.0	0.0%	0.3%	14.1%	88.0%	0.1%	0.1%
	70,000	79,999	10.000	120,000.0	0.0	0.0%	0.3%	16.1%	85.9%	0.1%	0.1%
	80,000	89,999	10.000	120,000.0	0.0	0.0%	0.3%	18.1%	83.9%	0.1%	0.1%
	90,000	99,999	10.000	120,000.0	0.0	0.0%	0.3%	20.1%	81.9%	0.1%	0.1%
	100,000	119,999	20.000	240,000.0	0.0	0.0%	0.5%	24.1%	79.9%	0.3%	0.3%
	120,000	139,999	20.000	240,000.0	0.0	0.0%	0.5%	28.1%	75.9%	0.3%	0.3%
	140,000	159,999	20.000	240,000.0	0.0	0.0%	0.5%	32.1%	71.9%	0.3%	0.3%
	160,000	179,999	20.000	240,000.0	0.0	0.0%	0.5%	36.1%	67.9%	0.3%	0.3%
	180,000	199,999	20.000	240,000.0	0.0	0.0%	0.5%	40.2%	63.9%	0.3%	0.3%
	200,000	796,400	298.008	3,576,100.0	1.0	0.1%	7.6%	100.0%	59.8%	4.2%	5.2%
Totals for Class				5,976,100.0	1.0	0.1%	12.8%			6.8%	7.4%

## Table 19 - User Statistics

Customer or Rate Class, or Meter Size	Volume Range Bottom (in Gallons)	Volume Range Top (in Gallons)	Avg. Use in Each Volume Range in 1,000 Gallons	Total Annual Use in Each Volume Range in Gallons	Customers Within This Volume Range	% Users	% Usage	Cumulative Use in This Class From Low to High Volume	Cumulative Use in This Class From High to Low Volume	% Revenue at Current Rates	% Revenue at Modeled Rates
2 Inch Cambridge	0	999	1.000	12,000.0	0.0	0.0%	0.0%	0.5%	100.0%	0.0%	0.0%
	1,000	1,999	1.000	12,000.0	0.0	0.0%	0.0%	1.0%	99.5%	0.0%	0.0%
	2,000	2,999	1.000	12,000.0	0.0	0.0%	0.0%	1.5%	99.0%	0.0%	0.0%
	3,000	3,999	1.000	12,000.0	0.0	0.0%	0.0%	2.0%	98.5%	0.0%	0.0%
	4,000	4,999	1.000	12,000.0	0.0	0.0%	0.0%	2.5%	98.0%	0.0%	0.0%
	5,000	5,999	1.000	12,000.0	0.0	0.0%	0.0%	3.0%	97.5%	0.0%	0.0%
	6,000	6,999	1.000	12,000.0	0.0	0.0%	0.0%	3.5%	97.0%	0.0%	0.0%
	7,000	7,999	1.000	12,000.0	0.0	0.0%	0.0%	4.0%	96.5%	0.0%	0.0%
	8,000	8,999	1.000	12,000.0	0.0	0.0%	0.0%	4.5%	96.0%	0.0%	0.0%
	9,000	9,999	1.000	12,000.0	0.0	0.0%	0.0%	5.0%	95.5%	0.0%	0.0%
	10,000	14,999	5.000	60,000.0	0.0	0.0%	0.1%	7.5%	95.0%	0.1%	0.0%
	15,000	19,999	5.000	60,000.0	0.0	0.0%	0.1%	9.9%	92.5%	0.1%	0.0%
	20,000	24,999	5.000	60,000.0	0.0	0.0%	0.1%	12.4%	90.1%	0.1%	0.0%
	25,000	29,999	5.000	60,000.0	0.0	0.0%	0.1%	14.9%	87.6%	0.1%	0.0%
	30,000	39,999	10.000	120,000.0	0.0	0.0%	0.3%	19.9%	85.1%	0.1%	0.0%
	40,000	49,999	10.000	120,000.0	0.0	0.0%	0.3%	24.8%	80.1%	0.1%	0.0%
	50,000	59,999	10.000	120,000.0	0.0	0.0%	0.3%	29.8%	75.2%	0.1%	0.1%
	60,000	69,999	10.000	120,000.0	0.0	0.0%	0.3%	34.8%	70.2%	0.1%	0.1%
	70,000	79,999	10.000	120,000.0	0.0	0.0%	0.3%	39.7%	65.2%	0.1%	0.1%
	80,000	89,999	10.000	120,000.0	0.0	0.0%	0.3%	44.7%	60.3%	0.1%	0.1%
	90,000	99,999	10.000	120,000.0	0.0	0.0%	0.3%	49.7%	55.3%	0.1%	0.1%
	100,000	119,999	20.000	240,000.0	0.0	0.0%	0.5%	59.6%	50.3%	0.3%	0.3%
	120,000	139,999	18.017	216,200.0	0.3	0.0%	0.5%	68.6%	40.4%	0.4%	0.5%
	140,000	159,999	16.113	128,900.0	0.2	0.0%	0.3%	73.9%	31.4%	0.2%	0.3%
	160,000	179,999	17.800	106,800.0	0.1	0.0%	0.2%	78.3%	26.1%	0.1%	0.2%
	180,000	199,999	20.000	100,000.0	0.0	0.0%	0.2%	82.5%	21.7%	0.1%	0.1%
	200,000	310,000	84.720	423,600.0	0.4	0.1%	0.9%	100.0%	17.5%	0.6%	0.9%
Totals for Class				2,415,500.0	1.0	0.1%	5.2%			3.0%	3.0%
0.625 Inch Cambridge Pasture	0	999	0.000	0.0	1.0	0.1%	0.0%	0.0%	100.0%	0.0%	0.1%
	200,000	310,000	0.000	0.0	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Totals for Class			0.0	1.0	0.1%	0.0%			0.0%	0.1%
2 Inch Dexter	0	999	0.000	0.0	1.0	0.1%	0.0%	0.0%	100.0%	0.4%	0.8%
	200,000	0	0.000	0.0	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Totals for Class			0.0	1.0	0.1%	0.0%			0.4%	0.8%
Free Water	0	999	0.000	0.0	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	200,000	310,000	2,476.000	2,476,000.0	0.1	0.0%	5.3%	100.0%	100.0%	0.0%	0.0%
	Totals for Class			2,476,000.0	0.1	0.0%	5.3%			0.0%	0.0%
Ghost Meter	0	999	0.000	0.0	4.9	0.7%	0.0%	0.0%	100.0%	0.1%	0.1%
	Totals for Class			0.0	4.9	0.7%	0.0%			0.1%	0.1%
Grand Totals				46,837,000.0		100.00%	100.00%			100.00%	100.00%