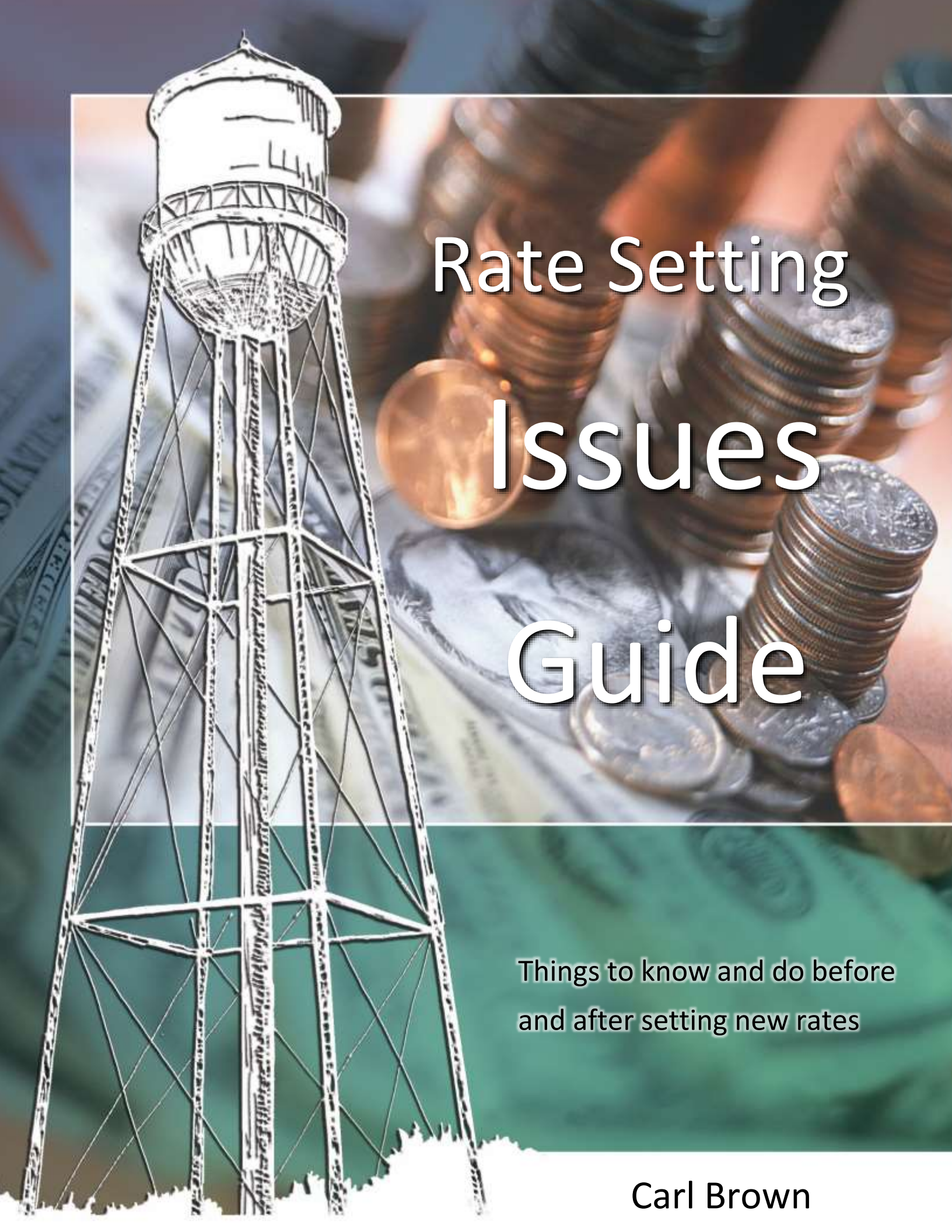

Rate Setting Issues Guide

Things to know and do before and after setting new rates

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This guide is a companion to the book, "How to Get Great Rates." The electronic version of that book may also be downloaded, free of charge, from the same site. Anyone who wants a hard copy of the book should contact the author. Hard copies are not free, but they are handsome, perfect-bound, large format books.

To download this guide and the book, and several other guides and spreadsheets referenced in the guide, all free of charge, visit https://gettinggreatrates.com/freebies/freebies.shtml and click the links for each desired item. The book and guide are large, so download may take a minute or two.

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Introduction

In the book, "How to Get Great Rates," I covered the processes, math and other things that a utility needs to do to get "great rates." Utility rates should be that good, periodically. If you will think of a timeline, analysis and initial rate adjustments fall at one point on that line.

"Great rates" are appropriately simple or complex, adequate and fairly structured. "Appropriately simple or complex" takes a lot of explaining, so I often just say, "adequate and fair" to describe great rates.

What this guide is about:

There are things to be considered and done before doing rate analysis. There are others that should follow the initial rate adjustments. All are up to the governing board or council to handle. Those board or council tasks are the subjects of this guide.

Target audience for this guide:

- City, town, utility district and private utility board and council members,
- Staff of such entities,
- Agencies and associations that help or fund such entities, and
- Others who do planning for such entities.

Language in this guide:

Whenever possible, I use the first person "I," rather than the third person "the author." I want to talk to you directly, so I will be direct.

There are tasks related to rate setting besides rate analysis. I must discuss analysis a bit, but those other issues are the prime subjects of this guide. The governing board or council will do some of those tasks on its own. To accomplish other tasks, the board or council needs to lead others, like the community at-large, in discussions, decisions and action. Utility staff must handle other tasks, like equipment repair and replacement. Ideas on how to get all these things done well are included in this guide.

Some tasks should be done before, and some after, rate analysis and initial rate adjustments. The before and after break is not always clear-cut. I just present the tasks and ideas here. You get to decide if each is a concern for your community, and when you should deal with it.

While I just said, you get to decide when to handle tasks, some should happen at a certain time if you want to avoid future problems. Examples:

- Several of my clients signed a new long-term water supply, or wastewater treatment agreement that locks in how their rates will be adjusted for decades. They did that BEFORE they had me analyze their rates. That is BACKWARDS! Analysis should happen before signing any deal like this. The rate setting stipulations of the contract should be set up so they will treat both parties fairly and do it well into the future. Fairness makes for a good on-going relationship. "Good fences make good neighbors," they say. Well, good pricing stipulations make for a good buyer and seller relationship. That good relationship is what really keeps you out of court.

- Cities and utility districts have hired me to do calculations that will help defend them against a lawsuit over the rates they charged the plaintiff, usually a ratepayer, and usually a high-volume, deep-pockets one, at that. BACKWARDS AGAIN! If you get sued by a customer, not analyzing and not setting rates appropriately and transparently is probably why that happened. Setting rates appropriately will make almost all ratepayers feel good enough that they won't sue. They may not jump for joy about paying more, but they won't sue. And, if a hothead still wants to try it, but you have done a demonstrably good job of rate analysis and rate setting that is fair, most of the time, an attorney will tell them it won't work. Lawsuit averted. If that doesn't happen, the judge will almost certainly tell them that.
- Across-the-board rate increases; you can do these before getting great rates. But that usually layers unfairness on top of unfairness in rate structure. Across-the-board increases are fairest when done AFTER getting great rates. And, there is a limit to how long you can do across-the-board increases and still have rates that are fair enough.

Timing matters on these kinds of things, so do them when they need to be done. It all boils down to planning ahead and good execution of the plan.

Such planning and execution also require that we recognize that, sometimes, we don't know what we don't know. If what you are getting ready to do is important, it will be important for years to come, and it may be hard to change course later, find someone to help you with the things that might be lurking that you don't know. A cliched line will illustrate this: "Guys, occasionally you MUST stop and ask directions." This line gets retold often, for good reason.

Throughout my career, I think I have discovered this truth. Some successful people are personally strong, full of stamina, very intelligent, and they carry the entire load of their life's work on their own shoulders. But more people are successful because they stop, ask questions, get help and learn when they encounter something they don't yet understand. After that, they might carry the entire load themselves. But more often, they get help with the carrying, too.

Sometimes, success is an individual endeavor. More often, it is a team sport. The utility governance and management game definitely is a team sport. Don't go it alone.

Back to rate setting, there is not a canned decision tree for rate setting and related things. There are issues or things that your town or utility needs to deal with. Others you can just consider, recognize they are not relevant or at least, not critical here and now, and move on. The need to deal with or not deal with issues is dictated by your situation. Every situation is different. Thus, these things cannot be handled in a cookie-cutter fashion.

That said, I had to order issues in some way in this guide. Thus, I ordered issues as I think most utilities will bump into them.

I suggest you plow through the guide, first page to last. I flesh out some of the basic ideas and definitions in the beginning of the guide. Later, I layer chapters on top of those basics.

Some issues, purposely not covered in the guide, are huge. They have been covered extensively in books and on Web sites. I left those out completely. Some issues are in play everywhere in every utility – the need to seek compliance with public health and environmental protection requirements, for example. I only covered those issues enough to relate them to the issues I focused on in the guide.

I have written before on many of the issues in this guide. Such articles have appeared in numerous journals, especially those of the Colorado, Kansas, Virginia and Wyoming rural water associations, with occasional inclusion in other journals. I thank those publishers for getting the word out. They fill a great information and training need for their readers and members.

Some of the chapters in this guide use much of the material from those journal articles. I thank all those publishers and associations for allowing me to cover this ground in their journals, and again in this guide.

Some issues are so situation-specific and technical that they can only be properly dealt with by hiring a consulting engineer, an accountant, an attorney, a rate analyst or other specialists. As I mentioned, sometimes you don't know what you don't know. And by the way, in this guide I say many things that have a legal component (doesn't everything?) I'm not an attorney. Consult your own attorney about legal issues.

Finally, I have some opinions about utility service. I will not write much about these later. I list them here, so you will know where I am coming from as you read the guide:

1. All things that are done by a utility must be done in the context of how that action serves customers and ratepayers. Actions you take should serve them, or at least not be a disservice to them. If your actions are contrary to the best interest of your customers and ratepayers, you need to change course. However, one must sometimes take the broader view when making interpretations. For example, non-compliance with public health regulations and permit requirements would let you keep customers' rates lower. That would benefit them. But, being out of compliance might kill someone or make them sick. That would not benefit them. Thus, you need to seek balance in the benefits you provide to your customers and ratepayers. Running a utility is seldom a binary choice, "this or that." Rather, ii is a series of choices of "some of this and some of that."
2. Part of providing good utility service is doing it in a fair rate structure. Fairness should be demonstrable – you should be able to prove it. Always line up on the side of truth and good information.
3. Private citizens and businesses make large investments in their properties because they believe public utilities will provide good, sustainable service to them. A utility's rates are important, but they are secondary. Service and dependability are key, rates are secondary.

4. Every sustainable utility must have adequate reserves. Strive to break even with no reserves and you will go broke. Yes, "government" is non-profit. But that does not mean "government" should have no reserves. To NOT have reserves is irresponsible. Fortunately, the condition of having inadequate reserves can be fixed.
5. Many people think that utilities, owned by governments, are "government." Granted, a utility worker's paycheck may be drawn on a "government" account. But utilities are first, and always, businesses. Those businesses serve us very well when they are both efficient, meaning they are effective but not expensive, and they provide dependable service. They serve us, perhaps, adequately if they are not efficient, but at least they are effective. They serve us poorly if they are neither efficient or effective. Sure, utilities should seek efficiency. But above all else, your mantra should be, "Serve our customers well and dependably. After that, we work on efficiency."
6. Utilities, and their staffs, are good at some things, but not good at others. Rather than try to do all things, doing some poorly or doing them at great cost, utilities should hire specialists to do those things they rarely do themselves and cannot retain staff to do. These areas of expertise often include engineering, rate analysis, law, sometimes accounting and other special fields. Hiring such specialists is, no doubt, expensive. But not hiring them when they are needed can be even more expensive in lawsuits filed against you, rate revenues that are inadequate, rate structures that are unfair and similar bad effects.
7. Utilities should make their records, meetings, operations and all other things as open to the public as possible, so long as doing so does not compromise the utility's functions and personnel. "Open meetings, open records" laws make utility service less efficient. Accept the fact that the burden on government of being accountable to the people is a layer of protection for the people. You must take time away from "doing the task," and spend extra time telling people what the task is and why you are doing it or why you want to do it. I consider telling the folks what you are doing and why to be one of the key services you provide. After all, it is their utility, not yours. They deserve to know what is going on and why.

Now it is time to cover the issues.

Chapter 1 – Making Decisions

Author's Note: Decision-making applies to everything, all the time. But, to do this well, you need a good blend of data gathering, timeliness and logical decision-making. Logic should be involved in every decision, but the mix of the other two ingredients depends on the situation.

It is crunch time. You must decide and take action. Do you have enough "data" to support that decision? Should you study the issue longer? How long?

In your personal life and public service life, you are making decisions all the time. If you decide well, you do well. If you decide poorly, you, or your customers, don't do well. And, perhaps others suffer or benefit, too. If you decide well but too late, sorry, that's a bad decision, too.

Much of your job is about making decisions that affect those you serve. You need to make good decisions and take correct actions.

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There are books about good decision-making. Unfortunately, there are no "cookbooks" on the issue. But there are some key ingredients:

- Criticality of the issue, decision or action – If someone will die if you do this wrong, do it right. If they will get sick, ditto. If they will be inconvenienced a little bit, it's not critical.
- Timeliness – sometimes, making almost any decision and then acting fast is the key to success. The shorter the time before the decision must be made, the less data you can gather to support that decision. "Snap" decisions must be made based on data and information you gathered before this decision opportunity even came around. That is when you discover the value of deep experience – your own and that of your network of advisors.
- Data – you can never gather all the data. Decisions are always made with only part of the possible data. The key is, within the time allotted, you need to gather as much of the most important data as you can. Or, you may gather data until most of it, especially the most relevant data, consistently points to a particular decision and away from alternatives.

Criticality is the quality, state, or degree of being of the highest importance.

Several problem and solution pairs follow, drawn from my field of experience. See if you can apply these to your areas of concern.

Problem 1: The water utility fund is "broke."

Solution 1: It's a simple formula; more revenue, less cost or maybe a mix of both. This problem is, logically, easy to fix. Thus, if it is a problem, there is a good reason for it.

When a utility goes broke, it usually doesn't happen fast, so the utility probably has already been cutting costs. If that is the case and the situation is critical, you get a loan right now and then raise rates soon. If it's not critical, maybe you can raise rates now and grow your way out of the problem. To do that, across-the-board increases will probably cause the least ratepayer anger, in the short run. Data needs? Quantify how broke the fund is and decide how quickly you should change that. Then, it just takes a little math to reach the solution.

As mentioned, this is probably not a math problem. Chapter 2 should help you solve it.

Problem 2: The utility has inadequate cash reserves to see it through financial upsets and emergencies.

Comments: Qualitatively, this is "Problem 1," but not as severe. What are "adequate reserves?" It depends. A large water or sewer utility may only need reserves that amount to 25 percent of its annual operating budget, plus whatever debt reserves are required by its lenders. A small, older, in-need-of-improvements utility likely needs 100 percent of its annual operating budget in reserves, not including debt. That shows you the likely low and high boundaries. I would not go lower. Sometimes, I have gone higher.

Solution 2: Determine what "adequate reserves" are in your case, raise rates soon, keep doing that for some years and get reserves up to the target level. Then, maintain that level of reserves, except for those years when the event you are building reserves for, occurs. The solution to this problem takes a little more math than Problem 1, but it's not that tough. Well, it's not that tough if you are not concerned with rate structure fairness.

Problem 3: The utility currently has substantial reserves and rates are in a cost-to-serve structure but next year the budget is going up.

Inflation happens, so you need an inflationary-style rate increase every year.

Solution 3: Inflation happens. Yes, always look for prudent cost cuts, but rates need to keep pace with costs. As costs go up, raise rates to match, every year. The budget itself will give you all the data you need for such increases. Of course, the current rates need to be in a structure that is close to cost-to-serve. Otherwise, by doing across-the-board increases, you will make the rate structure even less fair over time. But rate structures need not be perfectly fair all the time. Fair enough is good enough most of the time.

Problem 4: You can't prove that rates are based on cost-to-serve principles. Some people complain. One talks of hiring an attorney.

"Cost-to-serve" rates recover costs from those who cause those costs to be incurred.

Comments: When someone says, "attorney," it's time to get your "ducks in a row." You are going to have to move fast (timeliness) but at the same time, you must get it right (data and good decisions), too. Get it wrong and you're a dead duck. Good intentions won't keep you out of court or win the case.

Solution 4: Get a comprehensive rate analysis, now. (Truth be told, you should have done that months or even years ago.) Try to keep the aggrieved person from hiring an attorney because that is the rate setting equivalent of "going nuclear." When there is a rates-related lawsuit, one party loses and the other loses bigger. The fact is, ratepayers, taxpayers and citizens like to occasionally see the "math" behind the rates. It's only reasonable. Show them the math. Assure them the increase will not be that big a deal, if it won't. If it will, you must win them with the fairness of the rate structure and the necessity of the higher rates. That takes rate analysis and analysis takes some time. Don't procrastinate. It won't get better with age. Chapter 2 is quite relevant to this situation.

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More on criticality: How seriously will a decision, or non-decision, affect the utility, ratepayers, others? Generally, proper rate setting is important but not critical. Thus, you need excellent, complete data and sound analysis. Set rates well. Don't rush it, unless the utility is going broke.

More on timeliness: Data gathering, and decisions happen in real time. All decisions have a "window of opportunity" to achieve the best possible outcome. Decide too soon or too late and your results are not as good.

Example: Your utility budget for next year is going up by the equivalent of one dollar per month per customer. You figure; not a big deal, no rush. You "gather data" for an entire year and don't make a decision, meaning, you don't adjust rates and get the needed boost in revenue. It is now time to do the second year's budget. The utility now needs the dollar for the procrastinated first year, plus another dollar for the second year's inflation. If "pulling the trigger" was hard the first year, it will be even harder the second year. Pull the trigger on inflationary increases every year.

A good decision based upon the best data available now, is almost always better than a spot-on decision made too late.

In your day-to-day decision-making, there are lots of recurring decisions. Gather more data, if you need to. Then stop, decide, take action, move on to other issues but monitor results of this decision.

In all decision-making that will not risk life or health, you must weigh the potential value of gathering more data (delay) against the likelihood that the delay will erode the value of the decision. Besides that, getting stuck on this decision keeps you from moving on to the next one. There is always a next one. To a large degree, decision-making is a numbers game.

You also need to consider the severity of the outcome from making a bad decision too quickly.

Decisions are hard. That's why your constituents need you. Change is hard. Decisions lead to change. Change gets us to a better place, if we decide well. Good decision-making will serve your customers, and you, well.

Chapter 2 – Getting New Rates and Other Ideas Accepted

Author's Note: To get new rates accepted, there are things you need to do long before doing the math of figuring out new rates. It is useful to consider these things early and thoroughly. Most of the ideas and strategies covered here are useful in getting consent for many other things, too. Stating strategies aimed at getting consent may seem to some as being against the notion of conducting public service openly. What I say here may seem underhanded or crass, dismissive of ratepayers. That is wrong! In order to get to the point where you can provide good public service, you must get approval from the public to do that service. Some would thwart you at every turn, so you need to get past the "no to everything" folks to get on with providing good service to all.

To provide good utility service, you must get ratepayers' consent to do it. Sounds odd, doesn't it?

You could "sell" ratepayers on new rates, maybe.

You could fool them into new rates. That happens. But it can also have bad repercussions later. And, use this trick too often or too ham-handedly, and you WILL be found out.

Or, you could inform ratepayers honestly and sufficiently to gain their consent of the new rates. Some will consent freely, which is wonderful. Some will consent grudgingly, which is good enough. If all goes well, none will vehemently, or in an organized way, oppose the new rates. That is also good enough.

The underlying notion to this chapter is called, "Systematic Development of Informed Consent," or "SDIC." The goal of SDIC is gaining at least grudging consent. In this case we are talking about setting new utility rates. But the notion applies to just about everything you do for, or with, anyone else in the public arena.

I suspect this notion has been around for as long as two or more people found it necessary to agree on a course of action. However, for many years now, SDIC has been thoroughly developed and capably taught by Hans and Jennifer Bleiker. This chapter will not expound upon the details of SDIC, so to learn more, visit https://consentbuilding.com/sdic/. By the way, I got this training three decades ago and it serves me better the more I apply these principles.

The goal of SDIC is gaining consent or acceptance of a course of action. In the context of setting new rates, rarely will a ratepayer say to you, "I accept the rates you proposed." If they send you a text that says, "Love those new rates," you better note that on your calendar and celebrate it each year.

Mainly, ratepayers hear the proposed rates presentation and they nod up and down, or at least they don't nod sideways, or they fail to voice resistance, or they signal that they are ready to move on to the next issue. Or, when the presentation is done, they quietly rise and leave. Or, more commonly, they never bothered to attend the meeting because they have more important things to do.

Why Utilities Analyze Rates

Rate analysis is a tool that helps you get ratepayer consent for rate adjustments, which are almost always bill increases for at least some ratepayers.

1. Most commonly, a city or district calls for a rate analysis to figure out rate adjustments to make because it is embarking on something expensive: building a new water tower, a whole new wastewater treatment plant, new lines, or something else on that order of cost magnitude. Costs are going up, so it is clear that revenues need to go up, too. That means that utility bills need to go up, maybe not everybody's bills, but at least some.
2. Other times, the expensive event that calls for analysis is dealing with rates that have been kept too low for too long. Now the utility must play catch up. Situations 1 and 2 can be in play at the same time – the perfect rate-setting storm.
3. There is a third group, my favorite. For those, the expensive event is trying to justify keeping the high reserves, high. These utilities have been doing a good job of managing the service, and the finances. They just need an outsider's look at how they are doing, and they need help restructuring rates. They don't need wholesale changes. They need a little tweaking, so they can hang on to their reserves. That is, unless this situation runs together with Situation 1. In that case, they also need more revenue to maintain reserves.
4. Occasionally, a utility will call in an analyst specifically to do rate restructuring, but that is rare. It is almost always about getting more revenue. Most figure, why get people mad about their bills being adjusted if the utility is not going to get more revenue out of the effort, too? The purpose of rate analysis and initial rate adjustments, in the utility's view, is almost to get more money. Fairer rates are a side benefit to them. In my view, you should seek structure fairness first and always. That gets rate acceptance from the most ratepayers. Extra revenue is just a side benefit from getting the rate structure right.

Number 1 above is easy for ratepayers to understand. Markedly higher costs lead to higher rates – "cause and effect." They don't like it, but they know it happens.

Ratepayers don't really get Number 2 above, and for good reason. By NOT raising rates regularly as costs have risen over the years, the utility has been sending this message to ratepayers: "No increase is needed because costs do NOT rise for the utility." Now, to get the needed rate increase, the utility must say to ratepayers, "Well, as it turns out, utility costs actually do rise. Now we need more money, badly." You may feel vulnerable telling that story to your ratepayers, but I won't. Telling that story is one of the main functions of a rate analyst.

Initial rate adjustments always lead to someone's bill going up more than other peoples' bills. Some bills might even go down and others go up.

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

A key question you need to consider is, who's bills need to go up or go up the most? Is it the low-volume, low income folks? Is it the ABC Corporation that uses 10 percent of the utility's flow?

Rate structure makes little difference to customers who fall close to the average. If revenues are going up 25 percent, the average customers' bills are going up about 25 percent, too, regardless of the structure chosen. But structure makes a big difference to those at the margins. How their bills will change makes a big difference concerning from whom you most need to seek acceptance of the new rates.

If bills will go up the most for the low-volume, low-income folks, gaining consent is mainly a numbers game. You have many low-volume customers.

If the big bill increase will fall on the ABC Corporation, it might turn into a "money to pay lawyers" game, if you do the consent seeking badly, so do it well. But that does not mean give in and cut the company a sweet deal. In almost all cases, the bill for very high-volume water and sewer customers is only a rounding error in their budget. The CEO will try to talk the bill down, but in the real world, the company can get a much bigger bang for its buck lowering some other large bill by just a little bit.

Now that I have probably scared you, let's back up and parse it out.

The Ratepayers

Ratepayers need utility services. Those needs boil down to getting the desired level of service "24/7/365," or very close to it.

It is simplistic to describe it as follows, but useful. Your customers can get the impression that, once the infrastructure is set up, service just happens. Many do not realize that it takes skilled people, doing good work and making good decisions to make utility service happen. They just think, "Turn on the tap, water comes out. Flush the toilet, water goes away."

Some ratepayers also do not know, do not appreciate, or simply want to dismiss the fact that providing utility service costs money, their money. They would like to pay nothing for the service, or at least, as little as possible. And, they would like to think that, once the utility is up and running, inflation does not happen to utility costs.

On a related note, they think that "government should do more with less." And, they think a utility that is owned by a government entity IS "government." Thus, the utility should also be able to do more with less. Some even think they will get the best value out of utility service if they "starve the beast," meaning, keep the rates cheap.

Someone needs to do some educating to gain ratepayer consent.

The Utilities

Utilities often feed into the belief that utility inflation does not happen. They provide good service and almost always do it "sight unseen." They don't talk up what it takes to provide that service. They hold rates steady for years. Many utilities say nothing to their ratepayers, except for every five or ten years, when they want a lot more money. Do you have children who say little to you until they want money? Ah, you know how it feels.

Utilities, and the governments that own them, have a fact-based, logical, realistic view of utility service. They know it costs money to set up and run a utility – they put together the budgets and pay the bills. They do the unappreciated work of developing and setting rates and fees to pay those costs. Staff and decision-makers of utilities are immersed in the business of utility service. It is clear to them that this takes work and money. It seems to them that ratepayers and customers should be able to easily grasp that, too. But somehow, they don't.

Thus, there is a natural difference between the understanding and mindset of ratepayers and that of the people who make utility service happen. Ratepayers are not going to bridge that divide. Many distrust "government." And, cutting ratepayers some slack for their lack of interest in the utility, they have busy lives to live. They have a lot to do. They can't afford to carve out time to make sure "government" runs right. That means, it is up to those in the utilities, and the governments that own them, to do some education and winning of consent for adequate and fair rates.

With that groundwork laid, recall that the act of adopting new rates is a breakover point on a timeline. There is strategizing and work to be done before that break. There is strategizing and work to be done afterwards, too. Actually, the strategizing and work done afterwards can more usefully be thought of as the strategizing and work to be done before the ***next*** rate adjustments.

Before you adopt new rates, you must propose new rates. That lets people have an opportunity to think about what is likely to come and voice opinions about it, if they want to.

Before you propose new rates, you should do an appropriate level of analysis to support the rates you would propose. You, yourself, need to know what that math says about those rates. Plus, you need to be able to show ratepayers and others why you are proposing those rates. In other words, you need to use facts to seek informed consent. Once they are shown the facts and the math, and assuming the facts and the math clearly support what you are proposing, most ratepayers will accept those rates. Acceptance is as good as it gets in the rate setting game.

Other ratepayers are not so accepting. Some of those will challenge you. Your job: Limit opportunities for them to do that successfully. (That sounds under-handed but read on.) You must develop the facts and math that clearly support the rates you propose. If the facts and math clearly support the proposed rates, most challengers will back off. With this kind of ratepayer, that is as good as it gets – postponing argument to another day or over another issue. Some will even grudgingly accept that you are right and that you are trying to serve them well. A third kind of ratepayer will be against you no matter what. The next subsection covers these folks.

A Key Point of Strategy

You will have a meeting, or maybe several, to discuss the analysis and the proposed rates. At some point in that meeting, you will take feedback from ratepayers. Do not open the floor to the public for discussion until the analysis and resulting rates have been sufficiently discussed by the analyst with the decision-making body. Here's why.

In going first, the decision-making body stakes the "high ground" by examining the analysis, finding it sound, and recommending and supporting adequate and fair rates that are supported by that analysis. The decision-making body may not uniformly line up behind the recommended rates, and that is Okay. But they should be in favor of adequate rates and a structure that demonstrably treats people fairly.

Through that examination and discussion of reality, the decision-making body sets a benchmark. That is, they create a wall of facts that a naysayer must first tear down to reach their alternative goal – cheap rates for them.

If someone, or a group of people, want to go a different direction with rates, that may turn out fine. But they must prove that their option will actually work, and that it makes better sense than the benchmark. If the benchmark really is sound and fair, it will be hard to prove the case of the alternative.

Now, back to how the process should play out.

A rate setting key point of strategy: The board or council should hear from the rates expert and discuss things FIRST. Only then do you open the floor up to comments, questions and the certain-to-come complaints from ratepayers. Lay fairness and the facts out first. Make others argue against fairness and the facts.

After discussion of the analysis is done and board or council members, through their comments, have made it clear they want to fund the utility right and do it fairly, you can open the floor to comments, and no doubt, some complaints. Since you have already taken the high ground, complainers will be forced to try to prove the math of the analysis is wrong. If the analysis is sound, that won't work, but some will try anyway. Alternatively, they must argue for the low ground, which also happens. Be careful not to give in to the person who speaks loudest or who is the most intimidating. Do what is right and it will work out.

Complainers can rail against the facts. They can advocate a structure that is not fair. But both strategies are unseemly and difficult to execute. Some other ratepayers, who would be treated fairly by the new rates, may join YOU in support of adequate and fair rates and take issue with the complainers' attempts to stop such rates. That makes it even harder for complainers to win. Still, most complainers will give it a shot, mainly to voice their disapproval, but then they will grudgingly cease and desist. That is their form of grudging acceptance, and that is as good as you will get from them.

Here is a mini-strategy on what that complainer just did for you, and what you should do.

They just gave you their (grudging) acquiescence, meaning, they don't like it, but they won't fight you. They just gave you a gift. Treat them kindly and accept the gift, graciously. Never demean them or say anything to the effect of, "Ha-ha, we won, you lost." And, don't linger on the issue. They could get angry again and change their mind. And these folks usually have good memories and, if provoked, they can hold a grudge.

Also recognize that, as they may see it, they are practicing the "live to fight another day" strategy, and that's Okay. A battle averted now might be a battle you never have to fight.

To return to something mentioned before, there are two main kinds of rate adjustments:

- The infrequent kind gets revenues high enough to pay the utility's costs, plus it restructures rates. These are the most difficult to implement. These get the most complaints.
- The more frequent kind of adjustment is the simple, across-the-board increase to all ratepayers. These only aim at keeping revenues high enough to keep up with costs. These are a snap to implement. These get few, if any, complaints.

Generally, you should do initial rate adjustments first, to get rates up to an adequate level and into a fair rate structure. Follow that with across-the-board increases each year for several years, to keep them adequate. Eventually, do new initial rate adjustments, restarting the cycle.

Let's consider the initial rate adjustments, first.

Initial Rate Adjustments

I call the restructuring type of adjustment, "initial" rate adjustments. This kind of adjustment requires cost classification, a part of rate analysis, to achieve the goal. These adjustments lead to both adequate and restructured rates. I promote fairness in the restructuring. But you could restructure and get unfairly structured rates, too. Let's just assume you want fairly structured rates. They are a lot easier to promote.

Cost "classification" is the process of separating costs into types: "fixed costs," "variable costs" and maybe a few other types. Each of the types of costs are then recovered by different parts of the rate structure. Fixed costs are recovered through minimum charges, variable costs by unit charges, and others by other types of fees.

Cost classification requires knowledge of what the various costs are related to. Otherwise, you are just playing with numbers.

Initial rate adjustments require the most analysis, the most educating and the most diplomacy, on your part, whether the structure of those rates is fair or not.

To arrive at the initial rate adjustments, you or a rate analyst need to do analysis. It is risky to try initial rate adjustments without it. Without detailed analysis, you don't know how restructured rates will perform. (You might get such rates adopted without analysis, against the wishes of the complainers, and if those rates go belly-up in some way, the complainers have you in a headlock.) To successfully educate ratepayers on the new structure, you need some facts and math to back you up. That is especially true when some ratepayers' bills will go up a lot and others will go down, which is common.

People often think of the status quo, the current state of their rates, as being fair. They believe, if the proposed new rates would increase their bill, or they would increase their bill more than others, or especially if their bill would go up while others go down, the proposed rates are not fair. In the case where a ratepayer's bill would go down, they consider that fairer than their current rates. Of course, if their bill will go down and others' bills will go down even more, they consider that a move in the right direction, but still not fair.

Trying not to be judgmental, over my years in rate analysis, I think this is what I have discovered:

1. If a ratepayer's bill is going up more than any other, they want to fight you.
2. If their bill is going up the same as the average bill, they don't like it, but they almost always accept it.
3. If their bill is going down some, they like it and welcome the change.
4. If their bill is going down the most, they love your sense of fairness and think you are a great board or council member.

Groups 3 and 4 will accept the new rates. You had them at, "this will lower your bills."

To gain wide consent, which you want, you really need to get Group 2 on-board.

Group 1 might only be one person, but to keep from being embroiled in acrimony, attempts to organize against you and maybe even a lawsuit, you need Group 1's acquiescence, grudging consent or at least, resignation.

It is also possible that those who, by all rights, should fall into Group 1, just won't show up. That happens a lot.

Group 1 often includes the CEO of the "ABC Corporation." Your proposed rates would double the ABC water bill from $1,000 per month to $2,000; a rounding error in the company's financial statement. But the CEO would want to argue it anyway – it's what they do. However, right now the CEO is dealing with a labor dispute, two material supplier negotiations worth $10 million per year and his wife is suing him for divorce. The CEO has bigger fish to fry. If the CEO had nothing else to do, he might argue about the bill increase. But lucky you, he's busy.

However, if the Group 1 person is a hothead and he, or his company, has deep pockets, the going could get tough.

Groups 3 and 4, are a numbers game. Group 2 just needs to be educated. Group 1, you're talking personalities and individual situations.

There is one other group you should pay attention to, even if they don't jump up and down and waive their arms in the air. Do this because you want fair rates. And, do it in the interest of good utility management, meaning, avoidance of lots of problems. Who am I talking about? It's the "little old lady, widowed, retired, living alone on Social Security," and others in a similar situation. "Jack" her bill up too high, even if the math says that is fair, and you will have news media problems (headline: "City Slams Retirees," or, "Retirees Choose: Meds or Water"). Such headlines do not make for good utility management.

Quite commonly, the "little old lady's…" bill is too high right now. After properly classifying costs and structuring rates, her bill might go down because the math, and her water conserving nature, are on her side. If the math is not on her side, at least it will be on your side when it comes time to explain things.

After doing the education process well, you have gained mostly willing consent, a little grudging consent and you blockaded one or two hotheads. You pass the new rates ordinance. Finally, you can relax, right? No.

So far you have only been putting the great rates apparatus into place. Now you need to work it and monitor it. Make sure it is bringing in the right amount of revenue and that the improvements you said the money would pay for are lining up as promised. Keep folks informed about what their higher bills are now buying. Making that case is part of providing good service. But it also buys you continued support – consent, which is good business and which you will need for the next rate adjustment. Before you know it, it will be time to start preparing the next year's budget and inflationary rate increases, which

will be discussed a bit later.

To sum up initial rate adjustments, analysis determines rate adequacy and a new rate structure. That becomes the recommended set of rates. And hopefully, those are what get proposed, discussed, generally accepted and later adopted by the rate setting body.

How to Educate for Initial Rate Adjustments

There are good and bad ways to discuss and promote initial rate adjustments. I will cover the good ways, because that is what you should do and there are fewer of those.

- First, and always, tell people about the utility. Not the rates, the utility. Do this frequently and in small bites, using several different media if you can. People need to know, basically, what it takes to own and operate their utility in a way that serves them well. In fact, stress that it is their utility, not yours. You are just managing it for them. You need to give them a sense of just how big and complicated the utility is. How people worked hard to get it set up right and how they continue to manage it, so it serves them well. Don't go deep into engineering, chemistry or other technical things. Give them the basics, the costs and highlight the people side of making service happen. Following is one way you might say this:

  "Did you know that our operators must sample your drinking water every _____, from the right locations, at the right time, in the right way, and handle those samples properly and timely to get accurate test results from those samples. If those results are corrupted, your drinking water might be bad, but the test would not show it. That is why we spend good money to get your operators good training. You want them to know what to do and how to do it because they are protecting your health. That is a big reason we pay a competitive wage, so we can keep good operators serving you."

- Later, when it comes time to ask ratepayers for more money, ratepayers will already know the utility is big and complicated and skilled people are working hard every day to keep it going and serving them well. Needing more money won't be a surprise. And, it won't be a nameless, faceless machine they are pouring money into. Then, they won't be so inclined to "starve the beast" or fight you. And, they will have a better sense of perspective, "They are only asking me for another $3.00 per month and that will keep the good service coming. I can go with that." Did you hear that? You just got consent.

Now, you are approaching the time for making the initial rate adjustments. The analysis has been done. The board or council is aware of the new rate needs that the analysis outlined and likely they agree about what they should do, at least generally. It is time to inform the ratepayers. Remember, this will not be brand new to them. You have already been talking about the utility, its finances and such. But this discussion of new rates is a current event.

Everyone impacted by the utility's rates should at least be given the opportunity to become aware of the results of the rate analysis and resulting recommended rate adjustments:

- My default recommendation is to give any customer as much information as they want. If they want a copy of the full report, give it to them.
- 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." I will say that another way. Don't wait for them to ask for the full report. Don't even ask if they want a copy. Just give it to them. 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. And make it impossible for the media to claim that you are trying to hide anything.
- If, between you and your analyst, you give people everything and try to openly and honestly answer every question, it should go well, with one caveat. As stated earlier, at the meeting where you receive the analysis report and discuss it and the recommended rates, you must cover the math (the analysis) and stake out the high ground – which is the math-supported, restructured rates – before opening discussion to the public. Stick to that plan.
- What will happen to their water bills is as much as most customers care to know about the analysis. To satisfy those information needs, the utility can publicize the current and recommended rates. You can also give people a table showing bills for different volumes and rate classes "before and after" the rate adjustments. Post such tables on your Web site. Hand them out at rate discussion meetings. These tables will satisfy almost all ratepayers and lead them to consent. Some may even walk out of the meeting after they read through such tables. It's not because they are disgusted with you. It's because they now know enough, and they are off to do something more important than sit through the rest of the meeting. "Consent gained, mission accomplished," is the phrase you are looking for.
- 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 full report on the utility's Web site so everyone can see for themselves what the report says. That way, no one would have to print out or carry around a 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.

- Open meetings/open records laws require some of these measures. Of course, you should satisfy those requirements. But, whenever possible, go beyond those minimum requirements and do it quite publicly. Again, you want to be seen as being as open as possible. And, behaving in this way is another aspect of staking out the high ground. Many will not understand the math and much of what is in the report. But, if they feel you are being completely open about the analysis, they will be inclined to accept the resulting rate adjustments.

As I have said before, when it comes to rate adjustments, consent is as good as it gets.

When the Bad Thing Happens, You Need a Fall-back Strategy

It just might come to pass that an overwhelming number of ratepayers will line up against the proposed rates. Or maybe one very powerful ratepayer (they have money) will do it. In these cases, you need to do some thinking:

- Did we analyze well enough?
- Did we educate well enough?
- What else could we have done to turn the tide? Can we still do that now?
- Did that ratepayer, or that group of ratepayers, not like the overall level of the rate increase? Or, do they just not like the structure? If it is a structure issue, would their favored structure be worth it to us to accept, in order to get adequate rates, which the utility needs? Would the structure they prefer not harm others much, or be rejected by others in big numbers? You must do some additional analysis to figure out some of these things.

The point is, you need to do a "post-mortem" to try to find out where you went wrong, and to see if you could do it another way.

An aside, but a very important one: Other functions of the utility and the entity that owns it are controlled by processes. These include city policies and ordinances, State laws and even federal requirements. Stick to the "process." Rate setting is a process. Follow the process. Do it even if doing so may, at least temporarily, lead to a bad result – the utility gets under-funded and flirts with failure. Follow the process. If you don't follow the process, you might "win" the new rates but lose on the grounds of process – you improperly over-ruled the will of the people.

Now, back to the situation where lots of ratepayers have balked at the proposed new rates.

If you just cannot turn them around, you may need to stick to the process and go with the flow. Keep the rates where they are. Or, if you raise them at all, only raise them as much as ratepayers will stand for at that time. No, those are not sustainable rates, but if ratepayers demand it and overruling them would lead to great harm, let them have their way. Remember, it's their utility.

At this exact point in time, you need to act quickly to try to prevent bad outcomes from becoming utility-killing outcomes. For example, if it is appropriate, start the discussion laid out in Chapter 4, the ghost town chapter of this guide. Relate to the ratepayers how funding must be at a minimum level just to keep the utility sustainable, and the rates are not there. Tell the ratepayers that the utility might serve them poorly for a while and perhaps even fail after that. If you can project with some level of certainty when that will happen, tell them when. (For example, if you have a $100,000 loan payment coming due in six months and there is no way you will make it without that rate increase, tell the ratepayers that. And, tell them about the credit worthiness hit their utility will take for missing that payment. Default, itself, is not a utility-killing event, but losing credit worthiness can destroy a utility somewhere down that road.)

Only cry wolf, or ghost town ghost, if you know the ghost is lurking. Otherwise, it will backfire.

What you just read should not goad you into scaring people, just tell them the truth. The fact is, because of hard circumstances, some towns and other organized entities truly are facing hard decisions. Do we bankrupt the utility and keep more money in ratepayers' pockets? But then they are served by a failing system, with those consequences. Or, do we fully fund the utility but force ratepayers to make hard "what do I pay for first" decisions? In that case, the ratepayers' financial condition jeopardizes the utility's sustainability.

If the town or other place is to survive, its utilities need to survive. Thus, you should tell them that if the water and sewer utilities fail, everyone will need to find an alternative to community-based water and sewer. This might be the core of the case you would make:

> *"The city water utility draws its water from a great water source (location, quality, pumping capacity). If we lose the water utility, you all will have to drill your own private wells. On town-sized lots, drilling your own well is seldom a viable solution because there would be too many "straws" sunk into the same aquifer below, drawing it down over time. It will become more expensive to reach deeper and deeper to keep getting water and you might not be able to get any water someday."*
>
> *Continue with, "On the wastewater side, seldom are town-sized lots large enough or have enough of the right type of soil to adequately treat everyone's wastewater. Some of that untreated wastewater would find its way into the aquifer below and contaminate wells. You might treat your wastewater just fine, but if your next-door neighbor, or even someone a half-mile away doesn't treat their wastewater adequately, your water gets polluted. Thus, you lose in two ways."*

Once a community builds community-based water and sewer utilities and develops on town-sized lots because those utilities enable it, going back to on-site private systems is difficult and expensive, if not outright impossible.

There are other issues that need to be discussed when ratepayers balk. Do it frankly and truthfully. Do not try to scare, even if the facts are scary. Scaring almost always backfires.

What you need to do with these kinds of discussions is educate ratepayers. Bring them back around to the fact that, rates that are a bit higher really are the cheapest, best solution to their utility service problem. And hopefully, you can turn them around before too much damage has been done. Remember, you are seeking consent, not appreciation.

The going-down-the-wrong-path chain of events might take a long time to play out. In fact, I run across utilities that have been, incrementally, going down the wrong path for decades. Thus, while this is going on, you should document the consequences of going down the wrong path. Again, you need facts to educate ratepayers. Trust that, eventually, you will turn them around.

When you do turn them around, never, ever even hint of saying, "I told you so." Preserve their dignity. People need to retain their sense of worth. If you take it away, you will cause more problems. The fact is, they made a choice, it turned out badly, they learned, they made a new choice, and now things are improving. Your job is to facilitate good things happening for them. Facilitate them back to that good place. It is not your utility, it is theirs. Sometimes people treat their own property badly.

Now you are thinking, "All that is easy for him to say. He's not living it." And my response is, "You are right. I'm not there." So, figure out how you can best serve your customers and do that.

Deciding when and how to start "facilitating them back to a good place" might be a little tricky. Every situation, and every set of players, is different. When the time is right, make another run at initial rate adjustments. Eventually, you will get there. Or, at least, you can get on the road to getting there.

Inflationary Rate Adjustments

The other main type of rate adjustment is a simple, across-the-board increase, likely set to match inflation in the next year's budget (not the Consumer Price Index). It is best to do initial rate adjustments to make rates adequate and fair. Then, for several years, perhaps even many years after that, do inflationary increases.

Inflationary increases should happen every year that there is inflation in the cost to own and operate the utility. That is just about every year, so as a general rule, do an inflationary increase every year except for when you do initial rate adjustments, which will cover inflation, too.

Raise rates every year, at least a little bit.

Inflationary increases are small, two to four percent most years. In most water utilities, and for the average residential customer, that amounts to a bill increase of 75-cents to maybe a buck per month. Most people won't attend a board or council meeting to argue about one buck.

Build your education campaign around that fact. Prepare the next year's budget. If it will be three percent higher than the current year's budget, propose to increase all major rates and fees by three percent across-the-board. As you go through the budget adoption process, carry the proposed rates right along with it. When the time comes, adopt a new budget and at the same time, adopt the rates needed to fund it. Two jobs done and one of them, the rates, supports the other.

What is your proof that an inflationary increase is needed? The new budget. Because most ratepayers consider the current rate structure to be the de facto "fair" rate structure, and everyone's rates will go up the same, and not by much, they see little reason to argue or even take time away from other activities to attend a meeting. You adopt the new budget and the new rates, and you're done with rates for another year.

Now, what you have read for the last 12 pages sounds very crass and dismissive. I don't mean it that way at all. That is just how these things usually play out. We all make decisions about how we will invest our time. Arguing about one buck is not a good investment of time for most people. And few people want to argue for the low ground. When it comes to considering inflationary-style increases, you may have no one except the board or council attend that meeting.

To close, you want adequate and fairly structured rates because they serve your customers, and their utility well. But customers want cheap utility bills. Those two things collide. Thus, you need to convince ratepayers that rate adjustments won't hurt (or hurt too much) and it will ensure that the good service will keep on coming.

Get consent, adopt the needed rates and all ends well… until next year.

Chapter 3 – Affordability Index

Author's Note: The Affordability Index, bill affordability generally and bill payment assistance programs are hot topics. In this chapter, I discuss the Affordability Index.

Rate affordability, often measured by the Affordability Index, is an important indicator to which you should pay attention. On a related note, bill assistance programs described in Chapter 2, are aimed at making bills for some customers easier to pay – more affordable.

The notion of an affordability index, and rate affordability generally, applies to all utility services. But in this chapter and the next, I will mainly discuss these issues regarding water and sewer services. Of course, you should apply these ideas to other services, too.

First, I must dispense with a pervasive thought.

There is a school of thought that I frequently encounter when I attend a board or council meeting to present the results of a rate analysis. The thought goes like this: "Rain falls from the sky, it is free. And, everyone needs water to live. Therefore, I should not have to pay for water." (Some just cut to the chase with, "Water is a right.")

My take is this: "Yes, water is free, and you can use all you want, so long as you have legal access to the source, and you are willing to go get it and take it back to your home or business. But, if you want it pumped out of the ground or captured in a reservoir, have it treated, pumped into a storage tower or tank and piped to your home or business so you can turn on the tap and use it 24/7/365, that is the part you pay for."

Said graphically, if you can legally get a glass of water into your hand, you have the right to drink it. But you do not have the right to force someone to place that glass of water in your hand. You must either do it yourself, or you pay them an agreed-to fee for them to do it for you.

Before discussing the limited topic of the Affordability Index, and at the risk of hacking off liberals, or conservatives, or maybe both, I must point out some facts:

- As alluded to above, some think water is a right. Whether you agree or not, bill assistance programs edge us in the direction of treating the *delivery* of water *to your home or business* as a right. That is, access to the water itself, is a right. And, the treatment, storage and delivery of water to where we want it should also be free or at least subsidized. In many cases, we have ourselves to blame for this sentiment. Many rate structures truly are unfair to low-volume, low-income customers. Much more on that in the next chapter.

- Something stands in opposition to the "it's a right" notion. That is the cost of producing and delivery water. Over the longer term, rates must be adequate to fund the utility properly. If everyone is getting it as a right for free, that means no one is paying for it. Or, that "others" are paying for it. The practical and fair approach to utility costs is to have customers reimburse the utility for the costs they cause the utility to incur. Rates with both attributes of adequate and fairly structured are generally called "cost-to-serve" rates. Life, and rates, are not perfect. But, cost-of-service rates are a good place to start when examining utility rates.
- Not all utility customers cause the utility to incur the same level of cost.
- Not all utility customers have the same ability to pay their utility bills. Thus, the same bill amount will affect different customers differently.
- Some customers have such a low ability to pay that they are prone to pay late, or not pay at all, causing the utility to lose revenue or causing the utility extra expense (extra fairness processes, lawyers, collection agencies) to collect that revenue.
- Bill assistance programs can lower bills for some customers. But such programs are not a "free lunch." The programs themselves cost money to set up and administer. And, the utility's ownership and operating costs do not go down because certain customers' bills go down. That cost gets paid by other customers who do pay their bills.
- The only way to lower bills, generally, without causing a decrease in net revenues to the utility is this. The costs to own and operate the utility must go down. That will lower the need for revenue from all customers, including the ones who find it difficult to pay. (Later, I will call such customers, "difficult-to-pay customers." And, programs that reduce such customers' bills will be called, "bill assistance programs.") Higher levels of technology, automation and similar changes can sometimes lower costs. But the general trend is for utility costs to rise. Thus, bill reduction programs are built upon the basic premise, stated or not, that some customers must pay higher bills than other customers. That might be through cost-to-serve rates. Or, it might be by some form of subsidy from one group to another.

This is a problematic landscape, to say the least.

Let's move on to the easy part of this topic, the Affordability Index.

Affordability Index: The monthly charge for (typically) 5,000 gallons of residential water or sewer service divided by the median monthly household income for the area served by the system. An index of 1.0, or 1.0 percent, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable. The Affordability index is a primary factor in determining grant and loan eligibility and grant amount.

Defined in the text box at right, the Affordability Index is an indicator. It has been a stable and standard measure for many years. It is used for many things but key among them is use as a factor in determining how much grant and how much loan, or how low the interest rate will be, if any of these, an entity is eligible to receive to help fund capital improvements. The notion is, if the rates that would result from loan funding of the improvement would cause the rates to be "too high," on an Affordability Index basis, the funding agency would replace an amount of loan funding with grant funding, or reduce the interest rate charged on the loan, to "buy down" the cost of the improvement. Reducing that cost would reduce the need for higher rates.

Thus, in a back door and partial sort of way, use of the Affordability Index and any similar criteria for such purposes partially gets at the "water is a right" notion. But the benefit does not stop with those who live there. Those who do not live in a grant-recipient place also get benefits from assuring good water and sanitation service there. Remember, you occasionally travel to other locales. You drink the water. You use the restrooms. You want those places to be safe, too. If they can't handle all the cost on their own, you probably want to chip in a little, so your next trip will be a safe one.

Reducing the cost (to the utility) of improvements can be a major factor in improving (reducing) the Affordability Index. The cost of debt service for major, recent system upgrades can increase a system's ownership costs by as much as 50 percent. Thus, if half of that cost can be paid by grants, costs would be 25 percent lower, decreasing revenues needed from rates substantially.

As described in the "facts" subsection above, costs incurred but not paid by a certain customer, group of customers or an entire utility, do not go away. They get paid by another group or entity. Most grants and loans come from state and federal government agencies. Thus, when grants or lower interest rates are given by such an entity, the local cost gets transferred to a state or federal agency. Those agencies are funded by tax and other receipts from those who pay state and federal taxes and fees, or by other means of generating revenue, or by deficit spending, which passes costs on to a future generation to pay.

We all know how this works. We all decry deficit spending, unless the deficit spending is for us. But as I tell my clients, if the rules of the game say you are eligible for a grant and taking the grant does not have enough negative aspects to make it not worthwhile, take the grant. If you don't take the grant, another town or district will. Then, through your taxes, you will be paying for *their* improvements. To serve your customers the best you can, it is better that the improvements go to your system. But when there are no more grants, don't cry about that. Just remember "the good old days" and be glad that you once got a grant.

Enough of high finance, theory and philosophy. Let's get back to the Affordability Index.

The Affordability Index requires gathering data about household incomes (which the Census Bureau does) and calculation of the average bill that such a household would pay to fund the (new or upgraded) system. That comes from rate analysis or even a simple calculation based on the current rates, for example. Once you know the bill for the "median" household and the income of that household, the math is simple: Divide the monthly bill by the monthly household income. That is the Affordability Index.

In my experience doing rate analyses, I have seen the Affordability Index for water or for sewer bills range between 0.2 percent and four percent. The Affordability Index tends to run the highest for small, rural utilities because those systems enjoy little economy of scale and rural places tend to have many retired people and others who have little income with which to pay utility bills.

The Affordability Index is a very useful tool. Get to know the Affordability Index of your utility services because it may be the difference between your utility getting help to fund improvements or not. It also will be a very good predictor of how your customers are likely to receive news of a rate increase.

Chapter 4 – Bill Assistance Programs

Author's Note: When rates become unaffordable enough for some customers, you may want to consider a bill assistance program for those who have the hardest time paying. But fairly structured rates will almost certainly give difficult-to-pay customers more bill assistance than other strategies, so you should pursue such rates first.

Bill assistance is a relatively new field in utility rates. I place bill assistance programs in three categories:

1. Bill assistance by enforcement or encouragement (this is the historical approach),
2. Bill assistance that does not transfer costs from one group of customers to another, and
3. Bill assistance that does transfer costs.

I discuss each in separate subsections below.

I'm not sure of the history, but newer assistance programs were probably first explored in a serious way in electric service billing. Such programs are spreading to other utilities. In the cold northern part of the U.S., when the power utility shuts off a customer's electricity and they have no good alternative but to stay in the cold house, eventually, their water lines can freeze and burst. To say the least, that worsens the customer's bad economic and living situation.

Legislation now protects electric customers from winter electricity shutoff. That is a form of assistance to customers, though it is not itself a *bill* assistance program. The bill will still come due.

Bill Assistance by Encouragement

People manage their bills differently:

1. Some get the bill in the mail, sit down right then, write out a check and put it in the mailbox the next day.
2. Some put the bill into a "tickler" box, envelope or on the edge of the kitchen counter and pay the bill sometime before it comes due.
3. Some toss the bill into a pile of other mail or elsewhere and, good intentions or not, fail to pay the bill on time, but they eventually pay. These are called, "slow-pays."
4. Some people receive lots of bills, don't pay them and then move out of their apartment in the dead of night. These are called, "no-pays."

Utility customers come in all those sorts and more. As I conduct rate setting workshops and talk with clients, there is one thing they seem to agree on. With few exceptions, slow-pays and no-pays are the same recurring group of people.

You have slow-pays and no-pays. You probably assess a penalty for late payment. That is the historical bill assistance approach – penalize them. It works for lots of people. That is one among other reasons most of your customers fall into Groups 1 and 2; they don't want to pay penalties. But the Group 3 and 4 folks are not very motivated to change how they manage bills by penalties. Accept that they are different. Don't belittle them about how they set priorities. Just recognize that slow-pays and no-pays require services that others do not. Deal with them on that basis. I will explain.

Slow-pays almost always end up paying, they just do it late. They had other things on their mind. They had other things to spend their money on that month. Something got in the way of paying on time, so they needed more time to pay. Their priorities are not the utility's priorities.

Slow-pays cause the utility to incur additional costs: rebilling; extra phone calls or letters to collect the bill; calculation and assessment of "penalties," calculation and collection of payment plans and other measures that might graduate to billing the landlord if the customer is a renter; service shutoff; placing a lien on the property; or selling the account, at a loss, to a collection agency. You can think of these services as banking. In effect, slow-pays want banking services along with their utility service. Bankers don't work for free. You should not, either.

The notion, and the math, of cost-of-service rates apply to the costs associated with slow-pays and no-pays, too. Thus, slow-pays and no-pays should reimburse the utility for those costs, plus make a proportionate contribution to the building of reserves.

Frankly, slow-pays and no-pays should reimburse the utility for the hassle factor of dealing with them, too. Ask any billing clerk what their favorite part of the job is. Probably none will say it is doing all the slow-pay and no-pay calls trying to collect on unpaid bills. No slow-pay or no-pay situation is fun for those clerks to deal with.

When you set late payment convenience fees, be sure to cover all the costs plus a bonus for the hassle factor. A banker would do no less.

You should rename those things that you now call "penalties" to something more descriptive, like, "convenience fees." When they pay late, they are taking out a loan from the utility. Bankers charge loan origination fees plus interest for the time the loan is outstanding. You should do the same with a policy or regulation that reads something like this one, which is based on monthly billing:

"For bills paid after the due date, the customer will pay a convenience fee to initiate extended bill payment. That fee shall be the greater of $10.00 or ten percent of the outstanding total bill amount owed to the (City, District) for all (utility) services provided during that month and all other fees associated with the customer's account. If any part of the customer's account is still unpaid when the bill in the next billing cycle comes due, the convenience fee to extend bill payment for yet another month, or any part of a month, will be assessed on the total amount then due at that time. If the customer's account balance has not been paid in full by the second billing cycle due date, the (City, District) working with the customer, will arrange a payment plan to bring the account current. If that effort is not successful, the (City, District) will initiate other remedies available to it."

Note that the convenience fees in the example are scaled to monthly billing. If and as allowed by your State's laws, scale these fees higher or lower to account for unpaid bills on longer billing cycles.

Once such a customer brings their account current, you should require a deposit in an amount equal to or perhaps somewhat less than what State law will allow. The deposit exerts an effect much like the down payment a home loan lender requires. It causes the customer to have some "skin in the game," which encourages them to perform (pay their loan payments) because they want to eventually get their deposit back. At the least, if they don't pay one month, you have a reserve to draw on, temporarily. And by not paying on time, the customer has put you on notice that they may need convenience services in the future, too. That is useful information to you.

Bill frequency can make a difference with slow-pays. If you bill bi-annually, a slow-pay can be into you for six months' worth of service before you even know it. Bi-monthly and they are two months and a grace period behind. Monthly and they are into you for about six weeks' worth of service. Moral of the story: monthly billing is useful for several other reasons. But a big one is that monthly billing limits your slow-pay and no-pay exposure. It also limits the bill customers must pay to a more manageable amount. In that sense, you do them a favor by billing frequently.

Rate setting workshop participants also tell me this. Many slow-pays do it so frequently that their utility bill, with "penalties," ends up costing them nearly double what it would have been, had they just paid on time. Some folks need a lot of banking services.

A no-pay can pop out of thin air – they lose their job, get ill or something of that magnitude has happened. But usually, no-pays come from the ranks of slow-pays.

Some no-pays can be brought back into the paying-customer fold with the above measures. Some skip town and hope you won't find them. State law is usually pretty prescriptive about how you may handle no-pays. You may be able to file a lien, if they own the property. If the no-pay is a renter, State law may allow you to bill the property owner. Worst case, you may have to add their bill to the others that are "uncollectable" or "bad debt." Notice that the terms used for such events are also common in the banking industry.

A third common theme I hear is that slow-pays are more commonly low-income, low-volume residential customers. Low-income customers have a hard time paying for lots of things. Fortunately, they are often low-volume customers, too. Measures in the next subsection commonly lower their bills on a cost-to-serve (fair) basis, so you may be able to make it easier for them to pay without having to assess convenience fees or have other customers subsidize them.

Perhaps some of these ideas will help you deal with slow-pays and no-pays adequately. Hopefully you will not need to resort to the transfer of cost kinds of measures described in the third subsection that follows. But the one starting next should help slow-pay folks, too.

Bill Assistance Programs That Do Not Transfer Costs

There are rate setting methods and structures that function as bill assistance programs, though few people realize it.

Cost-to-Serve Rates

Oftentimes, calculating and adopting cost-to-serve rates is an effective bill assistance program. That may seem to be counter-intuitive, but following is a common situation:

- Existing rates are often set up with an excessive minimum charge. That means, the minimum charge generates more revenue than the sum of the fixed costs. The minimum charge is almost always the biggest portion of a low-income, low-volume residential customer's water or sewer bill. When the minimum charge is set too high, that group of customers' bills are too high. When you do a cost-of-service analysis and then lower the minimum charge accordingly, this group of customers' overall bills usually go down, giving them bill relief. Thus, the relief is not a function of transferring costs from the low-income customers to higher income customers unfairly. It occurs because costs *cease* being attributed to and collected from low-income customers unfairly. Setting an appropriate minimum charge does not solve the bill payment problem for all difficult-to-pay customers. But it helps.
- In a similar way, minimum charges that include a surcharge to recover capacity costs on a meter size basis, which is another facet of cost-to-serve rates, almost always lower the overall bills of small meter, low-volume customers. Most of the residential customers that have a difficult time paying their water and sewer bills are in this group of customers. Therefore, rates set in this structure function as a bill assistance program.

I hope you are starting to see that oftentimes, maybe even most of the time, setting rates properly in the first place will reduce or even eliminate the need for a bill assistance program that would force some customers to subsidize other customers. That is true because when the rates are set without the benefit of analysis, they are often quite unfairly structured. Frequently, such rates force the small meter, low-volume, low-income customers to subside other groups of customers. Cost-to-serve rates reverse that situation.

There are other rate structures that reduce bills for many difficult-to-pay customers.

Bill Averaging

For many customers, electricity use and their bills go up in the winter. That makes it even harder for some to make it through winter, financially. As a result, many if not most electric utilities offer a bill averaging program to even out the bills that each customer would need to pay each month. This is one form of bill assistance program, it is relatively simple to administer, and it does not involve one group of customers subsidizing another group of customers. Each customer is paying what they rightly should; they are just doing it evenly throughout the year.

Bill averaging is not commonly used in water billing. This structure has a big drawback for water use. It tends to mask the effect of consumptive use of water, which is mainly for outside irrigation. Not seeing the effect of that extra use makes it less likely the customer will notice their high use and self-regulate, to keep their bills down.

But on the wastewater side, at least for residential billing, bill averaging usually makes good sense. It makes the most sense to bill each residential customer based on their winter-averaged water use. This is called "winter-averaged billing" and it is quite common.

In most areas of the U.S., most of us use some water outside of the home and do not return that water to the wastewater collection system. Such use is mainly for lawn and garden irrigation, car washing and similar forms of "consumptive use." This water does not go down the sewer drain, so in fairness, the customer should not be assessed a sewer bill for it. Winter-averaged billing, another common facet of a cost-to-serve rate analysis and structuring already discussed, is yet another kind of bill assistance program.

Non-residential customers also have consumptive use of water, some at a very high percentage of their total water use. Prime examples are garden centers, green houses and tree nurseries that apply copious volumes of water for irrigating plants. Non-residential customers can be very problematic to assess sewer bills on a winter-averaged basis. And, such customers are considered little if at all when the focus is the affordability of water and sewer rates.

However, by separately piping and metering consumptive water use versus water that is returned to the sewer system, such customers can be given "credit" for consumptive use of water on their sewer bills. That is best done when the facilities are first being built, piped and plumbed, but retrofits for high consumptive use customers can also be worthwhile. If a sewer utility allows such piping and plumbing to reduce sewer bills, this is yet another form of a bill assistance program.

Programs for both these types of customers are discussed in more detail in the following two subsections.

Winter-averaged Billing for Residential Sewer Customers

Bill averaging that usually results in bill reduction is quite common for residential sewer use. This is an excellent type of bill assistance program. It is done by averaging water volume used during heart of the winter months, calculating the bill for that average volume of use and then billing each residential customer at their use level, the same amount every billing period of the year.

Winter-averaged billing might be the most effective, and cost effective, bill assistance program for sewer customers.

This is usually the fairest and simplest rate structure for residential sewer rates and I almost always recommend it. This structure is called, "winter-averaged billing." Because it is so effective at leveling and lowering residential customers' sewer bills, and it does not unfairly transfer costs from one group of customers to others, I will describe this program in some detail.

Use this structuring and billing method for residential customers only. Use a different method, described later, for all other customer types.

For residential customers only, a nice thing about winter-averaged billing is that, since all residential customers' bills are fixed for a long period of time, your revenue stream will be very dependable, just like with flat rates. In fact, winter-averaged bills are flat rates, but each flat rate bill is tailored to the use of each customer. Thus, sewer revenues will not go up or down (much) due to fluctuations in water sales during the year because most of the sewer volume in most systems comes from residential properties.

The winter-averaged bill process takes a little work to set up, but it will make your billing simple in the future. You will bill most residential customers on an actual sewer use basis, while keeping the billing system simple.

There are three basic situations you need to consider for winter-averaged billing. I will describe each.

1. Full-year Residential Customers

These customers lived in their (northerly) homes during enough of the winter months that you can calculate their winter-averaged use. Most winter-averaged bills are calculated using three winter months, usually December, January and February. You can use other months, if you desire. The key is, do not use months that have much consumptive (outside) use of water or use that indicates a resident has not been home for much of that period (snowbirds). Proceed as follows:

- For each residential customer, total up their water use for the previous months of December, January and February (more or fewer months, as you desire and as your climate will allow). If volume for any of these months is zero or unusually low ("snowbirds") or otherwise an unusual amount, use different months from the "skirt" of the previous winter season or just drop the non-use and low use month(s)

and calculate the average from fewer months that reflect full use during those months.

- For each residential customer, divide the volume sum by the applicable number of months. This is the winter-averaged monthly use for each customer.
- To calculate each customer's sewer bill, multiply their average volume of use, in thousands of gallons, 100 cubic feet or other units, as appropriate, by the recommended unit charge rate. Add the minimum charge the customer should be assessed. Hopefully, that will be based on that customer's water meter size. The result will be the bill amount to assess to that customer every month (or other billing period) until you repeat this calculation in the future and adjust rates again. Because each residential customer's bill will be based upon their average volume use and the minimum charge that is appropriate for them, their resulting bill will be fixed but unique to them and proportional to their use.
- Do the same for each residential customer. (This and other math can be done in one large batch using a spreadsheet, so the math need not be difficult to perform. In fact, a full featured billing program should do these calculations for you.)
- Enter the bill amount for each residential customer into your billing program and you are done. Until you enter new bill amounts again for residential customers, your billing program will process each customer's own unique bill amount for sewer use based upon their winter-averaged water usage.
    - I suggest you repeat the process every year, so you will have new usage data for bill calculations each time. Do this either in the spring, when you have new winter data available, or just before the start of the next budget year. If you do these recalculations at the same time you adopt inflationary rate increases each year, customers will only experience one bill adjustment/increase each year.

2. Part-year Residents and New Customers

Note: In southern locales, some part-year residents (snowbirds) will have greater use in the winter than the summer because they are in the home in the winter, but not in the summer. Winter-averaged billing may need to be adjusted, or it may not work at all for snowbird part-year customers in such locales. But, one of the following billing processes will work even for them.

In more northerly locales, snowbirds go away during a large part of the winter. (Except for areas popular for skiing, snowmobiling and ice fishing, for example.) In addition, new homeowners or renters may not have lived in a home during the previous winter season. Therefore, they do not have winter use data from which to calculate their winter-averaged bill.

If a customer's winter-time use is simply not usable or they have no winter-time use, bill that customer as follows:

a. Bill them for the average volume used by all residential customers that did have winter volumes that were averaged.

b. Or, bill them for the average volume in Bullet Point a. immediately above, plus ten to 25 percent more to avoid having many such customers under-pay for the volume they will actually use during normal months. This is particularly appropriate for snowbirds because they are not likely to be low volume or even average volume water and sewer customers.

c. The methods in the above Bullet Points a. and b. arrive at the unit charges to assess. To the amount calculated for unit charges, add the minimum charge for the size of water meter that serves each customer.

d. As an alternative to the methods in Bullet Points a., b. and c. above, simply bill such customers for sewer based on water use throughout the year, plus the minimum charge for their meter size, until they have been through a winter season and have averageable volumes to use. If that never occurs, continue to bill them the average bill for winter-averaged customers.

e. There may be the case where a new home is built, or an existing home is sold, to a person who already lived in the utility's service area. It is likely such a person will continue using sewer service much like they had used it in the previous home. In this case, you can continue billing the person now residing at the new home the same bill amount they were assessed at the previous home. Once they have been through a winter season in the new home, they will have winter-averageable data with which to calculate their sewer bill in the new home. This alternative is not a bill assistance program, per se. But it does prevent their bill from changing until there is data on which such new rates can be calculated.

All these billing processes are bill assistance programs in that they level customers' sewer bills throughout the year. Most also reduce bills by not charging them for consumptive use of water, too.

3. Unmetered Customers

You may have a few residential sewer customers that do not receive metered water service – they have their own, unmetered well. You may bill them at the average residential usage rate for all other residential customers, perhaps with a surcharge as described in the following.

Unmetered water users tend to use more water (and sewer) than metered water users. Such customers do not have the water customer "price signal" to fix leaky water faucets, leaky toilet flapper valves and the like. Such leaks can amount to several multiples of the flow rate of the average metered customer. That excess flows goes down the sewer and to your treatment plant, increasing your treatment costs.

Therefore, for sewer customers that do not receive metered water service, you should assess unit charges as described in Bullet Point 2b. above, except you should increase the volume even more – perhaps between 50 percent and 100 percent, to account for the extra volume that such customers tend to use. In this case, the bill assistance is not for the benefit of this customer. It is for the benefit of those customers that do get metered water service because revenue the unmetered customers pay in does not have to be paid by metered customers.

Alternatively, you could allow such a customer to install on their well, on your approval and at their expense, a water meter of the appropriate size and type. You would read that meter and calculate their sewer bill as described in Bullet Point 1 or 2 above, as appropriate. In essence, they would become metered customers for sewer billing purposes.

If a non-residential customer otherwise fits the description in the previous paragraph, you can allow them to install a meter on their well, plus a meter on the consumptive use portion of their water line piping. That is described in the following subsection.

The important thing to strive for when using any of these programs and processes is this – be sure you are consistent.

Sewer Rates for Non-residential Customers

As a default, non-residential customers should pay sewer rates based on metered water use throughout the year. However, some commercial or similar customers may use large volumes of water and that volume does not get returned to the sewer system. You could do winter-averaged billing for commercial establishments to account for this, but neither I, nor most other analysts recommend that. Commercial water and sewer use can be quite different from residential use and not coincide well with seasons of the year. That is often the case with apartments and condominiums, too. For these reasons, I, and most other rate analysts recommend you ***not*** offer winter-averaged billing to any customers except those that are residential.

But, if you give residential customers a way to not pay for consumptive use on their sewer bills, it would be fair to give other customers a similar opportunity. That can be done by allowing them to segment their water piping systems into two parts, as approved by the utility, and then assessing sewer bills that do not include water volume that is consumed (not returned to the sewer system). One part of the piping system would serve consumptive use facilities. The other part would serve the company's or other customer's restroom and similar facilities that are plumbed for sewer service. Such customers would install a second water meter, as approved by the utility, from which consumptive water use could be determined. This meter is often called the "deduct" meter.

When billing these customers, the water utility would assess water rates based upon the readings from the meter that meters all water use on the property, and the sewer utility would assess sewer rates only on the net volume that serves the restrooms and similar facilities that are plumbed into the sewer system. One minimum for water service and one minimum for sewer service should be assessed to those bills, as well.

Obviously, configuring piping systems in this way can be done more conveniently and cheaply when a new facility is being designed. For that reason, I suggest, in your new connection application process, you make applicants aware of this optional billing procedure. That will let them design the water system to comply with the utility's requirements and let them take advantage of cheaper sewer bills, if they think that would be worthwhile. In so doing, you and developers of properties within the City would be working together to try to optimize how the City and its customers work as an integrated water system. And, you would treat sewer customers fairly by giving them a fair way to reduce their sewer bills to cover only the water volume they actually return to the sewer.

I suspect the cost-to-serve rate analysis and rate structuring methods discussed so far have more potential to provide bill relief for difficult-to-pay customers than all other types of program combined. And, they do it without forcing one group to unfairly subsidize another. And, they relieve the utility from having to administer a complicated and controversial cost transferring program.

But there is yet one more rate structure that functions as a bill assistance program.

Conservation Rates

Conservation rates are those where the unit charge goes up as the volume of use goes up. Thus, the lowest unit charge is available for the first block of volume. Conservation rate structures look something like this example:

- The first 4,999 gallons per month would be billed at $5.00 per 1,000 gallons.
- The next block of use, from say 5,000 to 9,999 gallons would be billed at $6.00 per 1,000 gallons, a $1.00 premium for use in this range.
- And all volume from 10,000 gallons per month and greater would be billed at $7.00 per 1,000 gallons, a $2.00 premium.

Here are some conservation rates truths to consider:

1. Difficult-to-pay customers are commonly the small meter, low-volume customers. In many places these customers use less than 5,000 gallons per month. In fact, some use less than one or two-thousand gallons per month. These customers should not be hit with conservation rate premiums. They are already conserving.

2. Some businesses that use high volumes of water will, indeed, make some permanent, often technology-based changes to their water use in response to aggressive conservation rates. They may be able to switch to recycling and treatment of process water, install irrigation system timers and soil moisture meters, install automated valves and the like in car washes and other water-centered operations.
3. Many high-volume residential customers will not use less water under any reasonable conservation rates structure. They want their "18th green" quality lawn, even if keeping it costs an extra $50 per month, three months out of the year.
4. By charging more for higher volumes of use, more revenue is collected from high-volume users. That means less revenue is needed from low-volume customers, lowering the low-volume customers' bills. Thus, bills for a high percentage of the difficult-to-pay customers will be lower, helping them stay out of the slow-pay group. Thus, conservation rates have high-volume customers subsidize low-volume customers, and to the degree that they can adjust their water use, that subsidy is voluntary. But most who pay the subsidy choose to use high volumes and paying for it is not a big issue.

It is said, and we would like to think, that conservation rates encourage customers to conserve and become good stewards of the resource. Many customers will conserve, if the conservation rate premiums are high enough. Otherwise, this rate structure serves mainly to collect more revenue from those who are the most willing and able to pay. That is a good thing for the difficult-to-pay customers. It is also good for the utility because it makes it easier to collect the revenue it needs. The foregoing sounds crass and unfair, but a business fact-of-life is, the business can only get money from those who have it. Job 1: get enough money. Job 2: do it fairly, if you can.

There is one more conservation rates issue to consider. This one is a potential downside to such a rate structure. That is, if the overall water rates are already pushing the upper limit of affordability, especially for certain businesses that are already conserving, they cannot cut water use much more. Add overly aggressive conservation rate premiums and these customers' best net income option might be to shut down or move elsewhere.

If you get the shutdown trend started you could fall into the dreaded "death spiral" – a few businesses shut down, water sales go down, water rates go up to maintain revenues, more businesses shut down, on and on. At the very least, you will get lots of complaints. While this sounds like purely theoretical economics, it is in play with every water-related decision that businesses make. Sum up the effects of all those decisions over time and you can maintain a community or even grow it, if the rates remain affordable. Or, you can be headed for ghost town status if the rates become unaffordable.

Water affordability is an incremental thing. Almost never do high water rates "kill" a town. But, if the incomes to be generated in such a town are not that good and other costs are relatively high, excessive water rates can be the straw that broke the camel's back.

If your overall rates are fairly low, and you set conservation rate premiums too low, you won't get much conservation or extra revenue from those rates. In that case, just set level unit charges and keep it simple.

If your rates are already somewhat high and you set conservation premiums too aggressively, you flirt with excessive conservation, revenue loss and a loss of businesses.

Conservation rate structuring is a balancing act, but in the right situation, such rates are a great form of bill assistance program.

Religious, Civic and Other "Helping" Organizations

Churches, Elks Clubs, Rotary Clubs and many other organizations have as a part of their charter, helping people. For many of them, helping people is at the core of their charter. When such an organization helps one of your customers with their water, sewer or other bills, that is not your bill assistance program. It belongs to the helping organization. But it is still a bill assistance program and you should encourage it.

Find out what organizations help or can help. Put them in contact with your difficult-to-pay customers and then stand back and let caring people help people in need.

Yes, as a governmental entity, you must watch out for the "church and state" separation thing. And, as some would see it, a church helping someone with any connection to a governmental entity drags that religious baggage into the governmental arena. It's tricky.

Helping organizations do not just hand out money. They care about people. Oftentimes, people who have a hard time paying their utility bills need such a friend, partner, mentor and teacher. Oftentimes, people from such organizations can help folks improve their situations far beyond just paying their utility bills. That is a good thing all the way around.

The core function of utilities is to serve people. That is the core function of lots of other organizations, too. Network and get the helping hands working. We will all be better off when you do.

To close this subsection, there are many bill assistance programs, rate structures and other measures that do NOT transfer costs from one group to another. They should be your preferred approach, and probably your only approach, to help the difficult-to-pay customers. Exhaust those alternatives before moving on to cost transfer programs.

It is always preferable to assist difficult-to-pay customers by first, assessing fair rates to them. And as most customers who will end up paying higher bills see it, fairly structured rates are reasonable. They don't mind paying their fair share. But many do mind subsidizing others. As you seek fair rate structures, do it as transparently as you can.

Bill Assistance Programs That DO Transfer Costs

I am not a proponent of cost transferring programs for utility services. I am not an expert in organizing them. I have rarely recommended them. In the following I give only basic descriptions, so you will need to explore and learn about these strategies on your own, too. With the cost transfer programs, there are also many variations you can use, so you will need to do some research and use your imagination.

This I can say with conviction. A utility is a business, regardless of who owns it. Businesses must cash flow properly or they go out of business. It would be wonderful if you collected all rates and fees from each customer based on the cost to serve each. But if you can't do that, you still need to pay your bills somehow. That means you get money where you can.

It does not serve well those customers who are willing and able to pay full cost for good utility service, if the utility goes out of business or functions poorly. Thus, at some level of need by low-income customers, the higher income customers are better off subsidizing others and keeping the service going, than they would be if they let those folks fail and lost the utility services, too.

Senior and Veteran Discount Programs

Such programs are common. Restaurants, movie theatres, car dealers, you name it, lots of organizations have senior and veteran discount programs. To a degree, these programs also help some of the difficult-to-pay utility customers.

However, keep in mind that seniors are some of the highest net worth people in the U.S., and for good reason. They have been around long enough that, if they were talented and driven, if they just got lucky or if they were frugal, they have amassed a higher net worth than other groups. A discount to a millionaire on their utility bill does not help the utility. It has little effect on the millionaire, too. And whatever the millionaire does not pay gets transferred to others. That transfer of cost only makes things worse for the difficult-to-pay customers. In regard to efficiently helping difficult-to-pay customers, senior discounts, and to a degree, veteran discounts, are not effective.

The one upside to such a discount program is this: it is simple and clear cut. It is easy to verify the age or veteran status of someone. They either are or they aren't, and they have a driver's license, an insurance card or other I.D. to prove it. There is no gray area. And if you give X percent, or Y dollars of discount, the math is simple, too.

My recommendation is this. If your ratepayers want to honor people who have gotten older and people who have served in the military, do it for that reason alone. But find another way to help the difficult-to-pay customers.

Difficult-to-pay Customer Discount Programs

We have arrived at the, usually, bureaucracy and legal risk-laden and controversial kinds of help for difficult-to-pay customers. These programs, in one way or another, transfer costs from the difficult-to-pay customers to other customers. This field is chock full of debate and disagreement, lots of posturing, legal jeopardy and not so many facts.

Many who are much better educated in the social sciences can address cost transfer, difficult-to-pay customer issues far better than me, so I will only add this. If you want to initiate such a program, you must listen to people, be empathetic, do your homework, work very hard, network, get good legal advice, keep the program as simple and straightforward as you can, listen to people, be empathetic and get good legal advice. Did you notice some repeats?

The reality is, some of your users will truly be financially hurt by markedly higher rates, especially high minimum charges. Even if those who have the means must help those who are disadvantaged, there are some benefits to those folks for "pitching in:"

- Having minimal water and sewer service available to all will help to protect public health because everyone will have the opportunity to practice basic sanitation and prevent disease. Disease prevention helps us all.
- Minimal service to all cuts down on the temptation to steal water by tampering with meters or making illicit connections, which in the end, costs the paying customers in higher rates to prevent, find and fix such damage to the system.
- Minimal service to all will remove one issue that may make some so upset that they would cause mischief or harm to others.

Before you proceed with a cost transfer difficult-to-pay customer assistance program:

- Whatever you think you want to try, run it by your attorney first. Law related to programs that, effectively, transfer utility costs from one group to another could place your utility in legal jeopardy.
- Run the idea by your ratepayers, a lot. In fact, you better get them involved from the ground up, because some are going to pay for it and others are going to benefit from it. Your plan of action needs to be acceptable to most folks. You may want to reread Chapter 2 of this guide.
- Whatever options you are considering, figure out the dollar cost. That might be in terms of simply writing off non-payments. Or, it might be partly the write off costs, plus the cost of operating the assistance program. Doing billing and collection takes staff time and causes other costs. Running an assistance program will cost even more, on a customer served basis.

    - Ask any billing clerk where they spend the most time and have the greatest frustration. It is not doing the mainline work of billing. It is collecting from, answering questions from and dealing with complaints from non-paying customers. Add a cost transfer program to their workload and they may find a better job and leave you high and dry.
- Once you have figured the cost of the program, you will need to plug that cost into your rate analysis and refigure your rates so they will be high enough to also cover that cost. In other words, all your paying customers will share the bad debt cost. This cost is a moving target – as the rates go up, the cost goes up because more customers will fall into the difficult-to-pay customer category, increasing assistance costs. You will need to run a few iterations of the calculations to home in on the cost of the program, and the rates needed to cover it.
    - A caution: The program, and assessing higher rates to pay for it, is going to make some ratepayers mad. Plus, the rate calculations are going to be complex. I recommend you NOT be the one doing the rate calculations. You should hire a rate analyst for that. And, when you go that route the analyst is going to build an integrated spreadsheet or set of sheets that will iteratively calculate the cost I mentioned above, plus the rates needed to pay the cost. And, if you want, those rates will continue to be in a cost-to-serve structure, other than the effect of the subsidy, of course.

Now you are ready for difficult-to-pay customer bill assistance options that do transfer costs.

Usage Allowance

You did not see that one coming, did you?

A usage allowance is what it sounds like, and it is a relatively uncontroversial program, too. With a usage allowance, the customer gets, for "free" (if the cost is not added to the minimum charge), a certain volume each billing period. Usage allowances run the full range from none, to infinity. A rate structure with an infinity usage allowance is a flat rate – pay the flat rate and you get to use as much as you want.

In water, usage allowances of one to a few thousand gallons per month are common. Usage allowances are uncommon in sewer service. Usage allowances are not so common, or at least they do not amount to big dollars, in most other utility services. In most sanitation (trash) collection services, the smallest container size and the least frequent pickup frequency is usually the default "usage allowance."

Flat rates are nearly unheard of in water service, but they still exist. They are quite unfair to low-volume customers and a large percentage of difficult-to-pay customers are concentrated there.

In 2017, I analyzed rates for a 2,000-customer town in Wyoming that had flat water rates. Surprise, surprise, the average residential use was over 40,000 gallons per month. (The national average is a bit over 5,000 gallons per month.) Several residential customers averaged over one-million gallons per month! (That is a cube of water 51 feet, by 51 feet, by 51 feet in size.) The price signal, or lack of a price signal, really does affect use.

Obviously, the one-million gallon per month customers were racking up costs for the utility at a much higher rate than the "little old lady, widowed, retired, living alone on Social Security" who used 2,000 gallons per month. Her block of water measures 6.4 feet on each side. Talk about rates that are the opposite of a bill assistance program!

Usage allowances are often set without clear mathematical calculations of how much the allowance costs the utility, and how the costs of that volume will be recovered. Consider this example:

The board of a water utility decides to "give" each customer a 2,000 gallon per month usage allowance. The board realizes it costs something to give that volume away. It does not know how much because it has not done any cost analysis. But to try to recover the loss, the board estimates it costs about $5.00 per thousand gallons to produce and distribute that flow.

Now the board has a choice. It can recover that cost from unit charges on flow above the 2,000-gallon allowance. Or, it can add that cost to the minimum charge.

Boosting the unit charge to recover that cost would transfer that cost to higher volume customers. Higher volume customers tend to not be candidates for a bill assistance program, so such a structure would tend to benefit the difficult-to-pay customers by driving their total bills down. However, the analysis and math to figure out the unit charge needed to pay for this cost is difficult, it is a moving target and many high-volume customers are good at applying pressure to decision-makers. Plus, as the unit charge goes up, units used and billed-for will go down. People respond to big price signals.

But… boosting the minimum charge is an easy fix. Especially if you assume that all customers use at least 2,000 gallons and charge everyone a nice, even $10.00 extra per month to cover the cost. Minimum charges are, after all, essentially guaranteed revenue. That is a big plus when it comes to budget preparation time for the utility, so the board goes that route. Recovery of the cost of a usage allowance is commonly done something like that.

Putting the cost of a usage allowance on unit charges is usually a functional form of a bill assistance program for difficult-to-pay customers, because they commonly use lower volumes. But putting that cost on the minimum charge does the opposite, making their bills even harder to pay. Thus, a usage allowance that is paid for with higher unit charges will be a difficult-to-pay customer bill assistance program if you do the required math.

Other Bill Assistance Options

Option 1, the structurally easy option, works like this. You bill everyone the full amount due for their usage. During the year or at the end of the year, after attempting to collect all bills in full, you write off any bill amounts that have not been collected. A small variation is, you sell all "uncollectable" debts to a collection agency.

Option 1 is "clean and simple," conceptually. But there are certain customers who will be encouraged to continue not paying if they know their bills will be completely written off. And some customers on the fringe of the difficult-to-pay customer class, when they see someone's bill being written off, will also stop paying and have their bills written off, too.

Stated succinctly, the assistance program is to not pursue further those who avoid you well enough to "skate by" without paying. Or, if you sell accounts to a collection agency, you will recover a small percentage of the outstanding bills owed to you. The collection agency will not collect the face amount of those bills, either. So, the difficult-to-pay customers, as a group, will pay less than they otherwise would. This is messy, but it can function as a bill assistance program.

Option 2 would have you forgive part of a bill for certain customers, but they still must pay some base amount or percentage of their bill. Option 2 is not as slippery a slope as Option 1, but it is more complex to design, set up and administer. In fact, it could be remarkably more complex. This option goes something like this.

You set up a utility bill assistance program whereby the utility would forgive bill amounts over some threshold. That thresh hold could be a dollar amount for all who qualify, perhaps down to a certain minimum bill amount. It could be a percentage of the outstanding balance. Or the target bill amount could be some percentage of each household's income. The write off might kick in for a set amount or percentage of write off so long as the customer's income, or other eligibility criterion, meets a threshold. Or, the write off might float, being based on the customer's level of income or another criterion.

I suggest you set the threshold on an affordability basis. This is often called, "means testing." When applying for the assistance program, the disadvantaged customer would bring you their tax return or some other acceptable proof of income or need. You would set the affordability threshold of the utility bill at say, four percent of household income. Then it is a matter of calculating four percent of each applicant's household income, for example, and capping their bill at that amount.

If you have very many customers that qualify for assistance, you can probably enter the threshold for each in your billing program and the assistance program pricing will happen automatically, when appropriate. If you just have a few, you could keep a list of them on hand and each month before you send out bills, check the bills of customers on the list for need of adjustment. During a month when such a customer's bill went go over the threshold amount, you would cap that bill. During the months they stay under that threshold, you would send the bill, at full amount. Again, without a strong policy and consistent adherence, this could become a slippery slope.

A sticking point to such programs is, what criterion, or criteria – documentation – should you use to set the threshold for eligibility in the assistance program? A short list of documents you could require the applicant to produce for you, each year, might include:

- Their most recent tax return,
- Their 1099 statement for Social Security, retirement and any other payments made to them,
- Documentation showing eligibility for aid to dependent children, a free school lunch program or similar programs,
- Documentation showing their eligibility for another means tested program.

In addition to examining income, it would be advisable to examine an applicant's net worth – their savings. (People get testy about the income tests. They really get testy about the net worth test.) Why look at their savings? Some older folks have little reportable or documentable income. On an income basis, they appear to be "poor." But they have substantial retirement and other savings. If you disallow assistance to a teenager who fled an abusive home, they have nothing of value and they now work at McDonald's part-time for $9.00 per hour until they can get on their feet, that would not be fair. If you give bill assistance to a retired millionaire who lives in a nice, paid-for house; they drive a nice, paid-for car and they don't report any earned income, that would not be fair, either.

News flash: Some people work for cash, trade goods for cash or barter and do not pay taxes on that income or income equivalent. A certain number or percentage of these people are going to slip through the cracks and get your services at a discount, regardless of how well you vet them. But, do your due diligence as well as you can.

Aren't bill assistance programs fun?

By the way, you can use a blend of Options 1 and 2 – write off some customers' bills and reduce others.

With any of the options discussed above, or others not discussed, you could set up a "dollar more," "round up" or other donation programs. In such programs, ratepayers, by choice, elect to donate to a fund to help the needy pay their utility bills. You would use this fund to subsidize the utility bill assistance program.

To close this subsection, bill assistance programs that transfer costs from one group to another are loaded with difficult issues for everyone. For many reasons, you should try to avoid going down this path. Exhaust the fair and reasonable rate structures first. Then, if you must transfer costs, do it as fairly and transparently as you can.

Chapter 5 – Ghost Town Issues

The three discussions that follow are concerned with utility, and even whole city or whole district, sustainability. This chapter covers the importance of remaining sustainable, if that is possible, and what to do if it is not. Of course, a utility cannot remain sustainable if the customer base it serves is not sustainable, too. That means, if the town or other place the utility serves is not itself, sustainable, the utility is probably not sustainable, either. But it depends.

We all have a good idea of what sustainable is. And we can prove what was not sustainable, once it has gone belly-up. But, before that happens, who really knows? Still, we are not relieved from seeking sustainable cities, towns, utilities and more.

A sustainability analogy:

Gauging sustainability is like standing on a small boat in a bad storm, looking through binoculars at another boat one mile away and trying to make out the mascot on the flag that boat is flying.

Sustainability is a moving, distant target.

Let's lower the horizon over which we measure sustainability from "forever," to "for a long time." Thus, if certain conditions exist, a town can be said to be sustainable "for a long time." Once that town has moved well into that time period, its conditions should be assessed again to determine if it is sustainable for another long time.

Achieving sustainability is like getting great rates. You analyze and adjust rates properly and your rates are great, for a while. Over time they become less great. More time and they are just Okay rates. Eventually, they are awful rates. Rates must periodically be renewed to greatness and it certainly should be done before they get awful.

The sustainability of cities, utilities and all other things are the same way. You don't make them sustainable once, and then forever after that they stay sustainable. To stay sustainable, all things need renewal.

The Ghost Town Ghost

You're climbing, climbing and then, BANG! The engine stops. Time to revisit your traveling goal.

Old goal – reach some distant destination to work or have fun.

New goal – find as flat and smooth a surface as you can, get as close to stall speed as you can and try to execute a "walk-away-from-it" crash.

Two important definitions:

- Natural places are… well… natural.
- "Built" places are formerly natural places that we humans changed to suit our needs. (Yes, I know, one could argue that beavers create "built" places, too, but that is a different area of concern.) Built places are often called cities, towns and utility districts. Let's lump them all together as "towns" because "ghost town" has a ring to it. "Ghost utility district" is… blah. Just remember, utilities are included in the "town" mix and it is utility health that I am focused on in this guide.

To put a finer point on sustainability, "towns" should have a diversified mix of compelling reasons to exist. That way, when one reason plays out, and it will, the other reasons can "save" the town. Thus, the town changes, progresses and stays relevant and viable.

Ghost towns – crashes – happen. Such crashes are in the works right now. But, don't think you can stand there and see the crash progress. This is not a train wreck-like event. It is more like a glacier. Forces chip away at a town's sustainability until one day, the town simply tips to the bad side and cannot recover.

The ghost town fate is unavoidable for some places – engines sometimes quit. But good maintenance can prevent many failures. Is your "town" headed for ghost town status? Can you walk away from that crash? Can you prevent it?

Fact of life: Every sustainable town must have a compelling reason to exist. Exhibit A: the gold mining town back in the mountains where the vein played out in 1801 – ghost town.

Most towns grow from the grass roots up, centered around a compelling reason, or a set of reasons to exist. In these towns, people buy homes and build businesses hoping to make a return on their investment. A big reason to officially form a town is to protect those investments. Towns do that, if they can stick around. Supporting property values is also why most towns get into the utility business, so let's focus on utilities.

Fact of life: Utilities live or die by the rates their ratepayers pay.

Fact of life: Ratepayers do not want to pay higher rates. It's in our DNA. But we can swallow our DNA pride when properly motivated. Consider:

Bob invests $200,000 in a nice home in Rateville. The water bill that Bob might pay to support a failing water system (an oxymoron, but it's happening) might be $360 per year, $30 per month. And, eventually, the Rateville water system… well… fails.

Facts of "town" life:

- Towns serve us and protect our investments – homes and businesses.
- All towns must have a compelling reason (or better, reasons) to exist.
- Your town must compete well with other towns to remain viable and serve you well. A compelling reason to exist is not enough.
- Taxpayers and ratepayers don't want to pay the full cost of all the goods and services they receive.

So, now what? Can Bob drill a well and get water? If he can, what will it cost to drill it? What will it cost to operate and maintain it? And, is this a permanent and desirable solution for Bob?

Another option – Rateville sets rates that enable a sustainable water system. After doing 310 plus rate analyses, I find it usually takes about 25 percent more in revenue to go from unsustainable but temporarily tolerable, to sustainable. Bob's rate then works out to $450 per year, $37.50 per month. That is $7.50 more, and that $7.50 is an insurance premium to protect Bob's $200,000 investment. Is that a good deal? Bob would probably say, "yes," if he knew the facts.

Without the facts, Bob will say, "NO! Thirty bucks, that's it. Rateville's water is good. I've got a good job and a really nice house. And besides, government should do more with less."

Bob may be okay with a failing water system. Sustainable businesses are not. They want infrastructure to last at least as long as their investment horizon before they invest in a new business location or they expand an existing business.

Businesses are the canary in the mineshaft. When they don't thrive, Bob can't thrive. Result: Bob loses his job. Bob sells his house at a loss, if he is lucky. Ghost town.

A sustainable town must have a compelling reason to exist…and… it must have the desire and wherewithal to continue to exist. Nature reclaims everything, unless we prevent it.

If a town is to stay viable, folks must develop and maintain assets. There are "soft" assets, and those are important. But here I am talking about hard assets – things like water and sewer utilities. How do we fund those? Rates.

Nature reclaims everything, unless we prevent it. Whether a water system produces and distributes water or not, it is continually being reclaimed by nature. Metal rusts and corrodes, plastic weakens and breaks, pipe joints pull apart, concrete turns into little pieces of clam shell.

As long as we want a water or sewer system, or any other built thing, to serve us, we must work to maintain those systems. And, even the best maintained system must someday be replaced with a new one – start over.

Rates that are adequate (a must-have) and rates that are fair (a nice-to-have) are the basis for sustainable utilities. Sure, it is self-serving for a utility rate analyst to say you need great rates. But, if your town is to compete well with others that have even stronger compelling reasons to exist, you need to give yourselves every possible advantage. Providing great utility service is such an advantage. Without great rates, you can't do that.

If the ghost is chasing your town, you need to have an honest talk among yourselves. Ask: Is ghost town status inevitable here? If it is, think in terms of a "walk-away-from-it" crash as you plan your next steps. I will cover that in the next section.

If the ghost is behaving, figure out what you can do to make your town as competitive as possible. Get great rates and you will be a leg up on most of your competition.

If the ghost catches your town, know this. Provide easy access and a dog walking area, and being a "ghost town" could, itself, be a compelling reason to exist. People love to visit somebody else's ghost town.

Winding Down the Town

Okay, the ghost is catching your "town." Now what?

Becoming a ghost town is wrenching. It turns the investments made by people in their homes and businesses into low-return, or even no-return investments. That often bankrupts people and businesses. Depression and other maladies can follow. In short, little good results from a town becoming a ghost town.

Some towns have no choice. They will become ghost towns. But they usually get to choose whether that event will be a planned and orderly crash, or a haphazard and costly one; the loss of everything, or just a downgrade.

Becoming a ghost town is not inevitable for most. But, if your "town" loses its compelling reason to exist and local people and businesses do not want to invest what it will take to come up with a new compelling reason, "shutting down" may be in your future.

Shutting down is no picnic. But, shutting down may not mean everything stops. Some services and functions will likely continue, at least for a while, but under new "management:"

- The town might disincorporate; if, where and in the way that is allowed; and assign responsibilities to higher levels of government – generally the county. Thus, the county might take over law enforcement, social services, road maintenance and the like.
- The county, or a nearby utility district, might take over ownership and operation of the town's water, sewer and other utility services.
- If a utility can be a profitable venture, a private company may purchase it. This also happens in viable towns. Sometimes selling is a good town management strategy. Sometimes it is not. That will be discussed in the next article.

When a town heads down the road to ghost town status, some services the town provides will cease. Folks in the town do not want to support (fund) them, other governmental entities don't either and there is no profit to be had by a private company taking up the services.

So far, I have been discussing functions of the "town," the governmental entity. These are important, but they might only be the tip of the sustainable-place iceberg. There are lots of other things you should consider when faced with the ghost town ghost.

Business does not thrive in a ghost town. If you go to the local grocery store, gas station and take care of lots of other life and business needs locally, you will not be able to do that in a ghost town. You may find yourself driving an extra 40 miles a few times per week to satisfy your life needs. And, you may not be able to satisfy your business needs that way at all. As a result, you may find the resale value of your home will drop or even go to zero without a hometown to support it.

Business needs to be sustainable at least long enough for the investor(s) to get their investment back out in the form of profits. They really would like for the business and the town to be long-term sustainable, so when they decide to sell out, there will be willing investors to buy them out. Government and utilities, however, need to be sustainable even longer.

"Economy of scale" helps all these entities achieve their sustainability goals. Economy of scale simply means, the bigger an entity is, or the bigger a group of entities are, the cheaper it is to make things and do things. Granted, your small town may not have much economy of scale – selling bread, milk and gas are more expensive in a small town. But your personal economy of scale, when forced to drive far for everything, is not too good, either. At some price level, it is cheaper and less time consuming for you to buy local, keeping local businesses going, than it is to drive down the road a far piece.

Unless you are quite wealthy, and you are diligent about buying local, you are not going to save your town alone. Many others must buy local, too. It is not likely that everyone will spontaneously decide to buy local and save the town. You really need to get together and talk this over.

Still, if the ghost cannot be stopped, it would be better if that is a planned event than a surprise. Yet another reason to get together and talk it over. That way, people can make good decisions about where, and in what, they invest their money and time:

- A homeowner might: Build a $50,000 addition to the house? No. Plant a garden? Yes.
- A business might: Build a $500,000 plant expansion? No. Stop making long-term investments in the existing plant and "mine" the current investment? Yes.
- If the town is going to completely shut down and the need for utility service is going to cease, utilities need to make plans, too: Invest in a brand-new whiz-bang treatment plant? Avoid it. Invest in upkeep so the existing plant will be functional until it is no longer needed? Yes, if it will last that long. If it won't last, you have a real hard decision to make.
- Those in the "town" funding business, like private lenders and grant and loan agencies, must deal with sustainability, too. They must "pick winners and losers" if they are to invest well: Invest $2,000,000 in a whiz-bang treatment plant for a soon-to-be ghost town? Bad idea. Do the same in an ongoing concern town? Good investment, if everything else lines up, too.

Were these examples simplistic? Yes. To get down to the real issues and options, people in a town need to have an open, honest and informed discussion about their situation, options and probably costs and benefits of those options. That discussion will be uncomfortable, even painful for some. But you need to have that discussion.

To keep a town going, it takes a lot of investment by the town government and the people and businesses of the town. Work, planning, leadership and money; people will invest if they feel their town can remain sustainable. Absent that, people will pull back, making ghost town status a self-fulfilling prophesy. If your town has a compelling reason to exist and the wherewithal to exist, make that fact well known and "talk it up." People need reassurance to keep investing.

But, if survival is just not in the cards, be honest about that, too. Again, people need to make investment decisions. Help them make good ones.

One last plea. Don't pull the plug on your town unless that is the best course. Clearly, it takes a lot of work to keep a town successful. It takes a lot to wind one down well, too. If you are going to put in a lot of work anyway, why not aim at sustainability? With expert help, you probably can achieve that.

Utility service is where most of the "rubber meets the road" in the services provided by "towns" and similar places. For help managing utilities, rural water associations, power associations and others have great experts. They give lots of good, down to earth, utility management assistance and advice. Call them. And then, follow the leads they provide.

If you must wind down your town, do it on purpose and in control.

To Sell, or Not to Sell (the Utility)

Your town, district or other unit of government, let's call it a "town," may be hitting hard times. The town needs cash, lots of it. The ABC Water Corp. just offered $10 million to buy the town's water utility. Hmm…

Or, ratepayers are digging in their heels and fighting the higher rates needed to sustainably fund the water system. They say, "government should do more with less." Hmm…

Or, ratepayers simply distrust "government" and want the utility to be sold to a private company. Hmm…

To sell or not to sell, that is the question. Whether 'tis nobler to cash out big and leave the ratepayers to twist in the wind, or suffer their slings and arrows and sorrowful lack of gratitude…

Selling the water, sewer or other utility for big bucks is tempting. Cash out big. Get rid of all the headaches. No more complaints to smile through. Never be responsible for raising a utility rate again.

Keeping utilities public has its up and downsides. Selling out has its up and downsides, too. You need to weigh one against the other to arrive at the best course for your utility, its customers and the town or district, in general.

Table 1 below lists some upsides and downsides to public ownership of utilities. Utilities, especially water and sewer, are very capital intensive. That makes Upside Number 2, very important.

In many places, Upsides 3, 4 and 5 are the most important. Small towns struggle with economy of scale – it costs more to do almost everything in a small town. Utilities require experienced and capable operators, plus heavy equipment. Those come in handy for maintaining streets, storm drains, buildings, and other things required to keep a town going. These staff know how to do things and run equipment. Sell the utilities, get rid of the operators and, sure, you rid the town of the costs and hassles of a utility. But the loss of those skilled staff and equipment may cut into your overall economy of scale so much that the higher cost of doing other things, or the inability to do other things at all, negates the savings of selling out.

Scale aside, the cost of utility operations and equipment should be self-funding through proper rate setting anyway.

Table 1: Keep Utility in Public Ownership

Upsides	Downsides
1. Can be more responsive to customers and ratepayers for service, rate setting.	1. If town is small, little economy of scale, so utility expensive to own/operate.
2. Facilities can be cheaper to build due to tax-exempt bonds, and some grants and loans only available to municipal entities.	2. Grants trending downward, reducing advantage of public ownership.
3. Town employed operator(s) are on-site, readily available to fix line leaks, etc.	3. Must deal with ever more stringent and complex regulatory/permit requirements.
4. Town-employed operators can do other tasks, too. With more employees available, town improves economy of scale and responsiveness to perform many functions.	4. Town less likely to have specialized operations/trouble shooting expertise. Must go outside for such expertise.
5. Trucks, backhoes, etc. on-site, readily available, and can be used for other town functions.	
6. If town does not want employees, it can hire contract operations firm.	
7. Town subject to open records/open meetings law so conducts business openly. Enables ratepayers to “watchdog” town.	5. Pressure from customers to keep rates down sometimes works too well, making the utility unsustainable.
8. Rate analysis, to support proper rate setting, fast and cheap if solicited right.	

I often use the notion of "marginal cost" when doing rate analyses. The notion is more complex, but an easy way to describe the notion is this. You produce one-million widgets for one-million dollars. That makes the average cost per widget one-dollar. But, it won't cost you one-dollar to produce the one-millionth and one widget.

The same thing applies to having capable utility operators and their equipment on hand. Most of the time, they work for and are paid by the utility. If you need them for a few hours to do "city" work, sure, you should pay that part of their salaries out of city funds. But, the cost to have them do general "city" work is on a marginal cost basis – it's cheap. Were it not for the utility paying them most of the time, they would not be available to the city for a simple hourly cost.

Back to the story, Table 1 also lists downsides. Downsides 3 and 4 are big and growing. Permitting and regulatory compliance are difficult and becoming more difficult every year. Environmental and public health protection requirements are not like they were decades ago when the town first got into the utility business. Yet, Downside Number 5, shows that ratepayers want to beat down the rates anyway, making it difficult for a small town to run a sustainable utility. You can do it. But you must continually fight the, "our rates are too high" battle. That can be tiring.

Table 2 is a shorter list. But, it has some heavy hitters.

Table 2: Sell Utility to Private Company

Upsides	Downsides
1. Big cash infusion to town, can be millions, available to satisfy many town needs.	1. Whatever cash town receives, ratepayers will pay back to private company, plus return on plant investment, in higher rates.
2. No more utility headaches – staffing, operations, permitting, compliance, rate setting, complaining customers, meter shutoff, etc.	2. With fewer employees available for many town functions, town loses economy of scale and is less responsive. Other functions get more expensive to perform.
	3. If utility is small, operators not likely stationed on-site.
	4. Rate setting governed by a utility commission - very bureaucratic and very expensive for company to bring rate case. Drives up rates.

Selling upside Number 1 is so big, it can blind you to everything else. Cash is hard to come by in small towns. There is a lot of it tied up in utilities. Add to that, Upside Number 2, getting rid of many headaches, and you've got a one-two combination that is hard to turn down.

The economy of scale upside to keeping the utility becomes a downside to selling the utility. Lose enough economy of scale for your other functions and you might cut into the town's sustainability. You might gain big on the sale, but down the road, lose the town.

Upsides for the town from selling are generally downsides for ratepayers. Selling for millions means that, ultimately, the ratepayers are going to pay those millions, plus a return on plant investment, back in rates to the private company. The ratepayers thought they could avoid "high" rates when the utility went private. Maybe not. Adding to the push toward higher private system rates is the cost of getting a rate (increase) case through the utility commission. In my experience, private system rate analysis costs ten to twenty times more than analysis for a public utility. Owning and operating the system might come in at reasonable cost. But it is not cheap getting a reasonable rate.

Again, economy of scale is key when selling. You need the private company to have such an economy of scale advantage that, even after earning profits from ratepayers, the rates will still be lower, and the town will not suffer a large enough economy of scale hit to eat up the advantages of privatizing.

Decisions, decisions.

If selling utilities is on your mind, you need to get some good advice. Your first call should be to your rural water association. They have been around this block before. They can help you sort through and weigh the up and downsides against each other.

The association can point you to others for advice on this very special, one-time, critical situation.

We do a lot of this work ourselves, too, either directly or indirectly as we do rate analyses. We get hired by some cities and towns to calculate the rates they really need to be sustainable, if they keep the utility, and the rates that are likely if the utility is sold. That information gives the town a clearer picture of the up and downsides they, and their ratepayers, are looking at. If they sell, they know what to expect in private rates. If they don't sell, they know where their rates should be to remain sustainable.

Consider all the facts of your situation and the best decision might almost make itself for you.

Chapter 6 – Cheap Rates, Unfair Rates and Slow-pulling a Band-Aid

A few years ago, I read an article in the American Water Works Association magazine, written 75 years ago, about how folks back then were proud of their too-cheap rates.

They still are.

Cheap rates are bad. Not because cheap is bad. Cheap is good. But, it's not cheap to own and operate utilities. So, if you operate on the cheap, you will provide service on the cheap, and that is not good.

Economical rates are almost always doable. Most utilities are economical to own and operate, enabling you to serve customers at least adequately while not falling too far behind in taking care of the system.

Step up to adequate and fairly-structured rates and now you can serve customers well, prepare for the future, head off problems and do it all by collecting the right amount from each customer. Let's call these, "great rates."

"Cost-to-serve" rates recover costs from those who cause those costs to be incurred. Mathematically, at least, this is the fairest rate structure of all.

If you are starting from cheap rates, great rates are hard to switch to. It's usually no picnic going from economical rates to great rates, either. Folks like their cheap rates. And, truth be told, folks generally like the status quo, too. But, once you get switched over to great rates, you will not want to go back.

The only thing standing in the way of getting great rates is the "switch."

Making the switch successfully requires two things:

1. Calculating adequate and fair rates, and
2. Convincing ratepayers they want adequate and fair rates. Or, convincing them to at least accept adequate and fair rates.

These points were extensively covered in the chapter called, "Getting New Rates and Other Ideas Accepted." But, dealing with too-cheap rates deserves some repetition.

On Point Number 2, you are not going to convince them all. One of the things that almost always happens when you propose to switch to great rates is this. Surprise, some customers' bills will go up. Some might go down – no problem convincing those folks. Some might stay about the same – ditto for them. But the ones who will see big increases – they come unglued.

Reveal the proposed rates and the rising-bill customer will say, "This is not fair. You're jacking my bill up but you are dropping bills for others. (Or, not increasing them as much.)" Or, maybe they will use more colorful language to describe their new rates, you, and your family.

Here is the cold, hard truth. The customers whose bills need to go up are being subsidized right now by the customers whose bills need to go down. It's not that someone's bill is going up now. It's that their bill should have been higher all along.

The "this bill increase is not fair to me" ratepayer is operating under one or both of the following erroneous beliefs:

1. The current rate structure is fair, therefore, to change it (and increase my bill) is unfair, or
2. I just don't want to pay more.

Truth be told, Belief Number 2 is usually the operative thinking. That thinking is hardwired into us all. Ratepayers want what they want and they don't want to pay for it. However, you can inform them, "This is why too-cheap rates for you would not be fair to others and it would not serve you well, either." And you explain.

The fact is, when you change the rate structure, somebody is going to "get hurt." Great rates usually lead to some customers being happy and others being "disappointed," to say it mildly. But, the goal of fair rates is not to prevent anyone from being disappointed. Instituting, or reinstituting fairness, leads to someone being disappointed. We all like fair rates, so long as it is our bill that is going down.

Therefore, you, a person who sits on the rate setting board or council must choose between making those with the currently unfairly high rates happy, or, making those with the currently too-low rates happy. That is an easy choice, when ratepayers are just theoretical. It is much tougher when those ratepayers are real people, and some are family, friends, business associates and customers of yours. Make the right call and, at least after the complaining subsides, you will feel better for it.

The switch will be hard. Grit your teeth, do it, do it quickly. "Bad" news doesn't get better when you drag it out. Gently and informationally, announce what needs to happen. Then, adjust the rates. Stand your ground when the complaints fly. In my experience doing 310 plus analyses, this is what will happen.

An aside:

Comparing your user charge rates to neighboring utilities is risky business. Their rates are probably inadequate, unfair or both.

Rule: Don't compare rates.

Exception: If your rates are the most inadequate or unfair of the bunch, comparison might help you.

Exception to the exception: Many folks are proud of having the cheapest rates around, even if that results in bad or risky service. They might dig in even more when they find out they have won the race to the bottom. They want to hang onto that prize.

My advice: figure out what it really costs, be strong, charge what it costs. For what customers get, those rates will be pretty cheap, too. Plus, the utility will be funded right.

You will get some complaints when you propose the change. When the first bill with the new rates goes out, you will get some more complaints. Some people are not tuned in at the discussion stage. Second billing, a few more complaints.

After that, almost everyone discovers, "Hey, I'm still alive. I didn't go broke. And, I think that, tonight, the football player will get eliminated on 'Dancing With the Stars.' I sure hope the gymnast wins."

That last "quote" is not meant to be cynical, it's reality. People have lives to live. Most recognize after getting over the shock that, "Wow, it really wasn't that big a deal. And, they did a thing they call 'analysis' to figure out fair rates and they gave us the information. I like that. What do you want to do for dinner tonight?" There I went again, sounding cynical, but I'm not.

Switching to great rates is hard, for a little while. But, within a few months you will be glad you did it. Then, your utility's "life" will get a lot better – now well-funded, it will be well-maintained; capital improvements will not be daunting, and you will be proud of the level of service you can provide your customers.

Fair rates and well-served customers – you can't beat that. Happy ending…

It would be nice if they were all neat and tidy, happy endings. It is too much for some.

Sometimes, getting to great rates is a change that some cities and districts feel they can't do in one jump. The "rate shock" would be too great. They need to go slow. Occasionally, that really is the case.

I'm a 'pull the band-aid off fast," kind of guy. Most rate increases are small – maybe $5.00 per month for the low-volume customer. Just pull the band-aid off and be done with it.

But, if you want or need to pull the band-aid off slow, pull it slow. To accomplish that, you calculate the desired rates. You make your best guess at how close to those rates your ratepayers can go before it becomes overwhelming. If that is one-third of the way to the desired rates, you calculate one-third-of-the-way-there rates. The first year, you adopt those. The next year, you raise rates by another third, plus one year's worth of inflation in the budget. Do that one more time, with inflation, of course, and you are there. Then, you drop back to inflation-only increases each year.

Now you have fair rates, arrived at with little pain, and well-served customers. Happy ending postponed, but it eventually arrived.

Chapter 7 – Analyses, Studies and Calculations, Oh My

Analysis, study, calculation: Why should you know the difference among these?

Your rates might be way out of whack – too low and unfair. That calls for a big fix – rate analysis.

Maybe your rates are fair enough for now, and you just need a little more revenue to cover next year's budget. That calls for an easy fix – a do-it-yourself rate calculation.

Maybe you need something in between – a rate study.

Rate analysis is multi-faceted.

Rate calculations are simple or limited in scope.

Rate studies fall in between.

To get the results you need, the calculations and analysis you get need to match up to your situation. Complexity of the calculations and analysis will determine who should do those calculations, how much it will cost, if anything, and likely, how much extra revenue those adjusted rates will generate.

As to the cost and extra revenues issues, beware. I met with a town in Wyoming recently. They said they got an estimate for water and sewer rate studies they plan to hire out next fiscal year. The estimate, from a prestigious firm that I know fairly well, was $175,000. I didn't flinch, much. And I didn't want to make them feel bad because they probably will end up hiring that firm. So when asked, I told them my fees for what that town needs would probably be around $60,000. I over-estimated. I bet at $40,000, I would net $15,000 more than I usually do on projects of that size and complexity. And I make a good living doing this.

As I write this today, I got an e-mail from a 3,300-population town in Nebraska asking for a water, sewer and electric rate analysis proposal. I haven't calculated fees or written that proposal yet, but the total fees will probably come in around $30,000. The city administrator sent me the proposal for this project from another firm that does lots of rate studies in Nebraska. The fee was $96,000.

Price is important, but in truth, the cost of an analysis or study usually is not the critical issue. Most utilities are going to net so much extra revenue because of the analysis, they could over-pay by five or ten times and still come out with a fantastic return on investment. But do you want to over-pay by five or ten times? And doing that does not guarantee you will get a great rate analysis. I have seen many very bad "studies" for very high fees, too.

Okay, so I scared you a little bit. Let's switch gears and look at your options, starting at the high-end of calculation complexity.

Rate Analysis

Rate analysis is a comprehensive set of calculations, a "model," that virtually depicts the real financial life of the utility. The goal is to determine the rates and fees needed to fund that utility adequately. A nice secondary goal is to fund the utility using fairly structured rates. In my mind, fairly structured rates should be the primary goal of analysis and adequate rates just come along for the ride. But not all analyses lead to fairly structured rates. There are, after all, other things to consider.

Rate analysis considers and tabulates volume usage, current rates, incomes, expenses and balances. It also projects several things well into the future: operating expenses for five to ten years, capital improvement expenses for five to ten years, and equipment repair and replacement expenses for, in my case, 20 years. There may also be some wildcards to deal with: lawsuits, wholesale supply agreements, non-rate or fee revenues and other special issues. Using such data and information, analysis projects financial needs five to ten years into the future. This data and some calculations define the revenue need side of the equation.

A set of assumptions, data and calculations is often called a "model." In that context, model is a noun, a name for something.

To "model" (a verb) rates is the action of putting together those assumptions and data and running the calculations.

The English language can be confusing.

Costs are then classified to determine the desired rate structure, preferably a "cost-to-serve" structure, but it could be another structure.

Rates are then calculated in the desired structure that will be high enough to satisfy the revenue need with a combination of initial rate adjustments and future adjustments. Future adjustments will most likely be in an across-the-board format so future increases should be an easy "do-it-yourself" affair.

While an analyst could create a model that defines all this, print the model out and give or e-mail it to you, I think more is needed. Because such models are complex, I think the analyst should list and summarize their important assumptions, analysis findings and recommendations in a narrative report, too. That way, you need not be a spreadsheet guru to discover and interpret what you need to do. The narrative report will tell you.

One more step is also desirable to flesh out the analysis process. That is, the analyst should visit the rate setting board or council to present their findings, recommendations and answer questions. This is complex stuff to try to read and interpret. It helps rate setters to hear it explained, in person, hopefully in plain language. It also should bring home the point: rate adjustments really need to happen. This is not just a "good to do" thing or an interesting thing to think about. Sometimes boards and councils need encouragement to "bite the bullet" and just do it. The analyst should give the rate setters encouragement to take the big step – adjust rates.

That description is long and a bit complex. Analysis is long and complex.

Rate analysis is time consuming and complex, it is not free, and few people know how to do it. Fortunately, you don't need rate analysis very often and you don't need to learn how to do it. So, when do you need rate analysis? Likely you need it when two or more of the following issues are in play:

1. Your system has over 200 connections, especially those over 1,000 connections.
2. Regardless of connections served, you are going to do a big capital improvement soon. This is the most common trigger for rate analysis. But, the same could be said for rate studies, too.
3. Your rate structure is out of whack, meaning, unfair. You might have some sense that is the case. But, you can't really know until you do analysis. Hint: If you are getting lots of complaints about fairness and you can't "prove," with the math that they are wrong, and certainly if you are getting sued over rates, the complainers may be on to something.
4. You have many commercial customers, any special agreement customers, quite a few larger meter customers, one very large meter customer, or three different customer meter sizes.
5. You have a high usage allowance, such as 5,000 gallons per month in Wyoming and other western states, or 2,000 gallons elsewhere.
6. Your growth rate is either fast or negative (losing customers).
7. You have low reserves, no reserves, or reserves have been on a downward slide lately.
8. You haven't had a comprehensive rate analysis done in the past five years. (This is the one that catches nearly all utilities.)

How many of these issues are in play for your utility? Two? Five?

Above, I said you need analysis if at least two issues in the list are in play. I will soften that just a bit.

If your water utility only has 200 customers, they are all residential and those homes are uniform in age, size and lot size, customer use will be at least somewhat uniform. The more uniform customer use is, the less important rate structure is. Why? Because many customers are close to the average and there are few outliers. When structure is not important, the overall level of rates is the key issue. You need to keep rates high enough to pay all costs and retain strong reserves, but structure doesn't matter very much.

Another case where structure does not matter much is when the service is very cheap to provide. That means overall rates can be low. It is reasonable and practical for ratepayers to "quibble" about structure if their water bill is going from $50 per month to $75 per month. But if their bill is going from $12 per month to $15 per month, the structure of that increase could be unfair by 50 percent, and that would only amount to overpayment of $1.50 per month. If you are arguing about a buck-fifty, something is very wrong.

As I think of it, "great rates," and rate analysis to get them, are not that important when rate structure is not that important. In that case, you don't need analysis. You just need to do a simple calculation. If you need X percent more revenue next year to pay for your budgeted expenses and build or keep adequate reserves, you increase the major rates and fees by X percent.

The problem with that simple solution, in what seems like a simple situation, is this. Volume use really does vary a lot, even in what looks like a homogenous community.

Use and other complications multiply as systems get larger. At 2,000 customers, you just will have more volume use outliers; lots of zero to 1,000 gallon per month customers and a few 50,000 gallon plus users. You might even have one that uses one-million gallons. You will also have a wider variety of meter sizes and capital improvements will be needed more frequently and cost more. When use and other issues are this complicated, rate structure matters a lot.

When you have 10,000 customers – case closed. You need analysis about every five years.

Thus, size (and things that are often related to size) matters.

There are no hard, fast rules that say, "Rate analysis is this, rate studies are that and rate calculations are another thing." Thus, when you examine your rates, decide what you want to accomplish. If it will take rate analysis to do that, get a rate analysis. If a small increase to already fair rates is in order, do-it-yourself is the way to go.

Why is this important? You want to achieve your goal – adequate and fair rates. To do that, you need to employ the right tools. And, you don't want to pay for analysis if you will only get simple calculations. You can and should do those yourself.

Size of the utility and size or number of the issues in play make all the difference. Rate analysis will show you how to make rates adequate and the structure fair. I call those, "great rates." If you are not so worried about fairness, the analysis can also model another structure you prefer.

How to get a rate analysis is discussed in Chapter 8. If you think you might need rate analysis, you should read that chapter.

There is good news on the rate analysis front. Even those utilities that need "great rates," don't need them all the time. Good enough rates are good enough, during most years. Rate calculations can get you those rates, so let's cover the low end of the scale – rate calculations – next.

Rate Calculation

Rate calculations can take different forms. The safest and simplest rate calculation, the one that EVERY utility should do during most years, is the annual across-the-board inflationary increase. I stress, annual. Do this every year at budget preparation time. If next year's budget is going up by three percent, increase all important rates and fees by three percent (not including any makeup payments to get reserves up, and such).

Calculations might, however, be complex but confined in scope. An example on the high-end are system development fees and system development surcharges, covered in Chapter 11. These calculations lead to a set of rates that will generate revenue, revenue that will not need to come from regular user charge fees. Thus, these calculations are best done by a rate analyst as a part of a comprehensive analysis. But, if you wanted to, you could calculate and set such rates separate from all others. On occasion, we analyze system development fees only.

One set of calculations that some do on their own, but they shouldn't, is this. A nearby city or district needs more water. It asks you to contract to sell water to them at X percent of your "regular" rates. Don't do it! This is a wholesale supply agreement situation, so read Chapter 12 to learn about that.

Rate calculations can include many things, but one thing they probably would not include is cost classification calculations. Cost classification is the process of separating "fixed costs" and "variable costs" from each other, and perhaps from a few other types of costs. Classification is done to determine cost-to-serve rates, the core of rate analysis.

Rate analysis is high-end, rate calculations are low-end. That leaves ground in between for rate studies.

Rate Study

The American Water Works Association (AWWA) has a rather robust description of "rate studies" that verges on my definition of rate analysis. The AWWA description includes cost classification and development of the base minimum charge and average unit charge. A true rate study should include that much at least.

In practice, many things that are called, "rate studies" fall short of the AWWA description. Thus, for all practical purposes, what is in a rate study can vary a lot. That is why, when you solicit a rate "study," you need to verify what each analyst is going to supply. Just saying "study" does not guarantee you will get what you think you will get, or what you really need.

A rate study is commonly done by an engineer. (No engineers, I'm not getting ready to slam you. Read on.) A rate study is most commonly done when that engineer is designing a new treatment plant or other expensive capital improvement. In that situation, the engineer needs to tell their client the financial effect the new infrastructure will have on the system's finances and rates. Sometimes that study tells the client, "To pay for this thing, the average bill for each customer will need to go up by YY dollars per month." Or, the study might determine, based on cost classification, that the average minimum charge needs to be YY dollars per month, and the average unit charge needs to be Z dollars per 1,000 gallons.

Yes, the description I just gave is simplistic. Of course, there is more to such a study. Often, the rate effect of an engineered improvement is required by grant and loan agencies and the lending market. Funders ask this: "How much more must a customer pay to fund this thing?" Or, they may want to know how high the rates will need to be to fund this thing, plus, fund the entire utility service, too. They usually want to know what it will cost, on an Affordability Index basis, so they can figure out how much grant the project deserves and how much loan they will issue. They also want to know if this town or district can comfortably repay the loan. These programs function like a banker and bankers ALWAYS want to be paid back.

Engineers are great at solving problems and answering questions with facts, not just assumptions. They know how to focus on what the client and funder want. They are presented with a problem, they design the fix, they calculate the cost of the fix, and they calculate how that cost will affect ratepayers, if and as directed by the funder of the project. They would do more, if asked to. They can solve their way through most anything. But, seldom are they asked to do that with rates.

Closing

Descriptions of the three classes of rate calculations lead to this.

If you need rate analysis, buy a rate analysis from someone that you have verified does rate analysis. Most likely, that person will go by the title, "rate analyst" and their only service is doing rate analysis. But, some engineers, financial advisors and others do rate analysis, too. The key: verify that rate analysis is what a service provider does for a living before hiring them to do a rate analysis.

A few years ago, I was asked by a small town to review a "rate study" the town bought, to see if the recommended adjustments were reasonable. They sent me a copy of a short letter from the person who did the study. The letter included one main statement, like this:

- If you increase rates by five percent, revenues will rise by $100,000.
- If you increase rates by ten percent, revenues will rise by $200,000.

Someone should be ashamed of themselves for taking money to come up with a "study" like that!

If you need a rate study, buy a rate study done by someone who, you have verified, does "rate studies." However, I offer a caution. As rate studies are commonly done, they lack many useful features, especially transparency. They don't "show their work," so to speak. The report states where you should set your rates, but it does not show you how they arrived at that set of recommendations. Sometimes the report states that the firm applied principles outlined in the AWWA "M1" manual, but that is about it. The analysis in such a study may be top-notch; really, I'm not kidding. But if it is that good, you should get to review the analysis, not just the results.

Now, if you need an inflationary, across-the-board rate increase, the most common rate calculation, don't spend a dime for that. You should do that yourself. If you are preparing a budget, you have already figured out how much higher that budget needs to be compared to the current year's costs. Just increase all rates and fees to match. Or, if your analyst said you need to match inflation and add another two percent (to play rate adequacy catch up), do that.

Your rates need some sort of adjustment this coming year, maybe even right now. Consider what you are up against and the result you want to achieve. Then, choose the right kind of calculation or analysis to get the job done right.

Chapter 8 – The Results of Rate Analysis

Author's Note: In this chapter, I relate results of analyses done through the RATES Programs in six states, as of 2018. Just bringing up the program promotes my service, but it has an educational value in this guide.

Utilities need adequate and fair rates. Easy to say. Hard to do.

"Back in the day" when utility service was cheap, rates were… cheap. Being cheap, rate structure fairness was no big deal. Surprise: rate structure now matters.

Like many, I am a proponent of cost-of-service rates. Even if you do not adopt cost-to-serve rates, you should determine what such rates would be, so you will at least know what you are giving up when you adopt different rates.

To that end, if you want to learn how to do cost-of-service rate analysis or "studies," your starting place needs to be a visit to the American Water Works Association's store https://www.awwa.org/store to order the manual, "M1 Principles of Water Rates, Fees and Charges." Spoiler alert: tough reading ahead. And, it will take you a few years of study and application to get really good at rate analysis. As of this writing, I'm 27 years into it now, and I'm still learning.

You say you don't want to be a utility rate analyst? But you still want to get that job done right, for a reasonable fee? Then, read the rest of this guide carefully. There are few ways to do this right but lots of ways to do it wrong.

If your utility happens to be located in one of the RATES Program states (visit https://gettinggreatrates.com/ and click your state link to learn more), you don't even need to know how to solicit for rate analysis. (And wow, do I see that done badly!) I have partnered with those water associations to do rate analyses, under their supervision. Those associations make sure I serve their member systems well. It's very bad PR if they hang you out to dry. I give these associations and their members a no-recourse guarantee. They can fire me at any time for any reason, or no reason. Thus, they keep me on only because I serve their members well and reflect well on the association.

I beat the cost-of-service drum loudly. But I think each system should have appropriately simple or complex rates. Sometimes, simple trumps mathematically fair. Your rate analyst can gather data, do the math and advise you, but the simple or complex decision belongs to you.

For those of you not in one of those states, that's Okay. You won't get the discount or supervision by the association, but I treat everybody the same way, anyhow. I do it because it's the right thing to do, and because that way, I only have one set of morality principles to remember.

Drilling down a bit, in 2012, the Kansas and Wyoming associations were the first to initiate RATES Programs. Those associations have long stressed good rate setting, so the lion's share of clients have come from those states.

North Dakota, New Mexico and Virginia came along in 2013. Virginia and New Mexico have a few participants. In North Dakota, the association's executive director handles all rate analyses himself, but we are there to backstop him.

In early 2017, Colorado became the most recent association to join in.

With that as background, here are the Program results so far. Remember, if you are not in one of these states, your return on investment results will not be quite this good, but they will still be pretty hard to believe.

Rate
Analysis and
Training for
Environmental
Systems
"RATES" is a joint effort of rural water associations and GettingGreatRates.com. To learn more about the program and see detailed results by client, visit https://gettinggreatrates.com/ and click on a state link.

Table 1 shows some of the over-arching results. For example, recommended rate increases over the first five years averaged more than $2 million for each utility. (A couple of larger cities and utilities pushed up the average revenue increases, but the average fee is up some because of them, too.) If all utilities did as we recommended; granted, not all will; on average, the utilities would recover our fees in the first 5.2 days after collecting at the new rates.

Table 1: Over-arching Results of RATES Programs

$109,067,878	Projected 5-year Revenue Increase, All Utilities Combined
$2,225,875	Average Revenue Increase per Utilitity Analyzed
$6,123	Average Fee per Utility Analyzed
1.7	Average Number of Utilities Analyzed for Each Client
$10,715	Average Fee per Client (Mainly Cities) for All Utilities Analyzed
36,353%	Average Five-year Return on Rate Analysis Fee Investment
5.2	Average Days to Payback of the Analyst's Fees

Think of that return rate this way. You set the new rates to become effective on Wednesday, January 1. By the morning coffee break on Monday, January 6, the new rates have earned enough extra revenue to pay us. After that, you pocket the extra earnings for almost five more years. "Pocket the extra earnings" is flamboyant-speak for, "You now can build up reserves, pay for a big capital improvement, take care of other big-dollar needs and fund markedly better service with the extra revenues the new rates will generate."

Generally, smaller utilities need smaller rate increases, on a dollar basis. They may be small dollars, but to those utilities, they are very important dollars. Thus, their returns generally run lower than the average, but most are still in the range of thousands of percent to tens of thousands of percent return on investment. Maybe they can't pay us with 5.2 days' worth of extra revenues. They may need to go a couple of weeks to get us paid.

The net revenue increases for all these utilities, projected at $109 million, will buy a lot of system improvement, service improvement and other important things.

The fee per rate analysis of the average utility worked out to $6,123. Clients averaged 1.7 utilities analyzed (usually water and sewer), so the fee for that combination, plus a visit to present results and recommendations for most clients, ran the total fee to $10,715.

GGR Fees

With one common exception, we assess fees on a lump-sum basis. Going in, clients know exactly what their project will cost.

The exception? When attorneys are involved (rates lawsuits), we charge by the hour. Early on, we did a couple of those on a lump-sum basis. Never again!

The five-year average return on investment rate is 36,353 percent. It is hard to picture what that means. Try this.

Table 2: Returns by Utility Type

		Revenue Increase	
Utility	Number	Total	Average
Water	24	$40,059,063	$1,669,128
Sewer	19	$49,447,795	$2,602,516
Electric	3	$13,307,281	$4,435,760
Trash	3	$6,253,739	$2,084,580

Let's say you bought a top-notch mutual fund. It grows by 20 percent per year for five years. Thus, it would grow by a bit more than 100 percent over five years, doubling in value. That same fund would need to grow 363 times faster than that to match the returns our clients have been averaging. So there, Wall Street!

This all sounds like bragging. It is not. Other good rate analysts, with utility funding goals as conservative as mine, can give you similar results.

Table 2 reveals some interesting things. Electric utilities needed the greatest rate revenue increases, in dollars. Electric is often considered the "cash cow" of utilities, but (the few we analyzed) were significantly underfunded.

Water rates needed to go up the least, averaging $334,000 per year. That is interesting because we hear a lot about how water rates are too low. At least for this group of utilities, water was better funded than all the other utilities. Still, a third of one-million-dollars per year is a lot to be short.

Table 3: Basic RATES Program Client Data

2,839	Average Connections or Customers of Each Client
49	Utilities Analyzed
29	Clients (Cities, Districts)
8	Repeat Clients
6	Analyses Where a Return on Investment (lawsuits, rate disputes, etc.) Calculation is Not Relevant
4	Analyses Underway Now

Table 3 shows that we analyzed 49 utilities but only had 29 clients. That's where the 1.7 analyses per client comes from. Plus, eight of these clients (so far) had invited us back for the next round of rate analyses. Rate analysis and initial rate adjustments are not a once-and-done activity. You must analyze rates periodically and get back to "great rates," if you don't want to fall back into the under-funded and unfair rates camp.

There are two big picture results to take away from this discussion:

1. Analysis yields improved rate structure fairness – this result does not show up in a return on investment calculation. But, it produces goodwill. Every utility needs goodwill to be successful.
2. Increased revenues – $2 million per utility in this group of utilities. If your utility is "smaller" than these, your extra revenues will probably be lower. But whatever amount each client needed, we designed rates to get it for them. That extra revenue buys a lot of good service and that buys goodwill, too – a double-dip.

Your utility probably needs more revenue right now. Your ratepayers deserve fairly-structured rates. Rate analysis will set you on the course to get both.

Chapter 9 – How to Successfully Solicit Rate Analysis

Author's Note: I am a utility rate analyst. It is self-serving to tell you how to solicit rate analysis services. But I am telling you some little-discussed facts about how to get this done well. I think you would do well to consider this approach.

When you "solicit" to buy a utility rate analysis, engineering for a bridge, a tractor or toilet paper, you are seeking the best result, the cheapest to purchase result, or some compromise of the two. That is "Solicitation 101." But you need more.

Utility rate analysis is a service that, even the largest, most active utilities use only infrequently. Others use rate analysis even less. Most of the people responsible for soliciting rate analysis have never done it before. So, I ask you, rate analysis solicitor newbie, how are you going to do this right, first time, no practice?

Engineering and rate analysis are different. You should acquire these services differently, even if you still hire an engineer to do rate analysis.

Most people fall back on the engineering request for qualifications or request for proposals. Let's call those an "RFPQ."

When used for rate analysis or rate studies, the engineering RFPQ is usually a 15 to 20-page long document that requires timetables and milestones, a detailed description of how the project will be done, resumes, insurance coverage, deliverables, and more. Responses are often 100+ pages, before giving any rate study report examples.

In the standard RFPQ, you state that you won't pay anyone for submitting a response. That is all well and good, but you will pay for those responses. Here's why.

Every successful consultant of every stripe keeps track of their solicitation response success rate. They also keep track of the time it takes to write those responses. If, on average, a certain consultant gets one project out of every five responses he submits, and it takes 40 hours to write each response, he has invested 200 hours for each winning response. To keep the math simple, let's say this consultant calculates his productive work-time at $100 per hour. That means, this consultant has $20,000 in each successful response, meaning he needs to earn that much, before doing any analysis work, just to break even. In terms used in this guide, the $20,000 is a "fixed" cost which should be recovered from the minimum charge. If all the other responding consultants experience costs and success like that, lucky you, the fees you will pay the analyst you choose will include $20,000 for marketing to you.

A side note: big utilities can shoulder $20,000 in marketing costs quite easily because their rate analysis needs are much more complex than small systems. Their total fee payout can run well over $100,000. But their five-year revenue increase will likely be in the millions or tens of millions of dollars. On that basis, $20,000 is a rounding error.

I am a rate analyst, but not a good marketer. I rarely respond to RFPQs in the engineering format because I can't win frequently enough to still do analyses for about $7,000 per smaller utility and maybe $10,000 for bigger ones.

As to that engineering RFPQ, it is fine to build $20,000 worth of project acquisition cost into a $500,000 engineering project. With engineering, the stakes are high on many fronts. But you can't build $20,000 worth of marketing cost into a $7,000 rate analysis project. As an analyst, I can tell you, that math does not work.

This should all come as good news to you. For rate analysis, you can simplify how you solicit, get better results and reduce your work, too. This means you need not do lots of RFPQ preparation work where you try to pretend you know what rate analysis is, and you specify lots of methods, milestones and more. Instead, you spend almost all your effort finding actual rate analysts and then you solicit them for proposals. Here's how it should go.

As Stephen Covey, the management and self-improvement guru advised, "Start with the end in mind." Decide what you want to end up with and write it down in a statement. I recommend this,

"We want to have rates that are appropriately simple or complex, adequate and fair."

Note to my engineer friends: Don't get mad. If you are a good rate analyst, you can get rate analysis projects through this simpler solicitation process, too. And, you will like not spending a week to write a doctoral thesis-like response in hopes of getting a $7,000 rate analysis project.

Your end-goal might be different, but whatever it is, write it down. Tell it to your prospective analyst(s) or give it to them in a short solicitation. Before you take that step, call your rural water association (or other media association). Ask, "Who is a rate analyst?" And, "Who do you recommend?" They may balk on the second question; they can't play favorites. But, listen closely, they don't want you to mess up.

Now that you know who to solicit, consider the following before you write up a big RFPQ.

Rate analysts know rate analysis. You don't need to tell us how to do it. Just tell us your goal, you know, that statement three paragraphs ago, and we will tell you how we plan to get you there.

Thus, at its simplest, you should call and tell me, or us:

1. Your goal, and
2. Response requirements:
    - Deadline,
    - Who to send it to,
    - How to send it (e-mail is best),
    - How the fees should be structured (lump-sum is to your advantage, hourly usually is not),

Yes, you need documented proof that you did your due diligence. That is one reason you feel the need to specify every detail in the RFPQ.

Fight that urge. Do your due diligence by carefully considering responses to a simpler solicitation and checking up on the best, or the several best, responders. That is productive due diligence.

- State that professional liability insurance is required (Ask, what do you have?),
- State that a guarantee is required (Ask, what is yours?),
- State who to contact with questions, and maybe a bit more.

If you wrote this information down, it should be three pages – tops.

The thing is, you can miss asking for something and we analysts are going to catch it and cover it in our standard solicitation response anyway.

You call, we scope, we propose. That is the simplest, cheapest way for analysts to acquire projects. And it is the best way for you to find and decide who is the best analyst for your situation.

The simple solicitation response for me averages four hours: a scoping call with you, calculate fees, write up the proposal, e-mail it, and include some sample reports.

When solicited in this way, I get one out of two projects on which I propose. Thus, I have eight hours of unpaid time to build into project fees. That's cheap project acquisition.

What do you accomplish by keeping the solicitation short and sweet?

- You reduce your conceptualizing and writing work. There is no need for you to know how rate analysis is done. Just state your goal and the response requirements.
- You reduce what you will pay for analysis. The more you write and specify, the more you force responders to tailor our words to your words, our organization to your organization. That takes lots of time, running up our costs, which runs up your costs. The more time we spend proposing, the higher we must push our fees to recover those costs.
    - By the way, when you solicit using a long, detailed, overbearing RFPQ, you tell potential responders, "This town or district is very bureaucratic and is going to micro-manage my work." That tells us, add more time (fee) to the project to cover that extra bureaucracy.
- You reduce the chances you will mess up.
- You reduce the chances of picking a non-rate analyst or an aspiring rate analyst. That would be a big mess up. (Yes, we need more rate analysts to do what needs to be done. But you should let them get training and do their trial and error learning on someone else's dime.) When you give no guidance on what to do and how, responders must figure those things out. Experienced rate analysts do that all the time. Others don't. Everyone's response to your solicitation will be telling.

You have your solicitation written, now what?

1. Don't mail or e-mail it out to the world! That invites unnecessary responses for you to sift through. That increases your chances of… that's right… messing up. Instead,

2. Call the one or few analysts identified by the association. Tell the analyst your goal and the response requirements you wrote up, then let them take it from there. Each of us will gather the information we need to figure out what you need, so we can propose the right services for fees we need.

The following is not a slam, it is reality.

Engineers, bond brokers and financial advisors do not work cheap. Their time is too valuable. If you get a dirt-cheap rate analysis fee proposal from one of these firms, there is more to the proposal than rate analysis. The firm may be using the analysis project to get their foot in the door – get known by you – so they can do work in their primary area of expertise. That may be fine, if they really do great rate analyses, too. But you need to go in with eyes wide open.

3. Consider responses and options. A logical read of the proposal(s), something you need no training in rate analysis to do, should reveal "your" analyst. Also recall, you talked to these folks on the phone. Those conversations should have given you a very good idea who is the best candidate for your project. The written response should just serve to formalize it.
    - And, if they give you a guarantee something like ours, "You will be satisfied, or you don't have to pay us," you know that they really intend to satisfy you, and probably will. Worst-case scenario, they work for a while, you are dissatisfied, you fire them and don't pay them, you lose a little time, then you get a rate analyst who will satisfy you.
    - Keep it in perspective. This is not engineering where there is the risk an engineer could design a faulty bridge, it falls down, someone gets killed. Life, death and public safety, that is why we must be fastidious when training, and later selecting engineers. In rate analysis, nobody dies. It's just about getting high-quality rates. A logically minded person can choose an analyst who can deliver that. And, if you have the out – the guarantee – you get a do-over if you need it.
4. Decide, and move forward. Well, first, run that decision by the association. They likely know something you don't. And, they don't want you to mess up.

That describes the low-work, low-bureaucracy approach. Short of having an analyst who was vetted by an organization like the association, it is the most effective approach, too.

If you absolutely, positively must have more process than that, visit https://gettinggreatrates.com/freebies/rag.pdf and download the "Rate Analyst Guide." This guide will lead you through the solicitation process in several variations. It also has a link to a two-page solicitation template in Microsoft Word. Plug in your details and your RFP is written.

Utilities rarely solicit for rate analysis. Many have never done it. When they solicit, they often do it ineffectively. Don't be one of those.

Chapter 10 – Wholesale Rates, Contracts and More

Just don't do it! Don't enter into a wholesale supply agreement.

That is my stock response when someone asks me if they should buy from another party, or sell to another party, at wholesale. There are so many ways these arrangements can go wrong. And even when they work out, there is still the hassle factor to consider.

In this chapter, I will discuss "wholesale" rates – rates that generally result in lower unit charges than "regular" customers' pay. But some special supply agreements can result in higher unit charges when the special customer causes higher capacity, supply or treatment costs than the average customer. As you read discussion in this chapter about lower wholesale rates, just keep in mind, it can go the other way, too.

Rewind a bit. I am not an attorney. I am not practicing law. But in my experience, the number one reason a utility in a supply agreement gets sued, or decides to sue, is disagreement about the rates. Oh sure, the rates are almost always legally binding, and the buyer can't avoid paying. But rates are often very unfair to one party, probably unintentionally most of the time. Bad rates can destroy the relationship, the very thing such agreements are intended to foster. Let's do better.

Taking the hardline approach:

1. If a subdivision outside of town wants to buy your water, have them annex in and then sell those folks water just like any other in-town customer. They pay the rates listed in the rates ordinance – case closed.
2. If those folks don't want to annex in, let them join the water district that serves their area.
3. If there is no such district, let them form a district.
4. Or, they could form a neighborhood association, homeowners association or whatever name these entities go by in your state, then drill their own well and build and run their own water system, if they can get their own water.
5. And if they can't get their own water, well, they should have thought about that in the first place.

A Wholesale Pricing Primer

The hardline approach is not always the best approach. And if those folks are all the way down to Bullet Point Number 5 above, every one of them is going to be mad at you. You know lots of those folks. You might go to church with some of them.

Maybe you have already crossed the supply agreement line. Now you want to make it better.

If you want to enter into a supply agreement, or negotiate revisions to an existing one, there are two things you need to do:

1. Hire an *attorney who is an expert in that field*. You and the other party need a clearly defined framework for what will be a long-term relationship. Make it a happy one, and
2. Hire a *rate analyst* who knows how to calculate wholesale rates (or whatever type of rates are needed in your situation) and how to write up the rates governing stipulations of the contract. Money is usually the sticking point in a supply agreement. When it isn't, money is related to the sticking point. Rates for "regular" customers should be adequate and fair. That is just as important in supply agreements. That means, rates need to be adequate for the seller. And, they need to be fair to the buyer. Plus, it must be clear to all how rates will be adjusted in the future because they <u>will</u> be adjusted many times. Every adjustment will be a new opportunity for the relationship to break.

It is tempting to go the free "do-it-yourself" route and write up your own agreement. Again, just don't do it!

Do-it-yourself supply agreement contracting is likely to get you, or the other party, into a very bad deal. Everyone could mean well going in, but things just happen. The bad deal will sour the relationship. That will cause both parties extreme heartburn, and maybe litigation, so a bad deal for one is a bad deal for both.

Not to pick on used car salesmen, but if such a salesman adopts the business model of maximizing price received on every sale, they do whatever it takes to keep the price up. That strategy may kill repeat sales, forcing the salesman to someday find a new line of work. But hey, they got it while they could.

In wholesale supply agreements, <u>repeat sales are what it is all about</u>. That means the price, and other things, must be right. Otherwise, both parties are in for a long, grinding relationship.

In wholesale arrangements, there is no "free lunch" or windfall profit. If one party is being taken advantage of too severely, the wronged party will figure it out and the relationship will crash. You, as the seller, might be getting a sweet deal in pricing with a buyer who is locked in forever to pay your rate. But the buyer can make you pay for that windfall many times over in hassle factor.

The previous paragraph mainly discusses one party taking advantage of the unpreparedness of the other. But if you take the do-it-yourself route, YOU may set yourself up as the "taken advantage of" party. You, as the seller, may price the commodity too low from the beginning. Or, the way you define how rates will be adjusted in the future may lead to future rates being too low.

"Regular" customers are the ones who pay according to your set rates table. If you discover you set those rates too low, you go through a public process, raise rates, problem solved. With rates in a supply agreement, you are locked into how rates are to be set for a very long time. Get it wrong and it just might stay wrong, almost forever. You must get it right and the best time for that is from the beginning.

Reality: Contracts are wonderful instruments for defining wholesale supply relationships, if they are well designed. But if the contract says (in obscure language) this party gets all the goods and that party gets the shaft, the relationship is going to break. On the pricing side of such arrangements, if you are the seller, you should not sign on the dotted line unless:

1. You know what your average cost-to-serve is. That requires rate analysis.
2. You know what your marginal cost break-even point is. That requires the previous analysis, plus, marginal cost classification.
3. You arrive at a reasonable profit percentage to add to the marginal cost break-even amount. That enables you, the seller, to make a "profit" on a marginal cost basis. That makes you feel good about the arrangement because you are making money. And, that rate usually allows the buyer to get the commodity cheaper than their next best alternative, making them feel good, too. The "feel good" makes for good long-term relationships.

Marginal cost just means, as compared to the average of all customers, the special customers cause the utility to incur each category of variable costs at the same (100 percent) rate, or at some lower rate. This usually only applies to variable costs – unit charges. Minimum charges are usually calculated on a base cost, plus surcharge basis.

By the way, assuming the arrangement does not cause the seller excessive cost or time to administer, and that the pricing is right, wholesale sales will drive down the rates that regular customers must pay, too. That is true even when the wholesale unit charge is lower than what regular customers pay. Why? As the utility produces more volume, the unit cost to produce that volume (almost always) goes down. It is the classical "economy of scale" phenomenon. However, you need cost analysis and marginal cost classification to figure out where that break-even price is. Otherwise, you run the risk of losing money on wholesale sales. That will cause the regular customers' rates to go higher, so the wholesale customer can enjoy a subsidy.

You have an obligation to serve your regular customers well. Having them subsidize an optional customer with cheaper-than-cost service is not in their best interest. Except for when it is.

A case can be made for selling water at a cut rate to a really good employer just outside of town. What the regular customers "lose" in higher water rates, they more than make up in more and better employment and general local economy gains. I'm not a proponent of having utilities play favorites like that. And, I just bet there are several state laws that prevent the practice or place restrictions on how you may go about doing that. You better get good legal advice.

My contention: you should leave utility rates out of it. The "little old lady, widowed, retired, living alone on Social Security" should not be forced to subsidize anyone with her water bill.

If a town wants to subsidize an employer, or any other endeavor, the town should do it in broad daylight as a completely separate initiative. The council should hold meetings, discuss the issue, "sell" taxpayers on the subsidy (good luck with the "little old ladies…"), hold a vote and directly subsidize the endeavor. Again, attorneys have a lot of good advice about that. You better listen.

Complicated, isn't it? Has your attitude improved? Then, I will now stop the beating.

Into the Wholesale Pricing Weeds

If you agree that wholesale agreements are a lawsuit waiting to happen, just don't do it. But, if you want to or must enter into such an agreement, or you are already in one, consider this approach to set up or revise a wholesale supply agreement:

1. Of course, hire an attorney that is referred to you by good sources, like the rural water association, as the best (commodity being considered) wholesale agreement attorney for your situation. I am not an attorney, so I can't give you much more advice than that. And,
2. Unless there is something very special about your situation, get the initial pricing set up in this way:
    a. The minimum charge should be set at the regular rate for the meter size that serves that wholesale customer.
        i. If regular customers pay a minimum charge that includes surcharges based on meter size, to recover the costs of plant capacity, the wholesale customer's minimum charge should be set on that same basis for that customer's meter size.
        ii. If the wholesale customer is located outside of your city limits or district boundary and you assess a premium for such service (and you should), assess the premium to the wholesale customer, too.
    b. Generally, the minimum charge should include no usage allowance. All commodity volume should be paid for with unit charges.
    c. Unit charges should be set at the marginal cost rate, plus ZZ percent, as a profit margin for the seller.
        i. State law can come into play when it comes to pricing. Otherwise, I have seen profit margins range between none and 200 percent. I most commonly see the marginal cost profit rate range between 25 and 50 percent. That usually brings the wholesale unit charge in at 50 to 75 percent of the regular customers' unit charge. But sometimes, a wholesale rate can be higher than the average unit charge. They are not always cheaper.

3. Unless instructed by your rate analyst to do otherwise, future rate adjustments should be made as follows:

    a. During those years when regular customers' rates are adjusted (raised) on an across-the-board increase basis, the wholesale customer's rates should be adjusted by the same percentages. But that should not be done for longer than (usually) five years.

    b. Within (usually) five years of the last cost classification and rate restructuring (rate analysis), the wholesale customer's rates should be reclassified and restructured as described in Bullet Points 1 and 2, immediately above. This is a recalibration of the wholesale customer's rates, starting the cycle over. Generally, all customer's rates should be reanalyzed about every five years anyway. Thus, classifying wholesale customers' rates can be rolled into the larger rate analysis project. Calculating a new wholesale rate is not a big deal. Once you have built the analysis model, including classification of the average cost structure, it's a two-hour add-on to do marginal cost classification for a wholesale customer.

Embedded in this process is the need for the parties to agree, up front, on the average cost and marginal cost classification percentages for the various types of costs, plus the profit margin the seller will be allowed to add to the marginal cost unit charges. By the way, it is best if the seller prices service to its regular customers on a cost-to-serve basis, too. That will treat the regular customers fairly and it will demonstrate to the wholesale customer that it is consistently applying cost-of-service principles in rate setting for all.

While using a consistent rate calculation methodology for regular customers and wholesale customers is nice, and if you do that you should point that out to your wholesale customer, it should not be required in the agreement. The seller should be allowed to sell to its regular customers in any structure it likes and that should not affect the wholesale customer's rates. The wholesaler (city, district) should retain the flexibility to set its regular rates however it chooses. But the wholesale customer should always be assessed cost-to-serve, plus profit rates.

Because wholesale agreements last so long, some of the original cost categories might drop off the list over time. More likely, new ones will appear. For sure, dollar amounts will change. Regulatory controls and costs generally get more complex and expensive, not simpler. Thus, the agreement needs to take that reality into account and allow for new costs to appear. But those costs should be classified, and rates set for the customer using the same cost-of-service principles that were originally adopted.

While costs will change over time, causing rates to change, too, the method for calculating those rates will stay the same. That is, unless and until it is modified by agreement by both parties. These things will be negotiated out between the parties each time something significant

changes. Otherwise, the agreement stays in place and the pricing just gets tweaked a little from time to time.

You surely have figured out that the sticking point in this pricing strategy is that the parties need to agree on how costs will be classified. (That is the case with any other strategy, but without classification, everyone must make judgments, sometimes using inadequate data and information. Most often, the buyer makes the judgment that it should get service for half the cost to regular customers. The seller makes the judgment that it should collect 25 percent more from the wholesale customer than from regular customers. Without data and math, the parties do not have firm footing to resolve the impasse.

Closing

I go back to the "don't do it" at all advice. Ten or 20 years after a wholesale supply agreement was signed, the current parties, represented by different people then, will find themselves in an "arranged marriage." If the original arrangers did their homework well, the supply agreement relationship could be the equivalent of "bliss." If not, well, it won't be blissful.

If that advice doesn't stop you, I drop back to the "don't do-it-yourself" advice. Good legal advice – that should go without saying. And, it sure helps the parties to arrive at agreement when they have a rate analyst do the cost classification and rate structuring. As the analyst classifies, they need to explain to all why they classified as they did. If that does not suit everyone, they can gather around a projection screen as the analyst classifies costs in real-time, using a spreadsheet. The parties can make suggestions, discuss options and get some education from the analyst. In real time, they can see the rate results of those options. The analyst can describe why a certain percentage for a certain cost is, or is not, in line with cost-to-serve principles. The parties will soon agree on the cost classification percentages, with the effects on each party clear to see by all.

The process is all about fairness, transparency and consistency. That makes for "good feelings." That makes for a good wholesale relationship.

Chapter 11 – Snowbird Billing

Author's Note: "Snowbirds" cause certain costs to occur, even when they have gone south. They should pay rates that enable the utility to recover those costs, hence, snowbird billing.

I said in the first line of Chapter 10, "just don't do it." That advice often works well for snowbirds, too. Sometimes, it doesn't.

People with means can become "snowbirds." They have a home in the north and another home in the south. To maximize their time in good weather, in the winter these folks go south, where the sun is still shining. In the summer, they migrate back north. The snowbird name is north-oriented. These folks could just as easily be called, "sunbirds," going north when the sun gets too hot. As biased as the naming convention is, let's continue to refer to these folks as snowbirds. Just keep in mind, they cause the same kinds of utility effects in the sunbelt as they do in the north, with the seasons flipped.

Utilities serve these folks in both their homes. The utilities don't get to shut down just because some of their customers go away for a while. Utilities must be ready to serve all the time. Now, snowbirds would like to pay only one set of utility bills – the ones where they happen to be living at the time. If the off-season utility allows discontinuance of billing, the unavoidable costs that utility incurs during their absence must be paid by the full-year residents. That is not fair any way you look at it.

And as a practical matter, the full-year residents, on average, have less means than the snowbirds to pay higher bills. Heap more expense on them and some will have a hard time paying, some won't pay and someday, an attorney just might bring suit against the utility for forcing them to subsidize the "well-to-do." Individually, these folks do not have the means to hire an attorney to sue you. But put a bunch of them together, and they do. Win that case or not, the utility loses.

On the flipside, snowbirds, almost by definition, have means to hire an attorney. Some snowbirds ARE attorneys. Set snowbird fees too high or not transparently and you might get sued from that angle.

Good news: if your utility has no snowbirds, you don't need a snowbird policy and rates. If you only have a few, you still should be able to continue to assess the full minimum charge to snowbirds and it will work out fine. If you allowed the few to have you shut off meters and you don't charge them for that service, it would not affect the utility or rates much, so you could do that if you like. Or fairer, assess a shutoff fee and a turn on fee.

Not so good news: if you have lots of snowbirds, you probably need a policy and rates to account for them fairly. So, here we go.

Should you allow bill stoppage or not? While it is true that snowbirds are not using any volume during their time away, they still cause the utility to incur various unavoidable fixed and capacity-related costs. The cost of debt service paid to build system capacity to serve them is usually a major cost of this type. Perhaps your system now has no debt, great. But it still has the cost of the wear out and rust out of facilities and the cost of basic administration and maintenance required to keep the system in working order so when snowbirds return, there will be service available for them to resume using. These are major unavoidable costs. All utilities have these.

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

Many utilities require snowbirds to continue paying the full minimum charge. In my view assessing the full minimum charge to snowbirds is excessive because snowbirds do not cause the utility to incur a full share of fixed costs while they are away; only the unavoidable fixed costs. Thus, I often recommend against that practice. But, if that is your policy, if you have only a few snowbirds and you want to continue that practice, it will likely work out okay for you. I'm not advocating unfair rates, but I will paraphrase some of my client utilities,

"Boo-hoo, snowbirds have to keep paying their minimum charge while they are gone, staying in their other house by the beach. We feel bad for them."

Don't need a snowbird policy? Then skip the rest of this chapter and move on to the next. Otherwise, continue.

Based on their meter size, snowbirds should pay a full share of capacity-related costs. Remember, capacity costs march on whether snowbirds use the water or not. Snowbirds should also pay for their share of unavoidable fixed costs they cause, even when they are gone. Sum those two things up and you get the snowbird fee for each meter size. I could go into detail about how that is done, but you should not be doing such calculations anyway. Normally, snowbird fee calculations should be rolled into a comprehensive rate analysis anyway.

Normally, snowbird fees come in at 50 to 80 percent of the full minimum charge for normal residential sized meters. At the 50 percent level, it can be worthwhile (to the snowbirds) if you will assess snowbird fees. At 80 percent, that is so close to a full minimum charge that it is hardly worth setting up separate fees. And if the snowbird actually has you shut off their meter while they are gone, and they have to pay even a small shutoff and turn on charge, nearly all snowbirds would be better off just paying the regular minimum charge and leaving the water on.

The snowbird fee described above is not the only way for you to recover costs incurred on behalf of snowbirds. Here are some others:

1. If a snowbird simply goes away and returns but does not notify you that they will be away, they simply have not identified themselves as snowbirds. Thus, their account would remain in active status and they would continue to be billed like usual. Almost all snowbirds handle their utility accounts in this way because it is just not worth the hassle to discontinue service. (Cliff's Notes version of this option: You don't have a snowbird rate class. You only have an active customer rate class.)

2. If a snowbird notifies you that they will be away and they want to go into "snowbird" status, you can offer them this billing service:

    a. At their option, you turn off their meter, for which they would pay a disconnect fee. If they do not have you turn off their meter, they do not pay a disconnect fee.

    b. You place their account in "snowbird" status while they are gone.

    c. They would be assessed the appropriate snowbird fee each billing period and pay that fee, if they give you the address to which you would send their snowbird bills. Or, if you allow this option, their bills could accrue until they return.

    d. When they return, you turn on their meter, if it had been turned off, and assess the reconnection fee plus all accrued bills and resume billing them as an active customer.

The overall simplest and cheapest alternative for most customers would be to remain in active customer status. For small meter customers, they must have their service shut off for many months to recoup the cost of meter turn off and turn on. But in some very cold northern locales, line freeze up is such a risk that it is safer for homeowners to shut off and winterize their plumbing, so they likely would opt for meter turn off regardless.

Remaining in active customer status also makes billing and administration simpler for you because your staff would not have to change the customer's status in the billing program and disconnect their meter and reconnect it again when they return. They just go on being, and being billed as, a regular customer.

If you have many snowbirds, perhaps you should adopt snowbird rates. But if you can avoid it, do. Life is simpler when your rate structure is simpler.

Chapter 12 – System Development Fees and Surcharges

Author's Note: System development fees and capacity surcharges are complex. They are not needed in some utilities. When they are needed, their calculation should be part of a comprehensive rate analysis. However, they could be calculated separately, as well. Such fees are covered here so you can figure out if you need these or not, get an idea of what they are, what they do and how they are calculated.

Why assess system development fees? Because it costs money to build capacity to serve new customers. You obligate capacity every time you connect a new user. Once you have obligated all the available capacity, you're done. No more new connections.

Alternatively, you can and should assess capacity surcharges to recover those costs over time. However you recover this cost, make no mistake, it must be recovered. Consider this analogy:

You buy a car and finance it through your bank. You decide you don't need to drive the car next month, so you don't send next month's payment to the bank. Next month arrives and the banker calls, "Where's our payment?" You say, "I'm not driving the car this month, so I'm skipping this month's payment." The banker says, "When you bought the car, you didn't buy miles, you bought the opportunity to drive miles. The bank finances opportunity, not outcomes. The repo truck will be over in two hours. Remove your personal belongings before then."

Water and sewer service are the utility types discussed in this article. Why? They are just about everywhere there is a concentration of people. Thus, meter size can be the key to fair rates in water and sewer.

But, SDFs and minimum charge surcharges should be applied, with some tweaking, to electric, trash collection and other services, too. Brevity demands that we limit the media covered here but the principles are the same for other services.

When you connect a new customer, you create an opportunity to get service. Opportunity has its costs. It is hard to repossess utility capacity, so it is best to be paid for it up front. But since you can't do that completely, you should collect the rest over time with surcharges. And later, as the facilities wear out, you should pay for their replacement with surcharges.

This article examines system development fees and minimum charge surcharges, later just called, "SDFs" and "surcharges." In particular, it describes meter size-based SDFs and surcharges. Granted, you really don't want to deal with SDFs and surcharges. But, in the utility business, rates happen.

Does your community need SDFs and surcharges? If your utility has more than 500 connections, or at least three different meter sizes, or any four-inch or larger meters, or it might be asked to serve such meters, it probably does. If new connections are being made rapidly (you are growing), you need SDFs and surcharges. As communities grow and diversify, generally, their rates should be tailored to the customer base (become more complex), including meter size-based SDFs and surcharges.

How a community sets SDFs sends a message. "We believe everyone should pay their fair-share." Or, "Cheap fees! Cheap fees! Please build here." Or, "We want to keep out the riff-raff."

The cost-of-service notion is simple – figure out who causes how much of the system's cost and assess fees to each customer accordingly.

Those statements are simplistic and crass, but you get it. Where and how you set SDFs sends messages. Be sure that the message people receive is the message you want them to receive.

In my experience, "swanky" locations like developments in or near ski resorts, in the mountains or on the beach assess strong SDFs than other places. That is probably partly because the utility can get that kind of money from folks who build there. And, it is reasonable on a risk basis. Locations like that can grow rapidly for one or a few years, necessitating building expensive capacity to serve that growth. But growth can go away for a few years, making it tough for revenues to keep up with costs.

Back to the cost-of-service rates notion, it is this. Figure out who causes how much of the utility's cost and assess fees to each customer accordingly. The notion is simple and intuitive. Making such rates happen is another thing.

SDFs and surcharges are cousins; two parts of an overall rates program. SDFs recover capacity costs "up front," at the time of connection, based on the cost of infrastructure needed to serve each new connection. SDFs are very good for recovering peak flow capacity costs.

Up front is the best time to get paid for capacity costs. Why? If a plant wants to move to town and will need an eight-inch meter, and that will require you to upsize a lot of infrastructure to serve the plant, it is best to get as much of that extra cost up front as you can. You could assess the plant surcharges instead. But, if the plant goes belly up after five years, everyone else will be left holding the capacity cost bag.

Then again, price new connections too high and development goes down the road. You need new customers to improve your economy of scale. Decisions, decisions.

Surcharges recover capacity costs on the "easy payment plan." You can recover peak flow or base flow capacity costs, or both, with surcharges.

Did you catch that? Capacity costs come in two main flavors: peak and base flow. Fees to recover peak flow costs should be based on meter size. Base flow costs are the same for all customers regardless of meter size, so you can classify those as "fixed" costs and they will be recovered in everyone's minimum charge at the same level.

One way to calculate very fair and reasonably simple peak flow SDFs and surcharges is to base them on meter size. Meter size-based rates are clear cut. Other methods can be quite subjective. In rate setting, you want things to be clear cut every chance you get. You want to say to a disgruntled ratepayer, "The math clearly says this is fair so we're going to do what is fair."

The following generalities should give you an idea of which fees to use, when:

- If your community has stopped, or nearly stopped growing, meaning, no new connections are being made, SDFs become a moot point. Just set them low and pretty flat to avoid discouraging growth.
- Surcharges can be used in concert with SDFs, each recovering part of the cost of building and rebuilding infrastructure. Or, surcharges can be used alone.
- As communities mature, their infrastructure needs transition from mostly building new "stuff" to mostly replacing or upgrading existing stuff. SDFs match up with costs for building new stuff quite well. Surcharges are on-going, so they match up with replacing existing stuff quite well. Only new connections pay SDFs. But, all customers pay surcharges.

Table 11 - Capacity Costs

This table shows capacity costs to expect. From these costs, system development fees were developed in Table 12.

Peak and Base Flow Capacity Costs

Fixed Assets Original Value (Capacity Cost)	% of Value Attributable to Peak Flow Capacity	Peak Flow Capacity Cost	Annual Peak Flow Capacity Cost (40-year Depreciation)
$6,906,856	50.0%	$3,453,428	$201,259

	% of Value Attributable to Base Flow Capacity	Base Flow Capacity Cost	Annual Base Flow Capacity Cost (40-year Depreciation)
	50.0%	$3,453,428	$201,259

How Capacity Costs Will Be Recovered

These costs are modeled to be recovered from system development fees in Table 12

Peak Flow Capacity Costs to be Recovered by System Development Fees

6.5%	Target Percentage of Costs to Recover
$13,001	Target Portion of Costs to Recover
$1,350	Resulting Peak Capacity Cost per 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	Resulting Base Capacity Cost per Share

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

$100	Average Field Cost per New Connection
$50	Average Administration Cost per New Connection
$150	Sum of Admin and Field Costs (Fixed Costs to Make New Connections)

With the important concepts covered, here comes some of the math, albeit, simplified for brevity and to reduce confusion. Tables used to illustrate the math come straight out of a recent rate analysis model and report to a water district. Thus, table numbering starts at 11. Tables have been truncated to fit the length and format of this page.

System Development Fee Calculations

SDF calculations aim at recovering part of the capacity costs. Surcharges aim at the remainder. The calculations for surcharges are the same as SDF calculations, with a little tweaking. That will be described later. Let's start by looking at SDF calculations.

1. Establish the Cost Basis

You need to establish the cost to be recovered, as shown in the previous Table 11.

In this case, the original value of the assets, which comes out of the balance sheet, was used as the cost basis. This value was broken into peak flow and base flow capacity costs, each to be recovered appropriately.

An alternative to original value could be debt for a new system or major upgrade.

The next thing you need is the "share" value of each meter size, so you know how to divvy up peak flow capacity costs.

2. Establish "Share" Values

The American Water Works Association (AWWA) has done studies of the sustainable peak flow capacity of different meter sizes and types. From those flow capacities, you can calculate the capacity "share" of each meter size. That has been done in Table 11B.

Table 11B - Safe Operating Capacities by Meter Size

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

This table calculates the meter equivalent ratio, which is used for calculating peak flow capacity-based system development fees and system development surcharges in Table 12.

Meter Size, in Inches	Meter Type	Maximum-Rated Safe Operating Flow, in Gallons per Minute	Meter Equivalent Ratio (Capacity Shares)
5/8	Displacement	20	1.0
3/4	Displacement	30	1.5
1	Displacement	50	2.5
1.5	Displacement	100	5.0
2	Displacement	160	8.0
3	Singlet	320	16.0

As shown in that table, in the right-most column, a five-eighths inch meter is the starting place for assigning share values. That meter size gets one share. A three-inch meter gets 16 shares (320 divided by 20). That means, a three-inch meter customer will pay for 16 shares of peak flow capacity costs, which is calculated in Table 13, that follows.

3. Calculate SDF Rates and Revenues to be Generated

Table 13 - System Development Fees Based on Meter Size

This table calculates system development fees to charge each meter size. Based on growth during the "Analysis Year," it also calculates total fee revenues that would be generated during one full year at these fees.

Meter Size, in Inches	Mix of New Taps in a Typical Year	Projected Annual Growth in Capacity Shares	Peak System Development Fee, Each Meter Size	Base Capacity Cost to Recover With Each New Connection	System Development Fee for Each Meter Size	Grand Total System Development Fees for One Full Year
5/8	0.0000	0.0000	$1,350	$150	$1,500	$0
3/4	8.9211	8.9211	$1,350	$150	$1,500	$14,721
1	0.0123	0.0308	$3,375	$150	$3,525	$45
1.5	0.0031	0.0154	$6,751	$150	$6,901	$22
2	0.0573	0.4586	$10,801	$150	$10,951	$636
3	0.0031	0.0494	$21,603	$150	$21,753	$68
Totals	9.0000	9.6295				$15,701

This is the amount used to calculate the "Meter Size-based System Development Fees" income in Table 3 (the projected incomes table of the analysis model).

Table 13 that follows performs the calculations. Highlights:

- Second column – the utility expects to hook up an average of nine new customers annually and expects meter sizes to be in the same proportions as the current customer base. Thus, in an average year, there will only be 0.0031 new three-inch meters hooked up. (Out of 2,918 meters on-line now, only one is a three-inch meter.)
- Third column – the nine new customers will have total capacity shares of 9.6295. As you can see, almost all new connections are expected to be served by three-quarter inch meters. This is a capacity to meter count ratio of 1.07 to 1.0 – almost a one-to-one ratio.
    - A utility with a high number of large meters, or a rapid growth rate in large meter connections, can have a capacity to meter count ratio of 1.5 to 1.0, or even higher. When the ratio is that high, meter size-based rates become critical for recovering costs fairly. Likewise, if growth is rapid, there is much revenue to be had from SDFs.
- Sixth column – the total SDF for a three-inch meter is just shy of 16 times greater than that of a five-eighths inch meter. Why? Granted, the peak capacity cost is 16 times greater than the five-eighths inch meter, but there are other costs besides peak costs. All customers are assessed $150 for base and connection costs (connection costs only, in this situation). These flat costs skew the ratio just a bit.

- Last column – the three-quarter inch meter customers' fees are the lowest, but they will generate the lion's share of SDF revenues. That is because almost all new connections will be three-quarter inch meters.
    - Note: I recommended, and this district opted to assess the same fees to 5/8 and 3/4-inch meters because there is little capacity or cost difference between these sizes and both are commonly used for single family and small business connections. That markedly simplifies the SDF and surcharge fees program. Remember, sometimes simple trumps mathematically correct.
- Again, last column – The $15,701 in total annual SDF revenues is only a small part of the true cost of capacity from Table 11. But this district plans to boost SDFs over the years to make them more adequate. Before you can finish the race, you must start.

Note: In the three columns in Table 13 that have sums, if you added the values above them you would not get those amounts. That is because, many rows and columns of the original table have been hidden to get the table onto this page.

Surcharge Fee Calculations

The calculation of peak flow cost surcharges to the base minimum charge are like those for SDFs, with a few math changes. Most of the math is shown in Table 14 on the next page. Following are some highlights:

- Not shown is the cost basis amount to be recovered by surcharges. It was the dollar amount of peak costs not recovered by SDFs in Table 11. Annualize that leftover amount and then divide it by the sum of the capacity shares of customers now on the system. That is the "Annual Capacity Cost per Share, From Table 11" in Table 14, which is $60.30 per share. (I left that section out of Table 11, simply to save space.)
- Divide the $60.30 annual capacity cost by 12 billings per year (monthly billing) to get the $5.03 surcharge per capacity share per month.
- Multiply the $5.03 times the capacity shares for each meter size to get the total capacity surcharge for each size meter.
- Add the surcharge for each meter size to the "Base Minimum Charge," calculated elsewhere in the rate analysis, to get the full minimum charge to assess to each meter size each month. These are the minimum charges, based on meter size, to adopt in your rate ordinance and list in your "rate table."

Table 14 - Capacity Surcharges Based on Meter Size

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

Meter Size, in Inches	Current Number Meters This Size	Total Capacity Shares Each Meter Size Group	Annual Capacity Cost per Share, From Table 11	Capacity Cost per Meter per Month	Base Minimum Charge	Total Surcharged Minimum per Month	Total Annual Capacity Surcharges for Each Meter Size
5/8	0	0	$60.30	$5.03	$13.61	$18.63	$0
3/4	2,892	2,892	$60.30	$5.03	$13.61	$18.63	$174,409
1	4	10	$60.30	$12.56	$13.61	$26.17	$603
1.5	1	5	$60.30	$25.13	$13.61	$38.73	$302
2	19	149	$60.30	$40.20	$13.61	$53.81	$8,965
3	1	16	$60.30	$80.40	$13.61	$94.01	$965
	2,918	3,122				Full Year of Capacity Surcharges:	$188,258

- To arrive at the "Total Annual Capacity Surcharges for Each Meter Size," multiply the total capacity shares in each meter size by the $60.30 annual capacity cost. Note that the three-quarter inch meter class contributes the most in surcharges. That is not because their surcharges are high; they are quite low. It is because there are so many of them.

Sum Both Revenues

- Add Annual SDF and annual capacity surcharge revenues to get the total SDF and surcharge fees. Keep in mind, SDF revenue is speculative because it depends on growth assumptions coming true. Don't "bank" on those. However, surcharges are a very dependable revenue.
    - In the case of your utility, the total might amount to almost nothing, or it might be 25 percent of your utility's total revenue. That depends upon several key factors: growth rate, meter sizes on the system, the capacity costs to be recovered and how aggressive you are at recovering those costs.
    - The annual SDF and surcharge revenues reduce the dollars you need to recover from regular user charges, making those rates that much lower, and fairer.

Closing

Meter size-based system development fees and surcharges are great tools for recovering infrastructure costs. Basing peak cost recovery on meter size, you can do that fairly. Or, at least get on the road to fair. Of course, such fees require math. But, when you "promote" such fees to those who will pay them, you tell them about the math. You don't have to do the political dance of, "We want to encourage this or discourage that, we want to welcome everybody, or we don't."

There are other ways of recovering capacity costs. In my experience, they are all harder to convincingly explain why they are fair. But then, I make my living doing math.

The point of this long, detailed description of SDFs and surcharges is not to turn you into a rate analyst. The point is to show you there is a great way to arrive at fairly structured fees to recover capacity costs. In my opinion, the lack of such fees is one reason, maybe the main reason, we are so far behind in infrastructure construction and renewal. SDFs and surcharges are tools that can help us get that job done and paid for fairly.

Use these tools and they will serve your customers, and your utility, well.

Chapter 13 – CIP and R&R

Author's Note: The need to fund capital improvements is the number one reason utilities get rate analyses or studies. The need to catch up on equipment repair and replacement is often number two. While rate analysis includes these costs, and sometimes, it includes building CIP and R&R schedules, such planning needs to be an on-going task of the utility's management. Two do-it-yourself spreadsheet planning tools discussed here may help.

In many utilities, CIP debt and cash-paid costs can consume 25 percent of the annual budget. In new utilities, or those that have done major upgrades in the last ten years or so, that might amount to 75 percent of the utility's annual costs. CIP is a sore subject for ratepayers. They know that when you are talking about millions of dollars, that will have a big rate effect. Give them the facts. When CIP is well-planned, it can often be surprising how little it affects rates.

As to R&R costs, I find that, in most utilities with a few decades of age on them, well-executed R&R absorbs about 15 percent of annual operating costs, not including debt and general administration. Fall behind on R&R and then need to catch up, and it can really hurt when rate setting time comes.

All utilities have a capital improvement program (CIP) or plan, whether it is written down or not. Some utilities project their needs over many years, write down their plans, maybe even put them into a database or spreadsheet. They also build those costs into current and future rates. That is how it should be done for large and small utilities alike.

Many utilities are less formal about it. Many have little, if anything, written down. Fewer still build those costs into present or future rates. But, they need to.

This lower key approach is not an entirely bad way to handle CIP needs. After all, many utilities, especially the smaller ones, are driven to do improvements by health and environmental protection standards, and other federal and state requirements. In other words, regulatory requirements are their de facto plan. And, these utilities look to the federal and state governments to fund the cost of those improvements. At least, they have hopes.

All utilities also have an equipment repair and replacement (R&R) plan and schedule. It may be formalized in writing and the cost is built into rates – a good practice. Or, it may just be in the chief operator's head – as good a memory as the operator may have, this is a bad practice. What happens when the operator retires?

Unlike CIP costs, R&R costs are not federal and state grant and loan fundable, unless someone knows of a loophole that I'm not aware of.

Generally, the upsides of formalizing CIP and R&R schedules outweigh the downsides. The overriding consideration, in my mind, is this: Not having these things well planned out is "no way to run a railroad." People and businesses depend upon good, dependable, sustainable utility services. They assume they will always be there to support the investments they make in their homes and businesses. Don't let them down.

CIP costs may be fundable through federal and state grant and loan programs, but there just is no "full ride" anymore. You will incur some debt. That cost needs to be recovered by some mix of system development fees or some other new connection charge, system development surcharges to the minimum charge and regular user charges. When to use each of these, and how to calculate them, is not the subject of this discussion. But, calculating the cost of CIP is.

R&R costs are not federal and state grant and loan fundable, though a utility might go to their local bank and get a loan to do some neglected R&R in a pinch. That really looks bad and it may haunt your utility if, and when, you do need to issue bonds or borrow for something because yours could fall into the "junk bond" category.

R&R costs are recoverable through regular user charges. Again, calculation of those charges is not the subject of this discussion. But, calculation of the annual cost of R&R is.

I have assembled two Excel spreadsheets that do-it-yourselfers can use to prepare CIP and R&R schedules, including calculation of their costs. Both are available for free download at https://gettinggreatrates.com/freebies/freebies.shtml. The following discussion, and snapshots of parts of those spreadsheets, are based on those applications.

You could do this planning and the calculations using other tools, or just the calculator in your phone and a note pad. But, however you do it, the basic plan parts and calculations you do should include the things discussed here.

Let's start with CIP.

Capital Improvements Program (CIP)

The CIP Planner© spreadsheet has a directions tab, a data entry tab and an output tab, part of which is reprinted below. Basically, you enter into the data entry tab, your CIP needs for the next 10 years, variables like the percentage of grant, loan and reserves funding you expect, interest rate and rate of inflation you expect and a few other criteria. The spreadsheet then builds your plan in the output tab. You can format that table as you like and print it out or otherwise use it to demonstrate your funding needs to funders, ratepayers and others.

Data output fairly well mirrors the input, so let's skip to the output for an example utility. The following table is a reformatted snapshot of the first four years of a ten-year plan. The table, and data included, were cut down simply to allow the table to fit into this article.

The Capital Improvements Program (CIP) table lists all the expected improvements, splits their costs by the assumed percentages of grant, loan and reserves used to pay for them, calculates and shows the resulting debt service to be paid and then shows, on the bottom line, the total cash needed for each year to fund this CIP.

Capital Improvements Program (CIP)							
Ratewell, WY Water System - Funding Assumptions: 50% Loan, 25% Grant and 25% Reserves							
			Years Following the Analysis Year				
		Test Year Starting	Analysis (This) Year Starting	1st Year Starting	2nd Year Starting	3rd Year Starting	4th Year Starting
		1/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	1/1/2023
Planned Spending, Debt-paid Portion of Projects (CIP costs to be funded with loans are shown in this section.)							
New Well and Tower		$0	$0	$772,500	$0	$0	$0
New Plant		$0	$0	$0	$0	$1,092,727	$0
Loan Closing Costs, Estimated at:	2.50%	$0	$0	$19,892	$0	$29,851	$0
Total Debt-paid Portion of Projects		$0	$0	$792,392	$0	$1,122,578	$0
Planned Spending, Grant-paid Portion of Projects (CIP costs to be grant-funded are shown here.)							
New Well and Tower		$0	$0	$386,250	$0	$0	$0
New Plant		$0	$0	$0	$0	$546,364	$0
Total Grant-paid Portion of Projects		$0	$0	$386,250	$0	$546,364	$0
Planned Spending, Cash-paid Portion of Projects (CIP costs to be funded from reserves are shown here.)							
New Well and Tower		$0	$0	$386,250	$0	$0	$0
New Plant		$0	$0	$0	$0	$546,364	$0
Grant Acquisition Costs, Estimated at:	2.50%	$0	$0	$9,946	$0	$14,926	$0
Total Cash-paid Portion of Projects		$0	$0	$396,196	$0	$561,289	$0
Grand Total of CIP Costs		**$0**	**$0**	**$1,574,838**	**$0**	**$2,230,231**	**$0**
Planned Spending, Debt Repayment							
Existing Debt Payments (Following is debt that was initiated during the test year or earlier.)							
2015 SRF Loan		$55,000	$55,000	$55,000	$55,000	$55,000	$55,000
New Debt Payments under assumed loan terms							
Loan Originated in 1st Year					$48,460	$48,460	$48,460
Loan Originated in 3rd Year							$68,653
Total Existing and New Debt Payments		$55,000	$55,000	$55,000	$103,460	$103,460	$172,113
Grand Total Cost - Debt Service and Cash-paid CIP		**$55,000**	**$55,000**	**$451,196**	**$103,460**	**$664,749**	**$172,113**

There are advantages to planning capital improvements using a spreadsheet:

- Once the basic data is in, "what-if" scenarios of all sorts can be run:
    - What-if the new well and tower project was postponed two years and it was added to the new plant project? You can move those costs from 2020 to 2022 and see the effect.

  - What-if no grants were available and the grant dollars assumed in the current plan had to come from a larger SRF loan? That would increase annual costs and the spreadsheet would calculate the increase.
  - Or, what-if the lost grant dollars had to come from reserves? That would increase one year's cash outflow but reduce annual costs as compared to SRF financing the difference. You get the idea.

- Capital improvement planning is a long-term task. In fact, it never really stops. To keep the plan up to date, you can change the starting date of the spreadsheet and that will change all other dates accordingly. And, you can update project costs, timing and everything else to keep the plan accurate.

Even in this very simplified, low-dollar example, you can see that Ratewell's debt is going to more than triple in four years. If you don't plan ahead, rates-wise, for such an event, it can really eat into your reserves in a hurry. You do have reserves, don't you?

Repair and Replacement Schedule (R&R)

Moving on to R&R, this is mainly the chief operator's or utility superintendent's duty to keep up with. But, to take it all the way, the annual annuity (savings amount) needed to pay for R&R costs needs to go into the utility's budget as a line item cost. That means, the budget adopters must "sign off" on this cost and build it into the rates they adopt.

Therefore, the annuity will need to be put into a draft budget, the budget adopters – the city council, the board – will need to discuss what is in the schedule and, essentially, pre-approve that plan. That will turn the R&R schedule into a working agreement with the utility's management, which may just be the one operator in a small system. Thus, the board will tell the operator, "We are signing off on these items at these costs on this schedule. You are authorized to make it happen. But, if you find need to veer off the plan by much, get our approval first."

The inquiring mind might ask, "What is an annual annuity calculation, anyway?"

In mathematical terms it is a present worth, or present value calculation. Such a calculation considers a string of inflows (incomes, if any) and outflows (expenses) over a period of time and solves for a level annuity (savings amount) that will cause the balance to be zero dollars at the end of the period. In other words, if you add X dollars to the account each year, by the end of the schedule, all expenses will get paid. ReplacementScheduler© has some enhancements, but that is basically what it does.

ReplacementScheduler© is aimed at equipment replacement. But, working with a water district recently, a related problem came up that the speadsheet can also help solve.

District customers pay fire insurance premiums. By adding a new water tower, the district could boost pressure and, perhaps, lower insurance premiums. By entering the estimated costs to build, operate and maintain the tower, in the appropriate years, and the anticipated premium savings (as a negative annual cost, an inflow), the spreadsheet will calculate the annual annuity in this situation.

If the annuity comes out negative, that means the annual insurance premium savings would be that much greater than the costs of the tower – they would save that much money.

There are a few other considerations to include in such analysis. The important point is this: you don't need to guess about such a high-dollar decision. You can use math.

Or, they might caveat the plan further with, "and you are authorized to make it happen for all items that cost less than $_____. For more expensive items, get our approval first."

In fact, the chief operator will not have purchasing authority for the cost of most items in a typical R&R schedule. They must have the city manager or similar staff person, if there is one, or the board or council itself, authorize and issue a solicitation and execute the purchase of expensive items. But having the annuity and reserves built into the utility's finances will assure that cash will be available to make the purchases. Thus, (lack of) money will not stand in the way of doing what needs to be done.

And, the board or council may go one more step and say, "You are allowed to postpone scheduled projects if that makes good sense, but if you need to move one up, get our approval first."

If this plan is to help the operator do what needs to be done, when it needs to be done, the board or council shouldn't restrict the operator more than that.

Anytown, USA, Water System

Equipment Replacement Schedule - Detailed

Year Beginning	Shared Line Camera, 10% Water, 90% Sewer	Shared 2013 Ford F250 4x4, 50% Water, 50% Sewer	Shared 2013 Ford F350 with crane, 25% Water, 25% Sewer, 50% Other	Shared Backhoe/ Loader, 25% Water, 25% Sewer, 50% Streets	Water Tower 1 Recoat	Water Tower 2 Recoat	Total Annual Replacement Costs
7/1/18	$0	$0	$0	$0	$0	$0	$0
7/1/19	$0	$0	$0	$25,000	$0	$0	$25,000
7/1/20	$0	$0	$0	$0	$0	$0	$0
7/1/21	$10,000	$0	$0	$0	$0	$0	$10,000
7/1/22	$0	$0	$0	$0	$150,000	$0	$150,000
7/1/23	$0	$30,000	$20,000	$0	$0	$0	$50,000
7/1/24	$0	$0	$0	$0	$0	$0	$0
7/1/25	$0	$0	$0	$0	$0	$0	$0
7/1/26	$10,000	$0	$0	$0	$0	$0	$10,000
7/1/27	$0	$0	$0	$0	$0	$200,000	$200,000
7/1/28	$0	$0	$0	$0	$0	$0	$0
7/1/29	$0	$0	$0	$0	$0	$0	$0
7/1/30	$0	$0	$0	$0	$0	$0	$0
7/1/31	$10,000	$0	$0	$0	$0	$0	$10,000
7/1/32	$0	$0	$0	$0	$0	$0	$0
7/1/33	$0	$30,000	$20,000	$0	$0	$0	$50,000
7/1/34	$0	$0	$0	$25,000	$0	$0	$25,000
7/1/35	$0	$0	$0	$0	$0	$0	$0
7/1/36	$10,000	$0	$0	$0	$0	$0	$10,000
7/1/37	$0	$0	$0	$0	$0	$0	$0

Anytown, USA, Water System

Equipment Replacement Annuity Calculation

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

1.00% Average Interest Rate on Balances Invested for the Term of This Replacement Schedule

3.00% Average Interest Rate on Amounts Borrowed for the Term of This Replacement Schedule

Year Beginning	This Year's Costs in Current Dollars	Future Annual Inflated Net Costs	Interest Earned on Prior Balance	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
7/1/18	$0	$0	$200	$20,200	$27,000
7/1/19	$25,000	$25,500	$202	$29,515	$27,540
7/1/20	$0	$0	$295	$64,423	$28,091
7/1/21	$10,000	$10,612	$644	$89,068	$28,653
7/1/22	$150,000	$162,365	$891	-$37,793	$29,226
7/1/23	$50,000	$55,204	-$1,134	-$59,518	$29,810
7/1/24	$0	$0	-$1,786	-$26,691	$30,406
7/1/25	$0	$0	-$801	$7,122	$31,015
7/1/26	$10,000	$11,717	$71	$30,089	$31,635
7/1/27	$200,000	$239,019	$301	-$174,016	$32,267
7/1/28	$0	$0	-$5,220	-$144,623	$32,913
7/1/29	$0	$0	-$4,339	-$114,349	$33,571
7/1/30	$0	$0	-$3,430	-$83,166	$34,243
7/1/31	$10,000	$12,936	-$2,495	-$63,985	$34,927
7/1/32	$0	$0	-$1,920	-$31,291	$35,626
7/1/33	$50,000	$67,293	-$939	-$64,910	$36,338
7/1/34	$25,000	$34,320	-$1,947	-$66,564	$37,065
7/1/35	$0	$0	-$1,997	-$33,948	$37,807
7/1/36	$10,000	$14,282	-$1,018	-$14,636	$38,563
7/1/37	$0	$0	-$439	$19,537	$39,334
7/1/38	$0	$0	$195	$54,346	$40,121
			Starting Account Balance	$20,000	$27,000
			Net Present Value less Starting Account Balance	$564,004	Minimum Desired Balance in Today's Dollars
			Capital Recovery Factor	0.055415	
			Minimum Annual Annuity	$31,254	
			Discretionary Annuity	$3,358	
			Required Annual Deposit to Replacement Account	$34,613	

I encourage boards and councils to think of R&R schedules like this:

You are not giving up the power of the purse strings and decision-making when you take detailed replacement needs out of the annual budget. You are just carrying out those duties for R&R in two steps:

1. *You approve the plan ahead of time, and*
2. *You build the annual annuity to pay for the plan into budgets and rates as the years go by.*

And, board or council member, putting a level line item cost, the annuity amount, into budgets rather than paying for a new mower this year and a water tower repaint next year, smooths out the budget drastically. That helps to prevent the "uh oh" situation of the water tower repaint sneaking up on you. And, not to be crass or anything, that is especially relevant when that event happens at the same time you are up for re-election.

ReplacementScheduler© has a data entry tab, where detailed replacement items and other criteria are entered, and a tab to calculate the annual annuity. The detailed replacement items table looks much like the table on page 98. You enter data and information into the yellow highlighted cells. This schedule was greatly simplified and cut down compared to a real schedule, just so the table will fit here. A full schedule will have many more items than this.

Notice that several items are shared with other utilities or other city functions. In these cases, you would list the item in this, the water R&R schedule, and enter the water utility's share of each shared cost. You would do the same thing in a separate sewer utility R&R schedule, entering its share of costs.

In the case of cities, towns and other multi-function entities, you can run an R&R schedule for each utility or function, entering data for each separately. Or, you can have a master schedule and link other schedules to it. That makes updating easy when you discover that tricked out dump truck that is shared five ways is going to cost $200,000 instead of $125,000. Open all the schedules, enter updated data and information into the master schedule and the linked schedules will pick up the updated data and recalculate their annuities – one entry and everything gets updated.

This spreadsheet works for anything that needs an R&R schedule. In fact, you could use this spreadsheet for the upkeep of your house or farm, if you wanted to: New roof in 2025, cost $7,000, replacement cycle 15 years; new water heater in 2030, cost $400, replacement cycle 10 years; new boundary fence in 2027, cost $10,000, replacement cycle 20 years; and so on.

The annuity calculation table appears on page 99. The annual costs from the detailed items table transfer to the table as "This Year's Costs in Current Dollars." The table then calculates the annual annuity, called the "Required Annual Deposit to Replacement Account." This is the amount that should go into the utility's budget. Every year, that amount should also go into a reserve fund for R&R. Or, if the dollars go into a general fund, they should at least be accounted for separately.

In the annuity calculation table, there is a column called, "End of Year Balance in Future Dollars." Notice that some of those balances are negative. That is because some of the annual costs exceed the balance in the account during that year, drawing it below zero. In such a case, you need to be aware that, during those years, you will need to borrow from a bank, the utility's general fund, or from elsewhere, to cover those costs. Or, if it makes sense, you may be able to revise the schedule, postponing some replacements a year or more, to smooth out the balances. If you borrow to cover the low-balance years, when the balance goes positive again, you can repay those loans up to at least the balance projected for that year.

To eliminate any negative balances, you could simply fund up the starting balance of this reserve. That is sometimes done by over-borrowing for a CIP project. The thinking of the lender is, "It is protection for us, the lender, to pre-fund the borrower's R&R reserves to a certain level, so they can take care of the assets for which we are lending. We will require them to take care of those assets and make additional deposits to this fund to make sure it happens. That is a much safer course for us than it would be to leave those assets subject to inadequate care and possible failure before we are paid in full."

You might, alternatively, transfer money from the general fund to the R&R fund to prevent negative balances. How you handle this situation is up to you, subject to your own money management policies, state statutes and loan agreements. The key is, once you near the 20th year, the balance will be strong again.

By the way, I built into the spreadsheet, a cell where you can enter a factor to boost the balance you want to carry in this fund. If you want to carry a balance that is two times the average annual cost of R&R, you enter a "2" and the spreadsheet calculates the annuity accordingly. If, for example, you see that seven years into the schedule you will run a negative balance, but by entering that "2" you can make it go away, do it – no borrowing required. Seven years from now, you can lower the balance back down, if you want to. But I'm always inclined to run higher balances rather than lower balances. Besides, the interest earnings on those higher balances will enable you, over the long haul, to assess lower rates than if you ran a bare-bones balance.

Earlier, I made the budget process sound a little simpler than it really will be. In fact, the previously calculated annual annuity is good for the next budget year. The board or council will agree to the plan and the annuity, put it in the budget and you are off, for that year.

After the utility runs most of the way through that year, it's budget drafting time again. The operator should redo the detailed items table. Doing that will refigure the annual annuity. In other words, update the schedule to take into account everything that has or will change. Either remove items that were, in fact, replaced or done during the year and will not need to be done again. Or, if they are repeating items, move them forward in time to the next year they will need to be done. Basically, delete, add or change items as needed to make the schedule relevant for the next budget year. That will calculate a new annual annuity, which needs to go in the next budget.

This process may be easier to do than it is to describe here. Much of this updating can be done by block copying and pasting, so it goes fast. Make any needed refinements and you are ready for the next year.

Thus, whatever the next budget year's schedule needs to look like, you make it so. Go through the budgeting and approval gauntlet again. Tell the approvers what R&R was done, what needs to be done in the next budget year and what those things will cost. They adopt the next year's budget and you're off, again.

You can see that this is a rolling schedule, it changes every year as future items get closer to the current year and need to be done. That also means the annuity amount, a rolling average, will change each year. But, for a schedule with all the important items included and spread out over the years as they likely will occur, the annuity should not change by much. Certainly, the annuity amounts from one year to the next won't be as different as the cost of a new mower one year and the cost of a water tower repaint the next year.

Reality check 1: you will make a costly scheduling error, but it will go in your favor.

In the detailed items table, back in 2018, you thought that the "Water Tower 1 Recoat" project would be needed in 2022. But, you get to 2021, inspect the tower and discover that the paint is in good shape. You can postpone that paint job until 2025. Such switches, where you can reasonably postpone a project to a later year, are easy to admit to and pay for because they reduce costs.

I suggest that if you err in preparing the R&R schedule, err on the side of being too aggressive. Assume things will need to happen sooner, rather than later. Assume they will be more expensive, not less. It is easy to tell the board, "We won't need Water Tower 1 painted until 2025, so we will carry over a bigger balance till then." Just keep it reasonable.

Reality check 2: you will make a costly scheduling error, and it will go against you.

You are going to have some R&R items come along sooner than you thought, more expensive than you thought or items will pop up that you didn't think about at all. To prepare for such things, it is a good idea to build in an annual "miscellaneous items" cost of perhaps ten percent of the annual annuity that the spreadsheet would have otherwise calculated without that item in play. That way, you will have a contingency balance to fall back on to pay for unexpected things. Doing that will also erase many, if not all, of the negative balance years.

Closing

In many utilities, CIP debt and cash-paid costs can consume 25 percent of the annual budget. In new utilities, or those that have done major upgrades in the last ten years or so, that might amount to 75 percent of the utility's annual costs. CIP is a sore subject for ratepayers. They know that when you are talking about millions of dollars, that will have a big rate effect. Give them the facts. It's their utility. They deserve to know.

Bite the bullet and prepare a CIP. Will that plan be spot on? No. But, any plan will be better than no plan. And, you can revise the plan to make it better as you learn more about what is needed and when. Your plan will always be a work in progress, and that is as it should be.

As to R&R costs, I find that, in most utilities with a few decades of age on them, well-planned R&R costs run about 15 percent of annual operating costs. That is not a real big rate setting deal if you build these costs in and keep them current. But, if you fall behind on R&R and then need to catch up, it can really hurt.

Keep up with CIP and R&R and keep your rates up so they easily pay for these things, and your utility will likely stay sustainable and economical to own and operate for decades to come. Ratepayers like that.

Chapter 14 – Thanks, and an Exhortation

This guide is too brief to cover all the issues you will face. Getting agreement on issues, getting great rates, doing service economically and a few other topics – hopefully the guide covered some of the hot button issues for you.

There are lots of issues to consider that drive rates. And, rates drive, or make possible, many things, if they are adequate and fairly structured.

Costs and rates don't move in a straight line. Utilities have their ups and downs, lean years and hopefully fat years. You, the decision-makers, managers and operators of utilities have many balls to juggle to make it all work out right. Getting the rates right makes it possible to juggle without dropping. But then, I'm a rate analyst. To me, everything looks like it can be fixed with rate analysis.

Still, I think you would agree, money makes the utility world go around. And, getting the money from ratepayers fairly sure does help to keep ratepayers on-board with the program.

Without modern utilities, half of us would be toting buckets of water on our heads almost all day. Without amazing wastewater systems, we'd all get sick a lot, and many would die. Without electricity, well, Bill Gates, Mark Zuckerberg, Jeff Bezos and all the other rich folks would be out there with us, toting water on their heads, too.

We utility customers owe a lot to those of you who design, build, operate and maintain, manage and fund the utilities that serve us, usually very well. Usually, you do it almost invisibly. And truthfully, you do it cheaply. Thanks for all that. Many others are thankful, too. They just don't say it. People capable of doing what you do can usually make a lot more money doing something that is not such a bedrock of life, health and business. But you chose to serve.

I will leave you with two constructive suggestions:

1. Stop doing what you do quite so invisibly. Get seen more. We, your customers, need to have an inkling of all that you do for us, so everybody can appreciate it, and
2. Get the right amount of money out of each of us, so you can serve us well and we can keep getting great service sustainably. Yes, we ratepayers are a complaining bunch. But deep down, we know utility service doesn't just happen. It takes you, doing the right things, to make it happen.

And all the rest of you, work on getting and keeping great rates. In my humble opinion, it's the only good way to go.