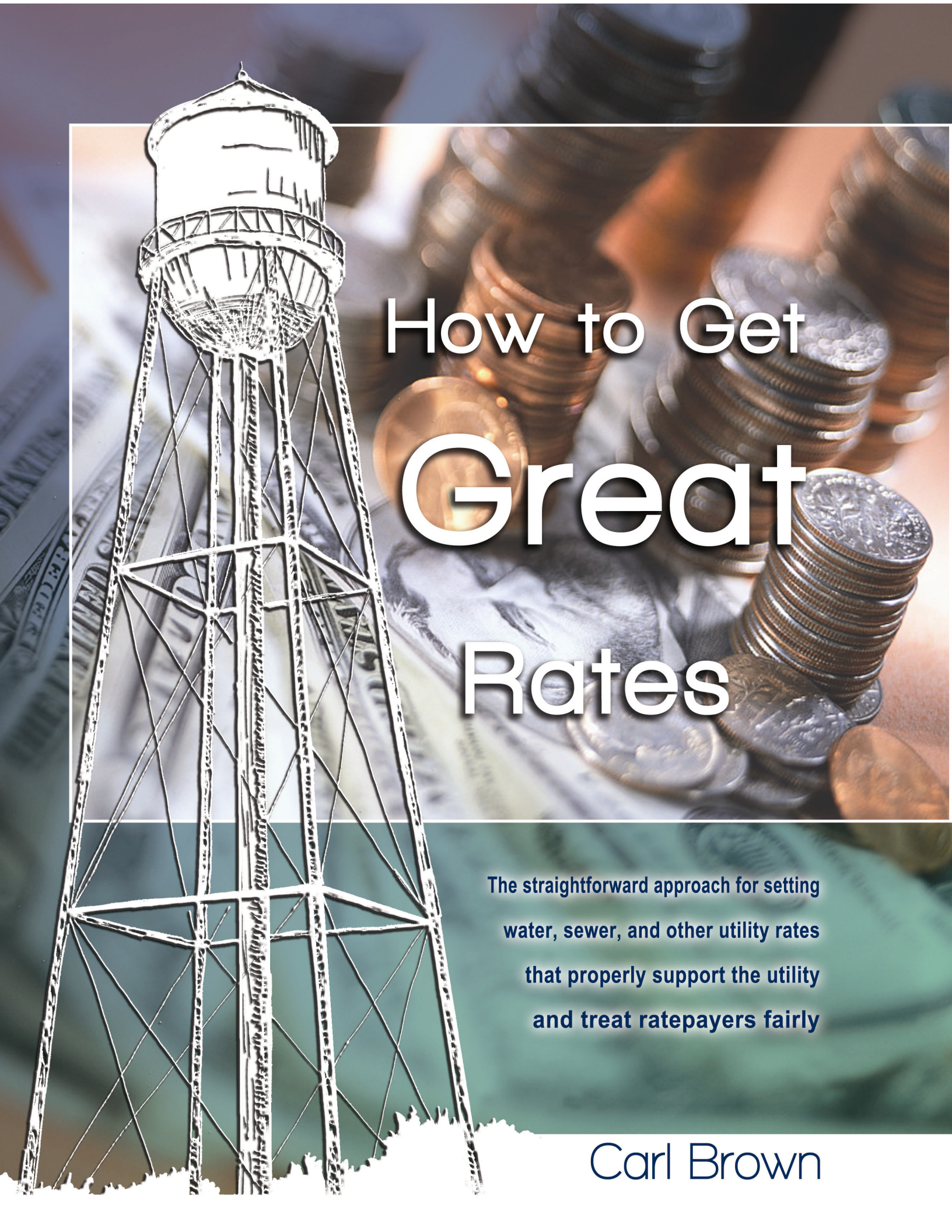


How to Get Great Rates

The straightforward approach for setting water, sewer, and other utility rates that properly support the utility and treat ratepayers fairly

Carl Brown

Prologue for Skeptics

The scene: You are attending the annual meeting of your state's rural water association or league of cities. The keynote speaker is about to take the stage. He is charismatic and though he is new to you he has already attracted a wide following to his message. You, like half of those waiting in the audience have yet to see him in person but you are anxious to learn what many in the audience are buzzing about. Finally, he strides to the podium, turns to the audience and speaks.

> *"The top priority for your utility?... Fixing your rates... They are too low by 40 percent... You can raise rates by 40 percent and your ratepayers will love you for it... It's easy to do, but... You must have a plan or you will go down in flames..."* He pauses for effect, then whispers,

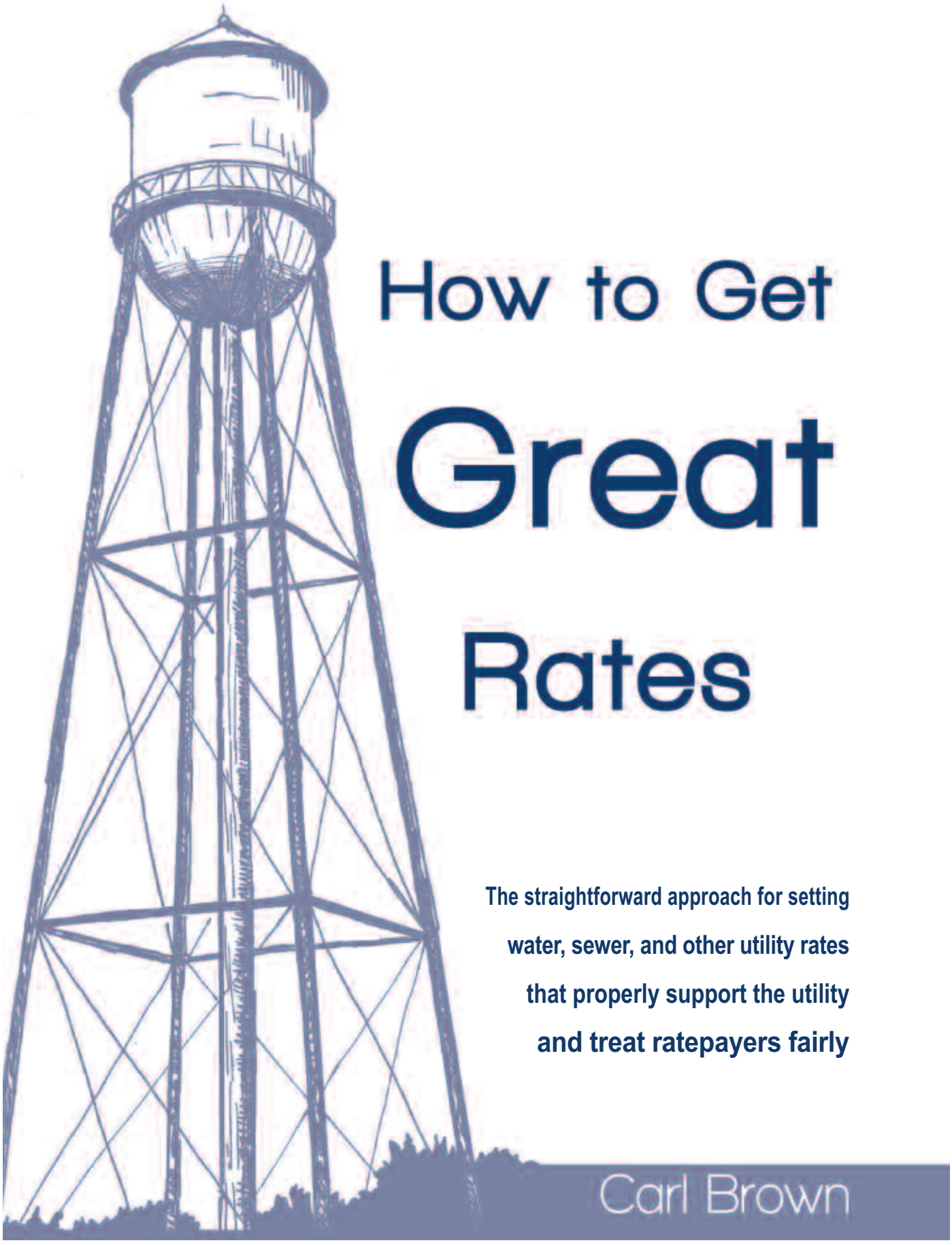
"Do you want the plan?"

Surprise! That guy doesn't have your plan and neither does this one. But, you can build your own plan and execute your new rates from the guidance in this book. No. your ratepayers won't be happy if you raise their rates. But if you do it correctly they will understand and accept the situation. That is the best you can hope for. They will learn from what you present and what they experience that the rate increase won't hurt much after all. They will even forget about it two months later.

The story? Made up.

The question? Real.

Do you want the plan? Then read on.



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electronic form on-line, visit: http://gettinggreatrates.com/.

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How to Read This Guide Quickly and Effectively

Of course it would be most useful if you read the whole book front to back. But, you are busy. Spend two minutes here and you might cut your reading and learning time drastically. Find the description that best fits you and progress through the book as suggested.

This is you	This is what you should do
You are skeptical about the need to base rate setting on a rate analysis.	Read the Introduction and Chapter 1. If that changes your mind about rate setting, return here to find your new description. If your mind is not changed, go about rate setting however you feel is appropriate.
You are motivated to get great rates but you don't want to learn how to analyze rates yourself.	Read Chapter 2 and Chapters 13 through 15. Then, set about hiring your analyst. After you get that underway, read Chapters 8 and 9.
Your system serves fewer than 400 people, your rates have not been adjusted for a long time and you feel you will have to do it all yourself.	Read the entire book, preferably from beginning to end. Then, read several of the referenced books. Consider getting a do-it-yourself rate analysis program or subscribe to the author's program by visiting www.gettinggreatrates.com/.
Your system serves more than 10,000 people and you want to learn as much as you can about rate setting.	Read the entire book, preferably from beginning to end. Read several of the referenced books. Get and use several of the referenced rate calculation tools. Then, analyze and reset your rates very quickly. You are probably losing thousands of dollars each day because your rates need to go up.
You did or got a comprehensive rate analysis a year or two ago. Now it's time to do inflationary increases.	Read Chapters 2, 9 and 10 and then other chapters as they appeal to you.
You are a system operator with little, if any rate setting duties.	Read at least Chapters 11 and 12. Then, give the book to your system's decision-makers and management to read. Without good rates your job as an operator will be very difficult so you want them to be well-informed rate setters.

Acknowledgments

Where would we be without the thousands of local government elected officials who make our cities and service districts run? Oh sure, some like the notoriety they gain by being the mayor of their home town or the water board chairman of their rural area. But almost all work long, unpaid hours, under-appreciated by those they serve. Why do they do it? They want to help us.

Where would we be without the thousands of men and women who have chosen a career in local government work? Sure, they get paid but compared to what we citizens and service consumers receive, we are getting an amazing bargain and we don't even know it. They too put up with our short tempers and disdain and still they press on. They want to help us, too.

We owe our local government elected officials and staff a huge debt of gratitude. Most of you reading this book now are those very people so I address this to you. Thank you for all that you do for us and for putting up with us.

Since 1991 I have been fortunate to work with hundreds of your fellow local government officials and staff and maybe even you. During that time I have trained thousands and learned from many, too. I know what I'm talking about when I say that, almost without exception, you and your colleagues are wonderful to work with. Many of you have contributed the problem examples, solutions and stories that are told in these pages. It is with you in mind that I decided to write this book for utility rate setting. This is one way that I can help you overcome one of your many challenges – setting and keeping great rates.

Please press on with your work and your service to us. Don't let our complaints and bad behavior get you down. I appreciate you and I know many others do, too. We are a majority that stays pretty silent but just know that we are pulling for you just the same.

Finally, and this is heartfelt, where would I personally be without all the great mentoring, advice, training, rich experiences and more that I have enjoyed over the years. So many things have shaped me in this walk of rate setting:

- The love of my wife.
- Experiences with my clients.
- The wonderful advice of my last boss' boss who told me, "Get out and spread your wings." (Maybe it wasn't quite that affirmative but that's my story and I'm sticking to it.)

I owe so many people thanks for all they have done to move me forward. Over the years I have been able to help thousands of cities and service districts. That has improved the lives of hundreds of thousands to maybe a few million people. That is VERY satisfying to me. I thank all of you who helped me and all of you who allowed me to help you.

Foreword

Rate setting drives people crazy!

Utility decision-makers fear adjusting rates. They **fear** even bringing the topic up. Well, except for those candidates for office who decided to run on a platform of **slashing** rates.

Ratepayers hate paying higher rates and they can get vocal about it. Ratepayers love voting elected officials out of office if they think those "politicians" raised their rates unfairly.

Rate setting will never become a recreational pastime. But, it doesn't have to drive anyone crazy, either. With education, a good strategy and proper tools and help, great rates can be yours without all the craziness. If the rate analysis part of rate setting sounds like too much risk and work, and for many it is, just hire a great rate analyst and "buy" great rates. Either way, with great rates you can do everything it takes to provide excellent service to your ratepayers and run a sustainable utility.

Primary audience for this book:

- Rate setting decision-makers
- Board and council members, mayors, chairpersons and presidents
- City and district administration, finance and senior operations staff

Secondary audience:

- Decision-makers in-waiting and lower-tier city and district staff with ambitions of climbing
- Consulting engineers
- Attorneys
- Public accountants
- Agency and association-employed assistance providers

There are other books, manuals and tools for rate setting. Some of these resources are useful to and affordable for small and medium sized systems. I offer this suggestion. Read this book. Then, if you find you want to grow your rate setting prowess even more, buy and use several of the other resources referenced in this book. I also offer this warning. Watch out for the siren call of the many short and simplistic guides and pamphlets on rate setting. They are good for introducing people to the need for good rate setting but those pamphlets are simply too brief to help you responsibly set rates.

The goal of this book is to strike a balance between too techie and long versus too simplistic and short; practical, yet complete enough to be responsible. The book also does a lot of hand-holding and mentoring. Hopefully you will find that aspect helpful and not condescending. The book includes descriptive text so you can learn the basic concepts and principles. It includes examples of the main parts of rate setting. And, it gives you access to useful tools and resources for getting the job done fairly soon, fairly easily, very accurately and always defensibly.

This book will help all systems do rate setting that is sane, quick, cheap and effective.

Ready? Let's go.

Contents

Introduction

Freeboard – The distance between the surface of the water and the lowest point on the top of the boat hull. Significance – Insufficient freeboard will lead to sinking.

Picture this. You are very gently paddling your boat across a mirror-smooth lake. There is no possibility that a rock will be tossed in the water near you, that a snake will pop up next to your paddling hand, that the wind will blow, that the rotten plug in the hull will pop out or that your trusty but frisky canine will jump around in the boat. Guess what? You don't need much freeboard to make it to the other side.

Now picture this. You're a teenaged kid paddling down a fast, cool, scenic river on a hot summer day. You might like to get swamped. If you're a teenaged boy with a cute teenaged girl on-board, getting swamped might be the first item on your agenda.

Great rates are rates that are adequate to fill all the short and longer-term needs of the system and they are structured fairly for the ratepayers, too.

Now picture this. You're the manager of a utility that serves 2,000 customers, including 100 businesses. They all depend on your service every day. Do your customers want their utility boat to get swamped? Not on your life! Do they want to pay what it will take to keep the boat from getting swamped? Not on your life! You have some convincing to do and that is just one of the joys of proper rate setting.

Net revenue and reserves are a utility's "freeboard." Without freeboard every utility will get swamped. It's only a matter of time. How to avoid getting swamped? Build freeboard with great rate setting.

Why should you want great rates? You probably have heard about the funding "gap" for water and sewer systems[1]. This gap is huge and growing rapidly, largely because rates are too low. Get great rates and you will close most if not all of your funding gap. Adopt advanced asset management strategies and you will close the rest of your gap. In fact, great rates and advanced asset management fit together like hand in glove. Asset management is summarized in its own chapter in this book.

Throughout this book you will find links to resources. You can key each link into your browser address box, but that is too much work. The quick solution is to visit www.carlbrownconsulting.com/ and click on the "Resources" link to access the referenced resources and more.

There is another reason you personally want great rates. Eventually the results of poor rates, a failing system and the need to "jack" rates up painfully, will come home to roost. That means that if you are responsible for your system falling into this situation, you may be facing involuntary departure.

Rate setting is done in many ways – some work great, some are disasters. The most technically difficult part of rate setting is the comprehensive rate analysis. That part is commonly botched by do-it-yourselfers or they don't do it at all and just set rates by the seat of their pants. (This strategy is actually a good one in certain circumstances.) Other parts of rate setting are easy. We still manage to botch those sometimes. This book will help you to get great rates without botching anything.

If you represent a small, simple system you can do the whole analysis and rate setting project just using this book. Well, OK, you should get legal advice on ordinance preparation. And, it wouldn't hurt to pick up a simple rate calculation spreadsheet for calculations, too. The final analysis (more accurately called a calculation) for such systems should usually include certain data and results. That will be discussed in this book. All in all, the rate calculation chore and the rate setting process for small systems are not that hard and all of it is illustrated in the book.

[1] The United States EPA performed an analysis of the gap between how U.S. water and sewer systems are being funded and how they should be funded to remain sustainable. The report is available at http://www.epa.gov/owm/gapreport.pdf. The analysis showed a shortfall measured in the hundreds of billions of dollars by 2020 and the gap had grown by some estimates to exceed one trillion dollars in 2008.

About the language in this book

In this book I avoid writing in the third person, passive voice when a more active voice is clearer. A passive voice writer might say, "A system's managers, decision-makers and others involved in rate setting should endeavor to analyze the system's financial needs comprehensively and set rates that will satisfy the needs of the system." I say, "You need to set rates correctly." Shift the gears in your ears for this active voice style.

My primary audience is system managers and decision-makers. Some of you reading this now are not among this group. Just take the decision-maker's point of view as you read along.

Unlike other texts on this topic I use a bit of cynical humor here and there. Other writers copyrighted all the dry text and left me no choice. Actually, they didn't take up ALL the dry text, so I grabbed what was left over. (Hey, this is rate setting, not standup comedy, so don't get your nose out of joint!) Without at least an attempt at some humor, you're not going to make it through a whole book on rate setting.

So read, learn, chuckle a bit and try not to get hacked off when my language is blunt.

The rate calculations are more complex for larger, more complex systems; thus, the term "comprehensive rate analysis." But, the principles for setting rates are the same. If you represent a larger system you will find the guidance here to be very useful. In addition, guidance offered here for getting the right rate analyst and for making sure the analyst performs well will be money in the bank and headaches avoided. Final rate analysis results for these systems will be discussed in this book, as well.

Why is so much space in this book devoted to rate calculations and rate analyses? Simple. Most systems have never comprehensively analyzed their system's financial, operational, capital improvement and rate needs. Why is that? Simple. Back when most of our systems were born, a few decades ago, operations were pretty simple so operating costs were low. Regulatory requirements were simple, meaning cheap to comply with. The federal and some state governments kicked in massive sums of money to pay for capital construction costs. That kept debt costs low. Rates simply didn't need to be very high because the bills were low. When rates are low rate fairness is a non-issue. Besides that, there is the practical matter of not having cheap computers and software programs in the early days for quick crunching of large amounts of data.

Times have changed.

Operating and capital improvement costs are now higher. Grants, if available at all, are lower (although 'bail-outs' and economic stimulus programs may change that temporarily). And computers and software programs are not only available. They are cheap.

Since few systems have truly analyzed their rates, or hired it done, few have ever actually seen a comprehensive rate analysis. Therefore, I show you examples so you will know what your next, or first, analysis needs to include.

I kind of lied in the previous paragraph. Complete rate analysis examples are not in this book, only excerpts. That's because comprehensive rate analyses require more than a few pages of output. Pages in a book are not cheap. So, to view the complete examples you will need to visit some Web sites that will be cited in the book. Actually, because of the nature of analysis output it works better to put that output on a Web site than to put it in a book anyway.

Almost all rates are too low. Almost all are structured unfairly, too. Why is that so commonly true? There are several causes that are detailed later in this book. But, the key causes are the difficulty and complexity of comprehensive rate analysis, and politics. Analyzing rates is hard. Raising rates without the results of a comprehensive analysis to make your proposed rates defensible can be political suicide. It's understandable that our rates are far behind.

This book covers rate setting issues, information and principles that are

Private systems:

Yes, this book will help you, too. You must get your rates approved by your state's public service commission, corporations commission or a similarly named agency. However, the principles of rate setting are the same. Follow the requirements of your regulatory agency but use as many of the strategies in this book as allowed. That will make your rate setting efforts serve you and your customers much better.

common to all systems; large and small, complex and simple, public and private. All systems are subject to the same basic forces. However, how each system decides how to set its rates depends a lot on the system's complexity and size.

Size[2] matters so let's talk about it.

For rate setting purposes, a "medium sized" system is a system that is large enough to comfortably afford the occasional cost of acquiring comprehensive rate analysis services from a rate setting specialist. That is also this system's best alternative to get this task done well and inexpensively. However, this system is large enough to do its own rate calculations and it could do its own comprehensive rate analysis, given the right training, resources and tools. Still, doing comprehensive rate analysis is rarely the best use of such a system's limited staff time and it taxes their expertise so they usually should farm this task out.

What best defines the medium sized system for rate analysis purposes? On the low end such a city or utility district is just large enough to afford a full-time administrator or manager who has credentials for this specialized position. This manager usually possesses a college degree in public administration, accounting, business administration, engineering or a similar field. Such professionals can do comprehensive rate analyses if they have acquired rate analysis resources, tools and training. Add 2,000 to 5,000 or so in population to this system and it will generally also have a finance director. Such a system should be even more capable of doing its own comprehensive rate analysis.

In round numbers a medium sized system generally has between 500 and 5,000 user connections or populations of about 1,500 to 15,000. Therefore, small systems are smaller and large systems are larger.

Small systems are challenged when it comes to user charge analysis. Most can do simple rate calculations or use simple rate calculation spreadsheets but few can comprehensively analyze rates. They also have more limited funds with which to hire a rate specialist. Small systems should hire a rate setting specialist only occasionally. During the in-between years they should do simple rate calculations on their own. All will be illustrated later. Alternatively, they could use a do-it-yourself rate calculation program.

Very small systems, usually serving a population below 400, can afford to hire such a specialist only in special circumstances. That is usually when the system is building an expensive upgrade. At such times a few thousand dollars for a rate specialist is money well invested to make sure the upgrade is appropriate, affordable and rates will be set fairly. During most other years, very small systems should do a simple rate calculation on their own. Every five years or so they should engage a free service provider to do a more detailed rate calculation. Like their bigger small cousins, they could use a do-it-yourself program, too.

Large systems can and usually do analyze their own rates and may be quite competent at it. However, it is relatively cheap for them to hire it done by a specialist so large systems have all options available to them.

Rate Setting Phases:

- Phase 1 – Decide your rate and fee goals – your destination.
- Phase 2 – Develop your own or "buy" a comprehensive rate analysis – a map – that leads to your goals, usually requiring large initial rate adjustments and rate structure changes.
- Phase 3 – Actually make those initial rate adjustments.
- Phase 4 – Make incremental rate adjustments in future years – course corrections that are almost always small increases – to keep net revenues and other financial indicators on track with the projections from the comprehensive rate analysis for as long as possible.

The bottom line is this. However and by whomever you get a user charge analysis done, do it quickly and do it right. This book will teach you how to do both.

[2] The United States EPA defines system size like this. Small refers to systems serving between 500 and 3,300 people. Large is greater than that. Very small systems are less than that. This book is about rate setting. Therefore, it uses different size classes that usually correspond to the capability of systems to do their own rate analyses. Do-it-yourself capability is more related to the staff on-board rather than population served by the system.

Do you think rate analysis is irrelevant to your system because your books balance? Join the club. You're **supposed** to have balanced books, even if you're broke. Balanced books don't mean you are bringing in the right amount of revenue, you are collecting it from the right users or you are maintaining, replacing and upgrading your equipment on a sustainable basis. Balanced books simply show that all current costs are offset by current incomes and reserves. Furthermore, your books say nothing about rate fairness. Ferreting out these issues is a function of comprehensive rate analysis, not balancing the books.

Most utility and local government officials; that group almost certainly includes you, are fiscal conservatives regardless of party affiliation. Almost no one can work close to, and provide services directly to citizens and ratepayers without being aware that they want "government" to keep costs down. That usually comes as a message, spoken or just understood, "Keep the rates down." Keeping the cost of government down is all well and good when government is just giving away money or services. But when government is running a business, and utilities are businesses, they are subject to the same laws of business that private enterprise must heed. The first such law is, "If there isn't enough money to run the business, the business won't run." A subpart to that law is, "If the customer wants the service, they must pay the price."

This book shows what needs to be done to get great rates. Some readers of this book will do all of these things themselves, including the comprehensive rate analysis – we are a nation of do-it-yourselfers. Some readers will hire rate setting specialists – they will outsource the hard parts. There is not a blanket right or wrong answer to the question, "Should we do it ourselves or outsource?" In real life, no one should attempt to do everything themselves or outsource everything. The only issue then is what balance you will strike. That depends on your unique situation and talents. This book will help you find the right balance.

Whatever balance you strike, you need to cover the four basic phases of rate setting. Chapter 2 will describe the four phases of rate setting. Other chapters will expand upon aspects of each phase.

Under later chapter titles you will see references to the four phases. These references will help you to understand how each piece of the rate setting puzzle fits in to make a complete picture.

Anytime rate adjustments are proposed, ratepayers are going to challenge you with the "Is the utility well run?" question. This question is generally code for "Is there waste in the budget?" All tax payers and ratepayers believe there is rampant waste in all segments of government. Several chapters will cover issues that you must handle well if you are to claim that your system is well run and the proposed rates were properly calculated and fair.

When you have finished reading this book you should be well prepared to tackle the rate setting task. Your goal? No, it's not to swamp the boat. You want to build adequate freeboard, run a great utility and prove to your ratepayers that all is well.

These tasks will all come together in this book so grab your paddle and let's run some rapids.

Chapter 1 – Getting into the Right Frame of Mind

(Relates to all phases)

I want you to go to a happy place, or time, or event in your life. Recall how that made you feel. When you prepare to analyze and reset your rates, I want you to go back to that place, or time, or event and let those good feelings surround your rate setting efforts. On the count of three you will wake up and feel relaxed and prepared to do that rate setting project.

One… Two… Three…

Summary

As it is with most things, frame of mind makes all the difference. Most rates are currently way behind. That is almost never because people can't afford to pay more. It is almost always because they have a real bad attitude about paying more. They don't have a good appreciation of the value they are receiving for the meager fees they pay for water and sewer services. That is largely the fault of the service providers but don't beat yourself up, there are plenty of contributing factors. This chapter will help you set your frame of mind, and that of your ratepayer's, so you all will view rate setting in a positive way. That won't make your ratepayers enjoy paying higher rates but at least they will understand the need and go along.

Introduction

Captain of Road Prison 36 to Cool Hand Luke, "You run one time, you got yourself a set of chains. You run twice you got yourself two sets. You ain't gonna need no third set, 'cause you gonna get your mind right."

Rate setting is actually real easy except for a couple of hard parts – figuring out where your rates should be set and figuring out how to convince your ratepayers that's where they should be set. Frame of mind; yours and your ratepayer's, will make or break your rates.

You have probably had some bad rate setting experiences. You may have even sought therapy, or police protection, following one of those events. But seriously, if you will think of rate setting in a positive way, and get your ratepayers to think like that too, it will almost certainly go well for you. No more therapy. No more police.

Philosophy of rate setting

Science is about measuring, describing and listing the truth: 2 + 2 = 4, a body in motion will tend to stay in motion, and the like. Rate calculations, often also called rate studies, include the process of calculating a system's financial position and other calculable criteria under its current rates as well as its financial position under alternative (probably higher and maybe restructured) rates. That process is a science. Some practitioners believe that it is sufficient to simply calculate the needed rates and then say, "By gosh, everybody just needs to 'suck it up' and pay them." Obviously, science itself will not educate and motivate ratepayers to pay higher rates. More is needed.

Philosophy is focused on defining the truth (using science) and determining what is morally right. Different philosophers come up with different definitions of morality. When it comes to rate setting you and others in your community need to function as philosophers. You need to find the truth and also decide what rate levels and structures are morally right for your ratepayers to pay.

In the context of rate setting, morality is called "fairness." You want to find rates that at least most of your ratepayers, were they fully educated about the issues, they would call them "fair." If your analysis (the science) will show that rates need to go down, you really won't have to educate and convince anyone about those rates. Everyone likes to pay less. Unfortunately, that is not likely. Rates need to go up in almost every system right now and they will need to keep going up to pay ever higher costs in the future, too. Rate increases usually require someone to thoroughly educate and convince ratepayers that those rates are in fact needed and fair.

To be convinced most people need to see evidence. In rate setting that evidence primarily is the result of a rate analysis or rate calculation. Unfortunately, the science of rate setting; the math, does not come free and it does not come in one size, flavor or price. How you do it, or how you have someone else do it for you, is up to you. But, as a matter of philosophy you need to decide if, how much and at what cost you will do or get the math done.

I hope this is a revelation to you, that you actually have choices in how to do or have the math done. The right answer for you depends on your needs, staff capabilities and other situation-specific issues. If someone has told you and everybody else in the world, "Use my spreadsheet template or Web site or guide (or other one-size-fits-all tool) and your problems will be solved," don't believe them. There is no one-size-fits-all tool for rate calculations. Furthermore, those tools rarely address the philosophy of rate setting at all. You need to:

1. Decide how much and what kind of evidence you will need to educate and convince your ratepayers,
2. Pick the appropriate tools to do that, and
3. Actually do the educating and convincing.

Luckily, there are rate setting specialists who are expert in all areas of rate setting as well as other service providers so you may not need to do much of this work yourself, if you so choose.

As you consider every issue, task and such you need to keep in mind your philosophical notion of fairness. If a tool, calculation method or something else will help you to achieve greater rate fairness you should use it so long as the cost of doing so will not itself cause the rates to be unfair. If that idea is hazy consider these examples.

Example 1: Your system is very small, serving 50 connections. Nothing special is going on in the system. Your operating costs are just going up because of inflation. You have no reserves. Your ratepayers are very skeptical that rates need to go up. To convince them of the need you could hire a "Big-5" accounting firm to do a comprehensive cost of service rate analysis. While the evidence generated from this analysis would be unassailable, it would cost more than a full year's worth of your operating costs to get it. Adding that expense to your operating costs and then setting rates to pay for it all would itself make the rates unfair in the judgment of most people. Alternatively, you could hire a rate setting specialist for perhaps $5,000 to do your analysis and guide you in setting new rates. That expense would probably still be too high considering the informational and educational value you would get from it. Or, you could subscribe to a do-it-yourself rate calculation Web site for a few hundred dollars. That may be a reasonable option. Or, you could get a free rate calculation template and, again, do it yourself, also a nice option. Or, you could get a free service provider to do a rate calculation for you, another nice option. Or, you could do it yourself from scratch – labor intensive, but also an option. As you see, you are never without options and there are probably several that will overlap in the area of "reasonable" for your situation.

Example 2: Your system is large, serving 5,000 connections. You have lots of capital improvements coming up, lots of growth and lots of reserves. You can choose from all of the small system options in the previous example and more. You can send some of your staff to rate analysis training so they can do analysis very competently in-house. You can hire a software design firm that specializes in rate analysis to design and license to you a program that will largely automate the process of rate analysis. You can hire a rate setting specialist and put them on staff. Be aware, just because your system has plenty of money on hand to pay for any of these services does not mean that the highest level of service will lead to the greatest rate fairness. But, having money certainly makes more options available.

Throughout this book you will read about the various facets of rate setting. Some are strictly mechanical – the science, the math. Others have more to do with the practicalities of getting proposed rates through the ratepayer gauntlet. While I give lots of advice based upon many years of rate setting experience, and you would do well to strongly consider this advice, it is still just advice. To set rates well you will need to develop a rate setting philosophy that will serve as your guiding light through the entire process. This book will point out some of these issues but you need to fill in the blanks based on your situation.

Do not under-estimate the power of the "little old lady, widowed, retired, living alone on Social Security." Headlines about her hardships can make how you plan to adjust rates look like cruel and unusual punishment.

Do not over-estimate the threats of the "captains of industry" when they say your proposed rates will kill their business. If such a small budget item will actually do that, they're headed down the tubes anyway.

Psychology of rate setting

Now that I have turned you into a rate setting philosopher I want to give you a double major in rate setting psychology, too.

There are two kinds of people: Those who base their decisions on logic and those who base their decisions on emotions. To be fair, none of us is set 100 percent in either camp all the time. We float. But, we tend to feel more comfortable using one decision-making strategy or the other. No doubt you know people from both camps and you should also have a good idea which camp you prefer.

Utilities can be thought of in many respects as "people." Utilities make decisions, just like the rest of us. However, because utilities cannot escape the effects of the real world very well or for very long, they tend to make decisions more logically than the rest of us. Keep this in mind as you read the following descriptions of people and their states of mind.

Truths concerning utilities

There is a set of principles and truths that frame utility rate setting. All are rooted in logic. They can be described like this:

1. Water, sewer and all other utilities are businesses, regardless of who owns them. Businesses must cash flow properly if they wish to survive, much less thrive. Consider the first law of business: "If there is not enough money to run the business, the business won't run."

2. A utility has a responsibility to its customers to nearly guarantee its long-term prosperity for their benefit. Customers demand that the service be there whenever they want to use it. They're pretty inflexible about that.

Thus, a utility must err on the conservative side by maintaining strong reserves that will enable it to weather financial storms. Most reserves should be built with utility (rate) revenues unless the ratepayers and tax payers are aware of and generally approve of doing otherwise.

3. If a service costs the utility money, the utility should recover that cost from those who use that service if that makes good business and community administration sense. For example, generally "growth should pay for growth." Developers should fairly pay for their consumption of utility services during the construction process and for the promise of capacity to serve that they exact from the utility when their construction project is done. Likewise, those users that have the capacity to place high or unusual demands on the utility cause the utility to pay extra for that service capacity. Even if those users never actually draw on that unusual or extra volume capacity, they should pay the utility for the added expense of making it available. Consider this analogy. A company operates both taxi and limousine services. A potential client requests limousine service but only wants to pay a taxi cab fare. Would it be fair to the taxi cab riders if the company met his demand, in effect transferring the extra limousine service costs to the taxi cab fares? Clearly the limousine rider should pay the limousine fare.

Truths 3 and 4 don't always get along.

4. If adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, decision-makers should consider the necessity of the change carefully before making it. Two contrasting examples illustrate this dilemma:

Good customer – One that pays on time and doesn't complain.

Bad customer – One that doesn't and does, respectively

   a. While it may be warranted on a cost-to-serve basis, raising the minimum charge markedly may make it difficult for fixed, low-income customers like the stereotypical "little old lady, widowed, retired, living alone on Social Security" to pay their utility bill. (There is no slight intended to anyone who could be described by one of those adjectives.) That may cause more of them to pay late or not pay at all. That may trigger your attorney, at high expense, to write threatening letters to those customers. Eventually you may even shut off their service. Thus, in the attempt to generate more net revenue by raising rates and enforcing them, net revenues may actually go down. Certainly, your local newspaper will jump all over you for "beating up" some disadvantaged citizens over a piddling amount of money. You don't want any of that.

   b. On the other hand, while in fact it is uncommon for water and sewer rates to significantly figure into a major employer's decision to move to or remain in a particular community, it can happen. Thus, it is possible that, by raising the minimum charge to all users and lowering their unit charges, thus lowering the total bill to a large employer, a system can help that employer to create or retain jobs in a community. Those jobs may be filled by people who would otherwise not be able to pay their water and sewer bills or would have to move out of the community to seek work elsewhere. Therefore, the system would retain more ratepayers and those ratepayers would have income with which to pay their bills. The community would also retain more taxable property value (that's where the real money is) and all the other economic activity associated with it. This is the economic development school of thought for rate setting. Heed this caution before pursuing this course. If the financial capability of a business is so tenuous that a miniscule reduction in its net revenue (increased water or sewer rates) is the difference between surviving and collapsing, look for the collapse to happen soon anyway. As an investor in economic development, the community should be looking for businesses that don't depend on bargain-basement utility rates for survival.

In other words, you owe it to your ratepayers to run a competent, strong, logical and fair utility that is always ready and able to serve them. It takes money – their money – to make that happen. If they are to (relatively) gladly give you that money, you must prove to them that the utility actually does and will continue to serve them well and that the rates are warranted and fair. You can't do that by just saying it. You certainly can't do that by just passing an ordinance or resolution that declares rates with the force of law. You must show them the proof and you must show them you care. Put simply, to get the desired outcome – higher rates – you must show emotional ratepayers that you are managing the utility logically, but that you also empathize with them.

These truths include the ideas of running a sound business, treating ratepayers fairly and looking toward the future when setting rates. Ratepayers; however, are more focused on their immediate issues of concern, many of which are emotionally based.

Truths concerning ratepayers

Just as there are truths about utilities, there are some nearly universal truths about ratepayers, too:

1. Ratepayers want their service.
2. Ratepayers want their service cheap.
3. Almost 100 percent of your ratepayers don't want to think about you or the utility at all, ever.
4. A persistent, tiny minority of your ratepayers want to think about you all the time, and not in a good way, regardless of what you say or do.

Affordability Index – the monthly rate of a user divided by the monthly income of that user.

Little old lady with a rate of $25/month and income of $1,000/month:

Affordability Index = 2.5%

XYZ Corp with a rate of $500/month and income of $100,000 per month:

Affordability Index = 0.5%

Which user will be hurt most by a $10/month minimum charge increase?

Ratepayers, at least many of those who would give you "trouble," make many decisions based upon emotion. Thus, to keep emotions in check and get the outcome the utility desires – higher rates – utility staff and decision-makers must deal with the above issues as follows:

1. Keep the service coming. Stay off their loss of service radar screen.
2. Reassure your ratepayers that rates are and will remain cheap, or at least affordable, if that is true. It almost always is. It may be counter-intuitive but to address the rates issue you actually want to stay ON their rates radar screen. You simply can't keep rates the same forever so showing up on that screen is inevitable. Your goal needs to be to improve your image on the rates radar screen. To do that you can't just talk about rates when it's time to raise them big-time. You need to talk about rates and finances frequently, even when rates are not going up and the finances are in great shape. You should raise and adjust rates frequently keeping your finances in great shape. Frequent increases keep the increases small. That makes your image on the radar screen small. That's important because…
3. Unless something is going wrong; which in your customers' world is their service gets cut off or you jack up their rates big-time, your ratepayers will never think about you. They have lives that keep them plenty busy. Therefore, you want to stay off their service radar screen. You want to stay on their rates radar screen with a small, relatively pleasant image. Thus, they won't think of you unless you are attacked by "CAVE" people…
4. CAVE people, and a few allies they pick up along the way can harm you little if at all, directly. However, if they can drive a wedge between you and all the cool-headed ratepayers, the ones that don't ever want to think about you, they can play havoc. (In reality, CAVE people serve a valuable function. They keep all of us honest.)

Citizens Against Virtually Everything

Stereotypically, utilities are logical and ratepayers are more emotional. Neither understands the other very well. Logically, it is in the best interest of ratepayers to have some understanding of the utility that serves them. Unfortunately, their emotional minds don't motivate them to do that. Thus, as a utility decision-maker, the burden is on you to bring your ratepayers along. You must exercise logic in your decision-making and service execution. But you must also think on an emotional plane to be able to connect with your ratepayers and get their approval of what the utility, logically, needs to do.

There is a related hazard you need to watch for. Someday a board or council candidate will run on the emotional platform of cutting rates but keeping service levels where they are, even though that candidate did no analysis to determine if that can be done or not. Emotional voters like such emotional candidates. If the utility does not have on-hand documents that prove where the rates need to be set, that candidate could be elected to the board or council and become an inside CAVE person, wreaking havoc. The comprehensive rate analysis is the proof you need to debunk such emotional claims.

None of the previous principles and truths are one-time events or problems that you can fix and then forget. They go on and on. You need to understand and heed these truths all the time. If you have not been doing this well in the past, your rates are probably too low and need to be jacked up. That will make you show up on your ratepayer's radar screens in a bad way and there is no getting around it. The CAVE people will try to take advantage of this "bad press." You must counter their attack, courteously and professionally. Do it using the following technique.

There is a notion called "systematic development of informed consent" http://ipmp- bleiker.com/sdicinfo.htm that is aimed largely at preventing people from opposing you and working against you. To be successful you can't have many people working against you.

Systematic development of informed consent is not about making friends. It's about not making enemies.

To prevent the CAVE people from winning cool-heads to their side to oppose you, you must answer an important question even before it is asked. That question is, "Were the proposed rates cooked up to serve some under-handed purpose?" Your answer must be this:

> *The rate analysis and rate setting processes were two distinct parts of the rate setting puzzle. They were completed by different people. The rate analyst did the "math." We, your elected officials, did the rate setting based on the analysis results.*

The first part of the puzzle, the rate analysis (Phase 2), is the math and science part. While your analyst should be empathetic about the effects adjusted rates will have on the ratepayers, that empathy should only guide them to propose rate adjustment alternatives that will be doable. The analyst's charge is, or should be, to develop utility rates that are adequate and fair. If they can also be cheap, that's a nice side bonus but it should never be the analyst's goal. The analyst's methods must be perceived as unassailable. If the analysis is "tainted" by politics or anything else, your opposition will use it as a weapon against you.

The second part of the puzzle is discussion of the analysis, discussion of how to implement new rates and actual adoption of a new rate ordinance or resolution to effectuate the new rates (Phase 3). This is the political part. This is the part where the rubber meets the road, where the rates will either be made adequate and fair or they won't. This is also the part where your opposition may legitimately question you, debate with you and otherwise try to win converts to their way of thinking. Don't worry about the impending debate. Because you did or got an unassailable analysis, you can substantiate the system's financial need. Solve the fairness issue, hopefully in accord with the rate setting goals you set in Phase 1 and you're on your way home.

As you are looking for your way home, consider this very common dilemma. Should the mayor or board chairman do the rate analysis or be intimately involved? Almost never! Were they to do the analysis and also be a key player in the political

An inconvenient truth about decision-makers:

Board and council members are people. They have feelings. They listen to other people, like ratepayers and voters, who have feelings. Their head tells them to believe the comprehensive rate analysis and raise rates. Their gut tells them to side with the people and keep rates low.

Boards and councils, when faced with the need for a large rate increase and rate restructuring, tend to hesitate, even procrastinate. As many see it, they are forced to take sides with either the utility or the ratepayers. This is a wrenching experience for many. Raising rates makes them feel like they are double-crossing their ratepayers, tax payers and friends.

Don't be surprised if your analysis goes smoothly and quickly, the results clearly show that big changes must be made, but your decision-makers want to go slow with adjustments. Their feelings are being conflicted and that's not entirely a bad thing. But, they do need to get on with it. Postponing the inevitable only makes it worse.

process of adjusting rates, there is no getting around at least the appearance that they "calculated the answer they wanted." It is far better to have a staff person like the manager or the finance director, or better yet, an outside analyst, do the analysis to avoid potential conflicts.

If the mayor of a small town or the board chairman of a small district is a rate analysis whiz, sure, they can do the analysis. But if they do, they should excuse themselves from the rate ordinance or resolution process. The Cliff's Notes version is this: The same person should not do Phase 2, the analysis and Phase 3, the rate setting. There will be much more on this later.

One truth about all people

The first big hurdle you must clear is getting your rates up high enough to pay all of your costs plus start building responsible reserves. That is a big hurdle and that is the one most systems are facing right now.

As soon as you get over the first big hurdle, the second will come up real fast. That is, someone is going to notice that you are building reserves and they are going to try to raid them. The raiders may be long-standing elected officials, newly elected officials, those running for office or ratepayers themselves. If the raider is you, this may be your thinking:

> *"Government is a not-for-profit function. Government owns utilities. Because utilities are owned by government, utilities ARE government. When a utility builds reserves, it is making a profit. Government is not supposed to do that. Thus, we need to roll back rates and wring those profits out of the utility."*

Your correct thinking is that government is not supposed to make a profit. Your erroneous thinking is that utilities ARE government. They are not. They are businesses. Some just happen to be owned by government.

To ward off the reserve raiders you must successfully make this argument. A utility is first a business. Business costs go up and down, mostly up. Incomes go up and down. If the utility is to weather these highs and lows and not have service upsets, the utility must maintain responsible reserves.

When the would-be reserve raiders show up consider using this analogy to explain why they should let you build and keep the reserves:

> *General Mills makes Cheerios™ . When General Mills puts a box of Cheerios™ on a store shelf, does that company spend its last dime to do so? No. It has reserves so just in case that box doesn't sell as soon as expected, or the box goes out of date and must be thrown away, the company won't go bankrupt. General Mills is not betting its long-term survival on selling that box of Cheerios™ . General Mills is looking way down the road.*
>
> *That outlook is even more important for our (water, sewer, other) utility. Thus, we need responsible reserves to insure our survival and un-interrupted service to you, our customers. We analyzed our rates (a year ago, three years ago) to determine what a responsible reserve level is. Keep a close eye on us to make sure we're managing the system and its finances properly. But, you need to let us build those reserves.*

In Chapter 8 you will find more about how to ward off the raiders.

If you set your rates to break even, you will go broke.

Reality check

If you have been deferring equipment replacement and maintenance and putting off needed capital improvements but you are still only breaking even with no reserves, your rates will need to go up, probably a lot.

Don't set your rates to break even. It's just not going to happen.

Systems now in this situation could set their rates five to seven percent or so higher for five years until they built a comfortable reserve. After that their rates could be the same or slightly lower than they otherwise would have been and they still would have reserves to fall back on. On a break even, no reserves basis, a residential bill might need to be $30.00/month. To build the desired reserve level that bill may need to be about $2.10 higher for five years.

This $2.10, about the cost of a fast-food cheeseburger or one and a half sodas per month, is a payment to a rainy day fund. It's cheap insurance, a guarantee that your ratepayers' utility service will stay sound and fairly uninterrupted. If you never have to use the fund, it earns interest, lowering the future bills your ratepayers need to pay. It's a "win" all the way around. If you will correctly and convincingly demonstrate why this insurance and savings makes sense and that you will manage it well, your ratepayers will adopt a positive frame of mind and will accept paying this temporary premium.

Unfortunately, the low cost of building reserves may be the rosy part of your picture. You may have been cutting corners on other, more substantial things that, over the long-haul you can't cut[3]. Your rate increase is going to be bigger, probably a lot bigger[4]. If that is your situation, your message to the ratepayers needs to be something like this:

> *We have enjoyed unsustainably low rates for a long time by leaving equipment replacements and system upgrades for the future. The future has arrived so it's time to catch up.*

By the way, before you give this message to your ratepayers you might want to notify your therapist and the police department. It never hurts to have back up.

Seriously, whoever your analyst is, they should do this explaining for you and that explanation needs to include a description of the effects of the rate increase on ratepayers. Rate increases might be large relative to current rates. However, the final rates are rarely large when compared to other services or when they are considered in light of the value of getting safe, dependable service right from the comfort of your own home.

Conclusion

To set rates well you need to get into the right frame of mind and put your ratepayers into the right frame of mind, too. Develop a workable rate setting philosophy and stick to it. Remember, and use the four facts about utility businesses and the four facts about ratepayers. As much as possible you want to stay off your ratepayers' service radar screen and on their rates radar screen, but with a small, pleasant image. When it comes time to propose a large rate increase, make your business case for the new rates. You need to make that case to your ratepayers convincingly, but empathetically. Almost everyone will initially be shocked. But your ratepayers will weigh your message and find it to be sound. They will also understand that the rate increase will affect them little in real terms (though that may not be the case for some.) Then, they will pay the rate, stop thinking about you and go on with their busy lives.

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[3] If an existing system is being well managed, there is little it can do to reduce most of its operating costs over the long-term. The floor for most costs is essentially locked in once the system has been built. Operating costs commonly include these items in these cost ranges (they are not cumulative for any one system):
- Twenty-five to 75 percent for debt service for a system that is fairly new and built largely with debt,
- Twenty-five percent or more for debt service for major upgrades,
- Ten to 15 percent for equipment replacement,
- Perhaps 50 percent for personnel expense.

[4] In the author's experience, most rate adjustments following the first comprehensive rate analysis include an average rate increase in the range of 20 to 45 percent. However, frequently the rate structure is so far from fair that some users' rates will go down modestly while other's rates need to go up even more to achieve the average increase.

Chapter 2 – Rate Setting Phases

Summary

Rate setting can be broken down into four phases:

Phase 1 – Decide your rate and fee goals – your destination.

Phase 2 – Develop a comprehensive rate analysis – your road map – that leads to your goals, usually requiring large initial rate adjustments and rate structure changes.

Phase 3 – Adjust rates and fees using the analysis to inform your decisions.

Phase 4 – Make incremental rate adjustments in future years – course corrections that are almost always increases – to keep net revenues and other financial indicators on track with the projections from the comprehensive rate analysis.

Phase 1 – Set goals

Phase 2 – Analyze rates

Phase 3 – Adjust rates, big

Phase 4 – Adjust again, small

Introduction

One of the difficulties people have with setting rates well is that they have too narrow a view of rate setting. It's not just the analysis, as many rate setting service providers think. It's not just the spreadsheet or rate calculating tool, as many programmers think. It's not just passing a new rate ordinance or resolution, as some council and board members think. Good rate setting encompasses a continuum of tasks, processes, interactions and even states of mind.

While rate setting can't conveniently be reduced to a checklist or a one size fits all template, it still needs to happen in a controlled, phased fashion. To that end, consider the following four phases that will be introduced here and expanded upon in later chapters.

Phase 1 – Set goals

Set goals. What does that mean? Does it mean that you should decide ahead of time the rate structure and level you want before doing the analysis? No. The rate analysis itself will suggest these things. Setting goals means you should decide how adequately you want the rates to support the utility. It also means you should have a sense of rate structure fairness for those you serve. The bottom line is this: Some, maybe many ratepayers will think the rates you propose for them are too high. You need to be able to point back at your rate goals to show ratepayers how your proposed rates satisfy those goals.

If your goal is to have the cheapest rates in the county you don't need to worry about the other phases. Just call around, find out what other systems are charging, and then charge less. Your ratepayers won't oppose you because they love cheap rates. There is no need to read the rest of this book because you are done. Well, until the system fails, anyway.

Is that a snide comment or what? Hey, lighten up and laugh a little bit. You know there are many cities and systems that take pride in having the cheapest rates they know of. Others won't come right out and say it but they want the cheapest rates, too. It's easy to slip into a race to the bottom. If cheap rates are your first priority just realize that other goals will be hard to achieve.

Without goals, the definition of success, you can't succeed.

Consider this. Before analyzing and adjusting rates and fees, your board or council should adopt a resolution something like this.

> *The (council/board) of _____ resolves to set and maintain utility rates and fees that are fairly structured for the ratepayers and high enough to adequately fund the system on a sustainable basis.*

By adopting such a goal statement you will have something to point to if someone tries to highjack the rate setting process or balk at paying rates that will adequately fund the utility. And, here's a helpful hint: You can't wait until you hit a rate increase logjam and then try to adopt the goal statement above. Those who don't want their rates to go up will simply see this as an "end around" play. You must adopt your goal statement BEFORE setting out to analyze and adjust rates.

Phase 2 – Analyze rates

If you don't analyze your rates before setting them, to mix metaphors, you're just "playing politics" and "shooting in the dark."

A comprehensive rate analysis will (assuming this is your goal) lead to rates that:

- Are adequate to cover all current costs and those that can be predicted for about 10 years;
- Will enable the system to build reserves as a hedge against future known, predictable and some unpredictable costs and revenue shortfalls; and
- Will be fair and equitable to ratepayers.

Were money no object you could hire a comprehensive rate analysis done every six months or so and your rates would be great all the time. However, money IS the object here so it is proper that you only do or get a comprehensive rate analysis when needed.

You need a (Phase 2) comprehensive rate analysis if:

- It has been three to five years since the last one,
- A big event, like a large capital improvement, is coming,
- You don't know that your current rate structure and fees are fair to your ratepayers, or
- Financial indicators like the operating and coverage ratios, and certain reserves have dropped below safe levels. These will be defined later.

Phase 3 – Adjust rates

This is, of course, a political process and politics has a pretty bad reputation. However, you can gain ratepayer acceptance of your rate adjustment proposal by doing the following. Do or get a comprehensive analysis. Make it clear to all that the analysis was sound and not influenced by politics. Make it clear that the elected officials actually used the results of the analysis to form their rate adjustment proposal.

Alright elected officials, put on your flack jackets or you might get hit with some friendly fire in the next paragraphs. I don't intend this to be mean spirited but it needs to be said.

The initial rate adjustment; the BIG increase and restructuring, will make or break your system fast.

A few elected officials were voted into office because they promised lower rates. Maybe they even promised lower rates for certain users. Maybe there was no actual promise spoken but that official, maybe you, just happen to line up well with a certain constituency – big business or residential customers, to

Without future incremental increases you will slide right back into the hole that the BIG increase pulled you out of. Once you get up to speed, don't stop.

Occasionally, rate setting is a sprint (Phase 2) but most of the time it is a marathon (Phase 4). It takes big muscles to sprint. Not many of us have those. It takes perseverance to finish marathons. We all can persevere.

name two. You want to lower, or at least not raise your favored constituent's rates. If this is you, I have a recommendation I want you to take seriously.

Do not analyze before raising rates to those other people.

Do the rate setting only as a political exercise.

That may sound harsh. And, it may seem like strange advice coming from a rate analyst. However, in this situation an analysis probably will not help you. It may even hurt your cause.

Wow! It's like I took this sleeping pill. And I had been drinking. And my girlfriend left me. And, then my wife. The last thing I remember thinking about was this politician who would do anything to get elected… Then I woke up and I was holding this smoking gun!

Obviously I didn't hit you with any shots, at least not fatally, because you're still here. Let's laugh it off and move on.

Phase 4 – Adjust rates again and again, incrementally

Incremental rate increases are those done during years in-between comprehensive rate analyses. Generally these are simple inflationary increases made to allow revenues to keep track with costs as they rise with inflation. Like regular brushing and flossing, these increases are best done on a do-it-yourself basis. These increases do not take rate structure fairness into account. However, since they are generally small increases done following soon after a rate restructuring, rates will remain fair enough for several years to come.

A key to successful rate resetting is this: for every year that you experience inflation in costs to run the system, rates should be increased. Interpretation:
Raise your rates every year, incrementally.

How to do this? Easy, really. You are already doing budgeting every year. You just need to enhance that process a bit by comparing your expected costs and revenues with those predicted in your last comprehensive rate analysis. Add to that some simple calculations of a few financial indicators. Then you will raise rates and fees to make your balances and indicators match up fairly close. All of this will be explained later in the book.

When costs or revenues diverge significantly from those in the comprehensive rate analysis, and they eventually will, it is time for a new comprehensive analysis. In other words, return to Phase 2 when it's time to go again, or even Phase 1 if your goals need rethinking. It is likely you will need to restart the phases by year five. With time things change so you need to get back on track with a new Phase 2 analysis.

And, there you have it, rate setting by phases.

Conclusion

The phases of rate setting can be summarized with this analogy. You want to travel to a destination (Phase 1). To find your way there you need a map (Phase 2). To get there you need to actually make the trip (Phase 3). To stay there you must pay the required costs, even as they rise (Phase 4).

Chapter 3 – The Timeline for Major Rate Adjustments

Summary

Rate setting eats up time. It will take someone significant time to actually do the rate analysis work. Add to that the time that lapses while someone is waiting on someone else to supply some data or give an approval. Then add more time while someone procrastinates. Add still more time waiting for the next meeting date to arrive. On and on; you can see why rate adjustment is measured in months. You can cut this time down dramatically.

Introduction

Get ready to spend some time with rate setting. How much time? That depends on:

- The bureaucracy built into your system,
- The speed of your rate analyst,
- The quality of your data,
- The speed and unity of your council or board,
- The severity of your rate increases and rate structure adjustments, and
- The anger or apathy level of your ratepayers, which is a function linked almost solely to how big the rate increase will be.

It will take a board or council a few months, maybe way too many months to recognize that the rates need examination. Then they need to actually decide to examine the rates and decide whether an insider or outsider should do that examination. If they stay inside it will take that person a few days to a few months to study the situation and make a recommendation. If they go outside it will take time to write a request for proposals and qualifications (RFPQ[5]) and get a service provider. Then the service provider has to analyze the rates and report on their findings and recommendations. Finally, if all goes well, the board or council has to actually adjust rates. Your rate setting timeline may look Figure 1.

Time From Recognition of Need to Rate Adjustments Completed Using Outside Help

Recognition of Need	Decision to get Outside Help	RFPQ Written and Sent	Select Service Provider	Analysis Production and Presentation	Rate Adoption
6 to 12 months	2 months	2 months	2 months	4 months	4 months

Figure 1

Your rate adjustment process can take 18 months from start to finish. That's too long!

Why does it commonly take so long for systems to complete the rate adjustment process?

- Procrastination is a big culprit. And, who can blame councils and boards. They know that adjusting rates as they have in the past is just going to get them yelled at again in the best case scenario.

[5] RFPQ, meaning request for proposals and qualifications, is a term that combines the more common terms "RFP" and "RFQ." These request documents are a part of the service acquisition process which will be discussed in detail in a later chapter.

- Not knowing how to carry out the process figures into most system's delays. Most don't raise rates but once every three to five or more years so few of the current council or board members were actually serving when this was last done. They have to learn or relearn it every time and they may not have been good at it the last time around.
- Most boards and councils use a very process oriented approach to acquire a rate analyst. They use long and complex requests for proposals and qualifications and they build in long response times. This takes extra time and it requires excessive work on the part of the board and the service providers who respond. All of this adds up to more cost and wasted time for all.

True Story: I recently received a request for proposals (RFP) from a 1,000 connection system that was 29 pages long! It should have been two pages at most.

I called the contact person and politely told him that it would take more time, and therefore cost more just to respond to his RFP than it would to do the analysis itself. That RFP was overwhelming and worrisome, so I politely declined to respond to it.

These actions and inactions create lots of problems for you. Don't put up with that.

Start with this premise. Your rates need to be raised every year that inflation makes it more expensive to own and operate the system. Except under national emergency conditions, that is every year. Thus, your "recognition of need" time should go away, period. So stop asking yourself every year, "Do we need a rate increase or can we get by for another year as is?" You have the need. Plan to raise your rates every year, at least a little bit.

Your first question each year needs to be, "Should we do a simple inflationary increase this coming year or do we need a more complex rate adjustment?"

If a simple inflationary increase will keep the system on track, and most years it will, do an inflationary increase (Phase 4) as described later in this book. That will take perhaps days to calculate and a few months to execute. Do this on a scheduled basis and it won't actually add any time to getting your rates adjusted on a proper schedule.

If you need a large or complex adjustment, especially if you need to make rates fairer, you need a comprehensive analysis (Phase 2). Do it yourself if you are willing, able and want to devote a large block of time to the task. Otherwise, gear up to get a rate setting specialist as described in Chapter 14. That process from start to rate adjustment finish should take two to six months. Again, if you plan for it and schedule this task in, it won't add any time to getting your rates adjusted.

Conclusion

As we do it now, rate adjustment takes too long, we don't do it often enough, it costs too much and we often have the wrong people doing rate analyses. In most cases, we set our rates lower than they should be. When it takes too long to adjust rates, your system also loses money because a rate increase not executed is rate revenue lost. Plan for some kind of rate increase every year and your lag time will go away.

With frame of mind and timelines laid out as a foundation, it's now time to learn how to actually analyze and adjust rates so they can be great rates.

Chapter 4 – Calculating Minimum Charges

(Mainly relates to Phase 2 rate analyses)

Summary

The basic idea of minimum charges is to enable the system to recover fixed costs from all users on an even basis. The minimum charge is a great cash-flow smoothing technique. It also falls heavily on low volume users who frequently have the most difficulty paying their bills. If you want rates that are fair to your ratepayers and that are easy to collect, you must get the minimum charge set correctly.

Minimum charges smooth cash flow. Rates that are a minimum charge only; flat rates, yield the smoothest cash flow of all. They are the least fair of all, too.

Introduction

Minimum charges have been set in many ways. Your situation is different from that of all other systems so how you set your rates must be tailored to your needs. What follows is not a rate setting cookbook but it will give you ideas for setting your minimum charges advantageously.

The minimum charge concept applies to all utilities – electric, gas, telephone, storm water, trash service and so forth. Some services, especially storm water and trash, commonly go so far as to pay for their costs with rates that are the same for all users – a minimum charge only.

The part of a water or sewer bill that is commonly called the minimum charge, flat fee or base charge ranges from zero dollars each billing cycle (no minimum charge) to 100 percent of the bill (a flat fee to all users). These two rate structures are at the extremes and they are rare.

Most systems have a minimum charge plus usage charges. The minimum charge may be the same for all users or it may be different for different user classes or even individual users. That difference might be based on meter or connection size, potential demand each customer can place on the system to provide flow, or other factors that are measured or estimated. Or, the difference might just be arbitrary. The minimum charge may include a usage allow or it may include no "give-away" volume at all.

Minimum charges are almost guaranteed income, like getting a salary instead of an hourly wage.

Minimum charge considerations

In the ideal world all users would reimburse the utility, through a minimum charge, for all of the fixed costs they cause the utility to incur. Keep that ideal in mind as you set your rates but do not fixate on it. It's a good goal but you probably won't be able to fully achieve it.

Minimum charges always do a couple of things well:

1. They establish an essentially guaranteed base revenue stream for the system, thereby making budgeting for the system easier, and
2. They establish a certain base charge that your ratepayers know they need to pay every billing period, making their budgeting more predictable (if not easier), too.

Fixed costs in small systems commonly comprise one-third to one-half of the system's total operating costs. In a very large system perhaps only 10 percent of its costs will be fixed.

If set up correctly, minimum charges also do a couple more things well:

1. They recover fixed operating costs from all ratepayers on a fair basis, and
2. They make potential lenders feel more secure that they will be paid back. Consequently, the borrower may enjoy a lower interest rate.

Generally, the fewer users there are in a system, the higher the minimum charge will need to be. Fixed costs generally don't go down in direct proportion to the number of connections. Economists like to say that small systems lack "economies of scale."

Regardless of size, if a system recently borrowed substantial money for capital improvements, it will likely have a higher minimum charge. That is because the system is paying all or much of those debt payments with minimum charge revenues.

How should your system go about setting its minimum charge? Minimum charges may be set to recover some, all or even more than the total of the fixed costs that all users cause the system to incur. They may also be set to recover potential demand-based costs that certain users cause the system to incur, but we'll consider that later.

Minimum charge calculation[6] strategies and methods

To do the most basic minimum charge calculation, system decision-makers need to know only three things:

1. The costs (generally fixed costs) for a known period of time, probably one fiscal year, to be recovered in the minimum charge,
2. The number of customers connected to the system for that period of time, and
3. The number of bills to be sent out during that period of time.

Thus, if budget projections say the fixed costs for a small system will be $12,000 next year, there will be 100 customers during that year and bills will be sent out monthly, the most simplistically calculated minimum charge would be $10.00 per month. That calculation will look like Figure 2.

$12,000 in fixed costs / 100 customers / 12 months = $10.00 minimum charge

Figure 2

The smallest, simplest systems can get by calculating their minimum charges in this way. (To keep it simple the calculation above disregards the desirability of building and maintaining reserves for working capital, capital improvements, equipment replacement and other needs.) While larger, more complex systems can't do the minimum charge calculation this simply and keep their rates fair to the ratepayers, the principles still apply to them, as well.

All systems, including the smallest, need to consider what a fixed cost is. The following should help.

[6] Minimum and unit charge rate calculations are discussed in this book separately. While a very simple, low dollar system can analyze and set its minimum charges, unit charges and other fees and charges separately, for most systems this does not work. Most system's rates should be analyzed iteratively and comprehensively to arrive at the proper reserve levels and mix of fees to achieve them. That requires modeling with spreadsheet or database programs to insure accuracy and speed while doing "what-if" scenarios.

Fixed costs

Any cost that is the same for all users should be recovered with the minimum charge, most of the time.

Minimum charges should (mostly) be about recovering fixed costs. Generally you should strive to recover an equal share of all fixed costs from each customer. However, it is likely you will need to stray a bit from that course.

What is a fixed cost? It is not a cost that never goes up. Fixed costs do vary through time. "Fixed" refers to what the cost is related to. If a cost is related to the volume of service received, it is a variable cost. If a cost is instead related to the fact that someone is a customer, it is fixed. In reality, many costs are a blend of fixed and variable but let's keep it simple for now.

The easiest illustration of a fixed cost is this. If you print a water or sewer bill for each customer and you put those bills in envelopes, you must affix one first-class stamp to each envelope to mail them to your customers. It makes no difference to the Post Office if one customer was billed $10 and another was billed $10,000. Your fixed cost for postage for each bill is one first class stamp. (Notice I didn't state the amount of the first class stamp because that would imply that the price of a first class stamp is fixed.) Thus, the cost category is fixed while its price may vary over time.

Of course, the envelope and the paper the bill was printed on are also fixed costs. The computer, the billing software program and all the things and actions it took to create and process that bill are fixed costs. Though the amount and cost of staff time and administrative supervision varies from year to year, the function of administration is almost exclusively a fixed cost.

This concept is easy. The actual calculation is usually easy, too. At least it is for small, simple systems. However, this calculation requires some complex assumptions. Growth or loss of customers will come into play for future years. A high rate of growth or decline will quickly run the fixed costs per user down or up, respectively. If a system has high-volume or other special needs users, the fixed costs for such users will be different from the typical residential user. Assumptions you make about how much of which costs are "fixed" versus "variable" will affect your minimum charge dramatically. For now, just concentrate on your typical residential user.

Some costs are real but you may not have considered them. For example, it takes administrative work, such as calculation of each customer's bill, mailing, keeping the books and such, to keep a utility running. These are (mostly) fixed costs and you know about these. However, this work must occur in a physical place like city hall or the district office. Each utility user should rightfully pay for that portion of the cost to own and operate that place used for administering the utility. Likewise, the time the city or district manager, finance director, clerk and other staff spend on utility business should be charged to the utility. Generally, these items are fixed costs and they can affect your minimum charge significantly. They are often overlooked, especially by cities, or they just don't want to bother building them into the utility rates. That may shift these costs to general revenue or other revenue sources for cities, and to unit charges for single-purpose districts. That is not fair. In the end you may want to pay for such costs with other revenue sources. But, you should at least know how big the cost is that you are shifting to those sources.

Equivalent dwelling units (EDUs)

Some systems assess minimum charges based upon equivalent dwelling units (EDUs). The basic idea is this. If a property has the capacity to use the same volume and kinds of service as a typical single-family home, that property should pay one EDU's worth of minimum charges each billing period. If another property has the capacity to use 100 times more service than that home, it should pay a minimum charge that is 100 times higher. Thus, each connection is rated against the service demand capacity of a normal single-family home.

EDU rates are usually calculated in one of the two following ways.

1. Mainly to keep the calculation simple, some systems total up all their fixed costs in a year, including the annualized cost of the infrastructure, divide by the number of EDUs and divide again by the number of bills per

year to arrive at the charge per EDU. While the math is simple this method ends up "double charging" multiple EDU users for some fixed costs that are related to the costs for meter reading, general administration, bill calculation, postage, mailing and the like. You don't read the meter 100 times each billing period for a 100 EDU user so large users don't (quite) cause the system to incur multiples of such costs. Thus, this calculation method is unfair to large users. However, it does reduce the minimum charge bill to low volume users who commonly have the most difficulty paying – recall the "little old lady, widowed, retired, living alone on Social Security." She uses little volume and is strapped to pay even a small utility bill.

2. Some systems deduct the fixed costs that are related to billing and administration before doing the above calculation. Then they add one share of those costs back to the EDU rate for each user to arrive at the EDU minimum charge for each user. This method is fairer to the large users, causes the minimum charge to be higher to the low volume users and it is more complex to calculate.

How big is an EDU and how many EDUs would a system have? Good question. EDUs can be calculated in several ways. Here's one.

Consider a system with 1,000 users, 900 of which are typical single-family homes with an average monthly use of 5,000 gallons; and 100 of which are commercial users with an average monthly use of 100,000 gallons. Fixed costs for the system total $240,000 per year or $20,000 per month. A typical EDU calculation would look like Figure 3:

Simple EDU Calculation

	A Item	C Residential	D Commercial
1	Average Monthly Use	5,000	100,000
2	Number of Users	900	100
3	Total Monthly Use	4,500,000 (1C X 2C)	10,000,000 (1D X 2D)
4	Total Monthly EDUs	900 (3C / 1C)	2,000 (3D /1C)
5	Average # EDUs per User	1 (4C / 2C)	20 (4D / 2D)
6	Charge per EDU[1]	$6.90	$6.90
7	EDU Charge per Average User	$6.90 (6C X 5C)	$137.94 (6D X 5D)

Total Annual Fixed Costs of $240,000 = $20,000 / month

Total Monthly EDUs = 4C + 4D = 2,900

[1]Charge per EDU is $20,000 / 2,900 EDUs = $6.897 or $6.90

Figure 3

The calculation is simpler than it looks. However, it's still a bit complex and the assumptions you must make about which costs to assess to EDUs are definitely complex.

It's usually not worth going to all the expense and trouble of meticulous EDU calculations. Why? For the most part the notion behind EDU billing is rate fairness but the bottom line is about getting the most revenue from those who are most able to pay. Higher volume users tend to be most able to pay, too. Recovering more revenue from high volume users will reduce the minimum charge you must assess to smaller users. This may be fine on an ability to pay basis, but it may not be fair on a cost to serve basis. Use EDUs if they serve you well but be aware that fairness will be difficult to demonstrate without some serious analysis.

Usage allowance

Some systems provide a usage allowance or "give away" volume with the minimum charge. That volume can be either constant for all users or vary depending on user classes. If the true value of the "give away" volume is included in the minimum charge, this can be a useful revenue generating and revenue smoothing tactic, though it will not be fair to those customers using less than the give-away volume.

Including a usage allowance or "give-away" volume will hurt some users and help others. If the cost of the volume given away is included in the minimum charge, that will hurt low volume users by raising their rates. Users on the other side will be helped. If the cost of the volume given away is not included in the minimum charge, the higher volume users will be hurt. Allowing 2,000 to 5,000 gallons of use per month with the minimum charge (common in water systems) may make rates more affordable for the 5,000 gallon per month residential user, the nationally recognized benchmark for affordability. However, if the cost of that volume is included in the minimum charge, it will make rates less affordable for the stereotypical "little old lady, widowed, retired, living alone on Social Security" because she uses far less than 5,000 gallons per month. If you give away any volume, strive to not give away more than 2,000 gallons per month so bills for low income people won't get excessive.

Minimum charges that include a give-away volume but not the costs of the volume given away are a cousin to the EDU method. Rather than taking more from the larger users by charging multiple minimum charges to them, the give-away volume method gives more to the small users for "free." This is an inexact way of helping needy users but it is common.

The forgoing are some of the major minimum charge strategies and considerations.

A minimum charge that includes fixed costs, potential demand-based costs or EDUs and perhaps other components can be calculated one component at a time and then added together for a total minimum charge for each class of user. The concept is simple. The calculation is not.

If your system is small and financially simple you may be able to do your rate calculations by hand or by using a simple, homemade spreadsheet. If you want more accuracy and certainty than that, or you just don't want to work and think that hard, just use my spreadsheet called GettingGreatRatesLater© by visiting the Tool Shed at http://carlbrownconsulting.com.

If your system is larger and financially more complex, you need more than a basic tool for rate calculations. You need help. The last several chapters of the book will cover your needs.

Conclusion

Throughout the rate setting effort, the system's decision-makers must balance the financial needs of the system against the effects that various rate structures would have on ratepayers. The system needs to be managed like a well-run business and that includes treating the ratepayers with compassion and respect. If you do all of this well your minimum charges will be become, and remain, just right.

Small systems and those with fairly homogenous users should set minimum charges that collect the system's fixed costs evenly from all users. The relatively small boost in revenue that complex minimum charges might generate is generally not worth the hassle and expense to pursue. These systems may be able to calculate an appropriate minimum charge with little outside help.

Medium and large systems and those with users that vary widely in how they use the system may want more complex rate structures, like potential demand-based minimum charges. Such systems will probably need help from a rate setting specialist to get them. Concepts for such rate structures are discussed in the next chapter.

Chapter 5 – Calculating Potential Demand-based Minimum Charges

(Mainly relates to Phase 2 rate analyses)

Summary

Potential demand-based minimum charges, commonly called an "impact fee," "capacity charge" or "availability charge," can make minimum charges fairer for ratepayers. That is because they enable the utility to collect more revenue from those users that cause the system to incur higher fixed costs – primarily debt for system construction. Generally only larger systems with many large or unusual users can productively use this fee structure. Small or rural systems with fairly uniform customer use of the system rarely need these more complex fee structures. However, each system should consider using such charges before dismissing them.

Introduction

This topic is actually too complex to fit well inside this book. However, more and more systems are seeing the need to make their rates fit their customers better. This chapter is for those readers.

How big does your water system need to be? If everyone turned on all their taps you would need to have a system big enough to supply all that demand. Not really, but your system was, or it should have been built large enough to handle a peak demand that is way higher than your average use.

Of course, that extra size costs more money to build. It only makes sense to have those who caused the over-sizing in the first place to pay for it. That is the idea behind potential demand-based user charges.

Now, if everyone creates the same amount of potential demand, it all comes out in the wash with your regular rates. But, if you have a few really large users, they need to pay more than everyone else for their capacity to demand service.

Potential demand costs and how to recover those costs is almost the same subject as capacity costs and how to recover them, as detailed in Chapter 7. The main difference is one cost is recovered over time (in a minimum charge) and the other cost is recovered up front (in a capacity charge) at the time a new customer requests permission to hook onto the system. You may well want to use both of these charges for part of the same cost. That will enable you to recover part of the cost "at closing" and part on a "monthly payment plan."

The operative question you need to answer when considering potential demand charges is this, "For whom was the system built?" The answer is not a simple listing of your current and assumed future customers. It is that same listing but with percentages assigned to each customer based on the dollar value of the potential demand that customer could place on the system compared to all other users. Thought of another way, each customer should pay for the value they receive by having the system, as designed and built, available for their use. The power industry has understood and charged for potential demand, usually done using a peak demand charge, for decades. Water utilities have been slow to adopt such rate structures.

Why should you charge large customers for the potential demand they place on your system? Simple. The more you rightfully charge them, the less you rightfully need to charge your other, primarily residential customers. Demand-based minimum charges may not generate that much extra revenue. However, it could be enough to lower rates drastically for low volume customers, making their rates markedly more affordable.

Some systems should use potential demand-based minimum charges

Most systems don't need potential demand-based minimum charges. Which ones are those? They are the stereotypical small rural town or water district that has primarily residential customers and only a few commercial customers. Few if any of the commercial customers will have use characteristics that are very different from residential customers. Thus, their potential demand is reasonably similar to that of the average residential customer. These systems typically have fewer than 1,000 connections and most of those are residential. If this describes your system you may want to just skip the rest of this chapter and use only the simple fixed cost-based method described in the previous chapter.

If your system is small and simple, you don't need a potential demand-based minimum charge bad enough to make the hassle worthwhile. End of story.

The remaining 10 percent or so of systems should consider potential demand-based minimum charges. Some of you will still want to opt out of this rate structure anyway, mainly because it is hard to do such calculations. But, hey, that's what rate analysts are for.

Consider the costs incurred to build your system. If there were never any variation in flow and service demands (surges) among customers or changes in their demand through time there would be no need for potential demand-based minimum charges. But, all systems' users generate surges in use, some very large. The costs to build a system large enough and robust enough to handle those surges are the costs you need to identify. These costs show up mainly in the form of debt service. Evenly distributed debt service is appropriate for small systems with uniform users but not for systems with widely different users.

It takes a certain cost to build a water system just so you can turn on your water faucet and get one drop of water to come out. (Actually, water systems are designed to provide at least residential scale water flow to its design target user base but that description is not graphic or memorable.) The "one drop" part of the cost of your system is a fixed cost. All users regardless of size should share that cost equally. Some users, generally very large users cause the system to incur higher costs. Let's call them "oversized" users.

To get lots of water to come out of the tap now and then for the oversized users you need to build larger, more complex and more expensive wells, pumps, storage tanks, distribution lines, basically everything. These are fixed costs too but they were caused by the oversized users, not the one drop users. Thus, the oversized users should pay those costs based upon the share of those costs that each such user is responsible for.

Potential demand-based minimum charges will do this. They will collect from residential users a minimum charge that only covers the one drop costs. From the oversized users they will collect the one drop costs plus a share of the over sizing costs. Oversized users might still pay lower overall rates if you charge them lower unit charges, but at least the total rates they pay will be commensurate with the costs they cause the system to incur.

There are various ways of doing the calculation that is needed. Two will be discussed here. One considers the costs caused by each and every oversized customer. Each such customer's minimum charge is then set based upon their individual costs. The other method considers the total excessive costs caused by all the oversized customers combined over a long period of time. Then these costs are divvied up to these users by meter size.

Potential demand-based minimum charge calculation using individually determined costs

This concept is straightforward but the calculation is complex. To do the calculation you need to know:

1. The total potential demand that all users combined can place on the system,
2. The total potential demand that all residential users combined can place on the system,
3. The potential demand that each individual oversized user can place on the system,
4. The fixed costs to serve all users such as billing, administration and the like, plus the annualized capital costs needed to provide service capacity at the one drop level,
5. The annualized costs (generally debt service) incurred to build enough capacity to satisfy the potential demand of each of the oversized users, and
6. How often each user will be billed.

Right now you may be thinking, "I'm not going to get this so I'm not even going to try." That's reasonable, but you should understand the basic concept well enough to decide if your system might benefit from this type of rate structure. If so, you can have a specialist do the calculations. This simple example should help with the concept.

You have a water system with three users; one is a "one drop" residential user (User 1), one is commercial (User 2) with a potential demand of one third of the system's capacity and the other is an industrial user (User 3) with a potential demand of two-thirds of the system's capacity less the "one drop" residential user's volume (to keep it simple we'll disregard User 1's volume). The costs to administer the utility, do billing, collections, read meters, and similar fixed expenses totals $30 per month and $10 per month per user. The cost of debt service for one drop of service capacity is another $30 per month and $10 per month per user. The total cost to build the extra capacity to serve the oversized users is $99 in debt service per month, 1/3 going to User 2 and 2/3 going to User 3 (the split between users is the stumbling block for most systems with this methodology). Thus, the total minimum charge for each of these users would add up as shown in Figure 4.

Potential Demand-based Minimum Charge Calculation

	Various Fixed Costs	Debt Service for "one drop"	Share of Debt for Over-sizing	Total Minimum Charge
User 1 Residential	$10	$10	N.A.	$20
User 2 Commercial	$10	$10	$33	$53
User 3 Industrial	$10	$10	$66	$86

Figure 4

The total minimum charges you will collect will be $159 per month and $1,908 per year. If you did not charge for potential demand you would only collect $60 and $720, respectively. That is a minimum charge revenue "loss" of 62 percent.

This concept is straightforward. The calculation for a three user system is straightforward. As you can imagine, the calculation for a system with 10,000 users including 400 exceptional users can get complex very fast even before other complicating factors are considered. As mentioned above, how you split the over sizing costs between users is impossible to document and about as hard to "sell" to those users. – Let's consider a simpler way of doing this calculation.

Potential demand-based minimum charge calculation using meter sizes

Basing oversized demand minimum charges on meter size is simpler to calculate than individually calculated minimum charges. In most systems the meter size is the limiting factor for flow to each user. Thus, this calculation is easy to do because you know, or should know the meter size of each customer. It's also easier to "sell" because you can mathematically relate meter size to flow capacity. The only thing you need to estimate is the sum total of the annualized costs to meet the potential demands of the one drop users and that of the oversized users.

To do the calculation you need to know:

1. The total number of customer meters of each size on the system,
2. The fixed costs to serve all users such as billing, administration and the like. In addition, you need the annualized capital costs needed to provide service at the one drop level to all users combined. The annualized costs are compiled for a long time period. That may be the last 20 years, the next 20 years or some other swatch of time that probably takes in the current year,
3. The annualized costs (generally debt service or cash paid capital improvements) incurred to build enough capacity to satisfy the potential demand of all oversized users combined that is in excess of the one drop capital costs, and
4. How often each user will be billed.

This calculation is similar to the previous method. Costs compiled from bullet point number 2 above will be used to calculate the entire minimum charge for residential users. This will also be the base amount for each oversized user. Costs compiled from bullet point number 3 above will be used to calculate the supplemental minimum charges for the oversized users. However, this calculation method is different from the first in that you will solve for the minimum charges for the four to 10 or so meter sizes that your customers use, not a minimum charge for each individual user.

You will likely never do one of these calculations. However, Figures 5 and 6 at the end of this chapter illustrate most of the meter size-based minimum charge calculation methodology.

Here's the take home message. Even though you may not consider your system large or complex, your rate setting needs are probably more complex than you realize. Set rates that capture costs from your users appropriately and you will be amazed at how much easier it is to collect revenues and do it with fewer complaints from your users.

Conclusion

Having become acquainted with the potential demand-based minimum charge concept, the following is all you need to know. If your system is small and uniform, you don't need it. Go with the one size fits all minimum charge calculation method from the previous chapter. If you might need a potential demand-based minimum charge calculation, call a user charge specialist to talk about it before deciding one way or the other. The specialist may still talk you out of using such a structure simply because it is not worth the hassle in your case. But, if you do decide you need the calculation just have the specialist do it for you. If you need such a rate structure it will likely reduce the minimum charge to your residential and small customers markedly. That will make their rates more affordable and fair and they certainly will appreciate that.

Sunny Ridge, MO, Water Rates Scenario 1

Chart 2C - Potential Demand-based CIP Account

CBGreatRates© Version 4.3

This chart depicts cost of facilities needed to satisfy potential flow demand. The cost for this demand will be paid by surcharges to exceptional customers' minimum charges.

5.00% Average Inflation Rate for the Following Water System Equipment for the Term of This Replacement Schedule
3.00% Average Interest Rate on Balances Invested for the Term of This Replacement Schedule
6.00% Average Interest Rate on Amounts Borrowed for the Term of This Replacement Schedule

Year Beginning	Item Description	Amount in Today's Dollars	Yearly Total in Future Dollars	End of Year Balance	Minimum Desired End of Year Balance
4/1/08		$0	$0	$0	$75,000
4/1/09		$0	$0	$77,981	$75,000
4/1/10	New well	$100,000	$105,000	$53,302	$78,750
4/1/11		$0	$0	$132,883	$82,688
4/1/12	Line upsizing	$125,000	$144,703	$70,148	$86,822
4/1/13		$0	$0	$150,234	$91,163
4/1/14		$0	$0	$232,722	$95,721
4/1/15		$0	$0	$317,685	$100,507
4/1/16	Line upsizing	$75,000	$105,533	$299,665	$105,533
4/1/17		$0	$0	$386,636	$110,809
4/1/18		$0	$0	$476,217	$116,350
4/1/19		$0	$0	$568,485	$122,167
4/1/20	New well	$100,000	$171,034	$492,487	$128,275
4/1/21		$0	$0	$585,243	$134,689
4/1/22		$0	$0	$680,782	$141,424
4/1/23	Line upsizing	$150,000	$296,990	$482,197	$148,495
4/1/24		$0	$0	$574,644	$155,920
4/1/25	New water tower	$250,000	$545,719	$124,146	$163,716
4/1/26		$0	$0	$205,852	$171,901
4/1/27	Line upsizing	$75,000	$180,496	$109,513	$180,496
4/1/28		$0	$0	$190,780	$189,521

Notes: Only facility costs that are directly related to potential demand by customers is included in this chart. This city intends to accrue a balance in this account that is twice the amount of the annual average CIP costs to satisfy development.

Starting Account Balance	$0	$75,000
Present Worth less Starting Account Balance	$1,054,537	Minimum Desired Balance in Today's Dollars
Minimum Annual Annuity	$70,881	
Discretionary Annuity	$7,100	
Annual Deposit to Potential Demand-based CIP Account	$77,981	

Figure 5

Sunny Ridge, MO, Water Rates Scenario 1

CBGreatRates© Version 4.3

Chart 2D - Potential Demand Minimum Charges Based on Meter Size

This chart 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. For simplicity, all five-eighths and three-quarter inch meters (generally residential) are assumed to have the same flow capacity and will pay the same potential demand surcharges.

Meter Size in Inches	Meter Square Inch Capacity	Number Meters This Size	Total Square Inch Capacity Each Meter Size Group	Total Potential Demand of a Meter This Size	Potential Demand Charge per Meter per Billing Period	Charge Modifying Factor[1]	Adjusted Potential Demand Charge per Meter per Billing Period[2]	Total Annual Demand Charge Fees by Meter Size[3]
0.625	0.307	200	61	$87	$7.28	100%	$7.28	$17,469
0.750	0.442	50	22	$87	$7.28	100%	$7.28	$4,367
Residential meters:		250	83					$21,836
Calculations for Meter Sizes Larger Than Normal Residential Meters								
1.000	0.785	10	8	$224	$18.63	100%	$18.63	$2,236
1.500	1.767	10	18	$503	$41.93	100%	$41.93	$5,031
2.000	3.142	10	31	$894	$74.53	100%	$74.53	$8,944
3.000	7.069	10	71	$2,012	$167.70	100%	$167.70	$20,124
4.000	12.566	5	63	$3,578	$298.14	100%	$298.14	$17,888
5.000	19.635	0	0	$5,590	$465.84	100%	$465.84	$0
6.000	28.274	0	0	$8,050	$670.81	100%	$670.81	$0
7.000	38.485	0	0	$10,957	$913.04	100%	$913.04	$0
8.000	50.266	0	0	$14,311	$1,192.55	100%	$1,192.55	$0
9.000	63.617	0	0	$18,112	$1,509.32	100%	$1,509.32	$0
10.000	78.540	0	0	$22,360	$1,863.36	100%	$1,863.36	$0
Over-sized meters:		45	190					$54,224
All meters:		295	274					$76,060

$77,981 Total annualized capital cost to supply potential demand[4]

[1] Charge Modifying Factor is used to raise or lower the charges to be levied on larger meter size classes.

[2] Adjusted Potential Demand Charge per Meter per Billing Period is the dollar amount that should be added to the standard minimum charge to arrive at the total minimum charge for each meter size class.

[3] Total Annual Demand Charge Fees by Meter Size - The summation amount at the bottom of this column is the dollar amount that these meter size based charges will generate in one year.

[4] Total annualized capital cost to supply potential demand is the total dollar amount of capital investment that these charges seek to recover. This amount should be close to the amount in the last column of this chart.

Figure 6

Chapter 6 – Calculating Unit Charges

(Mainly relates to Phase 2 rate analyses)

Summary

Unit charges will probably generate the majority of your rate revenues. Basic unit charges, especially for small, simple systems are simple to calculate. Rates for larger systems with complex finances and many types of users will be more complex to calculate. The basic goal of unit charges remains the same – recover the variable costs of the system from those users who cause the system to incur those costs.

Unlike minimum charges, which are almost guaranteed income, unit charge revenues are less predictable. But unit charges almost always generate more revenue.

Introduction

On a difficulty scale of 1 to 10, setting minimum charges will be about a "4" if you are able to use a simple rate structure. Setting your unit charges will probably also be about a "4." However, if your system's users are not uniform and your system is not small and simple, you may want or need inclining (conservation), declining (use encouragement) or other variable unit charges. You may want to include a usage allowance in the minimum charge, which complicates unit charge calculations. And, you need and really should do equipment replacement scheduling. If you do any of these things, the difficulty can shoot up to a "7" or higher very quickly and your risk of making a serious error or bad assumption also rises. Regardless, you or your rate setting specialist need to get this job done so don't let the possible problems stop you. As with minimum charges, your situation will determine what unit charges are most appropriate for your system and how you need to arrive at those charges.

In the ideal world all users would reimburse the utility for all of the costs they cause the utility to incur. (Does that sound familiar?) Remember this goal, strive for it but don't fixate on it. You probably won't get all the way there. Unit charges do (or should do) one thing well – distribute system costs to the users based upon the volume of the commodity each customer uses.

A unit charge is the price for a unit of volume of a commodity. For water services that is usually $X.xx per 1,000 gallons or $X.xx per 100 cubic feet.

Unit charges can also, if structured properly, give customers a price signal to either use more or use less of the commodity. Cheap rates encourage use. Really cheap rates encourage waste. Expensive rates encourage conservation. Really expensive rates encourage people and businesses to move away. Somewhere on this continuum is the right rate for your utility and your ratepayers.

Generally, the fewer users there are on a system, the higher the unit charges will need to be. As with minimum charges, economies of scale tend to help larger systems to produce commodities more cheaply. Small systems don't have that advantage. Thus, unit charges for water or sewer service may be $2.50/1,000 gallons for a large system but $4.00 to $9.00/1,000 gallons for a small system 50 miles away in a rural area.

The unit charge concept[7], like the minimum charge concept, applies to all utilities. This concept is very simple. Unit charges are the price you charge per unit of service delivered. (Surcharges are often assessed by units, too, but those will be covered in the next chapter.) The units by which you will collect the majority of your revenues will probably be 1,000 gallons or 100 cubic feet of water or sewer service. Units of measure vary around the country and they depend upon what is being sold. The level of the price or prices and other variables can be determined in various ways. Proceed like this.

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[7] Conceptually, all costs can be considered variable costs, collectible by unit charges, based upon whatever unit of measure is appropriate for each cost. For example: the cost to produce, treat, store and deliver water may average $2.00/1,000 gallons for a system. Thus, the cost is $2.00 and the unit of measure is 1,000 gallons. This is most commonly thought of as a variable cost and it is usually recovered with unit charges. The cost to measure a customer's use, calculate their bill, mail their bill, collect their charges and do all other administrative duties of the system may average $15.00/customer/month. Thus, the cost is $15.00 and the unit of measure is the customer/month. Administrative costs are most commonly thought of as fixed costs, recovered with a minimum charge, but they still have a price and units of measure. The same concept holds true for connection charges, unusual service charges, etc.

Cost to produce

It is believed by many rate analysts (including this one) that no system should set its rates without knowing what its cost to produce is. To do so is to risk charging at least some customers less than the cost to produce the service. That is a recipe for financial failure at the extreme and unfair rates, at the least. While you may have good reason to charge some customers less than your cost to produce, you won't know how much of a break you are giving them without calculating this cost. The cost to produce is calculated much like unit charges in Step 4 in the next section. However, much more is revealed about cost to produce, including how to calculate it, in Chapter 7.

Knowing your cost to produce is very helpful when making decisions:

- How aggressively should you pursue water leaks (usually out for water and in for sewers)? That largely depends on how much it costs you to produce the water. If your water is cheap to produce relative to the cost to find and fix small leaks, fixing small leaks should not be a high priority for your system. The reverse is also true.
- How interested should you be in buying finished water (or waste water treatment) from a new supplier? If you can buy finished water at far less delivered cost than you can produce your own, dollar savings are in favor of that supplier, all other things being equal. The same thing is true if you are considering being on the supply side. If you can sell water for more than your cost to produce, at least on a net revenue basis, that opportunity looks good.

Calculate your cost to produce and use it as a decision-making tool.

Unit charges

Unit charges may be set to recover some, all or even more than the total of the variable costs that the system incurs to provide the service. The costs you will need to recover are generally those not recovered through your minimum charges, but let's start with the simple and work toward the more complex.

Step 1

From your total costs deduct all of the fixed costs that you expect to incur during a period of time (and that you plan to recover with minimum charges), probably the coming one year period, as described in the previous chapters on minimum charges. Figure 7 illustrates this.

Total Costs – Fixed Costs = Variable and Special Costs

Figure 7

As with fixed costs, some variable costs are not purely variable. Part of a cost, such as staff salaries, can be fixed and part can be variable. You will need to make judgments about how to split such costs. Your guide should be this. If a cost is related to the fact that a customer is a customer, the cost is fixed. However, if the cost is related to the volume of water or waste water that passes through the system, it is variable. The easiest example is water treatment chemicals. As the volume of water that passes through the system increases, the volume of treatment chemicals used must increase.

Step 2

Deduct any special costs that are not related to the commodity you are selling, as shown in Figure 8.

Variable and Special Costs – Special Costs = Variable Costs

Figure 8

Examples of these non-commodity special costs include: staff time, vehicle expense and all other expenses involved in connecting (tapping on) a new customer to the system; expenses for special services such as pumping, hauling and disposing of grease from grease traps; treating septage contributed by septic tank pumpers; cost-sharing with developers to install oversized lines and equipment; and any other expense that is not associated with your mainline service of distributing water or collecting and treating waste water. Do not include these special costs in your unit charge calculation.

After making all of these deductions you are left with the costs to be incurred to supply the basic commodity – water or sewer service, for the next year. These are your variable costs.

Step 3

Estimate the volume of service you will provide in the coming year. Start with the volume distributed or collected last year and make adjustments to that, as shown in Figure 9.

Last Year's Volume + and – Adjustments = Next Year's Projected Sales Volume

Figure 9

Was last year an unusually dry year so water customers used more water for lawn irrigation than usual? Did you have a large industrial waste water customer for the first 10 months of last year but that user shut down and has no plans to re-open? Is there rapid growth in your city or area so you are connecting new customers at a rapid rate? Should you under-estimate the volume you will distribute or collect just a bit, to be conservative? Adjust the usage volume from last year until it is a reasonable projection for next year.

You have crunched lots of numbers and considered many issues to arrive at three things for your rate calculation:

1. The costs (generally variable costs) for a known period of time, probably one fiscal year, to be recovered in the unit charge,
2. The projected volume to be sold for that period of time, and
3. The units of measure the volume will be sold under.

Step 4

Calculate your unit charge. If budget projections say the variable costs for a modest sized water system will be $150,000 next year, the system will sell 60,000,000 gallons of water and the system will bill for each 1,000 gallons sold, the unit charge would be $2.50/1,000 gallons. (To keep it simple this calculation disregards the system's need to build and maintain reserves for working capital, capital improvements and other needs. If you desire to cover such expenses with unit charges you should assume a payment to each and add it to the variable cost total.) The calculation is done like Figure 10, page 39.

$150,000 variable costs / 60,000,000 gallons / 1,000 gallon units

= $2.50 / 1,000 gallons unit charge

Figure 10

The smallest, simplest systems; mobile home parks and primarily residential villages and small towns and districts can get by calculating their unit charges in this way. Importantly, with such a simple rate structure you don't need to know how much volume any particular customer used or will use during any particular month or billing period. Whenever they use 1,000 gallons, they owe you $2.50.

Unfortunately, such a calculation can get complex for systems such as:

- Those over about 1,000 connections, because they usually have commercial and maybe some industrial customers that may deserve different rates,
- Those with a usage allowance because that allowance costs money to provide,
- Those wanting non-level rates (declining, conservation, block and other variable rates) because these require multiple rate calculations that are dependent upon to each other,
- Those needing to build reserves because that is a dynamic, usually multi-year endeavor, and
- Those facing capital improvement needs because those, too, are dynamic, usually multi-year endeavors.

If you err, err on the side of setting rates that are simply structured rather than complex. Simple is easy for you to explain to ratepayers and simple for you to do a hand-calculation of someone's bill if you are asked to.

Step 5

While simple rates are nice, all systems should consider the following issues and how they will affect rates before actually setting them.

Usage allowance

Many systems have a usage allowance in their minimum charge. That is, when a customer pays their minimum charge, they earn the right to use the first 1,000 to several thousand gallons of service for no additional charge. Most considerations with usage allowances were discussed in the minimum charge chapter. However, it needs to be said that a usage allowance is usually a revenue reducer because the cost of that water or sewer service is usually not built into the minimum charge. This is why an allowance is so important to your calculations, and to your users.

The first 1,000 gallons of service delivered to your customers is usually the most expensive increment of service you will deliver to them. If you give that first 1,000 gallons away, you are incurring its costs but you won't collect any revenue for it unless you boost the minimum charge to recover it. Systems that "give away" 1,000 to 3,000 gallons or so with the minimum charge usually really do give it away. They don't build the cost of this volume into the minimum charge. That means recovery of this cost gets transferred to unit charges, in effect surcharging the higher volume users. This can actually be a good strategy for lowering bills to those who are hard-pressed to pay but you should at least know what the effect is before you "give away" volume.

As usage allowances go above about 3,000 gallons, the financial effect tends to go the other way. Systems generally build at least part of the cost of that much volume into their minimum charge. At least some users; especially the "little old lady, widowed, retired…," won't use their full "give away" allotment at these high levels. Those who don't use their full allotment may end up paying inflated minimum charges. In effect, these lower volume users will end up subsidizing higher volume users. That is a big fairness issue.

Winter averaging

It is fair to charge water users for all water that passes through their meters. However, some of that volume may not flow to the sewer system. Frequently, some water is "consumed," meaning it is not returned to a sewer system for treatment. Such water commonly gets used for watering lawns and gardens, washing cars, filling swimming pools, hosing off the driveway and such. In some communities, especially those where lots of water is used for lawn irrigation, a very high percentage of your water can be "consumed." Thus, it may not be fair to charge sewer customers for all water flow registered by their water meters. (More about this later.) How can you make sewer service metering fairer? For most of your customers there is an easy fix. It's called "winter averaging."

Usage allowances encourage use. Think of it this way. If your water bill included 1,000 gallons of use each month for no extra charge, you would try to use at least 1,000 gallons each month to make sure you got your money's worth. If your water provider raised the allowance to 5,000 gallons per month, you would try to use at least that much. If your provider raised the allowance to 100,000 gallons per month... Now it's getting silly but you get the point. And, so does everyone else.

Winter averaging is just what it sounds like. For each customer you will tally up their winter use for several billing periods, divide that by the number of billing periods you added and that is the average billing period use for that customer. Then, you will calculate the total user charge for that volume of use according to your rate chart and that will be what you charge that customer EVERY billing period. Do this for every customer, or preferably your residential customers only and you've got your rates set. You also can now calculate pretty exactly the total sewer revenue you can expect during the next year from your winter average customers. You simply add up all their billing period bills and multiply that by the number of billing periods in a year. This can really simplify your budgeting.

As with all things that seem too simple to be true, winter averaging is not appropriate for some kinds of users. Seasonal users that use more water in the summer than winter and they put that water back down the sewer should not be winter averaged or you will under collect rates from them. A snow ski resort that makes artificial snow will over-pay on its rates if winter averaged. Likewise, any business that operates in the winter but not in the summer will be over charged with winter average billing. The reverse is also true. A "snowbird" who leaves Minnesota and goes to Texas in the winter will under pay on their averaged rates in Minnesota but over pay on their rates in Texas. Thus, you need to consider whether winter averaging is reasonable for all users and make allowances for those where it is not. One of the easiest ways to do this is simply to winter average for residential customers but charge commercial and industrial users for all metered use for every billing period.

Before you embark on winter averaging, you need to think hard about fairness and convenience. It may be mathematically fairer to winter average but it does take extra work to calculate everyone's bill and especially to work out the problem accounts. And, it is generally true that high-volume users, especially those who irrigate lawns and fill swimming pools, are financially more capable of paying than low volume users. You might want to NOT winter average so the high volume users' bills will remain higher and the low volume users' bills will remain lower. Before making a snap judgment, crunch your numbers a bit to see what the effects of winter averaging would be on your system and your users.

Depreciation

The senescence or gradual decline of equipment is a real phenomenon. Financial statements usually model this event and call it "depreciation." Unfortunately, depreciation should not be used for rate setting purposes for these reasons:

- It is almost never funded (the amount is not deposited into a savings account to pay for eventual system upgrades and replacements) so it is not a real dollar cost.
- Equipment decline does not happen on a nice, straight-line as is usually depicted in financial statements. Most infrastructure equipment will work quite well for a long time. It may work adequately for awhile after that. Then, it will rapidly decline and eventually fail during the last 10 percent or so of its useful life.

- Future equipment needs will be somewhat to radically different from what was originally built (original cost is the basis for depreciation calculations). Needs, regulations, inflation, funding programs, technology and lots of other things change during the relatively long useful lives of utility components. Your future replacement costs and how you will pay them should dictate whatever savings you will set aside for those replacements, not past costs.

Capital improvement planning and equipment replacement scheduling

For system management and rate setting purposes you should prepare an equipment replacement schedule and calculate the payment you need to make to a replacement account each year to be able to do all anticipated replacements on that schedule, when scheduled. The payment to the replacement account is real money; thus, it is a real operating cost for the system.

In addition, you should do capital improvement planning (CIP) to handle the big-ticket system needs. A later chapter will cover both of these issues.

Alternative rate structures

Cost to Serve: Fixed and variable costs generated by each user class are paid by that class with minimum and unit charges, respectively.

Earlier you got a hint that not all unit charges are created equal. Here are a few variations for you to consider.

Cost-to-serve rates are based directly upon a study that determines, as nearly as it can, the costs to provide different levels and types of services. The cost to serve concept is very simple but the analysis is complex and expensive and is rarely economically feasible for small to medium sized systems.

The term "cost of service" rate study and the study methodology are perhaps most completely described in manuals produced by the American Water Works Association[8]. Many people request cost of service rate studies when they actually want a rate study that considers the nature of all costs but does not attribute segments of those costs to individual user classes. This simpler methodology is appropriate for most systems, especially medium sized and smaller systems. How to acquire rate analysis services of any type is covered in a later chapter.

Declining: Rates go down as use goes up.

Declining rates go down as volume usage goes up. These are often used as a "poor man's" cost to serve rate. (There is no slight intended to anyone who could be described by one of those words.) Declining rates are common, especially in the Midwest and Eastern U.S. They are less common in arid regions. In some cases rate setting decision-makers were considering the costs to produce different levels of service (economies of scale), even though they didn't know if those economies actually existed or what they actually were. In some cases those decision-makers were pressed by a large industrial user to give them a "deal" on water or sewer service so they lowered rates for higher volumes of use. They may have done this under the guise of "economies of scale" or they may have admitted to the ratepayers, "The XYZ Corporation wants a deal and we want to keep them here and keep them happy." Seldom do systems actually conduct a study to produce a reasonable estimate of the actual costs to produce service at different levels. Consequently, one would be hard pressed to factually defend any particular declining rate structure.

No system should establish declining rates unless it first determines its cost to produce. Otherwise, the system could end up selling high volumes of service for less than the cost to produce. In that case, smaller ratepayers would have to subsidize larger users.

Inclining: Rates go up as use goes up.

Inclining or conservation rates are the opposite of declining rates. Inclining rates; rates that go up as use goes up, are intended to encourage conservation. Unfortunately, the highest volume users tend to be the least affected by price signals, too. Thus, inclining rates in real practice are more of a way to collect revenue from those who are most able to pay. That

[8] American Water Works Association (AWWA) publishes manuals on more complex rate calculation methodologies. Visit http://www.awwa.org/ to access them.

actually is a pretty good thing because it generally lowers rates for the least able to pay. That reduces the utility's volume of slow and no-pays and that improves business performance. As readily available water supplies diminish and as treatment requirements (costs) increase, we will see more systems adopt inclining rates.

Generally, inclining rates should start at or near the actual cost to produce and go up from there. If the beginning rate is started too far below that, some will bring into question the fairness of the rates.

Proportional to use rates involve the minimum charge, too. However, disregarding the minimum charge component, this structure has unit charges that are the same for all users and there (usually) is no usage allowance. The basic idea is to recover all variable costs with the unit charge and spread those costs evenly to all users.

Proportional to use: The minimum charge and unit charge rates are the same for all users and there is no usage allowance (usually). Fixed costs are recovered by the minimum charge and variable costs are recovered by the unit charge.

Such a rate structure is very simple to calculate. It is also usually very easy to "sell" to ratepayers by simply telling them, "Whether you use 1,000 gallons or 1,000,000 gallons, your unit charge is $X.XX/1,000 gallons."

On the waste water side, proportional to use rates were required by the now extinct EPA Construction Grants Program and they are currently required by that program's successor, the Clean Water State Revolving Fund Loan Program. Most waste water systems in the U.S. were at least partially funded with one of these programs, or they will be in the future. Thus, most U.S. waste water systems are or will be required to have proportional to use rates.

As with other rate components, complex unit charge structures can be calculated one user class at a time. Conceptually this is simple. However, it's actually hard to do. The problem with segmenting rate calculations is that when you change a rate for one user class, you will create effects elsewhere, as well. That will necessitate a change elsewhere. And then elsewhere again. Without building an integrated software model of the system's finances, you will forever chase your tail through such calculations.

If simple rate structures will serve your needs, use them. If you need something complex, save yourself lots of headaches and leave this calculation to a rate setting specialist.

Most of the policy considerations that apply to minimum charges apply as well to unit charges. One warrants repeating. It is rare for water and sewer unit rates to significantly figure into a major employer's decision to move to or from a particular community. However, such users tend to be the larger users for most systems. Thus, they are most sensitive to unit charges and not much affected by minimum charges. The same is probably true for your utility. And like your industrial and wholesale users, your utility is a business, too. Pricing needs to make business sense if the utility is to succeed. Beware of the business wanting large water and sewer rate concessions – if you lower their rate you must raise the rate to someone else, like the little old lady, widowed, retired…

Conclusion

Small systems and those with fairly homogenous users should set unit charges that collect the system's variable costs by charging the same unit charge to all users, usually with no usage allowance in the minimum charge. In other words, keep it simple. This calculation can be done by about anyone who can do simple math competently if they have a good understanding of the management and operation of the system. Simple unit charges are also easy to describe to your ratepayers and that makes them acceptable to most.

Medium sized and larger systems and those with more complex issues should perform a comprehensive rate analysis if they are so inclined and able, or have it done by a specialist. This will assure that rates are set adequately and in a fair structure. It will also minimize the amount of politics it takes to pass a reasonable rate ordinance.

Chapter 7 – Special Fees, Policies and Issues

(Mainly relates to Phase 2 rate analyses and Phase 3 rate adjustments)

Summary

Generally, minimum and unit charges will generate the lion's share of your revenues. However, systems that are growing rapidly and have a substantial tap, connection or capacity charge may actually raise more revenue from these charges than from regular rates. Surcharge fees for unusual service can be substantial for some systems, especially sewer systems, as well. It would also be nice to lower everyone's bill, if possible. To do that you need to make calculations of the potential savings of certain actions, like eliminating water loss. And, all systems need to have strong policies and deal properly with ability to pay issues. Be aware, the actual user rate setting may go smoothly for you. But, setting of special fees and policies may take months and become hot issues.

Cost to Produce: There are several ways to define cost to produce. Each is acceptable for different purposes. Generally, cost to produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. In a proportional to use rate structure, this will be the unit charge.

Introduction

When you start thinking about analyzing and adjusting your rates, user fees may be the only thing you are thinking about. Tap, capacity and connection charges, surcharges, late payment penalties, development cost-sharing, cost of water loss and other issues may be off your radar screen but these can be important areas to address, too. Sometimes they are the most important things you need to take care of.

There are many facets to dealing with such issues. They can take a volume to cover but this chapter will hit the highlights.

Cost to produce

Cost to produce fits everywhere and no where exclusively so it is covered here in detail.

Your cost to produce is a useful number. You need to know how to calculate it because it will help you to make management and investment decisions. Unfortunately, like many other issues, what costs go into the calculation of cost to produce are somewhat subject to interpretation.

Debt payments for the system, personnel costs and all other costs are part of the total cost to produce but only part, if any of these costs could be saved in the short term if volume production went down.

The cost to purchase water from a wholesale supplier, chemicals to treat water, electricity to pump water and similar costs are clearly costs to produce. These go up or down in direct (or nearly direct) proportion to the volume produced. If you produce less volume, each of these costs will go down.

Most commonly, you will use the cost to produce figure to decide how to invest in the short term, such as deciding if it will be worthwhile to fix a water line leak now or let it go. For such a decision, use only those costs to produce that will go down immediately if you fix the leak. (Long term and expensive issues such as deciding on major capital improvements that will change your staffing needs are different. Return on investment, payback period and the effect on rates are more useful tools for these decisions.)

I did a rate analysis for a small water system that had a drastically declining rate structure. Unit charges started at $2.50/1,000 gallons. Rates graduated down until above 500,000 gallons per month a user only paid $0.10/1,000 gallons. This system had one user (a brick plant) that used in the millions of gallons per month. The analysis revealed that the average cost to produce 1,000 gallons exceeded $2.50. **This water system was losing over $2.40/1,000 gallons for most of the volume the brick plant used.**

With the above caveats out of the way, you should calculate cost to produce like this. Total up all of your variable costs for a year and divide by the volume sold (usually measured in thousands of gallons or hundreds of cubic feet) during that year. The example in Figure 11 should help.

Total Variable Costs / Total Volume (in 1,000s) = Cost to Produce $50,000 variable costs / 25,000,000 gallons / 1,000 gallon units = $2.00 / 1,000 gallons

Figure 11

Now consider this situation facing the example system. Let's say this is your system. One of your distribution lines springs a leak in one location. By taking meter readings up and downstream of this leak you determine that this leak is flowing at a rate of 2,500,000 gallons/year (about 7,000 gallons/day and about 10 percent of your total annual flow). You also estimate that it will cost $5,000 to fix this leak. In this case you will recover that cost in the value of water NOT lost in one year. The calculation would look like Figure 12.

2,500,000 gallons / 1,000 gallon units, Times $2.00 per 1,000 = $5,000 cost of water lost in one year

Figure 12

On the other hand, you might have a one mile segment of line that is leaking at every joint, meaning you would have to replace the entire line to get rid of this water loss. That replacement might cost $200,000. In that case, the investment would take about 40 years to recoup disregarding inflation, interest, leaks that would likely develop in the new line during this time and other variables. Somewhere between these two extremes you will find a range of water leaks that will make good investment sense to eliminate. Likewise, you can consider the advisability of fixing other problems by calculating the savings on a cost to produce basis.

These decisions are always about saving money. Once you have eliminated all options to productively save money, you need to concentrate on how to make more money, such as with surcharges and other fees.

Surcharges

You may want to assess surcharges if your sewer system has users that contribute high surge, high strength (high biochemical oxygen demand), high solid, caustic, acidic or other unusual waste water. Likewise, if your system has water customers that have potentially high peak flow demands such as those with fire suppression and irrigation systems and industries that use high volumes infrequently should consider surcharges because unusual flow or treatment characteristics will increase your costs to provide service compared to your "regular" customers. Thus, if you have enough of these kinds of users and enough costs at stake, it makes sense to recover these costs with surcharges.

Surcharges are calculated in the same way as illustrated for unit charges (for flow) in the previous chapter, with a few differences.
You need to calculate or estimate the costs to provide each special type of service. Then, you need to apply those costs to each user to determine each user's surcharge rate.

An example should help.

You have a large industrial sewer user that contributes high-strength waste water to your treatment plant. This user contributes 12,000,000 gallons of waste water per year. This flow contains (in excess of the "regular" customer's waste water strength) 500 milligrams per liter (mg/l) of settleable solids (SS) and 250 mg/l of biochemical oxygen demand (BOD) into your system each year (determined by influent sampling). That is 50,016 pounds of SS and 25,008 pounds of BOD per year.

You calculate that it costs your system $0.75 per pound to treat SS. You calculate it costs $0.85 per pound to treat BOD. The grand total of the resulting surcharges for this user would be $58,769 per year. The total surcharge calculations are illustrated in Figure 13.

Total Surcharge Calculations

Conversion factor: 1mg/l = 8.336 lb/1,000,000 gallons

	Column A	Column B	Column C	Column D	Column E
	Total Flow (in Millions of Gallonw)	Constituent Strength (mg/l)	Conversion Factor Constant	Treatment Cost per Pound	Total Annual Surcharges
SS	12	500	8.336	$0.75	$37,512
BOD	12	250	8.336	$0.85	$21,257
				Total Surcharges:	$58,769

Column A X Column B X Column C X Column D = Column E

Figure 13

The surcharge for all surchargeable services for this user would then be $4.90 per 1,000 gallons. That calculation is illustrated in Figure 14.

Unit Surcharge Calculations

	Column A	Column B	Column C
	Total Annual Surcharges	Total Flow (Thousands of Gallons)	Surcharge per 1,000 Gallons
SS	$37,512	12,000	$3.13
BOD	$21,257	12,000	$1.77
		Total Surcharge per 1,000 gallons:	$4.90

Column A / Column B = Column C

Figure 14

Finally, to get the total unit charge rate you would assess this customer, you would add your regular unit charge rate to the surcharge rate calculated above. If your regular customers are paying $3.00 per thousand gallons, the total unit charge rate for this surchargeable customer would be $7.90 per 1,000 gallons.

Do this same calculation for however many surchargeable customers you have and you've got it made. As you can see, surcharges can mount up quickly. If they do, that will reduce the pressure on your regular rates dramatically. However, if you don't have many surchargeable customers or their flows are not that high or strong, it won't be worth the hassle to do these calculations and set special rates. You and your assistance providers need to make that call.

Capacity charges, connection charges and tap fees

Concepts covered in this section are related to those discussed in Chapter 5.

Many people use any of these three terms and others to describe various fees charged to new customers. While all charges can be combined to arrive at a total "tap" fee, there are actually several different kinds of costs that go into these charges. All systems should assess and collect connection and tap fees. Larger systems and those with substantial growth should also assess and collect capacity charges. You can add all of these together for purposes of telling any particular connection applicant what they owe you. However, keep capacity fees separated from the other fees to avoid legal trouble.

If your system is growing rapidly, capacity and connection fees might be your largest revenue source. Set these fees too low and you can build yourself into oblivion. Set them high for a rapidly growing system and then have a mortgage crisis as we did in 2008 and you can lose your shirt quickly.

For purposes of this book, consider the following definitions:

Capacity Charge (also commonly called an "impact fee," "availability charge" or "system development charge") – A charge levied on a new customer that recovers all or part of the capital costs to build capacity to be able to serve that customer's actual or potential demand. This charge may be a few thousand dollars for a residential customer to many thousands of dollars for a large industrial customer. **The capacity charge buys a new customer system capacity.**

Connection Charge – A charge levied on a new customer to recover all or part of the costs a system incurs in the course of connecting the new customer to the system. This may include labor costs for staff or others on-site; equipment sold by the system to the new customer for making the connection; equipment, tools and supplies used by system staff for making the connection; and the like. This charge may be a few hundred dollars for a residential customer to thousands of dollars for a large industrial customer. **The connection charge buys a new customer connection to the system.**

Tap Charge or Tap Fee – A charge that gives a new customer the right to connect to the system. This fee may include the costs of administering the connection program, such as staff time to "sign up" new customers, get them into the system's billing program, do an inspection of the service connection to assure that it meets the system's standards and the like. This charge may be $50 to $250 for a residential customer to a few thousand dollars for a large industrial customer. **The tap fee buys a new customer the right to hook up to the system.**

Capacity, tap and connection charges are for different things but they are often combined to constitute one fee. That is fine, usually, but you need to be clear about what each component is and how it should be used. To do otherwise can get you into legal trouble and at the least, cause you to lose friends and esteem.

Capacity charges

If your system is still adding customers fairly rapidly, especially if many are high volume customers, you need to consider assessing capacity charges. These are impact fees, regardless of what you call them, so be aware that statutes of your state restrict how you can use these fees. Generally they need to go toward paying for actual capital improvements, not operating costs. Check with your attorney about this issue and keep your costs and revenues straight and you will be just fine.

To build the cheapest systems these days it takes a few thousand dollars per connection for water and maybe $10,000 or more for sewer. I know what you're thinking,

If we assess capacity charges like that on the front end, we will kill development. Kill development and we won't attract more users to help us pay our fixed costs. Then our ratepayers will be stuck with even higher rates.

This is the economic development school of thought for capacity charges. Keep the charges low and development will come. The theory is fine except it has a couple of problems:

1. When the bill gets paid, and
2. Who pays the bill.

If costs incurred to build a system with adequate capacity to serve additional users are deferred, they will have to be paid later, by someone. When costs are paid later, they are usually thrown in with all other costs. This basket of costs is then paid by ALL users. Therefore, when you don't charge the XYZ Corporation its fair share of system development costs on the front end, the costs don't just go away. They get transferred to other users. Who are some of those other users? How about the "little old lady, widowed, retired, living alone on Social Security"? She is not very capable of paying the XYZ Corporation's capacity costs and she shouldn't have to anyway.

There is another rub to building system capacity assuming that all that future growth will take care of the costs. That growth might not come. Or, if it does, it might go away after your system is on the hook for lots of debt to pay for all that capacity.

Granted, the development trajectory in most of the U.S. is upward most of the time (2008 turned out to be a big exception) but that trajectory can bounce around a lot from city to city, from district to district and from time to time. Consider the XYZ Corporation that assembles electronic do-dads. They tell the city fathers and mothers, "We will employ 100 people in your town, we will pay them $2,500,000 per year, plus we'll purchase another $1,000,000 in products, services and do-dad supplies from other businesses in town each year. Don't assess us a capacity charge for our water and sewer and we're ready to start building tomorrow." You sign, you borrow big money, you upgrade your water and sewer systems, they build, they operate for a few years. So, what happens next?

If at all possible, don't "bet on the come." Try to get the money you need to build capacity up front and from the right people. Oh, sure, that won't happen every time. And dang it, sometimes you must gamble if you are to win big. But don't play with the "little old lady's" water bill money. If her water bill money is going to be gambled away, she wants to do it herself down at the casino.

They get bought out by the ABC Corporation. ABC moves all assembly operations to Mexico.

Result? The XYZ Corporation paid no capacity charges and they only paid user fees for five years. The business is now gone and your town is stuck with oversized and over-financed water and sewer systems with even less means of paying for them now. That means the "little old lady, widowed…" is not just stuck paying "her" share of XYZ's bill. She now has to pay XYZ's share, too.

How then should you set capacity fees that will recover your costs to build service capacity? Simplistically described here, you would divide the cost it took or will take to build or upgrade your system by the total capacity of all users. As each applicant asks to hook up, you will multiply their units of capacity to demand service from the system by the unit cost of system capacity.

This calculation should be clearer when you consider the following example.

You are going to build a brand new 500 user water system. All 500 users will be connected on the first day of operation. All users will pre-pay their share of the system construction costs. It will cost $1,000,000 to build the system. The typical residential user will have a three-quarter inch meter with a capacity of 0.442 square inches. The system's total capacity to serve will be 220.894 square inches of meter capacity.

The capacity charges for two meter sizes are shown in Figure 15.

Capacity Charges by Meter Size

	Lump-sum Cost to Build	Column A Charge per In^2 Capacity	Column B Meter Capacity In^2	Column C Capacity Charge
System as a Whole	$1,000,000	$4,527	220.894	N.A.
Residential User	N.A.	$4,527	0.442	$2,001
4" Meter Industrial User	N.A.	$4,527	12.566	$56,887

Column A X Column B = Column C

Figure 15

This calculation should have seemed vaguely familiar. It is like the potential demand-based minimum charge calculation described in Chapter 5. However, here you will recover all of these costs up front whereas the minimum charge recovers them with each bill payment over a long time.

In all likelihood, you are not building a brand new system right now that will have all capacity used on Day 1. Therefore, most of your capacity costs would actually be a stream of costs through some period of time, say 20 to 40 years. Likewise, new connections would be spread over many years. Thus, you would need to calculate the present value of the stream of costs and revenues to build the system and do major upgrades to keep it functioning as originally intended. There are other modifying factors to be considered, too. In all likelihood, the $57,000 charge for connection of a four inch meter shown in the table above will come way down because you just can't "sell" it. The residential charge may go up some. Those factors are situation-specific. You may well choose to recover part of your system capacity costs with your capacity charge and part over time with a potential demand-based minimum charge.

Only large systems and those with a very large potential new customer need to consider individually calculated capacity charges. All others can calculate capacity charges on an average basis, similar to the calculation described next for connection charges.

Connection charges

Being simpler and lower, connection charges are easier for systems to calculate and collect. You can do this calculation in a couple of ways.

1. Add up all the actual or projected costs your system did or will incur to make a particular new customer connection and charge them that amount. You might also want to add a bit of "profit" to cover your risk, hassle factor, unforeseen difficulties and other issues.

2. Add up the costs you incurred to make all new connections last year, add a cost inflation factor to bring those costs up to this year's needs and then divide by the number of connections you expect to make this year and that is the average connection fee you can charge all new customers this year. (You should charge such a standardized fee only to your residential or general new customers, not large industrial or other unusual new customers. For them, do the individualized calculation described above.) Again, you might want to add a "profit" factor.

That's it. Connection charges are pretty easy to calculate, they are relatively low and they are fairly easy to justify. Use them.

Tap fees

Tap fees are easier and even lower still. Generally you want to do the calculation as described in bullet point 2 above but consider only your administration costs incurred when you "sign up" a new customer. This should include your costs to administer the application process, costs to enter a new customer's property into your billing program and similar costs. Don't forget to include a proportional amount of the costs of the computer system, office space for staff to administer the program and other costs that are easy to overlook but that are real.

That one is easy, isn't it? There is no reason for not having at least tap fees that fully cover your administration costs.

Capacity, connection and tap fees generate revenues, ideally enough to pay all the related costs. While you might not want to attempt to do a calculation of these costs, charges and revenues, you might find Figure 16 at the end of this chapter useful. This chart illustrates one way of capturing these costs so you know what you need to collect from oversized users. If your system is large enough or your growth rate is fairly high, it would be well worth the investment to have a rate setting specialist do this calculation for you.

Late payment penalties, disconnections and related issues

As with everything else, these fees can be subject to the laws of your state. Check with your attorney to make sure you don't break those laws.

Why do some customers pay late or not at all? There are two major groups of late payers:

1. There are those who just forget to pay the water bill now and then. Most likely it just got lost in a pile of mail. There are those who are temporarily having a hard time financially. They lost their job or their car broke down. Most of these slow-pays are financially capable so money is not the issue. On rare occasions these financially capable customers use non-payment as their way of protesting something the city or district did, like you raised their rates. But, they will get caught up once they get over whatever the upset was.

2. Then there are those who simply don't want to pay, ever. They may be permanent "down and outers." They may have limited income but they like their cell phones, cable TV packages, cigarettes, beer, CDs and DVDs a lot and they didn't think you REALLY would cut them off if they didn't pay their bill. Not paying, or paying only under duress is just their choice. They all have their reasons; they're just not good ones.

I have talked with many systems about this issue. Almost all of them tell me this. It is the same small group of people who pay late, but they do eventually pay when hassled enough. Some force you all the way to or even past the point of getting their meter shut off. Some come around and pay their bill late, plus the late fees you charge, on a regular basis. They just can't focus on paying until you make it a priority for them. Therefore, the issue is not ability to pay. They almost all eventually pay. It is simply an inability, or lack of motivation to pay on time.

Your job then is to provide adequate motivation.

Late payment penalties and disconnection and reconnection charges should not be money makers. In fact, if you set them correctly you will make very little money on them at all because they will be high enough that most people will pay on time to avoid them. Your only intent with penalties is to discourage poor performance (late payment and non-payment) by your customers. In that regard you want penalties and charges to be clear, timely and strong enough to give your customers the incentive to avoid paying a penalty but not so high that someone will sue you. (That sounds cynical, doesn't it? Actually, it's just business.) Your penalty fees should cause your customers to conclude this, "That movie or DVD that came out this week can wait till next month. I need to go pay the water bill NOW."

Typically, water and sewer penalties are set at one to five percent of the bill that is not paid by a certain date. The deadline to get caught up is often liberal; two to four months. (Some systems even work out payment plans for balances owed.) After that time there may be a process the utility follows to gain payment or disconnect the user. After all that the user might get disconnected. When they are ready to reopen their account they will pay their penalties and reconnection charges and you reconnect them. This whole process often gets real sticky with legal issues so, again, clear the following recommendations with your attorney before proceeding.

I recommend:

- A late payment penalty of 10 percent of the outstanding bill or $10.00 per month, which ever is greater (these penalties compound each month),
- A payment before disconnection deadline as soon as your state statutes allow,
- A disconnection charge that fully pays your costs to disconnect the user (including legal costs, process costs, staff time, a factor for charges and fees that simply are uncollectible, you name it),
- A reconnection charge that, like the disconnection charge, fully pays your costs to reconnect the user. This will probably be the same as the disconnection charge. This fee would be charged to any property being reconnected so long as it is not as a result of disconnection for non-payment (reconnection after repairing a service line, property transfers, new renters coming in, etc.) If, however, disconnection was made for non-payment the reconnection charge should be higher, on the order of double the normal reconnection charge. This penalizes the customer for letting it go this far, and
- All penalties and fees must be paid before reconnection is made, no exception. If they want to work out a payment plan they can do that with their banker, friends or relatives because the utility is not in the lending business.

There are a couple of special categories of late and non-payers. In cities that have water and sewer service, sometimes a customer will get cute and pay their water bill but not their sewer bill. Their reasoning is, "If they can't shut off my water, they can't do a thing about the sewer." They're pretty close to right on that one. Solve that problem this way. Write your sewer and water user charge ordinances so payment received from a customer will first be applied to the sewer bill. Any amount remaining will

Disconnection tip from a water district: A small town in my home state couldn't get one customer, a well-paid nurse, to pay her sewer bill for several months. Nothing motivated her. The city utilities superintendent mentioned it to a nearby water district and they told him a possible solution, so he tried it.

The town clerk sent the nurse "final notice" of sewer shutoff that would occur on the first Monday of the following month. For the next two weeks the nurse still didn't pay. Late Friday afternoon before deadline Monday the superintendent parked a trailer loaded with a backhoe on the street in front of the nurse's house. Monday morning she was standing on the city hall steps before the doors opened, checkbook in hand.

then be applied to the water bill. In this way if someone doesn't pay enough, they are in arrears on their water bill, which you can more quickly and cheaply address.

Especially in resort, recreational and vacation home areas, and in the north and south where "snowbirds" reside for part of the year, some property owners will disconnect their water and sewer service when they are gone. Their reasoning is good, "If I'm not there using the service, why should I have to pay for it?" The problem with that reasoning is this. These systems had to be built to satisfy their needs during the times they are there. Some of those costs, notably debt service, go on regardless of the volume of service each customer actually uses. Therefore, each customer should at least pay their fair share of these costs, even during the months they are gone. Address this issue by giving your customers two payment options:

1. Charge your full-cost disconnection charge when the customer disconnects. When they come back and want to reconnect, charge your full-cost reconnection charge plus the debt service and other appropriate fixed costs that accrued during the time they were disconnected. Or,
2. Send the customer a maintenance bill during the time they are gone that covers the fixed costs. If the customer chooses this option they may not actually disconnect their service (have the water physically shut off) unless freezing or leaks are an issue. If they don't physically disconnect, they don't have to pay disconnection and reconnection charges.

When you announce you are going to adopt a policy like that described above, those who disconnect to avoid payment are going to complain. You can't take away the discomfort of having to pay but you can at least describe to them why it needs to be this way by using an analogy like this story.

> *Customer, did you borrow money to buy your house, cabin, ski bungalow? Sure you did. Do you only make your loan payments on that property during the month(s) you are here? I don't think so. Your banker's loan made it possible for you to come here whenever you want. The debt the city or district incurred, on your behalf, makes it possible for you to turn on the tap and get water or flush the toilet and have it go away whenever you want. It has nothing to do with when, if ever, you actually use those facilities.*

Helping the disadvantaged

Rule 4. If adjusting a rate, fee or policy will turn currently "good" customers into "bad" customers, decision-makers should consider the necessity of the change carefully before making it.

Some of your users will truly be financially hurt by markedly higher rates, especially high minimum charges. Remember the fourth rule of utility management from Chapter 1? Even if those who have the means have to help those who are disadvantaged, there are some benefits to all for doing it. 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. You will cut down on the temptation to steal water by tampering with meters. And, you will remove one issue that may make some so upset that they would cause some sort of mischief to take revenge. In a perfect world everyone would pay their own bills and no one would have to subsidize anyone else. But, this is not a perfect world.

So, how do you set rates that have everyone pay their fair share yet don't hurt the disadvantaged too much? You can't exactly do that but you can come close with these strategies.

First, you need to run any of the following options you want to try by your attorney and your ratepayers. Your plan of action needs to be acceptable to both. Then, figure out the dollar amount of non-payments and extra costs chasing non-payments in one year that you might have if you raised your rates to where you think they should be. Consider this non-payment, or bad debt, as an operating cost for the system. Plug this cost into your rate analysis and refigure your rates so they will be high enough to also cover this cost. In other words, all of your paying ratepayers will share the bad debt cost.

Now you are ready for bill assistance options.

Option 1 – In the future, after attempting to collect all bills, you will write off those that make no sense to pursue further. This option can become a slippery slope if you don't have a consistent bill collection policy and consistently use it. Non-payers will proliferate if you let them.

Option 2 – Set up a utility bill assistance program whereby the utility would forgive bill amounts over some threshold under certain conditions. I suggest you set the threshold on an affordability basis. When applying for the assistance program, the disadvantaged ratepayers would bring you their tax return or some other acceptable proof of income. You would set the affordability threshold at say, four percent of household income. Then it is a simple matter of calculating four percent of each applicant's household income 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 everything will happen automatically. If you just have a few you could keep a list of them on hand and each month before you send out bills, check those for need of adjustment. During the months such customers' bills would go over the threshold amount you would cap their bill. During the months they stay under that amount you would charge the full amount. Again, without a strong policy and consistent adherence, this could become a slippery slope.

You can use options 1 and 2 together.

Finally, with either of the above options, you could set up a "dollar more" program whereby you would encourage ratepayers to donate to a fund that will help the needy pay their utility bills. Then you would use this fund to subsidize the utility bill of those who need it.

You may have other issues that are specific to your situation. Reason your way through them using the process described in this chapter.

True Story:

I recommended increased rates for a small city in 2007. In the front row at the city council meeting a group of five older ladies loudly protested the rates I recommended saying they would devastate them. After the meeting, while packing up I told the finance director I was headed to McDonald's for a soda and then back home. She told me I should skip McDonald's. She said those older ladies complain that a $3.00 per month rate increase will devastate them but they will be at McDonald's, like every other evening, for sundaes, pies, coffees and such.

I thought she was pulling my leg; those ladies were so convincing. I went to McDonald's and who was coming out the door as I went in? You guessed it. Each one of those older ladies spent more in McDonald's on their snacks that one night than what the water rate increase would be for a whole month.

Conclusion

Surchargeable expenses, penalties, connections, disconnections, reconnections and similar issues often consume a large part of your clerk's and operator's time. They are often your biggest headaches. They are costly and your fees and charges may not fully recover those costs. However, they should. Otherwise, your regular customers who pay their bills on time end up subsidizing the poor performers. If you will give your customers the incentive to perform well by charging significant penalties and fees and making them clear and certain, you will have far fewer problems.

Likewise, if you charge new customers for the capacity they consume and the full costs to hook them up, those costs will not be passed on to your current customers. In addition, your operations staff and others must decide how to wisely invest their time, equipment and the ratepayer's money. By calculating and using your cost to produce you can make many such decisions on a strong financial basis.

Sunny Ridge, MO, Water Rates Scenario 1

Chart 1C - Meter-size Based Tap Fees

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This chart calculates the average tap fee and total tap fee revenues for a given year.

Common Meter Size Name	Meter Size in Inches	Cumulative Economy of Scale Savings Factors	Capacity Cost	% of Capacity Cost to Recover w/ Tap Fees[1]	Flat (Administration) Charge[2]	Field Costs[3]	Total Tap Fee Each Meter Size	Taps Anticipated in Each Meter Size	Total Tap Fee Collections Anticipated
5/8	0.625	100%	$1,850	50%	$75	$125	$1,000	13	$13,000
3/4	0.750	100%	$1,850	50%	$75	$125	$1,000	13	$13,000
1 Inch	1.000	100%	$3,289	50%	$75	$125	$1,719	5	$8,597
1 1/2 Inch	1.500	95%	$7,030	50%	$75	$125	$3,414	1	$3,414
2 Inch	2.000	90%	$11,840	50%	$75	$125	$5,403	5	$27,015
3 Inch	3.000	85%	$25,160	50%	$75	$125	$10,768	0	$0
4 Inch	4.000	80%	$42,098	50%	$75	$125	$16,914	3	$50,742
5 Inch	5.000	75%	$61,667	50%	$75	$125	$23,200	0	$0
6 Inch	6.000	70%	$82,880	50%	$75	$125	$29,083	0	$0
7 Inch	7.000	65%	$104,751	50%	$75	$125	$34,119	0	$0
8 Inch	8.000	60%	$126,293	50%	$75	$125	$37,963	0	$0
9 Inch	9.000	55%	$146,520	50%	$75	$125	$40,368	0	$0
10 Inch	10.000	50%	$164,444	50%	$75	$125	$41,186	0	$0
Average Tap Fee, Total New Taps and Total Tap Fee Collections Anticipated, Respectively:							$2,894	40	$115,769

Economy of Scale Savings Factor[4]	5%	Capacity Cost for a $1,850 5/8 Inch Meter[5]

Notes:

[1] % of Capacity Cost to Recover w/ Tap Fees - If all costs are to be recovered from this fee this percentage will be 100. If none, it will be 0. Most systems will choose to recover only part of the capacity costs in connection fees, perhaps 25 to 50%. The remainder will be recovered over time through regular user fees.

[2] Flat (Administration) Charge - The total cost to inspect connections, administer the program and otherwise "sign up" each new customer. This cost is not dependent on meter size.

[3] Field Costs - The total cost to inspect line connections and all other field work related to allowing a new connection.

[4] Economy of Scale Savings Factor - Generally the cost of infrastructure to serve a customer does not go up as quickly as their capacity (meter size) goes up. That is called economy of scale. This value is your estimate of the economy of scale your system enjoys as meter size goes up. To be realistic this factor should be no more than about 7%, with 3-5% being more reasonable.

[5] Capacity Cost for a 5/8 Inch Meter - The capital investment costs that the system incurs for a customer with this size meter. Costs for all other meter sizes, except 3/4 inch, are proportionate to this one.

For simplicity, it is assumed that 5/8 and 3/4 inch meters exert the same potential demand on the system. Thus, they are assessed the same tap fee. However, larger meter sizes allow more flow so tap fees for larger meters should be greater. This is the basic purpose of this calculator.

Figure 16

Sunny Ridge, MO, Water Rates Scenario 1

CBGreatRates© Version 4.3

Chart 1D - New Connections Cost Recovery

This chart shows tap fee revenues, costs to expect and resulting balances for the next 10 years.

(First year figures are actual, subsequent years are projected.)	Infla./De-flation (–) Factor	Year Starting 4/1/08	Year Starting 4/1/09	Year Starting 4/1/10	Year Starting 4/1/11	Year Starting 4/1/12	Year Starting 4/1/13	Year Starting 4/1/14	Year Starting 4/1/15	Year Starting 4/1/16	Year Starting 4/1/17	Year Starting 4/1/18
Connection Fee Revenues												
Customers (Taps) Added During the Year		14	32	34	37	37	40	40	40	43	43	43
Average Total Fee/Connection	4.0%	$1,429	$2,894	$3,010	$3,130	$3,256	$3,386	$3,521	$3,662	$3,809	$3,961	$4,119
Total Connection Fee Revenues	NA	$20,000	$92,615	$102,340	$115,824	$120,457	$135,433	$140,850	$146,484	$163,770	$170,320	$177,133
Operating Costs Associated With Making New Connections												
Field Costs	5.0%	$1,750	$4,200	$4,686	$5,354	$5,622	$6,381	$6,700	$7,036	$7,941	$8,338	$8,755
Administration Costs	3.0%	$1,050	$2,472	$2,705	$3,032	$3,123	$3,478	$3,582	$3,690	$4,085	$4,208	$4,334
Total Direct Costs for New Connections		$2,800	$6,672	$7,391	$8,386	$8,745	$9,859	$10,283	$10,725	$12,027	$12,546	$13,089
Revenues Net of Operating Costs		$17,200	$85,943	$94,949	$107,438	$111,712	$125,574	$130,568	$135,759	$151,743	$157,774	$164,044
Cum Rev Net of Operating Costs		$17,200	$103,143	$198,092	$305,530	$417,242	$542,816	$673,384	$809,143	$960,886	$1,118,660	$1,282,704

Note: Connection charges should almost always cover at least the operating costs to make connections. Thus, cumulative revenues net of operating costs should be positive.

Capital Costs (Debt Service and Cash-paid Capital Improvements Attributable to Growth)

	% of CIP Due to Growth	Costs to Satisfy Growth										
Debt Paid for Growth Upgrades	56.5%	$4,000	$4,000	$78,734	$105,704	$123,403	$123,403	$123,403	$123,403	$123,403	$123,403	$123,403
Cash Paid for Growth Upgrades	87.1%	$30,322	$0	$0	$0	$72,930	$102,103	$0	$0	$0	$0	$0
Sum of Capital Costs for Growth	59.9%	$34,322	$4,000	$78,734	$105,704	$196,333	$225,505	$123,403	$123,403	$123,403	$123,403	$123,403
Total Growth-related CIP Costs		$37,122	$10,672	$86,124	$114,090	$205,078	$235,365	$133,685	$134,128	$135,429	$135,949	$136,492
Connection Fees Less Growth-related CIP Costs		-$17,122	$81,943	$16,215	$1,734	-$84,621	-$99,931	$7,165	$12,357	$28,340	$34,371	$40,641
Connection Fee Reserve Balance		-$17,122	$64,821	$81,036	$82,770	-$1,850	-$101,782	-$94,617	-$82,260	-$53,920	-$19,549	$21,093

Note: Ideally, connection charges should cover all growth related system expansion and operating costs. Thus, cumulative revenues net of all growth costs should be positive. To the extent that they do not cover these costs, they will be transferred to all ratepayers, many of whom are not responsible for current growth demands.

Figure 17

Chapter 8 – Making the Initial Rate Adjustments

(Mainly relates to Phase 3 rate adjustments)

Summary

Initial rate adjustments are done as the immediate follow-up to the Phase 2 comprehensive rate analysis. To be successful, the initial rate adjustments should be done using good techniques and smart strategies. If you can you should gain the support of most of your ratepayers for the proposed rate adjustments. You definitely do not want to embolden people to organize against your efforts. The rate adjustment process should include two distinct parts completed by different people: the analysis part and the actual rate adjustment part. The most visible part of the rate setting process is public meetings. At these meetings you will discuss the rate analysis and possible rate adjustments. At a final meeting you will enact rate adjustments. Do this well and you are almost guaranteed success in rate setting.

Wise saying on a T-shirt –

"Confidence is the feeling you have before you fully understand the situation."

Introduction

Feeling confident? Like you know what to do and how to do it? You might want to rethink that feeling.

You can want to reset your rates. You can hire a rate analyst. They can tell you what you should do to your rates. But until you actually adjust your rates, you haven't gone anywhere. In my opinion, Phase 3, the actual rate adjustment part is what keeps most systems from getting great rates. No one wants to go out on a limb and propose raising rates for fear that disgruntled people will cut that limb. There are plenty of people standing around with saws.

A word of advice: Talk dollars of rate increase for the average residential user, not percentages. The percentages will always be ugly. The dollars for a residential user will probably be on the order of a value meal at McDonalds each month.

Rate adjustments are separated into two camps.

1. Initial adjustments (Phase 3) are done immediately after the Phase 2 comprehensive rate analysis. They are the direct subject of that analysis so these adjustments have been modeled very carefully. These adjustments are the focus of this chapter.
2. In later years you will do incremental, generally inflationary increases (Phase 4) to make sure your rates remain adequate. Those will be discussed in the next chapter.

To be very clear, the term "initial" relates to when the comprehensive analysis was done, not to when the system was built. Rate adjustments done immediately after the comprehensive analysis are the "initial" rate adjustments. For some years after that you will do incremental rate increases basically to keep track with inflation. Eventually you will do another comprehensive rate analysis and do another set of "initial" rate and fee adjustments, restarting the cycle.

A **critical** word of advice: Never compare the proposed rate increase to the cost of a cable TV package. They will reject your proposed rate increase and toss you out into the street for even suggesting they give up that HBO, Showtime or sports package.

There are task oriented steps you need to take to adjust rates. There are also useful strategies you can use to keep the angry saw-wielding people at bay.

It's a blame game

If you, the board or council, set rates wrong in any way, the hotheads will blame you. If you leave it up to your users to set their own rates and they keep rates so low that you can't run the system right, the hotheads will blame you. As the hotheads see it, this is a beautiful system.

Don't worry about the hothead popularity contest – you can't win that one. Just provide good service at a fair rate and your cool heads won't have reason to blame you. As the saying goes, "It don't get any better than this."

After working off and on for probably 2-4 months, your rate analyst will have an analysis and recommendations for you. As you two are nearing the recommendation forming stage, you and your analyst and maybe a few of your board or council members should collaborate on how the recommendations will be structured and presented. Do this right and you will almost certainly get the funding you need and the respect of your ratepayers for a job well done. Do it wrong and you may or may not get adequate funding and you might get voted out of office as a bonus.

A word of warning

If you choose the direct democracy path make it clear to your ratepayers that that is exactly what you have done, and stick to it. If they choose the 'wrong' rates, fine. You have told them what outcome they should expect so let them suffer the consequences they have chosen. But don't double-cross them and as a board or council impose a higher rate on them that they have already demonstrated they don't want. That is a no-win action.

For the people, but...

The critical thing the board or council must decide early on and with little if any dissent among them is this. Either the board or council will take actions it considers beneficial for the ratepayers (like raise rates), or the board or council will simply execute the will of the people. The board or council needs to drive this train for the benefit of the passengers, or the passengers need to drive it themselves. Either way the train is headed down or off the tracks. The following example puts this issue in terms of rate setting.

You are an elected city council member. Your water rate revenues need to go up 25 percent to adequately fund the system. You must go down one of two paths toward this rate increase.

1. Path One: You may or may not try to convince your ratepayers that it is in their best interest to pay 25 percent more. You may or may not succeed at that. But at the end of the day, acting in their best interest as their elected representatives, you raise their rates by an average of 25 percent. (This is representative government and I almost always recommend it for rate setting and utility management.)
2. Path Two: You try to convince your ratepayers that it is in their best interest to pay 25 percent more. You may or may not succeed at that. At the end of the day you leave the rate increase decision up to them. (This is direct democracy.)

A double word of warning

You will occasionally consider a rate increase because you are planning to build a new system, a major upgrade or something else that will cost lots of money to build, operate and maintain for a long time. When that occasion comes, leave nothing to chance. You need to make sure that the system or upgrade you are going to build is your best choice, that you know as certainly as possible what it will cost and that you know what the rates need to be to support it. Get any of these wrong and you could be in for serious, permanent problems. Direct democracy just doesn't work here. Your community needs to rely upon its elected officials, staff and specialists to study the issue well and make good decisions on their behalf.

Elected officials are legitimately torn between Path One and Path Two (either of which potentially can work if done right.) While most elected officials feel they were elected to follow the first path, many perform as if they are following the second path. That kind of thinking has led to rates that are inadequate in most water and sewer systems today. That's because ratepayers got the idea that system funding and rates are negotiable, so they negotiated a better deal. You just didn't hold up your end of the bargain by operating the system well with the money they gave you.

In this country we are proud of our heritage of government that is "of the people, by the people and for the people." People naturally want their utility services cheap if not free. However, utility management is more a business function than a government function. Thus, the business must be funded properly or the "for the people" part just won't happen.

This is what you need to do.

As a united board or council, choose Path One or Path Two. Then make it absolutely clear to your ratepayers which of the two paths you have chosen. If things go wrong they need to know who to blame, you or themselves.

It happens so commonly that it is almost standard. Three or four of the five board or council members will choose Path One and the other one or two will choose Path Two. The Path One choosers end up doing the hard, unpopular work of funding the system well, usually raising everyone's rates in the process. The Path Two choosers get to be the "for the people" populists. They question the rate increase and their fellow council or board members. They point out how it will hurt the fine citizens or your town or district. But, they get to enjoy the success created by the rate increase. Human nature being what it is we are stuck with people who want to play it both ways. However, the utilities that provide appropriate service at reasonable cost are usually those that have united boards and councils. You, the board or council members, need to work this issue out "behind closed doors" before considering rate adjustments so you can serve your ratepayers as well as possible and not eat each other up.

And, a word of reassurance

Whichever path you choose, if you will thoroughly research the outcomes you can expect from various rates and you (or your analyst) clearly and convincingly lay that information out to your ratepayers, ratepayers will almost always choose (or let you choose) the right course. If they don't the results will probably be evident soon and they will correct their course.

Unfortunately, some Path Two choosers also like to "blindside" their fellow council or board members by not revealing their intent in pre-meetings and workshops where the nuts and bolts of the rate analysis are discussed. They prefer to wait until the public meeting, with the press there in force and then they will side with the "poor ratepayer whose rates are going to be jacked up so ruthlessly."

There is no absolute cure for this behavior. However, as mentioned at the very beginning of this book, you should set up a defense beforehand. That is, before analyzing and adjusting rates and fees, your board or council should adopt a resolution something like this.

> *The (council/board) of _____ resolves to set and maintain utility rates and fees that are fairly structured for the ratepayers and high enough to adequately fund the system on a sustainable basis.*

"The last liar always loses."

– Unknown

Consider this to be a rule – never open the floor to discussion until the rate analysis and possible actions to be taken have been covered to the satisfaction of the decision-making body. If a ratepayer, or a board or council member wants to argue against rate increases, that's OK. But make them argue against the facts after they have already been presented, not the other way around.

This goal statement tells everyone, including board and council members, how the board or council will decide rate setting issues. Then, before launching into a public discussion of the rate analysis and proposed rates, remind everyone of the council's or board's stated goal. You might even want to read it out loud for all to hear before you start the rate adjustment discussion. In that way, the analysis that was done and statements people make can be measured against this objective criteria. If a board or council member seems to advocate for a rate that won't satisfy that criteria, they should be asked to defend their position.

How to discuss rate adjustments

Early on, and several times again through the rate adjustment process, make it clear to all (generally during meetings) that the rate adjustment process has two main parts. One is the rate analysis, the math and science part. If done right the analysis is a fact-finding and fact revealing exercise. The other part is the discussion of the rate recommendations and executing rate adjustment actions, like passing an ordinance. This is the "political" part. This part often goes awry.

In most cases I prefer to see community decision-makers take an open approach on the political part. Simply tell your ratepayers, probably at your council or board meeting, what the analysis says. You will probably tell them something like this,

If we keep our current rates, which are unfairly structured and inadequate, the system will run out of money in 20___, or, we won't have the money needed to build the new _____, or, we won't have enough money to replace failing equipment so we will start to have service outages or (whatever the consequence is for your ratepayers.) If we adjust rates as proposed they will treat all ratepayers fairly and enable (great, good, just good enough) service to continue (or start.)

Whatever your story is, tell it to them. If you have an outside rate analyst, they will do this telling for you.

At this point you have two options for how to continue this "conversation."

1. Hold a public hearing. In a public hearing the audience is allowed to hear, but not participate (much) in the discussion of the issue. Only the council or board members and the analyst will carry on the conversation. However, that doesn't mean the issue won't be thoroughly examined. That examination will just be done by various members of the board or council bringing out the key points that the ratepayers care about. This option works if you are following the "representative government" model described previously. It does not work for the "direct democracy" model because in direct democracy, the people must be directly involved in the debate.

   You should go this route if many of those attending your meeting just want cheap rates and they won't listen to facts or reason. The media will still report that some people in attendance voiced disapproval of the proposed rate adjustment. However, the article will also state the reasons why the council or board said it is necessary and the effects the rate adjustment will have on the ratepayers and the system. Those reading the article will have a fuller picture with which to form their opinions about the rate adjustment.

A word of advice:

When discussing the rate increase, try to avoid talking about the new average residential bill versus the old average residential bill. Your customers are used to paying the old rate already. Instead, tell them something like this, "The current rate is buying you a failing system, no chance for upgrades, etc. An increase of $2.50 per month for the average residential user will buy you a system that will continue to serve you well for years and do ..."

2. The other option is to have this conversation directly with the ratepayers who have attended your meeting. In other words, discuss the issue in an open public meeting format. After the board or council has conducted discussion to its satisfaction, the mayor or chair person will literally ask the audience, "Well folks, what are your thoughts?" This option works for the "direct democracy" model discussed earlier. It can work for the "representative government" model too, but it can cause problems.

   Use this option only if those who attended are almost all rational and cool-headed. You can't have this conversation if only hotheads and the media are in the room. The hotheads will do their grandstanding and the media will report it. Since no cool heads will be there to say that the rate increase is not bad and it sure will buy a lot, the implication in the article will be that the rate increase is unwarranted and hated. The increase will go down in flames or someone will get voted out of office in the next election.

   Now, don't get the wrong idea. You can have only cool-headed, mild-mannered ratepayers in the room but one or several are still going to ask some pointed questions. That's OK. In fact, that is largely what this process is about. You need to know their questions and concerns. And, they need to see that you have considered them properly and can address them well.

If the rate adjustments will be small, and that's the idea with Phase 4 incremental adjustments that come up later, forget all this strategy discussion of how to have this conversation and do it as described in the next chapter. It's not a big deal so just get on with it. When the increase is small, no one really cares about rate structure fairness or anything else. They prefer to stay home and watch their favorite TV show. (Man, that sounds cynical but it's not. In reality, they are simply making a decision to invest their time where they feel it will give them the greatest return on investment. As most people see it, it just is not worth attending a meeting to talk about a $1.00 per month rate increase.)

If the rate adjustments that are needed will not ruffle too many feathers (mainly because they are small), the council or board may want to enact ordinance changes or pass a rate resolution during the same meeting where the analysis and adjustment needs are first discussed publicly. Otherwise, enactment of an ordinance or resolution should wait for the next meeting. But, make sure you do the enactment promptly.

One of the most important things you can do in the meeting(s) where you discuss rate increases is to assure the ratepayers that you thoroughly understand the needs of both the system and the ratepayers. You do that by demonstrating empathy for them and competence at running the system. That includes running the meeting itself in a tight, professional way. A loose, uncontrolled meeting makes many people feel uneasy about those doing the leading.

Meeting management

Public meetings are for the benefit of the public – ratepayers, citizens and the media. Your board or council doesn't need public meetings to be able to make decisions. But the public needs to see what goes into the making of those decisions so they can verify that those decisions were sound, if they care to. If you make a sound decision but you don't do it using a proper process or the public perceives the decision was unsound, then it was unsound. Your success is measured by the benefit gained by the system and the ratepayers AND by how satisfied the public is with the process you used to make decisions.

The following largely concerns meeting preparation and management. The goal is to get the most from your public meetings. Most of these considerations apply to meetings generally but they are especially important when initial rate adjustments are the issue. Much of what follows is easier to accomplish if you have good visuals – things for people to look at and learn from. Several graphs and charts will be illustrated in this chapter. To access the complete example cited (it's too big to put in this book), visit http://carlbrownconsulting.com/ and click on the example link.

Perhaps you are an old hand at public meetings. You've got it down pat. Please don't be offended but I have presented my rate analysis results and recommendations at dozens of public meetings. In way too many of those meetings, while my part went very well, other things under the control of the system's leaders went wrong before the meeting started and they only went downhill from there.

Your team (the board or council, your staff and whoever is working with you) needs to do some critical things to make your meeting go well:

- Besides satisfying your statutory requirements, you need to publicize the meeting well and encourage as many people as possible to attend. It is useful for your users to hear this information firsthand. They should never get the idea that you are trying to sneak a rate increase past them. And, the more people attend, the more cool-headed people you will have to leaven the hotheads, who will always attend.
- As much as possible, you all should be on the same page concerning rates, system finances and management before opening the meeting. Differ and the hotheads and the media will grill you at the least or tear you apart if they sense dissention in the ranks.
- You need to be well prepared to present and discuss whatever you will present and discuss. To do that, all team members need to read and think about the analysis results and recommendations beforehand. This is a very difficult thing for many board and council members because some don't want to do their "homework" before getting to class.
- It would be very helpful to write down any questions that come to you when reading the analysis so you won't have to depend on memory during the meeting. Better yet, you should pose the questions to your analyst ahead of time so they can do any necessary research and be well prepared, too.
- Unless they have something critical preventing attendance, ALL board or council members should attend rate setting meetings. In your ratepayers' eyes, there is no issue more important than considering a rate increase (well, outside of potholes, loose dogs and such). Treat their concern with respect.

- Your analyst will probably present their analysis and recommendations and answer all questions pertaining to them. Whoever does this presentation needs to be as brief as reasonably possible but still cover the important facts and recommendations well. They need to demonstrate to the ratepayers that the analysis was sound and that all will go well for them under the new rates (assuming this is true). And, they need to give the decision-makers motivation to act swiftly. At this point procrastination is the killer of more rate adjustments than anything else.
- To make issues as clear as possible for all, your analyst should concentrate on presenting information using line graphs, in color, and other visuals – "pictures" – rather than flashing tables of numbers up on a screen. Tables of numbers are necessary to document the analysis. Decision-makers need to see them. However, tables of numbers are nearly useless for people trying to understand issues in a brief meeting setting. (Plus, they are usually impossible to read on any size screen.) Rather than use the numbers directly, interpret the numbers with visuals and good descriptions. Line graphs you use may look something like the following charts, except do them in color, of course. Descriptions you might offer are below each chart.

Get ready to be hacked off.

When you get re-elected to your mayor, chairman, council or board seat and the next month you roll out a plan to increase water rates by 40 percent because the utility needs the money real bad, your ratepayers always smell the skunk. They know that you knew about this need two months ago when you were running for office and you didn't say a word about it.

History will show that many people knew about the serious problems facing Fannie Mae, Freddie Mac and other financial firms long before the meltdown of 2008 and they said nothing about it. How did it make you feel when they hid that from you? And, what was or will be the final result of that deception? Don't do this to your ratepayers.

If the utility needs money tell people as soon as you understand the need and you are able to explain it well. Trust them to understand and accept bad news because they (usually) will, if you present it openly and well.

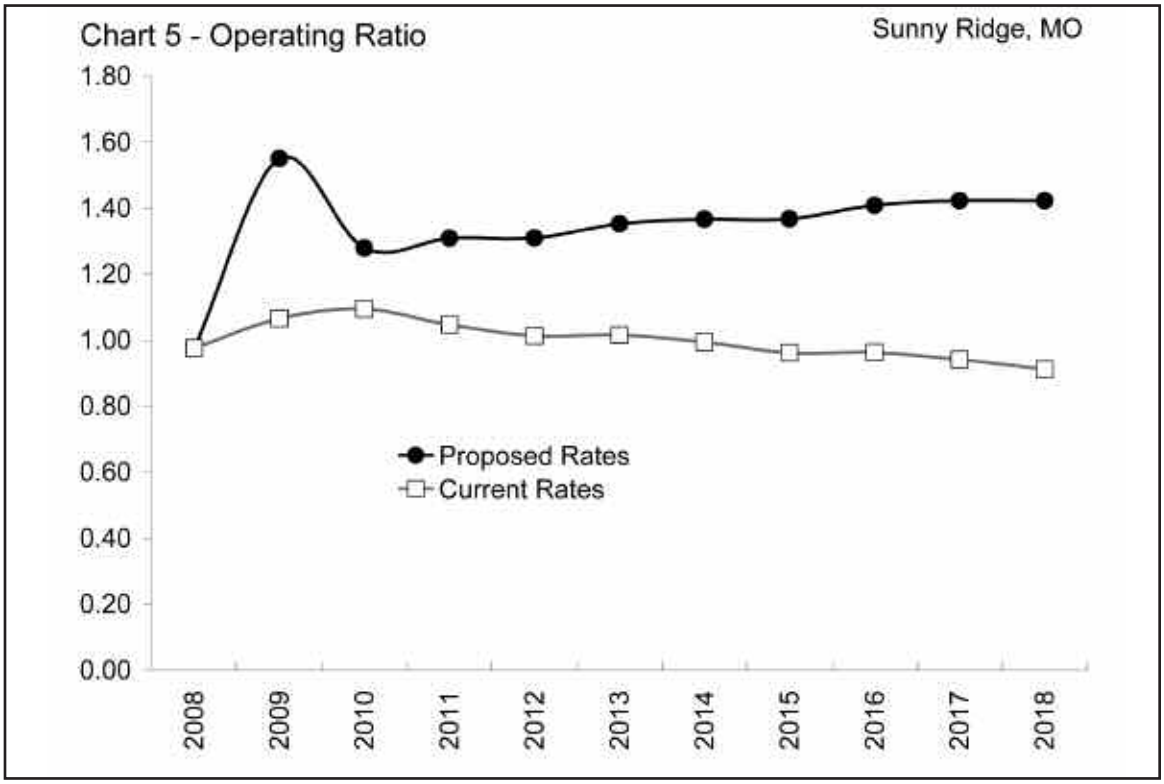


Figure 18 – Description: Operating ratio is a measure of the utility's ability to pay its operating costs. We must maintain at least a 1.0 ratio to break even. The ratio produced by the current rates won't do that. The proposed rates will.

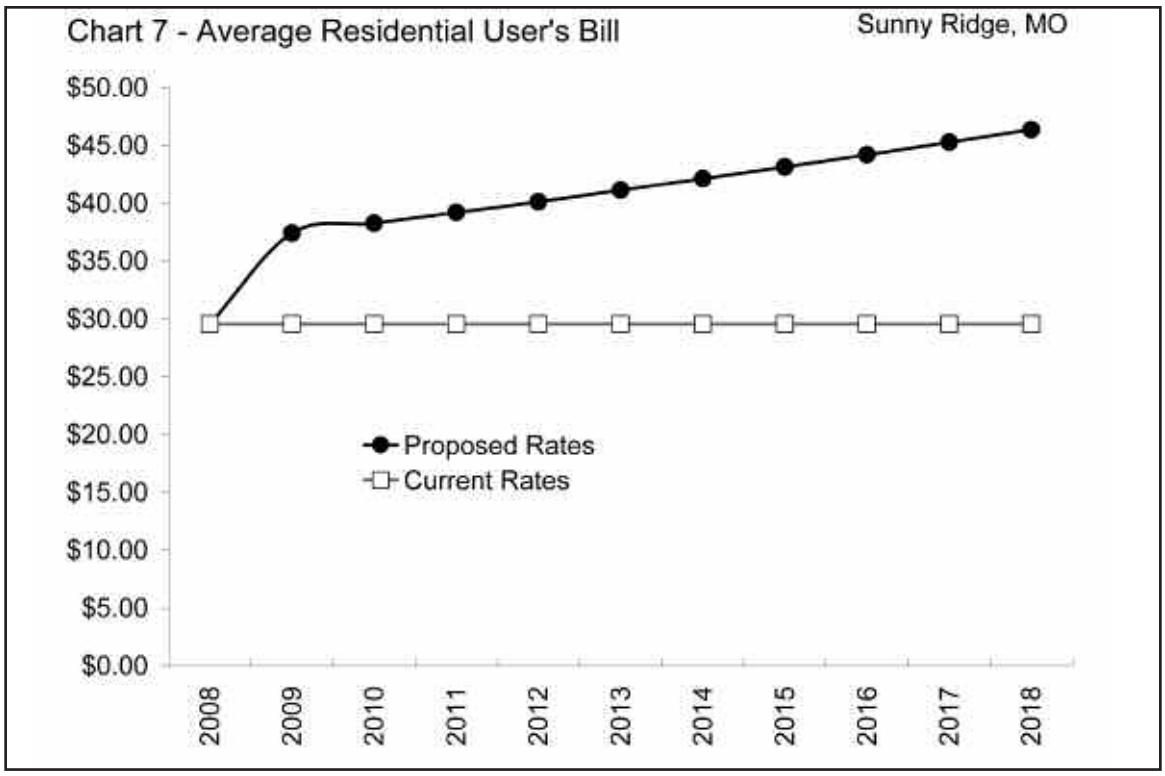


Figure 19 – Description: As you can see, the average rate will go up initially by about $8.00 per month and by about $0.75 per month for the next 10 years under the proposed rates.

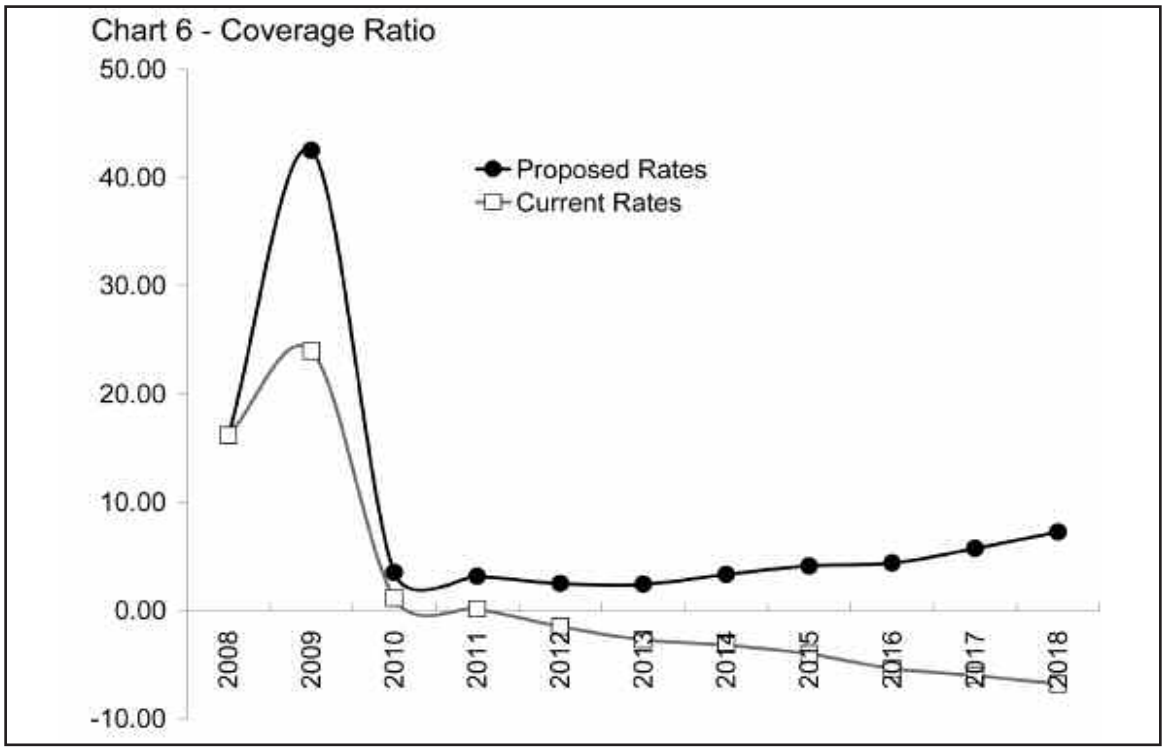


Figure 20 – Description: The coverage ratio is like the operating ratio. However, it measures the utility's ability to pay its debt service costs. Both lines rise and then fall sharply because some new debt payments will start very soon. However, the proposed rates stay above 1.0, which is break even. The current rates line does not. That means that if we don't raise our rates we will not be able to pay our debt service payments and we will go into default on our loans. Remember, that sort of thing happened during the mortgage meltdown of 2008.

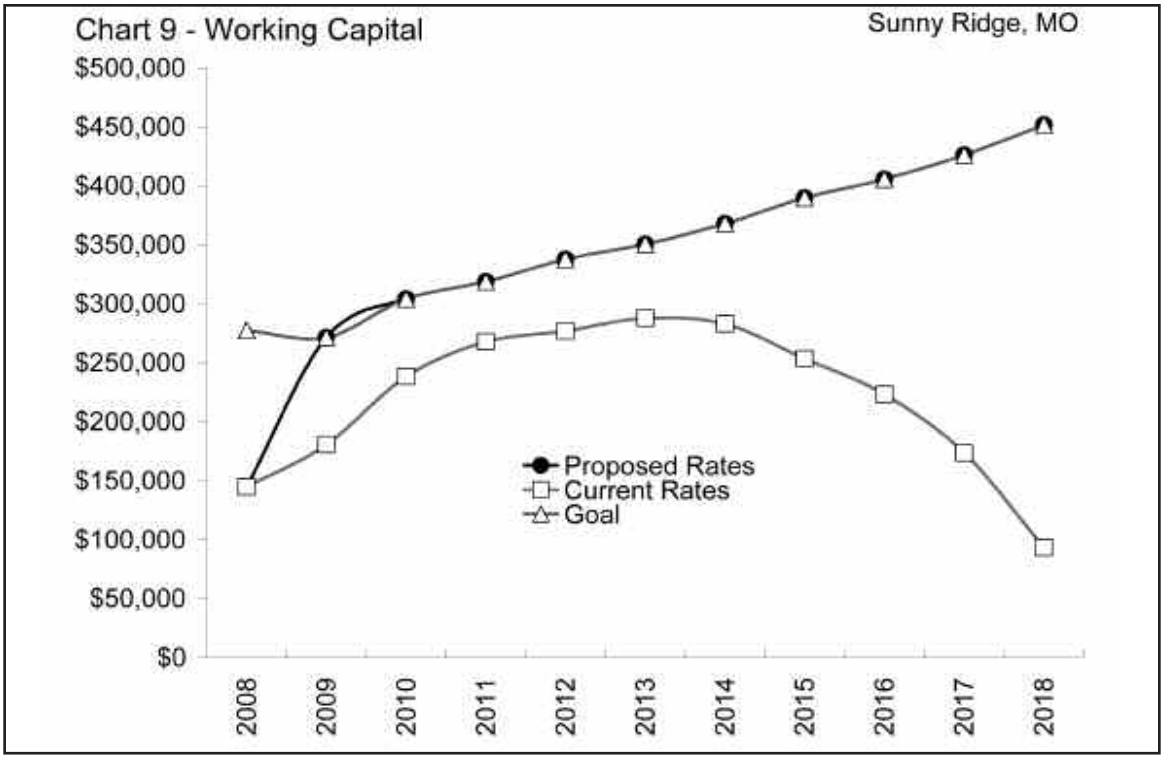


Figure 21 – Description: Working capital is the balance left after paying our operating costs. Under the current rates our balance will rise for a little while but then start to drop fast. Under the proposed rates our balance will meet our working capital goal very soon and continue to meet that goal for a long time to come.

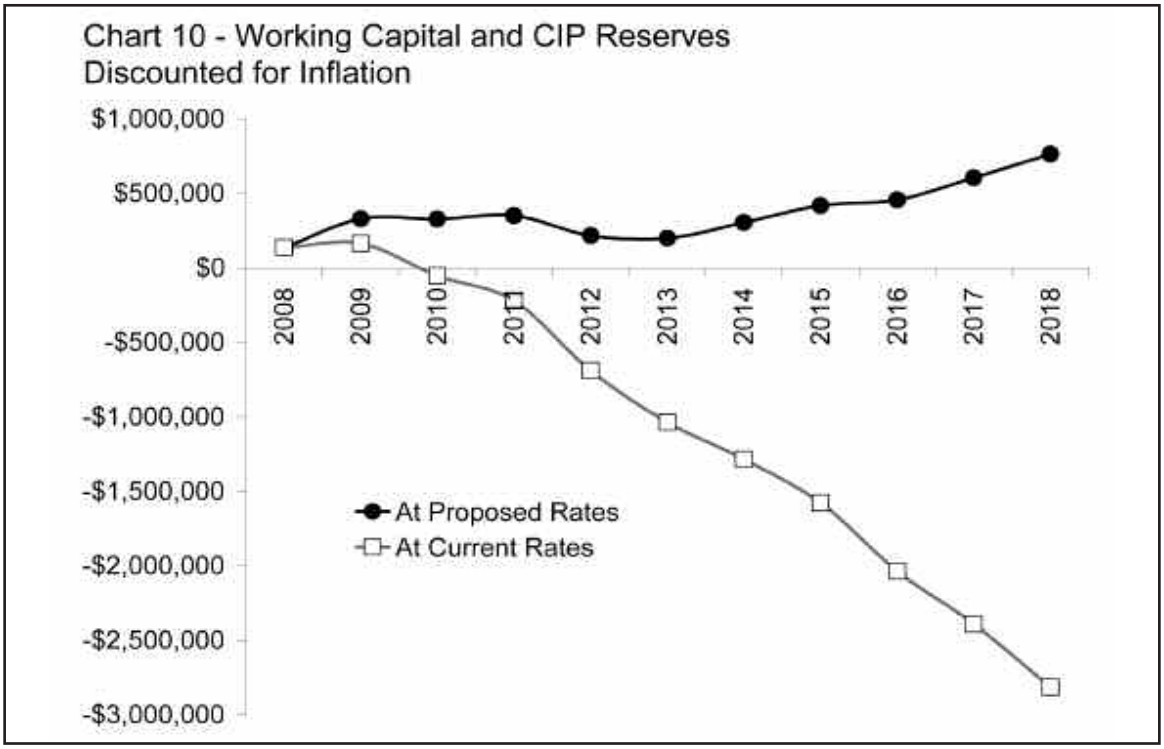


Figure 22 – Description: From the previous chart some of you may have thought, "The system is going to have too much money if rates go up like they propose." However, inflation will happen over the next 10 years. When it does it will erode the systems ability to pay for things needed to serve you. Thus, this chart shows the actual buying power of the working capital and capital improvement reserves at the proposed and current rates. Obviously, the current rates will not get the job done. Even at the proposed rates we may need to borrow a bit of money in 2012 to make it through the low balance you see.

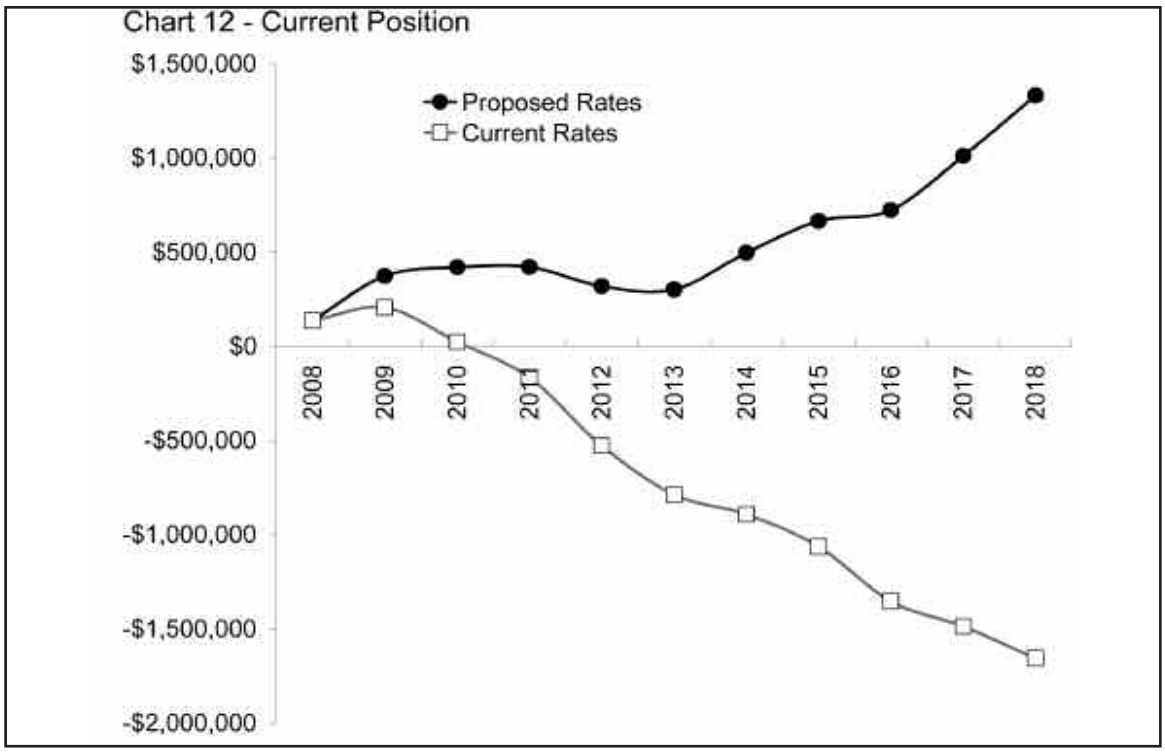


Figure 23 – Description: Current position is the total of our easily gettable cash. Under the current rates we will go completely broke in the next couple of years. Under the proposed rates our current position will dip for a few years but then recover, enabling the system to handle upsets and make improvements to the system that we have had to postpone for years.

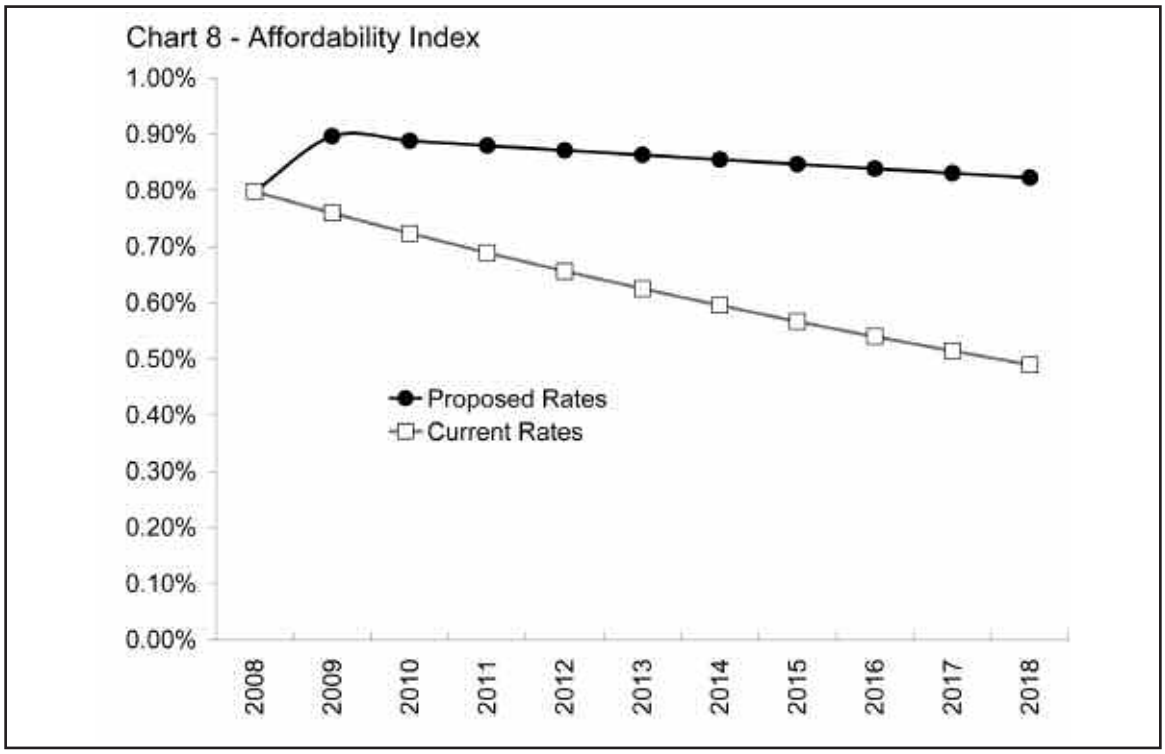


Figure 24 – Description: Some of you are probably worried about what the proposed rate increase will do to your budget. This chart covers that. The affordability index is a measure of how easy it is for a 5,000 gallon per month residential user to pay their water bill. The average around the country is about 1.0, meaning the average household spends one percent of their income to pay their water bill. As you can see, our affordability index is below that now and it will still be below that even after the proposed rate increase. Our future increases should be less than the pay raise rates our community averages so rates will actually get more affordable as the years go by.

- When discussing an issue, rate, fee or anything else, always describe and show how it will affect the ratepayers and the system. For ratepayers, when they can't get the message quickly the message is obviously too complex. (In fact, you may not even want to show all of the charts illustrated above. Just use those that "make your case.") Complex equates to expensive and they want nothing to do with that. So keep it as simple and graphic as possible.
- When the time comes to propose rate adjustments, the board or council needs to act decisively and swiftly. Indecision and procrastination invite doubt by your ratepayers and negative coverage by the media. They think, reasonably, that if you are taking so long to raise rates you must not really need a rate increase. If you really need a rate increase it should be urgent enough that you will propose it as soon as reasonably possible.
- Limit discussion of the analysis, recommendations, rate adjustments being considered and such to two hours if the rates will change drastically (more than 25 percent for very many users or $7.00 per residential user per month, whichever is greater.) If changes will be less than that, a one hour time limit is more appropriate. It is usually most effective to hold a special meeting to discuss rates rather than add this issue to an already full regular agenda.
- Give everyone who attends the meeting a chart that depicts the current rates and the proposed rates side by side. The chart in Figure 25 *(page 66)* demonstrates the kinds of information you should present. (Actually, most systems shouldn't include the percentage of rate increases, the last column of this chart, because the percentages will almost always be ugly. However, this client wanted the percentages left in so I left them in.) This really is the bottom line for ratepayers. If they see the rate adjustment won't hurt them too much, that's all they care to know.

Should you have cash reserves? Picture this:

There you are, in the spotlight, up on the high-wire, over the center ring, under the big top, in your tie-dyed spandex tights. The calliope starts to play. The crowd catches its breath.

You pick up your balance pole, take one quick look at the floor far below, no safety net to break your fall. You slide your foot out onto the wire. Simultaneously all of your ratepayers, clutching your waist, slide one foot forward. Your journey to the other landing has commenced.

This is precisely what running a utility without adequate reserves is like.

Your ratepayers will tell you, 'We don't want no safety net,' but trust me on this one, they do.

Give each member of the media a full set of the analysis results and recommendations package so they can mine for details and accurate quotes if they wish. They need data and quotes so make it easy for them to get the correct information. Even if they are not inclined to dig that deeply, your openness will reassure them that you are trying to serve the community well so they will be less inclined to cover the issue negatively. In fact, most will pick up on the critical need to properly maintain and upgrade the system and point that out in their coverage because that is the real story here. You may have a loudmouthed hothead at your meeting who doesn't want to pay an extra $2.50 per month to keep the system from going down the tubes. However, the media will almost always counter his rants in their reporting with the need for the increase and the good it will do. That is, if you give them the information.

There are other meeting-related issues that you need to handle well but these will get you started thinking about them.

Duties of those who execute rate adjustments

These considerations are addressed to those people, usually hired staff and assistance providers, who will actually do the hands-on work of making the rate adjustments happen.

A staff person of the system, probably working with the rate analyst and the system's attorney, should prepare a proposed rate ordinance or resolution using feedback from the board or council. You probably will need to address policy changes as well. You will have to take care of certain meeting requirements under your State's open meetings/open records law. You may also need to address requirements of grant and loan agencies that your system received or wants to receive funding from. Take all of these things into account when preparing the ordinance or resolution and policy changes. At the appropriate time in the council or board meeting the decision-making body will go through its process to consider and pass the ordinance or resolution and policy changes to effectuate the changes.

To smooth the way for future rate adjustments, I strongly recommend including a statement like the following in the new rate ordinance.

> *Unless the (board/council) of the (city/district) of _____ specifically determines otherwise, on the first day of each fiscal year starting on (the first day of the next fiscal year), and until (a date, 3 to 5 years away), all minimum charges, unit charges and tap fees will be increased (X) percent over the then current rates and fees in order to account for anticipated inflation and to maintain adequate operating, equipment replacement, capital improvement, emergency and debt coverage reserves.*

This automatic rate adjustment statement will do several things:

- It will put ratepayers on notice that the current rate increase is not a once and never again fix. Costs will go up and; therefore, rates must continue to go up, too.
- It will relieve future boards or councils and staff from having to do detailed rate analyses for every rate increase for a few years if no big changes are affecting the system and rates just need to track with inflation.
- It will make it much harder for future boards or councils to "back slide" on raising rates to keep up with inflation and the like because in order to keep the rates where they are now they will have to pass an ordinance or resolution to stop the scheduled future rate increases.
- It will give ratepayers a lever to make sure the city or district is actually maintaining various reserves for the utility because that is the stated reason for the automatic increases. Again, this can help to prevent future boards or councils from "back sliding" if they are tempted to raid the reserves for other purposes.
- The sunset language, "and until (a date, 3 to 5 years away)" assures ratepayers that they will not be forever subject to arbitrary inflationary increases. By the sunset date the council or board must actually reanalyze the system's rate needs and readjust rates to make them adequate and fair again.

Once the board or council decrees the rate changes by passing a rate ordinance or resolution, staff needs to make all necessary changes to the rate chart, the billing software program, Web page and wherever else it is necessary to effectuate the new rates and policy changes. Staff may even want to prepare at least some of these changes ahead of time and go live with them immediately after the board or council enacts the changes. For example, Web pages explaining the adjustments and showing the new rate chart can be prepared ahead of time. When the time arrives to go live staff can simply post the new pages to the Web site and everything happens seamlessly and quickly.

Victoria, MN, Average of Seasonal Water Rates Scenario

Chart 12 - Old Rates, New Rates and Changes

CBGreatRates© Version 3.6

These charts compare current and proposed rates.

Class Bottom in Gallons	Class Top in Gallons	Average or Median use in Thousands of Gallons	Current Average Quarterly Bill	Proposed Average Quarterly Bill Starting on 12/31/07	Bill Increase or (Decrease) After Rate Adjustment	Percent Increase or Decrease (-) After Rate Adjustment
General Customer Class (use per Billing Cycle in Gallons)						
0	999	0.6	$30.00	$32.16	$2.16	7%
1,000	1,999	1.0	$30.00	$32.16	$2.16	7%
2,000	2,999	2.0	$30.00	$32.16	$2.16	7%
3,000	3,999	3.0	$30.00	$32.17	$2.17	7%
4,000	4,999	4.0	$30.00	$34.76	$4.76	16%
5,000	5,999	5.0	$30.00	$37.35	$7.35	25%
6,000	6,999	6.0	$30.00	$39.96	$9.96	33%
7,000	7,999	7.0	$30.00	$42.55	$12.55	42%
8,000	8,999	8.0	$30.00	$45.15	$15.15	50%
9,000	9,999	9.0	$30.00	$47.75	$17.75	59%
10,000	10,999	10.0	$30.00	$50.34	$20.34	68%
11,000	11,999	11.0	$30.00	$52.94	$22.94	76%
12,000	14,999	12.9	$32.09	$58.00	$25.92	81%
15,000	19,999	16.8	$40.62	$68.09	$27.47	68%
20,000	29,999	23.7	$55.80	$86.51	$30.71	55%
30,000	39,999	34.3	$82.04	$115.90	$33.86	41%
40,000	49,999	44.4	$111.37	$145.40	$34.03	31%
50,000	59,999	54.2	$139.65	$175.10	$35.45	25%
60,000	69,999	64.4	$169.37	$207.65	$38.28	23%
70,000	79,999	74.5	$198.66	$241.06	$42.40	21%
80,000	89,999	84.4	$227.20	$274.89	$47.69	21%
90,000	99,999	94.1	$255.46	$309.63	$54.17	21%
100,000	9,999,999	263.1	$745.69	$946.16	$200.47	27%
Special Customer Classes						
	Bulk Water	132.8	$357.00	$377.44	$20.44	6%
	Minimum Users	0.0	$30.00	$32.16	$2.16	7%

Figure 25

Staff who answer the phone and discuss billing issues can make your transition to the new rates smooth or rough. They need to become well aware of the changes and probably even prepare a "cheat sheet" of facts and information on the issue, keeping it by the phone. That way when ratepayers call to ask why their bill went up this month, and they will, staff can respond concisely with facts and not get ruffled. If they get ruffled too often or with the wrong person, that can become a story that the media thinks it needs to tell. With modest adjustments a few people will call the first month. Maybe one or two will call the second month. By three months everyone will have gone on with their lives.

One month, three months and especially six months after the rate adjustments are enacted; you should be able to gauge the financial effects of the changes. Keep track of your new financial performance by comparing your actual balances and financial indicators to what was predicted in the analysis. Very early on your results may diverge from the predictions in the analysis but by six months and one year, both should be close.

If you don't want to calculate these ratios and balances yourself, you may want to let the spreadsheet shown in Figure 26 *(pages 68-69)* do it for you. To download this Microsoft Excel based spreadsheet, called GettingGreatRatesLater©, visit http://carlbrownconsulting.com, sign in to the "Tool Shed" and click the "Power Tools" tab.

Cheat Sheet:

- Old rates
- New rates
- When enacted
- How determined – by analysis
- What new rates will buy

This is important decision-making information. Relay it back to the board or council so they can consider the effects of their past decisions and frankly, so they can congratulate themselves on having done the right thing some months ago. Also feed this information to the media so they can report on how well the system is working and how well it is being managed. Yes, it's self-serving but the media will never know that great service at reasonable cost is a story to cover unless you tell them.

The analysis will have called for the system to deposit a certain amount of funds in an equipment replacement account (to be discussed in Chapter 11). Make sure you set up this account, deposit the funds and begin funding equipment replacements from this account. The analysis may have specified that a certain percentage of new "tap" fees be deposited into a capital improvements reserve fund. Make sure that happens. In other words, make sure that all the things that the council or board decided it wanted to do actually get done. Make this as easy as possible by restructuring your financial transaction recording procedures and your financial statements so they will match the statements in the analysis as closely as possible. That will make comparisons back and forth easier.

Finally, at one year after enacting new rates you will transition to Phase 4 – making incremental rate adjustments. These are described in the next chapter.

Conclusion

As you know, there are many more details concerning making the initial rate adjustments. Some are specific to your system. Some will be revealed by the rate analysis. Some you will discover when you start the "conversation" about adjusting rates. Whatever you need to do to effectuate rate adjustments, strive to do it as quickly and smoothly as possible. Stress to your ratepayers that you are doing this using a two part process; analysis, followed by adjustments. Make it clear to your ratepayers that the adjustments are needed and they were legitimately calculated. Use lots of "pictures" to convey the message quickly. Don't confuse or bamboozle them. Conduct tight, effective meetings. Act decisively and promptly. Oh, and watch out for angry people with saws.

CITY OF SHOW-ME
DOINGOOD COUNTY, MISSOURI
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
WATER PROPRIETARY FUND
For the Fiscal Years Ended June 30, 2008 and 2009

	FY Actual 2008	FY Budget 2009	FY Actual 2009
RECEIPTS FROM/FOR OPERATIONS:			
User Fees	$55,000	$68,750	$68,000
Tap-on Fees	$5,000	$5,500	$6,000
Fees from Developers	$200,000	$0	$0
Late Payment Penalties	$1,000	$1,000	$500
Fees for Misc. Services	$7,000	$7,000	$7,000
Interest Income	$500	$510	$530
Interfund Transfers	$2,000	$2,000	$2,000
Special Assessments	$7,000	$7,000	$7,000
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Total Receipts From/for Operations	$277,500	$91,760	$91,030
DISBURSEMENTS FOR OPERATIONS:			
Wages, Taxes, Benefits, etc. Administration Staff	$7,000	$7,300	$7,200
Wages, Taxes, Benefits, etc. Operations Staff	$20,000	$21,000	$21,000
Professional Services	$4,000	$4,100	$3,900
Utilities	$15,000	$15,400	$15,700
Equipment	$2,000	$2,000	$2,000
Vehicles	$5,000	$5,400	$5,100
Supplies	$2,000	$2,200	$2,500
Repair and Replacement	$7,000	$9,000	$9,500
Cash Funded Capital Improvements	$250,000	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$5,000	$5,000	$4,800
Total Disbursements for Operations	$317,000	$71,400	$71,700
Net Operating Income	-$39,500	$20,360	$19,330
Operating Ratio (Receipts From/for Operations + Current Position Start of Year/Total Disbursements for Operations; 1.0 is Break-even):	1.03	1.29	1.28

Figure 26

	FY Actual 2008	FY Budget 2009	FY Actual 2009
RECEIPTS FROM/FOR DEBT PLUS NET OPERATING INCOME:			
Net Operating Income	-$39,500	$20,360	$19,330
Loan Proceeds	$1,000,000	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Other	$0	$0	$0
Total Receipts From/For Debt Plus Net Operating Income	$960,500	$20,360	$19,330
DISBURSEMENTS FOR DEBT AND DEBT-FUNDED CAPITAL IMPROVEMENTS:			
Debt Principal	$0	$1,157	$1,157
Debt Interest	$0	$60,000	$60,000
Debt Origination Costs	$10,000	$0	$0
Capital Improvements Paid w/ Borrowed Funds	$1,000,000	$0	$0
Total Debt and Capital Improvement Disbursements	$1,010,000	$61,157	$61,157
Debt Coverage Ratio (Receipts From/For Debt Plus Net Operating Income/Disbursements for Debt; 1.0 is Break-even):	0.95	0.33	0.32
CURRENT POSITION START OF YEAR (CASH AND CASH EQUIVALENTS)	$50,000	$500	$500
NET CHANGE IN CURRENT POSITION	-$49,500	-$40,797	-$41,827
CURRENT POSITION END OF YEAR	$500	-$40,297	-$41,327
RATE AFFORDABILITY INDEX:			
Rate for 5,000 gal/month Residential User	$20	$25	$25
Median Household Income	$2,000	$2,050	$2,000
Affordability Index (Rate/Median Hsehold Income)	1.00%	1.22%	1.25%

Figure 26 – continued.

Chapter 9 – Making Incremental Rate Adjustments

(Mainly relates to Phase 4 rate adjustments)

Summary

In the years following the initial rate adjustments you will do incremental, primarily inflationary rate and fee increases. This will keep your system financially on track. You will do these increases by assessing how well the Phase 2 comprehensive rate analysis modeled your system's financial performance for the year you are now in and set rates for the coming year accordingly. The Phase 2 analysis did the complex calculations so the do-it-yourself Phase 4 process requires only a bit of simple math and making some value judgments.

Introduction

Rate adjustments are separated into two camps:

1. Initial adjustments, discussed in Chapter 8, are done immediately after the Phase 2 comprehensive rate analysis. They are the direct subject of that analysis so those adjustments were modeled very carefully and laid out for you by your analyst.
2. Incremental, generally inflationary increases will be done in later years to make sure your rates remain adequate. These adjustments are discussed here.

Your comprehensive analysis will include projections of future operating, capital improvement and other costs; customer growth and other important changes that you would expect to happen over time. The analysis will include projected fund balances and other financial health indicators, like operating and coverage ratios that you can expect in future years.

Some of you, especially those of you who represent very small systems, will not do or get a comprehensive rate analysis. Instead you will do a simple rate calculation. That calculation will probably not project future costs, growth of the customer base, future capital improvements and how they will be funded or other issues beyond the coming year. (However, some "canned" programs, such as GettingGreatRatesNow©, available at http://www.gettinggreatrates.com/, will make projections.) Not having these projections, you will not be able to plan how to set rates in the more distant future that would give your ratepayers a smooth rate increase over time.

Incremental rate increases don't take rate fairness into account. That was handled by the Phase 2 comprehensive analysis and Phase 3 adjustments. Incremental rate increases have one goal – keeping the system financially sound and on track.

However, you can overcome many of the shortcomings of simple rate calculations by doing a new rate calculation every year. In essence, rather than projecting five to 10 years into the future with a comprehensive rate analysis, you will project one year into the future with a simple rate calculation. Doing it every year will roll your projection ahead one year at a time. It is most advantageous if you will do this calculation each year as you prepare the next year's budget.

Even if you represent a small system that will not do or get a comprehensive rate analysis, read on so you will understand how to make adjustments that will improve your future rate setting results.

To continue to meet your system's financial needs, the comprehensive analysis will suggest rate adjustments that you should make in future years. However, those rate suggestions are not Gospel. If the future doesn't turn out quite like your analyst predicted, you will need to tweak the suggested rates a bit. Fortunately, your analyst will have also developed recommended rates for you that enable you to build and maintain strong reserves. Thus, raising rates in a future year by four percent versus five percent will not make or break the bank this year. It will only cause your working capital reserves to vary between say 30 percent and 32 percent. That kind of issue will be discussed later.

To make your financial future turn out as you desire, you will essentially do this:

- Each year in the future, preferably when you are preparing next year's budget, compare the projected costs, incomes, balances and ratios shown in the comprehensive analysis for that year with what you actually experienced during that year.
- If the financial indicators from the analysis closely match the actual performance of the system in all important respects, adjust rates by the percentages or amounts recommended in the comprehensive analysis for the next year.
- If variances are larger, make larger adjustments on an equivalent percentage basis. That process will be described in this chapter.
- When the analysis and actual performance cease to match well, do or get a new comprehensive analysis – start over at Phase 1 or 2.

Current Position: For a year, the sum of all incomes and working capital reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position is the bottom line for any particular year. In layman's terms, it is the quickly gettable cash.

Data is always presented in financial statements differently from how it needs to be organized and used for a rate analysis. Besides that, it seems no two financial statements are organized the same. That makes it impossible to give one example that will fit all circumstances. However, if you will calculate your current position, operating ratio and coverage ratio as defined in this book for any given year (which is right now still in the future), you can compare these balances and ratios directly with those predicted in your comprehensive rate analysis. Depending on how these indicators compare, you may raise your rates more or less than called for in the comprehensive analysis. The easiest way to do these calculations is to let a spreadsheet like Getting Great Rates Later, illustrated previously, do it for you.

Incremental rate adjustment example

Following is an example of how to calculate and accomplish your incremental increases.

Consider the predictions for fiscal year 2008 in the analysis example discussed in Chapter 8. This analysis is called "Victoria, MN Average of Seasonal Water Rates Scenario." To view the complete example cited, or another example, visit http://carlbrownconsulting.com/ and click on the example link. Regardless of who does your comprehensive analysis, they should display most of the information contained in this example.

Your primary goal is to have your actual current position for a particular year be at least as strong as the current position projected in the analysis for that year.

In Figure 27 (page 72, excerpted from the example analysis cited above), the current position for 2008 (shaded) was projected at $1,258,626. Now, let's just say that the actual current position for that year ended up being $1,200,000. That amounts to a shortfall of $58,626 or 4.7 percent below where it was projected. A current position of $1,200,000 is still very strong for this system. You might guess that you don't need to raise rates at all. You would be wrong and why you would be wrong will be discussed soon.

Since your current position was 4.7 percent short of expectations, you might think you need to raise rates by 4.7 percent above whatever was suggested in the analysis for 2009 to come out right at the end of that year. On that, you might be right. However, you need to do some comparing before making that increase.

Look through all the charts in your analysis that list incomes, expenses, capital improvements, etc. Compare the predictions with the system's actual performance. If everything except for rate revenues match up fairly well, and if you can't prudently eliminate (not just postpone) any expenses, then raise rates across the board by an additional 4.7 percent on top of the increases the analysis called for in 2009. Near the top of Chart 1A the analysis called for a 2.0 percent average rate increase for 2009. Thus, at the start of 2009 you should raise rates by a total of 6.7 percent across the board. I suggest rounding that to an even 7.0 percent for simplicity and to be a bit conservative.

That was fairly easy, wasn't it? Hope that yours goes that smoothly.

Reserves	Balance Ending on 12/31/06	Balance Ending on 12/31/07	Balance Ending on 12/31/08
Unrestricted Working Capital for Operations	$326,803	-$16,787	$8,572
System Expansion Core Fund	$688,153	$909,168	$1,180,755
New and Existing Debt	$0	$0	$0
New and Existing Other	$0	$0	$0
Replacement	$0	$34,911	$69,300
Current Position (sum of all Reserves)	$1,014,955	$927,292	$1,258,626
Working Capital + CIP	$1,014,955	$892,381	$1,189,326
Working Capital + CIP Balances Discounted for Inflation	$1,014,955	$892,381	$1,141,753

Figure 27

The comparison above where only one thing was responsible for the shortfall is rare. Your comparisons will probably not show that everything came out just as predicted. You may find these kinds of variances:

- Your actual revenue collection far exceeded or fell short of your analyst's predicted collections because you suddenly started or stopped growing rapidly and you charge high connection fees.
- Some costs came in higher and some lower than predicted, but the sum of those costs was close to what was predicted. Then again, many costs as well as the total may be far from what was predicted.
- If you accelerate or postpone a capital improvement, your cash and debt service needs will be far from what was predicted during those years.
- If your equipment replacement schedule called for doing substantial equipment replacements in one year and you didn't do any, that will make your financial picture look much better right now but it will get worse when those replacements can't be postponed any longer.

As you can see, you can't just compare the bottom line – the current position – and adjust rates without considering what happened to create that bottom line.

As you read the previous material it may have seemed that making multiple comparisons and adjustments is just too complex to do. It's not. It's much like reconciling your checkbook. (For those who are checkbook reconciliation-challenged, forget that I made that comparison.) Just spend some time looking at your analysis and comparing it to your actual performance and you will start to get a good picture of what is going on. After visually making comparisons you need to get numbers down on paper or in a spreadsheet so you can quantify the difference. Do that in this way. Write down or key in the actual current position amount that you achieved during the year in question. Then:

- Deduct any costs that you should have paid during that year but you didn't (things you put off that are needed, etc.)
- Add back in any costs that you paid that year that you expected to have to pay in a later year (you pre-paid these expenses), or costs that you just won't experience in a normal year.
- Add back in incomes that you should have collected but due to a one-time event, you didn't.
- Deduct incomes that you did collect but that you wouldn't normally expect to collect.

Calculating Adjusted Current Position

Item	Deductions	Additions	Running Balance
2008 Actual Current Position			$1,200,000
One-time Developer Payments Collected Earlier that Expected	$100,000		$1,100,000
Under-payment to Replacement Account	$18,000		$1,082,000
Replaced (Early) 200' Line Predicted for 2010		$17,000	$1,099,000
Electric Bill Increase Hit This Year Instead of Next Year		$10,000	$1,109,000
Connection Fees Will be Higher Next Year Than Projected		$25,000	$1,134,000
2008 Adjusted Current Position			$1,134,000

Figure 28

The result of all these additions and deductions is your adjusted current position. These adjustments may look like those in Figure 28.

Thus, if things would have gone as you would normally have expected them to go for 2008, your current position would have ended up at $1,134,000, not the $1,200,000 it actually ended at.

Calculating Net Revenue Needs

2008 Current Position Predicted by Rate Analysis	$1,258,626
(minus) 2008 Adjusted Actual Current Position	$1,134,000
Additional Revenue or Reduced Costs Needed in 2009	$124,626

Figure 29

Now that you know your adjusted current position, you can figure your additional net revenue needs as shown in Figure 29.

In 2009 you need to increase net revenues (increase user rates, increase other fees or sustainably reduce operating and other costs) by an additional $124,626. You might do some combination of these things but let's just assume that you will make up the whole shortfall by only raising user rates. You would then calculate the percentage rate increase you need to make in 2009 as shown in Figure 30.

Calculating the Percentage Rate Increase Needed

Revenue Needed to Cover Shortfall		$124,626
Rate Revenue Projected by Analysis for 2009		$1,144,200
% to Increase Rates to Cover Shortfall	=	10.9%
% Rate Increase Called for by Analysis for 2009	+	2.0%
Total Across the Board % Increase Needed	=	12.9%

Figure 30

Thus, you need to raise rates at the beginning of 2009 by a total of 12.9 percent across the board over the rates in effect in 2008. (That's way different from what you thought it would be, isn't it?) To make your rate adjustments you would simply pull out your 2008 rate chart and increase the minimum charge by 12.9 percent and the unit charge rates by 12.9 percent. You would leave the usage allowance unchanged. (Of course, you still have the matter of presenting the proposed increases and voting on them in a public meeting.)

All of that is probably more complex than you hoped it would be. However, you should find it's not really that hard once you get into it.

Hint: Once your rates have increased by a total of about 35 percent over what they were when your analyst did the last comprehensive analysis, you will need a new comprehensive analysis. That's because rate fairness can get pretty out of whack when rates are increased across the board by this much.

Hints and advice for decision-makers

If you were going to make up part of the shortfall with increases to connection fees or other fees, you would use the same process illustrated above based upon the dollar amount you planned to get from each fee and the total dollar amounts that each one of those fees produced in 2008 and are projected to produce in 2009.

Caution: Don't get fancy by increasing a rate here and a fee there when you do incremental adjustments. Without a comprehensive analysis to back you up you would be moving into the territory of rate setting that may have gotten you into a rate setting mess in the first place. I suggest you keep it as simple as possible with these inflationary style rate increases and only adjust user rates unless other fees are obviously out of whack. If you are going to adjust other fees, too, adjust them by the same percentage rate.

Really big caution: I and other conservative rate analysts (we want to protect you from harm) will have built some conservative assumptions and other buffers into the comprehensive analysis we did for you. It is more likely than not that if you adopted our rates you will actually achieve a stronger current position than predicted. Later on you may do the comparisons described above and determine that instead of needing the predicted inflationary increase of say 4.0 percent one year, you don't need any. Your current position is ahead of where it was predicted to be. That seems like good news to you and your ratepayers. You could tell them, "Folks, we ran the numbers and found we don't need any rate increases this year!"

Don't do that!

If you say, "There will be no rate increases this year," the message your ratepayers will hear and remember is this,

*There will be **NO RATE INCREASES** **THIS YEAR!***

Commit to no rate increases and you can bank on some big cost popping up and then you've had it. Don't skip any years. Raise your rates every year. If not the full predicted amount, do one-half or one-third of that amount just so your ratepayers know to expect some level of increase to keep track with inflation.

In the months leading up to the financial system meltdown of 2008, were Fannie Mae, Freddie Mac and Lehman Brothers' reserves too high? Apparently not. How would you guess your system's reserves compare to theirs? Shouldn't yours be stronger?

Incremental increases are a ministerial function. Treat them that way. Don't make them into some big issue because they are not.

If your current position truly does stay well ahead of where it needs to be for two or three years there is nothing wrong with maintaining higher reserves. In fact, higher reserves earn interest and that will reduce the need for additional rate revenue in the future. If you feel uncomfortable running high reserves you can move up a capital improvement, pay more by cash and less by loan or do other things that will improve the system more rapidly than you had planned. In this way you can serve your ratepayers even better than you promised.

Over-delivering is never a bad thing.

Raising rates too little and then quickly raising them again is a bad thing.

Going broke is a really bad thing.

Now that you know how large your rate increase needs to be, you need to adopt adjusted rates. Small Phase 4 rate increases are the "no big deal" rate adjustments. You need to present them just that way. You should draft an ordinance that makes the rate changes. Put that issue on your board or council agenda for a meeting where you will discuss the budget for the next year. In fact, the income and expense charts from your comprehensive analysis, as adjusted by you during your calculations for Phase 4 increase needs, WILL be your budget and income projection for the coming year. Thus, the analysis coupled with your adjustments will make budgeting very easy. Discuss the budget and the need for the rate adjustments to fund that budget at the meeting. Then adopt the budget and the rate ordinance matter-of-factly. Such adjustments are primarily ministerial. This is not a big policy decision that ratepayers need to weigh in on. Few if any will take the time to do it anyway.

Cheat Sheet:

- Old rates
- New rates
- When enacted
- Why? Inflation, unexpected capital improvement, whatever

Duties of those who execute rate adjustments

Once the board or council decrees the rate changes, just as for Phase 3 adjustments, staff needs to make all necessary changes to the rate chart, the billing software program, Web page and wherever else it is necessary to effectuate the new rates. And, just as you did for the Phase 3 adjustments, you need to feed follow-up information to the media so they can report on how well the system is working and how well it is being managed. If you want the media to write good stories about you, YOU must provide them.

While the size of incremental increases will be small, some ratepayers will notice them anyway and call to find out why their rates went up. Thus, staff who answer the phone and discuss billing issues should prepare a "cheat sheet" of facts and information on the issue, just like they did for the Phase 3 rate adjustments. When ratepayers call to ask why their bill went up this month, staff can respond quickly and factually.

You can quite professionally manage this ship (the system) so it stays high and dry or you can allow it to sink. The choice needs to be THEIRS. Don't ever give them cause to say the sinking was YOUR fault. Convincingly give them good information about the system and your ratepayers will almost always want you to keep it floating high and dry.

At some point, probably about five years after your comprehensive rate analysis, your incremental increases will start to get difficult to calculate. Too many incomes and costs will vary too widely from those predicted in the last comprehensive analysis for you to do simple math to calculate new rates dependably. Besides that, after several years of across the board rate increases, your rates will become unfair to the point that they should be reanalyzed.

The need for a new comprehensive analysis can actually pop up suddenly. If you have to move a large capital improvement up, that will affect rate fairness and adequacy dramatically. When anything dramatic happens, or the calculations just get too involved, it's time for a new Phase 2 comprehensive analysis. Get that analysis done and your rates adjusted and restructured and you'll be back to making simple Phase 4 rate adjustments real soon.

Finally, the comprehensive analysis called for the system to deposit a certain amount of money each year in an equipment replacement account, fund capital improvements and do other things that enable you to do good system management. Be sure you make all necessary deposits, replace equipment and the like. If you don't you may fall right back into the situation that probably lead to the original comprehensive analysis. That is, your rates are inadequate but it's hard to ask for an increase because then you have to own up to the fact that the system hasn't been well cared for either. It's a "Catch-22," I know, but don't do what they seem to want you to do, which is telling them what they want to hear. Tell them the facts and they will probably understand the need and go along with it.

Current position is the clearest and simplest indicator of rate adequacy so focus on this one. As you gain know how and confidence, there are other indicators you can use, like operating and coverage ratios. These indicators will be discussed in the next chapter.

Conclusion

Unlike adjustments following a comprehensive analysis, Phase 4 adjustments are small, simple, do-it-yourself affairs. These adjustments should be a part of your budgeting process. Unless a lot of change is going on in your system, you should be able to do Phase 4 rate adjustments for three to five years before it's time to start over with a new comprehensive analysis and Phase 3 rate adjustments. These increases will always be relatively small so they are readily accepted by your ratepayers. Make them every year and all will (probably) go well for you for a long time.

Chapter 10 – Financial Indicators

(Concepts in this chapter are useful in all four phases of rate setting)

Summary

Several financial indicators, importantly including operating ratio, coverage ratio and affordability index, will help you decide when and how to adjust rates initially. In later years, these indicators will guide you when resetting your rates, enabling your finances to stay on track with the predictions of the comprehensive rate analysis.

Introduction

In previous chapters you learned how to calculate rate adjustments. You also learned how to present the rate adjustment case to your ratepayers. But how can you know how high you need to set and keep your rates? This chapter will help you figure that out.

Financial indicators are the thermometers and stethoscopes of business. These indicators can give you a troubling reading. They **won't** tell you what is wrong. However, they **will** tell you that you need to look for the problem and give you ideas about where to start.

It is just too complicated to look at charts of incomes, expenses, starting and ending balances, capital improvement spending and projected spending and the like and determine if your financial picture is good. It helps to have some indicators, financial thermometers if you will, that tell you at a glance how things are going. Fortunately some smart number-crunching people figured that need out long ago and created some thermometers for us. This chapter will cover several of the most useful and easiest to calculate financial indicators – operating ratio, coverage ratio, affordability index and current position. If you will calculate these indicators, your decision-makers can see at a glance whether rates are OK or they need some work. Charts in Chapter 8 present these indicators visually. This chapter will teach you how to calculate these indicators.

Before you get all concerned about how to do yet another set of calculations, relax. If you prefer, you can simply download a Microsoft Excel spreadsheet template for an income and expense statement that does these calculations for you. This template was illustrated in Figure 26 in Chapter 8, *(pages 68-69)*.

Operating ratio

This is an indicator of a system's ability to pay its operating costs. A ratio of 1.0 means income and operating reserves are just high enough to pay expenses. Thus, less than 1.0 indicates operating in the "red." The calculation is easy, as shown in Figure 31.

Operating Ratio

$$\frac{\text{Total Operating Income and Operating Reserves}}{\text{Total Operating Costs*}}$$

*Not including debt or debt-related expenses

Figure 31

A small water or sewer system generally should have an operating ratio of 1.35 or higher to remain financially stable. Larger systems with larger, more stable operating budgets can get by with less, as low as perhaps 1.10. But more is better. Other types of utilities have desirable operating ratio ranges that are suitable for those industries.

The basic notion is this. If your operating expenses vary widely from month to month or year to year, you need to run a high operating ratio – a high balance. A high operating ratio target means that reserves will be high (most of the time.) High reserves will enable the utility to cover those times when expenses peak or revenues fall without having to take Draconian budget-cutting measures or jack rates up suddenly. Employees don't like the first measure and ratepayers don't like the second.

Operating ratio only considers real money expenses. Your income and expense statement probably includes depreciation. Unless you actually deposit the amount being depreciated into a savings account of some sort, depreciation is not real money. Therefore, you need to exclude depreciation when you calculate your operating ratio. However, you better be doing equipment replacement scheduling, the real world equivalent of depreciation, or your operating ratio will give you a rosy picture when it may actually be bleak.

Coverage ratio

Coverage Ratio

$$\frac{\text{Net Operating Income and Debt Reserves}}{\text{Debt and Debt-related Costs for That Year}}$$

Figure 32

Coverage ratio, Figure 32, is similar to the operating ratio except this ratio considers your ability to pay your debt and debt-related expenses each year. As with the operating ratio, small and less stable systems need a higher coverage ratio than do large and more stable systems. Your coverage ratio will be closely monitored by your lender. Since coverage ratio is based upon your net operating income, the basis for your operating ratio, by extension your lender will also be watching your operating ratio. For almost all systems, if they maintain a strong operating ratio they will also have a strong coverage ratio.

As with the operating ratio, the coverage ratio for a certain year only considers the debt and debt-related expenses for that year. Your outstanding loan balance may be $5,000,000. But, this year's coverage ratio will be calculated using this year's $300,000 loan payment, the current cost portion of the long term debt.

Affordability index

Affordability Index

$$\frac{\text{Annual Residential Bill for 5,000 Gallons per Month*}}{\text{Annual Median Household Income}}$$

*For water and sewer service, other volumes apply to other services

Figure 33

The math for the affordability index, shown in Figure 33, is done the same way but this is a different animal. Operating and coverage ratios measure the utility's ability to pay its bills. The affordability index measures the ratepayers' ability to pay their bills.

For water and sewer systems the affordability index is based on the annual median household income[9] (AMHI) of residential users of the service and the cost of 5,000 gallons of water or sewer service. (Other utilities use other volumes of service.) Thus, you divide the bill figure by the income figure. You will probably come up with a number between 0.25 and 3.0 percent for your system's affordability index. This is the percentage of income that the average (median) household (usually a family) will have to pay to get its water or sewer service.

Incomes vary widely across the U.S. and even within local areas. Generally incomes in rural areas are far less than in urban areas. Also, generally, rural water and sewer systems cost more to own and operate on a per user basis than their city counter-parts. Therefore, the affordability index for small and rural systems is usually higher (less affordable) than the index for urban and large systems. Another important factor that affects this index is debt service. If a system recently, or will soon build a major upgrade requiring lots of borrowing, their costs will be higher, pushing the rates and affordability index higher.

[9] Annual median household income data is collected by the U.S. Census Bureau every 10 years and estimated at the five-year mark between census surveys. The Bureau compiles median household income data. While that data is available to anyone it may be difficult to find. An easy way to get this data for a city or a county is to go to Google or another search engine and type in "median household income, city name, state name." Select the 'CityData' site that comes up and find your data there easily.

Calculating your affordability index will usually put your rate increase in a more positive light. For most systems that do a 35 percent average initial rate increase, the affordability index will only go up from say 0.60 to 0.80 percent. That means that, even though rates went up a lot on a percentage basis, they are still very affordable at less than one percent of median household income.

Tip: You can find a good estimate of your city or county's median household income on the Web. Simply go to Google or another search engine and search for "median household income, city name, state name." Several sites will turn up. CityData is an easy one to navigate through to find the information you need. Calculate the total annual residential bill for 5,000 gallons of use. Divide this by the annual median household income.

You may ask, "Why 5,000 gallons?" Some years ago this was about the average volume of residential use and lenders and grant agencies wanted a measure of the rate effects on the average residential user of the project they were being asked to fund. (Some agencies and lenders actually use a certain monthly use bill as their affordability criteria but that is usually still based on the affordability index for a certain volume of use.) Five thousand gallons of use is still good for many communities but others use way more than that now. If you desire you can calculate affordability index for any volume user and sometimes you should. In fact, this calculation can be an excellent "sales tool" when trying to convince ratepayers to go along with your proposed rates. An example will help.

Uses of the affordability index

You propose a certain rate structure. It works well for your low volume, "little old lady, widowed, retired, living alone on Social Security" households because their affordability index will be 2.5 percent. But, the XYZ Corporation doesn't like the rates you proposed for it because they will go up from the current $4,000 per month to $5,000 per month. The XYZ Corporation, by the way, uses 1,000,000 gallons per month and has revenues of $1,000,000 per month. They want no rate change. What are you to do?

You calculate XYZ's current ($4,000 / $1,000,000 = 0.4 percent) and proposed affordability indices ($5,000 / $1,000,000 = 0.5 percent) and tell the president this:

> *To get your affordability index back down to 0.4 percent and save you that thousand bucks, we will have to raise rates to everyone else. That means the affordability index to the "little old lady, widowed, retired, living alone on Social Security" will have to go up to 4.0 percent. When we announce that rate shift in the (council/board) meeting next month those little old ladies sitting in the front row are going to kill us for setting their rates 10 times higher than yours. And, the Gazette reporter sitting in the back row will make it a front page story, unless…you can stand with us and make the case for that cost transfer.*

Then you pause for their response.

Many well-established (not much debt), larger systems (low operating costs per user) in affluent areas (high incomes) that haven't raised rates for a long time enjoy an affordability index in the 0.15 to 0.4 percent range. They have very cheap rates. Those on the other extreme may have rates in the 1.5 to 3.0 percent range. I did a rate study for a small sewer system on the Canadian border where their current affordability index is about 4.0 percent and it needs to go up to 6.0 percent to keep the system in operation. Those are very high rates.

When rates will exceed an affordability index of about 2.0 percent because your system is preparing to borrow money for a capital improvement, affordability index becomes critical. Grant and loan agencies often target an affordability index around 2.0 percent as the breaking point for unaffordable rates. Thus, they will look at you much more favorably for grants if your rates will be that high.

You may now be thinking, “Ah ha, we can just jack our rates up from their current 0.3 percent affordability index to 2.0 percent and BAM, we’ve got a grant.” Not so. If your operating expenses are not high enough to use up all that extra revenue, and they probably aren’t, you will start stacking up lots of cash reserves. Grant agencies that condition their grants on a system’s and their ratepayers’ ability to pay will look at your finances and say, “You know what, you have so much money laying around you can afford to pay cash for your improvements. If you don’t want to do that you can still go to the market and get all the money you need instead of using our grants.” If you want to game their system you’re going to have to be slicker than that.

Now you have probably heard that the federal government is promoting asset management and full-cost pricing strategies. Having strong reserves are often an indicator of these good management and pricing practices. Thus, one of the ways to encourage such performance is with the “carrot” of grants. Some grants will be issued with such good management practices as requirements. However, that does not undo the basic premise of most of these programs. That is, to help systems a bit now so they can fly on their own later.

Be aware, your average residential rate, the affordability index of your rate or some similar criteria may only get you through the grant door. Affordability-based grant agencies, all other things being equal, will only give you enough grant to “buy down” your capital improvement costs enough to bring your rate down to their affordability index target. If they have money left over after doing that they will give it to another system that needs it even more than you.

The table in Figure 34 lists ranges of financial health indicators that are common. Don’t set your goals by them but they will tell you if your indices are in the right ballpark.

Common and Generalized Goal Ranges for Financial Health Indicators, in %

	Operating Ratio	Coverage Ratio	Affordability Index
Small System - Common Ranges	0.9 to 1.5	0.75 to 2.0	0.5 to 1.5
Small System – Goals	1.25 to 3.0	1.25 to 3.0	Below 2.0
Medium and Large Systems - Common Ranges	1.0 to 1.5	1.0 to 2.0	0.2 to 0.6
Medium and Large Systems - Goals	1.1 to 2.0	1.25 to 2.0	Below 1.0

Figure 34

Current position

If you are doing all of your calculations by hand, current position will be the easiest financial health indicator for you to use for assessing your rates. This value is included in standard financial statements so you probably already have it available to you. Current position and how to adjust it for rate setting purposes was discussed at length in the previous chapter.

When you add up all your cash and cash equivalent reserves and incomes for a year and then deduct all of your actual cash-paid or payable expenses (not next year's debt payments or any depreciation unless it is actually funded) for that year, you get current position. This is your in-the-bank and we-could-get-it-quick cash bottom line.

Obviously, you need a positive current position or you're going to the bank to get an emergency loan or to the federal government for a bailout, if they still have such funds. If you are running an operating ratio of 1.25 (25 percent over breakeven on an operating cost basis), your current position will be at least 25 percent more than your operating costs and probably much more. In that case your ratepayers would prefer that they be allowed to hold this money by having lower rates but it will serve them well that you hold these funds, they remain well invested while on-hand and they are available for emergency and cash-flow needs.

Conclusion

Several key financial indicators: operating ratio, coverage ratio, affordability index and current position, will make it easy for you to monitor your financial condition. Calculate these indicators and give them to your decision-makers regularly and they will be able to track your financial condition as it changes. Hopefully your indicators will show that your financial condition is strong and improving. If it is weak and deteriorating, these indicators will show that. They will help you figure out how much rates need to be raised incrementally (Phase 4) to get back on track. If an incremental increase won't get the system back on track while maintaining reasonably fair rates, the indicators will show the rate analyst and the decision-makers how to adjust rates (Phase 3) more aggressively.

Chapter 11 – Equipment Replacement Scheduling and Capital Improvement Planning

(Mainly relates to Phase 2 rate analyses)

Summary

Equipment replacement scheduling involves estimating when each important piece of equipment will need replacement and what it would cost in today's dollars to replace it. All of these replacements are placed in a matrix and a present value calculation is done to determine what all items will cost in the future and how much money needs to be saved each year to fund those replacements. Capital improvement planning is similar except the funding streams to pay those costs will probably be different.

Introduction

There is a technique used by many systems everywhere to try to keep rates down. That is, replace equipment only when it breaks and postpone system upgrades as long as physically possible. The bottom line: this technique doesn't work well, at best. At worst, it actually costs the system more money than doing timely replacement and system upgrades and it costs the ratepayers in service outages and poorer service.

Don't feel overly bad if your system is going down this route. It is very common. Why? Attribute it to the natural tendency of people to put off paying costs if they can. Ratepayers rightly ask you to do that. Without solid reasons to do otherwise, you comply. This chapter will show you why the "put it off" strategy is usually not the best, and how to change it.

There is equipment replacement and then there is capital improvement. The distinctions between the two can be pretty arbitrary. Building a new water treatment plant or similar substantial facility is always capital improvement. Replacing that treatment plant completely in the future is also generally considered capital improvement. Replacing or doing major refurbishments of components within that treatment plant without replacing the entire plant are generally considered equipment replacements. Electricity, staffing and the like to run the plant, however, are annual operating costs.

Having an equipment replacement schedule is not a guarantee that nothing will break down unexpectedly. But, that will be much less likely and when it does happen, you should be financially prepared to handle it.

How equipment costs get paid also enters the picture. If the improvement or replacement is paid with grants, loans or other outside sources, it is usually called a capital improvement. Otherwise, it is usually called equipment replacement.

Don't get hung up on what to call what you are doing. Just put what seems logical into a capital improvement group, the rest into an equipment replacement group and plan for how you will accomplish each.

Equipment replacement

As justification for not replacing equipment or doing upgrades we like to trot out the phrase, "If it ain't broke, don't fix it." That phrase makes excellent sense, just not in the way we use it.

The phrase, "If it ain't broke" is broken. We need to fix it. "Broke" needs to include more than broken down. It needs to include unsafe, too expensive to operate and poorly functioning. If we will expand that definition as it should be, we will see that we "got a lotta broken stuff that needs fixin'."

When most people use the term "broke" they mean that the equipment actually broke down and will no longer function. Engineers call this strategy "run to failure." This is a good strategy for light bulbs above your kitchen table, a wheel on the lawnmower, the roll of bathroom toi … (well, maybe not). You can run non-mission critical items to failure. But, think a second time before doing that with mission critical stuff because your ratepayers didn't sign up for water sometimes! They want it all the time.

"Broke" in reference to water, sewer, bridges and all other critical infrastructure needs to mean this:

- Worn to the point that the risk of failure has grown too high for your ratepayer's comfort level;
- Out-of-date to the point that replacing it with a new item, like an energy efficient electric motor, will pay for itself in energy cost savings over a reasonable time, saving your ratepayer's money. (By the way, my engineer friends tell me this is the case with most electric motors more than 10 years old);
- Equipment that is now unreasonably dangerous for operators to operate, exposing your operators to risk of injury or death and your ratepayers to liability risks; and
- Actually broken down, exposing your ratepayers to loss of service.

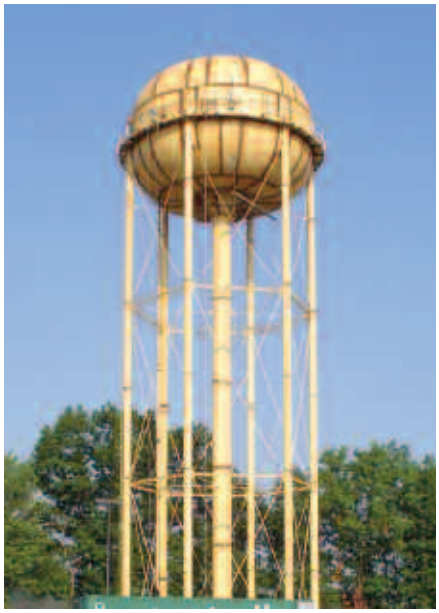
Equipment Criticality: The relative importance of one piece of equipment to the function of a system as a whole.

If you want to take a cross-country car trip, the condition of your car is critical. If you know that the transmission is about to go out, you will fix that before getting thousands of miles from home.

If you only drive one of your three cars to McDonald's every Saturday morning to eat breakfast with your buds, you can take a risk with that same transmission.

The same thinking applies to utilities.

Notice that each one of these facets of "broke" has a bad effect on your ratepayers. We tend to use the last one exclusively because that one is easy to prove. The others take more work to prove up and to convincingly present, but they serve your ratepayers' interests and are well worth the effort.



Granted, equipment will occasionally break down unexpectedly. However, most equipment replacements are pretty predictable. Trucks, tractors, pumps, motors, paint jobs and so on tend to last certain lengths of time in your application and environment. You can figure these things out and you should. As you do that, you need to record your future replacement predictions in an equipment replacement schedule. Finally (and this part is the key to your success), based on your predictions you need to deposit adequate funds into an account so they will be available when the time comes for those replacements. Having those funds on account will enable the system to do timely replacements and repairs. It will also earn interest income enabling the system to keep rates lower than if it had no reserves.

What goes into an equipment replacement schedule? The quick answer: whatever is too expensive or infrequent to be budgeted annually but not so expensive that you will need outside funds (grants, loans, leases, etc.) to pay for them over time. The first group of items falls into the annual operating costs class so you will deal with those every year. The second group describes capital improvements. Replacement schedule items, then, are all those items in-between these two groups.

Thus, there is no pat answer for all systems about what items should go into a replacement schedule. It depends on the system. A well motor at $5,000 for a tiny system may be a capital improvement. For a small or medium-sized system it should be a replacement schedule item. For a large system that replaces one or several of these every year, it may be an annual cost.

The common denominator for all systems is the annual replacement account annuity (deposit). This deposit needs to be made each year. That makes it an annual operating cost for each system. This deposit goes into a savings account of some sort so the account balance builds with additional deposits and with interest earnings. When equipment replacements are funded from this account the cost is a charge to this account, not the operating fund. Thus, this balance can go up and down but the operating budget will not be affected.

This is a beautiful system. You eliminate fluctuating replacement costs from your annual operating budget. You budget more easily and accurately. And, you don't get surprised when that moderately expensive item breaks because the replacement account is there to handle it.

A functional equipment replacement schedule needs to do the following:

- List what needs to be replaced, when and at what current cost for a long period of time, like 20 years,
- Calculate inflation of the cost of those items, interest earned on deposits and year-end balances for the account, and
- Show how much money needs to be deposited into the account each year (called the annuity) to accomplish all this.

How do your costs shake out?

Appropriate equipment replacement costs tend to run about 15 percent of total operating costs (not including administration costs) for most systems. They don't have much effect on rates but they are seemingly easy to cut, so we often do it.

Recent capital improvement costs, mainly debt service, can often comprise 50 percent or so of total system costs.

These two costs tend to eat up more than half of our rate revenues and there is not much we can do about that.

Does it sound like this is a complex task? It is. Technically, this is a present value calculation of a stream of costs and incomes. The actual calculation methodology is too complex to describe in this book. However, you can make the scheduling process, and especially the annuity calculation, easy and quick by using spreadsheets and other tools produced by several entities. Most water and sewer primacy agencies have such spreadsheets. Contact the office in your state that is responsible for administering State Revolving Fund loans. I don't want to sound mean here but at least some of those spreadsheets are kind of clunky. I know because I used to work in one of those agencies.

As an alternative you may want to visit my Web site and access the "Tool Shed" or "Products" links to get the equipment replacement schedule spreadsheet. This Microsoft Excel-based spreadsheet makes replacement scheduling easy and it calculates the annual annuity a system needs to set aside to be able to pay for equipment replacements as they come due. This spreadsheet is demonstrated in Figures 35 and 36. Note: To save space Figure 35 shows only the 5-year replacement items in detail but it shows the total replacement costs along the right side of the chart.

As shown in the previous chart, first you need to figure out all the equipment replacements, overhauls, etc. that your system will need for a long time, like the next 20 years. You need to estimate when each will be needed and how much it will cost. A chart like the one above will make that easier.

Next, you need to figure out how much money you need to deposit to a savings account each year to be able to pay for all of the expected replacements when they come due in future years. That is based on a net present value calculation, something that almost no one will ever do by hand. However, the chart in Figure 36 *(page 86)* illustrates how the data is compiled for such a calculation.

The "Required Annual Deposit to Replacement Account" at the bottom of the Replacement Schedule is the amount you would need to deposit each year to be able to do the replacements listed in these two tables. It's magic and it really works.

If you are handy with spreadsheets or data bases you can build your own replacement schedule. If your system is large enough to warrant it, you can even purchase software programs that do equipment replacement scheduling alone or as one among many system management and finance tasks. If your system is tiny, a Big Chief tablet, a calculator and pencil will work pretty well, too. The key is, just do it!

Sunny Ridge, MO, Water Rates Scenario 1

Chart 17A - Equipment Replacement Details Chart

Replacement Scheduler© Version 1.4 r© Version 1.4

This chart depicts equipment replacements and major maintenance work

CBGreatRates© Version 4.3

Years Between Replacement of These Items: 5

Year Beginning	Pump	Pump	Another Pump	Truck	Electric Motor	Computer and Related Items					Total Annual Replace-ment Costs
4/1/08	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4/1/09	$0	$0	$0	$0	$350	$0	$0	$0	$0	$0	$2,350
4/1/10	$300	$0	$0	$0	$0	$0	$0	$0	$0	$0	$13,600
4/1/11	$0	$100	$0	$0	$0	$2,500	$0	$0	$0	$0	$77,400
4/1/12	$0	$0	$200	$10,000	$0	$0	$0	$0	$0	$0	$11,300
4/1/13	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$43,600
4/1/14	$0	$0	$0	$0	$350	$0	$0	$0	$0	$0	$950
4/1/15	$300	$0	$0	$0	$0	$0	$0	$0	$0	$0	$38,200
4/1/16	$0	$100	$0	$0	$0	$2,500	$0	$0	$0	$0	$50,300
4/1/17	$0	$0	$200	$10,000	$0	$0	$0	$0	$0	$0	$11,100
4/1/18	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$17,700
4/1/19	$0	$0	$0	$0	$350	$0	$0	$0	$0	$0	$2,850
4/1/20	$300	$0	$0	$0	$0	$0	$0	$0	$0	$0	$300
4/1/21	$0	$100	$0	$0	$0	$2,500	$0	$0	$0	$0	$79,600
4/1/22	$0	$0	$200	$10,000	$0	$0	$0	$0	$0	$0	$47,500
4/1/23	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,800
4/1/24	$0	$0	$0	$0	$350	$0	$0	$0	$0	$0	$1,450
4/1/25	$300	$0	$0	$0	$0	$0	$0	$0	$0	$0	$52,900
4/1/26	$0	$100	$0	$0	$0	$2,500	$0	$0	$0	$0	$3,200
4/1/27	$0	$0	$200	$10,000	$0	$0	$0	$0	$0	$0	$13,100
4/1/28	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$12,700
4/1/29	$0	$0	$0	$0	$350	$0	$0	$0	$0	$0	$19,250
4/1/30	$300	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,000
4/1/31	$0	$100	$0	$0	$0	$2,500	$0	$0	$0	$0	$121,100
4/1/32	$0	$0	$200	$10,000	$0	$0	$0	$0	$0	$0	$26,200

Figure 35

Capital improvement planning (CIP)

Some might think, “We don’t plan to do any system upgrades next year so why should CIP be a rate setting issue?” The simple answer is this. You should be setting rates now, anticipating things that will or might happen during the next five to 10 years. It is very likely you will need to do some system upgrading during that time period so CIP needs to be a part of your rate setting. Capital improvement costs going into the future will be one of the largest, if not THE largest cost you will incur to own and operate your system. You better plan for it now. And, start setting some money aside to fund the small capital improvements and at least a small part of the large ones. Even if you plan to get substantial grant funding for CIP items, some seed money to get the ball rolling can help immensely.

CIP is basically the same as equipment replacement scheduling except your plan covers at least some items that are too expensive for your system to pre-fund with current revenues. You should do capital improvement scheduling in a similar way but you will probably fund these items differently. You need to think about that funding stream so here is a primer.

Our CIP

Item	Year	Cost	Ave Rate Increase
Main Street Manhole	2013	$30,000	$0.30
High St Pipeline	2014	$100,000	$1.00
New Treatment Plant	2015	$10,000,000	You don't want to know

Sunny Ridge, MO, Water Rates Scenario 1

Replacement Scheduler© Version 1.4

Chart 17 - Replacement Schedule

CBGreatRates© Version 4.3

This chart calculates the annual annuity to fund all replacements and major maintenance in the detailed schedule.

5.00% Average Inflation Rate for the Following Water System Equipment for the Term of This Replacement Schedule
3.00% Average Interest Rate on Balances Invested for the Term of This Replacement Schedule
6.00% Average Interest Rate on Amounts Borrowed for the Term of This Replacement Schedule

Year Beginning	Item Description	This Year's Costs in Current Dollars	One-time Transfers From Operating Fund	One-time Transfers to Operating Fund	End of Year Balance in Future Dollars	Minimum Desired End of Year Balance in Future Dollars
4/1/08	Total of replacements from detailed replacement schedule	$0	$0	$0	$0	$48,190
4/1/09	Total of replacements from detailed replacement schedule	$2,350	$0	$0	$41,722	$50,600
4/1/10	Total of replacements from detailed replacement schedule	$13,600	$0	$0	$72,168	$53,129
4/1/11	Total of replacements from detailed replacement schedule	$77,400	$0	$0	$28,922	$55,786
4/1/12	Total of replacements from detailed replacement schedule	$11,300	$0	$0	$60,244	$58,575
4/1/13	Total of replacements from detailed replacement schedule	$43,600	$0	$0	$50,594	$61,504
4/1/14	Total of replacements from detailed replacement schedule	$950	$0	$0	$95,028	$64,579
4/1/15	Total of replacements from detailed replacement schedule	$38,200	$0	$0	$88,316	$67,808
4/1/16	Total of replacements from detailed replacement schedule	$50,300	$0	$0	$60,839	$71,199
4/1/17	Total of replacements from detailed replacement schedule	$11,100	$0	$0	$89,633	$74,759
4/1/18	Total of replacements from detailed replacement schedule	$17,700	$0	$0	$107,680	$78,496
4/1/19	Total of replacements from detailed replacement schedule	$2,850	$0	$0	$150,225	$82,421
4/1/20	Total of replacements from detailed replacement schedule	$300	$0	$0	$198,382	$86,542
4/1/21	Total of replacements from detailed replacement schedule	$79,600	$0	$0	$98,425	$90,869
4/1/22	Total of replacements from detailed replacement schedule	$47,500	$0	$0	$51,520	$95,413
4/1/23	Total of replacements from detailed replacement schedule	$1,800	$0	$0	$93,513	$100,184
4/1/24	Total of replacements from detailed replacement schedule	$1,450	$0	$0	$137,342	$105,193
4/1/25	Total of replacements from detailed replacement schedule	$52,900	$0	$0	$64,403	$110,452
4/1/26	Total of replacements from detailed replacement schedule	$3,200	$0	$0	$102,823	$115,975
4/1/27	Total of replacements from detailed replacement schedule	$13,100	$0	$0	$116,994	$121,774
4/1/28	Total of replacements from detailed replacement schedule	$12,700	$0	$0	$130,996	$127,862

Notes: Replacements above are spelled out in the detailed replacement schedule. The minimum desired balance was set at approximately two times the expected average annual replacement cost. The required annual deposit, to the right, was calculated from that amount.

Starting Account Balance	$0	$48,190 Minimum Desired Balance in Today's Dollars
Minimum Annual Annuity	$39,314	
Discretionary Annuity	$4,875	

Required Annual Deposit to Replacement Account $44,189

Figure 36

Having a capital improvement plan doesn't mean you will actually get the money you planned to get, when you planned to get it, and from where you planned to get it. But, preparing for that event is much saner than sitting around as if your system will last forever and never need upgrading.

You need to have some CIP reserves set aside, even if you plan to get grants and loans to pay for the lion's share of these costs. There are up front costs to capital improvements; engineering studies and design work, legal services, financial services, rate analysis and the like that need to be paid for before grant or loan funds finally come through, which often doesn't happen until the project has been bid out. Having reserves enables you to make progress before you receive the big money.

However, it is likely that your state has statutes that prevent, or for all practical purposes they prevent you from pre-funding ALL CIP costs with current revenues. The basic notion behind such laws is that current users should not be required to fund expensive infrastructure that will benefit future generations but not their own. Thus, debt funding is acceptable because it spreads the costs over a long time and a particular user now only has to pay the current portion of that debt. That keeps payment on a "fee for service" basis and people like that. Obviously, you need to consult your attorney to be clear about what you can fund, when and how.

As to funding sources, it seems everybody wants grants. For sewer systems built in the 70's through the early 90's, just about everybody got grants, large grants. Most of our current sewer systems were built mostly with federal grants. There is probably a federal financial statement somewhere that shows what part of the current federal debt is taken up by these long-ago issued grants. I'm sure it is still in the billions and we're paying interest on it, but that is another issue.

We all hear about systems that get their U.S. Senators and Representatives to favor them with earmark grants. Those who don't get the earmark grants call them by another name; "pork barrel spending." We all hear talk about how pork barrel spending is a bad thing and Congress should stop it. Don't hold your breath waiting for that to happen. However, that doesn't mean that when it comes time for YOUR pork barrel project that your Congress person will come through for you. In fact, he or she probably won't, so plan on getting no pork.

News Item: A few years ago there was a disease that ran rampant in water and sewer systems. It was called "gotagetagrantitis." This disease was nearly eradicated but recently it mutated into a new affliction called "gotagetanearmarkitis." Both claim new victims every year. Those afflicted with these diseases commonly spend years in a debilitated state waiting to be cured. Some may never recover due to an insufficient supply of serum that is only manufactured in Washington, D.C.

Just in: A new disease struck local governments in late 2008. It is called "gotagetabailoutitis."

That leaves funding with cash reserves, current revenues, bonds and loans, leases and other methods whereby YOUR ratepayers will pay the bill. That's OK; you and they will be just fine. Remember, utilities are businesses and businesses don't need federal "pork." Not most, anyway.

What's a grant worth? That depends on when you get it and what it takes to get it. If the grant comes at precisely the time you are ready to use it, it's worth full face value, minus the expense and hassle you had to invest to get it. But let's say the grant comes through one year later than when you would have otherwise been ready to use it. Is it still worth full face value? Figure it this way.

Comparison of Grants and Loans		
	Option 1 - 20% Grant / 80% Loan Combo	Option 2 - 100% Subsidized Loan
Loan Amount	$800,000	$1,000,000
Total Loan Payout	$1,603,573	$1,223,134
Annual Payments	$45,816	$61,157
Total Interest Paid	$803,573	$223,134
Monthly Cost to Each Ratepayer	$3.82	$5.10
Total Payout by Each Ratepayer	$1,604	$1,223

Figure 37

Your grant amount is $250,000 on a $1,000,000 project (25 percent). Inflation in construction costs ran your project price tap up by 10 percent ($100,000) over the last year. Your grant is now worth something less than $150,000 ($250,000 minus the inflation of $100,000 minus expenses and hassle). Wait one and a half more years and at this rate, that same grant is now worthless, actually less than worthless. This illustrates the need to seek:

1. Grants that are substantial,
2. Grants that are a sure thing and they will come through exactly when you need them, or
3. Grants that escalate as inflation escalates the cost of your project.

Grant/loan combinations sometimes are and sometimes are not good funding sources. Consider the following options for a $1,000,000 project for your system with 1,000 connections. The options and calculations are shown in Figure 37.

Option 1 – Your sewer system is eligible for grant/loan funding with a 20 percent grant and 80 percent loan, the loan term is 35 years and the interest rate is at the market rate of 4.5 percent.

Option 2 – If you improve your financial capacity, your system is eligible for a 20 year, 100 percent loan at a subsidized rate of 2.0 percent.

Which option is best? That depends on what “best” means to your ratepayers. If what you are borrowing for is primarily long-lived facilities – a water tower and distribution lines – and your system and ratepayers are very bad off financially, Option 1 may be best. If; however, much of the funding will be for relatively short-lived equipment – pumps, motors and wear items in the system – and your system and ratepayers are doing well, Option 2 may be the better choice. This is especially true if your rates will still be relatively cheap (low affordability index) even with the 100 percent loan.

If you can get a 30 percent grant and get it quickly, the value of Option 1 climbs. If; however, the loan interest rate is 1.5 percent instead of 2.0 percent, the loan value climbs. Although market-rate bonds and leases are more expensive still, if your system’s creditworthiness is good enough you need to examine these options, too.

This grant/loan talk may seem overly dramatic but you get the point. Grants can be a benefit. Or, they can set you back if they are not substantial enough and timely. Timeliness is a real big deal when utility construction inflation runs like it has for the last decade – well above the consumer price index inflation rate. Wait three years and that earmark may become a negative, not a positive.

Thus, your thought process for funding capital improvements should go like this:

1. If we are eligible and if the grant will come through quickly we should apply for and hopefully get a grant. The longer it will take to get the grant the larger the grant needs to be to make the wait (inflation) and the hassle worth it. Keep in mind, grant programs are there to help new systems get started and to help bad off systems jump start better performance. If you don't qualify be happy because that indicates your system has "arrived." (Sure, I know, you don't believe that.)

Here's the deal:

Get the best deal you can as quickly as you can. If that is "free" money, great. If not, so be it.

2. If we are not eligible for a grant, or the wait will simply be too long, or there simply are so many applicants that our chances of success are slim, we need to forget the grant idea and look at cash, loan, lease and other financing.
3. If we are eligible for an interest subsidized loan and our dollar need is great enough to make the hassle and wait worthwhile, we should seek it. Even if we have enough cash reserves to pay cash for the project, we should calculate the financial outcome of borrowing at a subsidized rate versus paying cash and losing the earning power of having those funds invested. (Figure 38, *on page 90,* illustrates such a calculation and shows how a small water system could have borrowed $200,000 and saved about $130,000 over the term of the loan compared to paying cash for a recent line replacement project.)
4. Even if we are eligible for an interest subsidized loan we still need to consider market rate bonds, leases and other funding mechanisms. If the market can get money to us one year quicker than a subsidized loan program, the time savings may outweigh the interest expense of the market rate financing. And, there is the "hassle factor" to consider. If we only need a small amount, the hassle factor may outweigh the savings.

Conclusion

What is the value of doing equipment replacement scheduling and capital improvement planning and incorporating them into your rates? Among the many benefits, doing so allows you to increase rates in the future on a nice, even trajectory. That makes the rate increases to your ratepayers steady and small every year. That makes them palatable.

Without equipment replacement scheduling and capital improvement planning, many systems end up setting rates too low. Low reserves follow. Inadequate equipment replacement and capital improvements follow. And success has a hard time following this chain of events. But, if you will keep up with equipment replacement and upgrade needs on a planned, scheduled basis you are on your way to system, and rate setting success.

Using Investment Earnings to Make Loan Payments

LoanSaver© Version 1.0

Loan Terms:	20 Years	1.90% Interest	$200,000	Amount That Would be Borrowed
	Investment Terms	5.00% Interest	$200,000	Starting Investment Balance

	Loan Year 1	Loan Year 2	Loan Year 3	Loan Year 4	Loan Year 5
Investment Balance day Before Loan Payment	$210,000	$ 207,781	$ 205,450	$ 203,004	$ 200,435
Annual Loan Payment	$12,114	$12,114	$12,114	$12,114	$12,114
Investment Balance After Loan Payment	$197,886	$195,667	$193,337	$190,890	$188,321

	Loan Year 6	Loan Year 7	Loan Year 8	Loan Year 9	Loan Year 10
Investment Balance day Before Loan Payment	$ 197,737	$ 194,904	$ 191,930	$ 188,808	$ 185,529
Annual Loan Payment	$12,114	$12,114	$12,114	$12,114	$12,114
Investment Balance After Loan Payment	$185,623	$182,791	$179,817	$176,694	$173,415

	Loan Year 11	Loan Year 12	Loan Year 13	Loan Year 14	Loan Year 15
Investment Balance day Before Loan Payment	$ 182,086	$ 178,471	$ 174,675	$ 170,689	$ 166,505
Annual Loan Payment	$12,114	$12,114	$12,114	$12,114	$12,114
Investment Balance After Loan Payment	$169,972	$166,357	$162,561	$158,576	$154,391

	Loan Year 16	Loan Year 17	Loan Year 18	Loan Year 19	Loan Year 20
Investment Balance day Before Loan Payment	$ 162,111	$ 157,497	$ 152,652	$ 147,566	$ 142,225
Annual Loan Payment	$12,114	$12,114	$12,114	$12,114	$12,114
Investment Balance After Loan Payment	$149,997	$145,383	$140,539	$135,452	$130,111

Figure 38

Chapter 12 – Advanced Asset Management

(This chapter pertains to all systems and all phases of rate setting)

Summary

As defined by the American Public Works Association, advanced asset management (AAM) is "A comprehensive and structured approach to the long term management of assets as tools for the efficient and effective delivery of community benefits." AAM is a large undertaking but it can be done by large and small water, sewer and other infrastructure systems alike. While the principles remain the same, large and small systems should, however, approach AAM differently. This chapter introduces the notion and practice of AAM and describes how to initiate it.

Introduction

You may be thinking, "We just need to reset our rates. Don't bother me with this asset management stuff." That's OK, skip to the next chapter and move on with rate setting. After all, you have the option of doing or not doing advanced asset management. You don't have the option of not setting at least adequate rates. But, do come back to asset management someday.

You cannot do advanced asset management without also setting great rates. Period. You can set great rates without doing advanced asset management but why stop there? Asset management is just the natural next step after equipment replacement scheduling, capital improvement planning and smart rate setting.

Key Questions for Asset Managers:

- What are my assets; where are they; what is their condition?**
- What is my required level of service (LOS)?
- Which assets are critical; how do they fail; how do we deal with that?
- What are my minimum life-cycle cost options? **
- What is my required annual funding level? Who pays?**

** These questions are largely or completely answered by a comprehensive rate analysis

Some infrastructure systems, including some sewer, water, road and bridge, power and other built infrastructure systems, have long been managed using many of the principles included in the notion commonly called asset management or advanced asset management (AAM). However, the U.S. EPA performed a "gap" analysis for water and sewer systems http://www.epa.gov/owm/gapreport.pdf. This analysis indicates that by 2020 there will be a gap between funding that is needed and funding that is available of approximately $500 billion nationally. Some put this gap over one trillion dollars and growing. Obviously, not all U.S. infrastructure is being managed on a sustainable basis, which is a primary goal of AAM.

Advanced Asset Management: A process that enables you to get the most bang for the infrastructure buck over the long haul.

– Carl Brown

Fortunately, new engineering, data management techniques and other technologies have made it possible to manage assets of even smaller systems at a sophisticated level at reasonable cost. This enables managers to make better informed decisions and fewer decisions based upon gut feelings and expensive or incomplete personal experience. AAM should become a primary tool to make infrastructure systems sustainable at reasonable cost.

What is AAM?

AAM has many definitions but most share the same basic elements. The goal of AAM is to sustainably manage valuable assets so they provide the best mix of services at low cost.

To illustrate AAM, consider this situation. There is a small community where some of its on-site waste water systems are failing. The health department won't certify those systems as safe. Thus, property owners can't sell those homes and businesses. This problem needs to be solved and there are many possible solutions:

1. Each property owner can find their own solution, if there is one,
2. Groups of property owners can join together for combined solutions,
3. Groups of property owners can join together to form a group-wide management entity that can manage individual on-site waste water systems,
4. The entire community can join together to form a community-wide management entity that can manage individual on-site waste water systems, or
5. The entire community can design, build and operate a community-wide waste water system using various available technologies.

In the ideal world, the community would study this problem and possible solutions and seek to achieve the lowest life-cycle cost[10] solution for the problem. If soil types and depths were amenable and lot sizes adequate, continuing with on-sites systems might be the lowest life-cycle cost option and the most desirable solution. If soils or lot sizes were inadequate, a community-wide sewer system may be more appropriate. Of course, other factors come into play as well. While soils and lot sizes may be fine right now, if the community is developing in a denser pattern, like subdivisions and city-sized lots, on-site systems will not be the long-term solution. Thus, WHEN to switch to a community-wide system of some sort would become the operative question. At the heart of this decision process is life-cycle cost analysis.

Finally, you might think that to achieve the lowest life-cycle cost you need to cut the cost of everything you possibly can. Not true! This is where I gain favor with my engineering and financial planning friends. If you want the lowest life-cycle cost you must invest wisely in advice and information. Engineers and financial planners provide most of that for you so don't scrimp on getting their services. Their help will be an excellent long-term investment on your part.

Advanced asset management dos and don'ts

The following dos and don'ts are relevant to systems of all sizes and sophistication levels. However, as systems get smaller and their capacity to undertake complex initiatives goes down, these issues become critical. Thus, small systems need to pay special attention to these dos and don'ts.

Don't:

- Try to start a comprehensive advanced asset management (AAM) program all at one time[11]. That is too ambitious!
- Hire a consultant (at high cost) to develop and "hand" you an AAM program. That might waste your money because the program may be too complex for you, becoming yet another thing you "put on the shelf." However, investing to have a consultant mentor and guide you in how to develop your own program would be money well spent if you are ready for AAM.

[10] Lowest life-cycle cost – The mix of costs to build, own, operate, maintain and eventually replace or decommission a system that yields the lowest costs over the expected life of the system. Life-cycle costs of various options can most easily be compared when those costs are brought back to the present with a present value calculation.

[11] Fine print: If you're building a brand new system, doing a major system upgrade, having very high growth or other extreme things are going on, do start comprehensive AAM. Otherwise, you want to take AAM one small bite at a time to prevent making very costly errors and investments. AAM can do amazing things for your system, and you will probably get there eventually, but don't go there too soon or ill-prepared.

Do:

- Adopt an AAM policy statement, such as,

  It is the goal of the city council and administration of _____ to provide utility and infrastructure-based services to its users and citizens as well as possible for as long as possible within the confines of funds available. Strategies for performing in this way are commonly called advanced asset management. Advanced asset management has been defined by the American Public Works Association as "A comprehensive and structured approach to the long term management of assets as tools for the efficient and effective delivery of community benefits." It is the policy of the city council and administration to grow in its use of advanced asset management strategies in order to better serve the city's users and citizens.

  Every large endeavor needs a goal statement by which success can be measured and to remind people why certain things are being done and funds are being spent.

- Inventory assets and their needs. This inventory may include all assets and an assessment of their condition and needs. Or, this inventory may only include those assets that are critical to the function of the system, that are in poor condition, and that need maintenance, refurbishment or replacement soon. Equipment should be placed into a replacement schedule and plans should be made to carry out replacements according to the schedule. This was discussed in the equipment replacement scheduling and capital improvement planning chapter.

- When considering major capital improvements or infrastructure upgrades, or the funding of such improvements, consider the financial effects of all reasonable options to try to assure that investment decisions will produce the best possible life-cycle outcome. In many cases this will have the city or district purchase infrastructure that is not the cheapest. That is because the lower cost to own, operate, maintain, refurbish and replace higher quality equipment can sometimes more than offset the higher cost to purchase such equipment. Life-cycle cost or risk-adjusted return on investment comparisons can be done to decide which one is the best option to choose.

- Most small water and sewer systems in the U.S. now have key operators that will soon retire. In most cases it took years for these operators to build a base of knowledge and understanding of how their systems work. When these operators leave they will carry with them (in their heads) storehouses of information and knowledge about the systems they now manage and operate. This information, which often is an unwritten asset management program, is valuable and should be "mined" as soon as possible. Begin now to develop the base for an asset management program by recording the knowledge of these operators so it is saved as well as possible before retirement comes and the knowledge is possibly lost to the system. If the city or district has no asset management program to plug this knowledge into, the system should pay such operators to simply write down what they know about the system very informally. This will be money well invested.

- Part on good terms with key, long-term operations staff. Even if that person has been problematic to deal with. Here's why. The system will occasionally have problems that this now retired or resigned staff person will know how to handle. When you hit such a problem, pay the former staff person to help your new staff to troubleshoot and fix the problem. That will save you lots of time and money. It will also be on the job training for your new staff. Thus, that fee and your on-going good relationship will be money and effort well invested.

- When the city or district's decision-makers, management AND staff are ALL ready to pursue asset management further, the city or district should search out information and resources. Start by visiting http://carlbrownconsulting.com/ and sign in to the "Tool Shed" to access many asset management and rate setting tools and information. Many other resources can be located by simply doing a Web search using the terms "asset management, water, sewer."

- Periodically, analyze or have a rate setting specialist analyze the utility's rates and fees to assure that revenue generation will be adequate to properly fund the utility and maintain adequate reserves, and to assure that the rate structure is fair to the ratepayers. Such analysis is usually needed once every five years or so or whenever a significant financial event, such as a capital improvement, is looming. Have a rate setting specialist do such an analysis if you do not have staff thoroughly trained in comprehensive rate analysis. Small systems may be able to do their own rate calculations using GettingGreatRatesNow©. Learn more about this program at http://gettinggreatrates.com/.
- Annually, examine the financial needs (budgeting) of each utility and raise rates and fees as necessary to satisfy those needs. Such financial examinations are done during the years in between comprehensive rate analyses. Download and use GettingGreatRatesLater© to make this examination easier and more accurate. Access it from the "Tool Shed."

How to get started in AAM

Small systems

As a general rule risk and return on investment analysis for small or very simple systems will indicate they should improve their current operations and management techniques in basic ways. Their financial base cannot support sophisticated software programs such as geographic information systems, inventory and condition assessment programs, integrated asset management programs and asset management specialists.

However, when a new system is being built or a major upgrade is being done, such as in the on-site systems example above, management should always seek expert AAM advice. At these times management will be making decisions that its customers will be paying for in construction and operating costs for decades. AAM will insure the best possible decisions are made. Again, it is critical that you get advice from consulting engineers and financial planners at these times.

There are U.S. EPA guides and other resources that small systems can use to capture the benefits of AAM. Visit http://www.epa.gov/OWM/assetmanage/index.htm to access them. Links lead to documents such as the U.S. EPA guides, "Asset Management for Sewer Collection Systems" and "Asset Management: A Handbook for Small Water Systems," among others. Some of these guides have simple fill-in-the-blank worksheets and templates that are easy to use and effective for small systems.

Medium systems

These systems should target a more sophisticated AAM program. They should seek the advice of AAM specialists in developing their programs. Such systems have staff that is capable of using bundled software programs such as the Microsoft Office Suite and others. These software suites include a word processor, a spreadsheet program and usually a database program, among others. Systems can effectively perform AAM using these commonly available tools plus the simple worksheets and templates previously discussed.

Large systems

These systems will find greatest benefit by acquiring expert AAM advice, initiating sophisticated AAM programs and tracking program execution with integrated software specifically designed for this purpose.

You're doing asset management right now – you have valuable stuff (assets) and you're managing it. The only question is, "Are you doing advanced asset management?"

Steps to AAM

All systems should review the dos and don'ts in the previous section and apply them to their situation. All systems need a goal statement to start them on their AAM journey and to keep them on track. All need to capture knowledge from key operations staff. And, all need comprehensive rate analysis periodically and budgeting and rate sufficiency review and rate adjustment every year.

Before starting an AAM program, system managers should first decide how sophisticated to initially make their programs. You should not anguish over this initial decision to the point of not pursuing AAM at all. For the most part, AAM is an iterative process and systems will increase their level of sophistication with time. However, the closer you come to hitting your eventual goal initially, the less time and dollar investment will be required for those transitional phases of your program. That, after all, is what AAM is about – making you better at what you do and seeking the lowest life-cycle cost.

Having done the preliminaries, it's now time to start an AAM program step by step.

Set goals and learn AAM basics

1. Decide and write down the mission and objectives and the measures you will use to gauge success for the utility, and for the (prospective) AAM program.
2. Research AAM and get training on AAM. Several specialists and organizations conduct workshops and seminars on the subject.

Start teaching AAM to your decision-makers and others and get their buy-in

3. Use the results of your RAROI calculations to demonstrate the usefulness of AAM.
4. Talk with insiders (decision-makers, managers, staff, etc.) who need to be involved in running an AAM program. If they understand and embrace AAM, proceed. If not, re-educate the insiders or simply proceed no further if re-education is not effective. AAM is a team sport so if you can't organize a team, you can't play.
5. If the insiders accept AAM, start educating outsiders (ratepayers, contractors, etc.) Be sure they understand and accept that AAM is a strategically planned and executed, long-term approach to utility management that might increase initial user charge rates but would likely reduce long-term rates. It will almost certainly improve system performance, longevity and service. If outsiders welcome AAM, proceed. Put one or a select few outsiders on the AAM team so
   you can get the outsider's view as the program is being developed. If the outsiders aren't interested in pursuing AAM, re-educate the outsiders or simply proceed no further if re-education is not effective.
6. Continue teaching and seeking buy-in throughout the life of the AAM program.

Organize to develop an AAM program

7. Assign AM to a team of people with broad experience and capabilities who have a strong interest in the performance of the utility. For larger communities and systems this may be the city or system manager, senior operations staff, other available and interested staff, a member of the city council and a citizen. For small systems this team may be just the chief operator and clerk with one of them touching base with a member of the board or council occasionally, eventually bringing the public on board.
8. Develop the criteria that will guide development of the plan itself. These may include dollars available to invest in the plan and savings or improvements the plan is intended to achieve.
9. Decide if you will initially develop a very basic AAM program, a very advanced program or something in-between. This is your starting place.

If you decide to start with a basic AAM program or your system is small and simple

10. Seek outside assistance, as you are financially able.
11. Complete the worksheets in "Asset Management: A Handbook for Small Water Systems."
12. Satisfy the Governmental Accounting Standards Board (GASB) Statement 34 requirements.
13. Build the actual AAM program – set up an equipment replacement schedule, a capital improvement plan and schedule, operation and maintenance protocols, set and reset rates appropriately and so on.
14. Reassess the AAM program and performance, including rates every year.
15. Improve and advance the AAM program, including rates every year.

If you decide to start with a more comprehensive AAM program, or your system is large and complex, complete these additional steps

16. Decide how comprehensive you should make the initial AAM program. That will largely be controlled by the funds you set aside for the project and how brave you are.
17. Decide how to use specialists in the project. Using specialists removes much of the risk. That is a good substitute for being brave.

Conclusion

If you initiate a basic AAM program using only in-house staff and expertise, it will take a significant investment of time and effort. If you initiate a more advanced AAM program using in-house staff and expertise plus outside specialists, it will take a significant investment of time, effort and money. If executed properly, either mode will yield strong returns on investment including reduced system operating and ownership costs, extended useful life, improved service to ratepayers and reduced risk of system failure. All of these benefits add up to more satisfied ratepayers. That makes them more inclined to follow your lead on rate setting.

Chapter 13 – Who Wants to be a Rate Analyst?

(Concepts in this chapter are useful in all phases of rate setting)

Summary

The term "service provider" includes contractors and consultants, paid by you, and assistance providers employed by state agencies, associations and others, paid by their employing organizations. They differ in some important respects but all share important traits as well. To get the most appropriate service for your rate setting needs you should choose the most appropriate service provider and do it properly. If you don't do this well your system and ratepayers may suffer with insufficient rates, unfairly structured rates and poor service for years.

Contractor: Performs a scope of work, is paid by you

Assistance Provider: Provides advice and assistance to you, is paid by another

Consultant: Provides advice and assistance to you, is paid by you

Introduction

I didn't mean to, but I hacked off some board and council members early on. I wrote about things that you may not be doing so well. I didn't intend to make you mad. I intended to show you how to improve your performance. As you read further along I hope you came to understand my intent. One of the ways you can perform best is by choosing the right rate analyst when that time comes. That person may be an assistance provider, a consultant or even you. But, I can't make that call. Only you can do it.

Now I'm about to hack off some engineers, accountants, assistance providers, contractors and fellow rate analysts. Everyone just chill out. I'm not casting blame. I'm not saying any of these people do bad work. I'm just trying to make things work better for our utilities. So, everyone just step back and maintain your perspective. Stick with me. Everything will be just fine.

Here goes.

It seems everyone wants to be a rate analyst. (Not really but play along.) Associations, state agencies, pseudo-governmental organizations, consulting engineers and accountants; they all believe they have the solution to everyone's rate setting problems. Hey, I'm guilty, too. I used to do rate setting and analysis for a state agency for years. Now I do it as a private consultant. I thought I was good back then. I think I'm even better now.

If you are a community leader or staff person, it is important that you get the right help from the right service providers when the time comes. If you want to get the right service you need to know a bit about service providers. Likewise, if you are a consultant or assistance provider, it is important that you give the right help when a community comes to call. This chapter details similarities and differences in service providers and gives community leaders advice in how to use each one of them to their greatest advantage. These things are not Gospel but they hold pretty true, whether we accept them or not.

Some community leaders think that assistance providers employed by state and federal agencies, educational institutions and non-profit organizations have little in common with private consultants. Having been both, I submit that they are more alike than different.

It is important that communities (also referred to here as clients) and their service providers understand each other. Otherwise, there can be services rendered that do not fit the needs of the client, services that the client needs but doesn't get or services that are too expensive.

If you are the service provider, that is an issue for you in the long run of working with dozens or hundreds of future clients. If you are the client, this one service experience probably is your long run. You want this project to work out well for you. Whether your service provider can find work in the future is way down your list of priorities.

If you are getting a rate analysis done and based on that you set rates that are drastically too low the system may have serious operational problems from under-funding. If your rates are drastically too high or unfairly structured, you may get

voted out of office or lose your job. Similarly, if you are going to build a hard asset or a major upgrade you have one opportunity to get it right or you may build something that will forever be wrong, and costly. That is absolutely no joke. I have clients who came to me hoping I could do some rate analysis magic and reduce their rates. I'm sorry but their facilities are simply expensive to own and operate so their rates must be high. You must analyze well before building something expensive. That means you need to get the right analysis service provider.

Different service providers

To establish the differences and similarities of service providers, let's start with some definitions and characteristics of each.

Common examples of consultants: Consulting engineers, architects, financial advisors, and often attorneys and doctors. User charge analysts, though very uncommon, fall into this category.

Consultant

> *Consultant – Someone who provides value through specialized expertise, content, behavior, skill or other resources to assist a client in improving the status quo in return for mutually agreed compensation.*
>
> *– Alan Weiss, Ph.D., Consultant*[12]

The consultant is as an expert in one or more fields who provides advice, information, assistance, training or other services to a client, generally to help the client overcome a problem or make an improvement, for a **fee paid by the client.**

Characteristics of the consultant

The consultant:

- Is paid by the client,
- Seeks, or should seek, the client's best interests,
- Seeks short-term survival, long-term profits and fulfillment,
- Charges fees that are, or should be, value-based, and
- Fills niches and refers, or should refer, clients elsewhere when appropriate.

The consultant is paid by the client. The first rule of consulting is, get paid. If you don't get paid you're not a consultant, you're pursuing a hobby.

Besides just getting paid, if possible the consultant should get paid in such a way that they will have an incentive to seek the client's best interests.

The consultant should charge fees that are value-based. In other words, the investment the client will make in the consultant's fees should yield a strong return on investment. To do otherwise is to risk making a poor investment in the consultant's services. How often do consultants relate their fees to the client on the basis of return on investment? Not often. Now, this is not to say that all returns boil down to money. Some returns, such as system components designed to be easier or safer for operators to operate properly, are hard to put into dollar terms. But, the client should have the consultant clearly spell out what the returns of their services will be and quantify as many as possible.

The consultant needs to seek short-term survival, long-term profits and fulfillment. In the short run, consultants must get paid and paid enough. In the longer run, each consultant will be profitable or they will seek other work. Beyond just making a living and retiring well, one should enjoy what they are doing and have that joy show. Consulting should not be just a living; it should be an avocation that one loves doing. Clients should look for consultants that exhibit joy in their work. Such consultants will almost always out perform even the most competent, but uninspired consultants. Certainly, they will be much more satisfying to work with.

[12] Dr. Weiss is a pre-eminent business consultant, best-selling author and speaker on topics involving consulting.

The consultant should fill niches and refer clients elsewhere when appropriate. The best among us are not the best at everything. The goal of the client in selecting a consultant should be selecting the most appropriate consultant for the project they are considering. All prospective consultants should understand, and respect that goal, too. Every consultant must look out for number one, themselves. However, the best long run strategy to do that is to seek first the best interests of the client or potential client. Sometimes that strategy will have the consultant refer work elsewhere when that work is outside of their area of expertise. While the consultant may see this as releasing a "bird in the hand," the good will and enhancement of reputation will improve that consultant's prospects of catching the "two birds in the bush" that are within their area of expertise. And if those two birds never appear, at least the consultant can sleep well at night knowing they served their client, or someone else's client, as well as they could.

Now that you have the characteristics of a good consultant in mind, let's consider assistance providers.

Assistance provider

The assistance provider is as an expert in one or more fields who provides advice, information, assistance, training or other services to a client, generally to help the client overcome a problem or make an improvement, for a **fee or salary paid by a third party employer.**

Common examples of assistance providers: Providers of technical, psychological, financial and other types of assistance who are employed by state, federal, educational and non-profit organizations and associations but provide service to a third party.

Notice that the key distinction between consultants and assistance providers is who pays them. You pay your consultant. The employing agency or association pays its assistance provider employees.

As an example, circuit riders of the rural water associations and similar assistance providers of the rural community assistance programs do great work. Actually, in my experience they are some of the strongest experts in their fields. These assistance providers help you with a wide range of issues. They are paid by their employer – the association or assistance organization. Sometimes they are charged with performing certain services by a federal or state government agency that actually provides the funding for such staff. Thus, they may not get to help you as thoroughly as you would like with your particular need if it doesn't line up well with what they are funded to do. All in all, though, this system works well for the majority of needs smaller systems have.

Characteristics of the assistance provider

The assistance provider:

- Is paid by a third party but should behave as if paid by the client
- Seeks, or should seek the client's best interests
- Seeks, or should seek short-term survival, long-term goals and fulfillment
- Provides, or should provide the highest possible value for costs incurred by their employing organization and by their client, and
- Fills niches and refers, or should refer clients elsewhere when appropriate.

Assistance providers can be just as technically proficient as consultants in their area of expertise. Indeed, many of the strongest technical experts I ever came to know were not consultants. They were relatively low level state employee colleagues who worked in an area of specialty for years and became the top experts in their fields, bar none. I have since come to know assistance providers from many rural water associations, rural community assistance programs and similar organizations and I have been amazed at their expertise, too. No one employer type has a lock on all the experts. They are scattered all around.

Assistance providers have an added challenge. They are generally employed and paid by a governmental, educational, non-profit organization or association so they must serve their employer well. But they also need to serve you, their client well. In my experience working for a state agency, I found that those two don't always align. You, the client just need to

Thoughts on Myself as an Assistance Provider and as a Consultant

For 14 years I was an assistance provider paid by a state agency. I am now a consultant paid directly by my clients. I have thoughts about the two modes of assistance as they apply to my experience and my experience only, so cool it everyone.

As an assistance provider I worked just as hard as I do now as a consultant. But, being an agency-sponsored assistance provider there were limits placed on how, and how much I could help each client.

As a consultant I am free to serve my clients in whatever way they desire and that I deem ethical and within my areas of expertise. I work for my client, period. This alone makes consulting the best line of work in the world, as far as I'm concerned.

As an assistance provider my services were free of charge to my clients. Their percentage return on investment in my services was mathematically undefined because their investment in my services was zero. They did enjoy a dollar return on investment and that was often substantial.

As a consultant, paid by my clients, their percentage return on investment in my services is usually in the thousands of percent the first year. After paying me, on a dollar basis they usually net $30,000 to $50,000 the first year if they are a small client and hundreds of thousands into the millions if they are larger. The dollar returns I now generate for my clients as a consultant almost always exceed what I was able to do for them as an agency-sponsored assistance provider. That also makes me very happy to be a consultant.

make sure alignment problems don't get in the way of your getting the service and expertise you need.

I hope I was diplomatic enough on that issue.

Like the consultant, the assistance provider should seek short-term survival, long-term goals and fulfillment. Seeking the client's best interests is the best way to survive and prosper, usually.

The assistance provider should provide the highest possible value for costs incurred by the organization that pays them. However, they should seek the client's best interests, too, so they have a balancing act to perform. The assistance provider may perform for the client at no charge, but the service is not free to the client. The client still has costs and risks at stake: staff time and dollars to invest versus returns they hope to realize from those investments.

The assistance provider should fill niches and refer clients elsewhere when appropriate. Again, no difference compared to consultants. However, many organizations that employ assistance providers have restrictions about how and to whom they make referrals, if they allow referrals at all. On this issue, these organizations need to find ways to "get over it" and do what is best for the client. That didn't sound very diplomatic, did it?

Contractor

There is another group that provides a special kind of assistance; contractors. The contractor is a person or entity that performs a specified body of work for a specified fee paid by the client.

Contractors are different from the other service providers. The scope of work, the project, is developed before the contractor comes on the scene. (In fact, a consultant or assistance provider is often hired by the client to help develop that scope of work.) Bidders bid on the scope of work. Usually the low bidder wins the contract, thus becoming the "contractor." The contractor performs the scope of work and is paid by the client, who may be called the "owner" in this relationship. Generally, contractors build hard assets like roads, buildings, water systems, sewer systems and the like. However, some contractors provide training, accounting and other soft services.

The important differences between consultants and contractors boil down to these. Once competence to perform the work has been established, price is usually the factor used in selecting a contractor. The contractor is only involved in implementation of a previously developed project scope. Of course, you may sign a contract with a consultant but let's not muddy the definitions water.

Let's now examine each of these roles in the following common situation.

A city needs to build a major upgrade to its water system. The city requests the qualifications of engineers and eventually interviews one or several consulting engineers that have expertise in such design work. The city selects one. The city, now the "client" of the "consultant," has the engineer design the project or scope of work to build the water system upgrade. The client and/or the consultant may also get design and system management advice from an assistance provider from the state permitting agency and an association on how to best satisfy the state's regulatory and permitting

requirements. A rate setting specialist may analyze rates for the upgraded system. Bond counsel, investment bankers and related specialists may finance the project. The consultant then advises the city in the bidding process. The city bids the project, selects a contractor, probably on the basis of low bid, and signs a contract. Finally, the contractor builds the upgrade. Thus, we have client, consultants, assistance providers and a contractor, all playing different roles in the same project.

Common examples of contractors: Construction contractor, training contractor, water analysis laboratory, water plant contract operator and independent truck driver.

What clients should do

As you can see, there is almost no structural difference between consultants and assistance providers. And, experts can be found across the board. So, what should you, the client do?

Seek high returns on investment from whomever you solicit services. Calculate the investments needed to get each provider's services. Calculate what you would get in return - grant dollars, enhanced safety, ease of operation, higher rates and fees, fair rates and fees and so on. Then, calculate the return on investment you would get from hiring or engaging each service provider.

Better yet, have your prospective service providers calculate your return on investment or at least list the expected returns for you. Then, check their statements and assumptions. Keep in mind, dollar return on investment can be calculated for some outputs but not for others so you must make some subjective decisions when hiring service providers.

Compare paid consultants and free assistance providers. The comparison is largely one of "apples and oranges" but you still need to figure out which will be your best investment for the issue at hand. Fortunately, consultants and assistance providers are not mutually exclusive. In fact, you should use every resource available to you to your greatest advantage. Mix and match however it works best for you.

You are not alone. Don't go it alone. When it comes to community projects, almost everything has been done before. Your situation is probably not nearly as unique as you think it is. All those communities that have gone before you got help from someone to do their projects. Look around; ask around, Web search around. You will find many people, consultants, assistance providers and resources to help you do your project or rate analysis, too.

Most important, you should stay in the driver's seat. The project is yours. The decisions are yours. When the project is done the service providers will go elsewhere, but you will be left to enjoy or suffer through the results. Don't ever give up your authority to make the decisions concerning your project. Service providers are there to advise you, not to make the decisions for you. While you may not possess their technical expertise, trust that you will make decisions on your own behalf better than anyone else will. Learn from them what you need to learn so you can make good, informed decisions.

Now, look at that. We CAN all hold hands and get along.

Conclusion

Consultants and assistance providers offer many similar services and they should function very similarly. The key to success for the client is to find out what services are provided best by which paid consultants and what services they should acquire from free assistance providers.

Whether one is a client, consultant or assistance provider, all should:

- Behave as if we are all in this together, because we are,
- Network all around in all the ways we can. There is a world of information, help and more out there. We just need to find what we need,
- Find our place, serve it well, and don't try to cover too much ground. Other specialists fill the niches we don't, and
- Do everything on purpose, not by accident. While serendipity may open the path, we should go there by making informed decisions.

Chapter 14 – How to get a Great Rate Analyst

(Mainly relates to Phase 2 rate analyses)

Summary

Proper rate setting is a continuous process. It includes four phases; setting goals, getting or doing a comprehensive rate analysis periodically, making initial rate and fee adjustments, and making incremental increases in the future. The comprehensive rate study (Phase 2), for which you may hire an outside rate analyst or use an internal person for the task, is done over a few months time or less every several years, as needed. This chapter focuses on acquiring a comprehensive rate analysis from a rate setting specialist. Getting a user charge analysis done and user charge rates and fees adjusted properly requires using a good acquisition approach and doing it quickly. There are several approaches for acquiring these specialized services: closed, value-based and process oriented. If you are to get the right specialist at the right fee you must do three critical things: 1. Get to know them to assure they are the right fit for your needs, 2. Check their references, and 3. Require a strong guarantee.

What describes a great rate analyst?

- ✓ Smart
- ✓ Anal retentive
- ✓ Good with numbers
- ✓ Loves to model (as in spreadsheets)
- ✓ Deep analysis experience
- ✓ Goal oriented
- ✓ No conflict of interest
- ✓ Value-based pricing
- ✓ Nice, empathetic
- ✓ Good listener
- ✓ Strong presenter under pressure
- ✓ Boy Scout type – trustworthy, helpful, kind…
- ✓ Timely
- ✓ Energetic

Introduction

Disclosure statement: I am a rate analyst, potentially YOUR rate analyst. I cannot write a chapter about how to get a great rate analyst without bias. You have been forewarned.

Nearing the final chapter, we now will jump back to the start of the rate setting process – the comprehensive rate analysis. To get great rates you need a great comprehensive rate analysis (Phase 2). To get that, you need a great rate analyst.

For many systems the rate analyst needs to be a rate setting specialist. Why? It's like dental care. We all can and should brush and floss our own teeth regularly. But, when it's time for a professional check-up, a filling or, Heaven forbid, a root canal, do-it-yourself won't cut it. It's time to visit the dentist. A good one. A gentle one.

Now, going to the dentist assumes that you can get to the dentist. If you are stuck on a deserted island with no way of getting off, going to the dentist is not an option. Do-it-yourself or not doing it at all are your only two options. In that case, you must do the best you can with what you've got. Very small systems find themselves in this situation. They simply don't have the financial ability to pay a private consultant so that option is taken out of their hands (or so they think). They need to look to free assistance providers, free tools and themselves for that rate analysis. Fortunately, the ideas laid out in this chapter still apply in these circumstances, too.

Considerations for choosing a service provider

For purposes of the rest of this chapter, we're going to assume you are looking for a consultant who specializes in rate analysis. Many would have you believe that getting a great rate analyst is complex and tricky. It is not. They would also have you believe it is expensive. If you do it wrong it will be. Otherwise, it will not be. In fact, hiring the right rate specialist will probably yield the highest return investment that your system will ever make, period.

You need a comprehensive rate analysis if:

- It has been three to five years since the last one,
- A big event, like a large capital improvement, is coming,
- You don't know or can't prove that your current rate structure and fees are fair to your ratepayers, or
- Your reserves and financial indicators drop below those recommended in this book.

If one of the things above is true, you should move with urgency to get a rate analysis done. Think of it this way. If your rates need to go up by 30 percent right now (very normal) and your rates are now generating $100,000 per year, you need an additional $30,000 per year, or $2,500 per month. For each month you delay, you are losing $2,500. Wait one year and you will have to raise your rates an additional 25 percent (37.5 percent total or $37,500/year) to reach the same financial position in five years. Wait four years and you will have to double the increase to 60 percent not including the inflation you will experience during that time. Procrastination comes at a high cost.

Advice for very small, very low dollar systems: You probably don't need the expertise of a consultant who specializes in rate analysis. If you do, you probably won't hire one anyway. That's just the way small systems tend to operate – on the cheap. However, that doesn't mean you should blow off good rate setting.

Using the principles in this chapter, call your rural water association, primacy agency and others and ask for rate setting help. Follow the leads they give you until you find a service provider who can help you. That person may not be a rate specialist but their related experience will probably help you do your own analysis better than if you attempted it alone.

On top of an initial rate adjustment (Phase 3) to get your rates set correctly to start off, you need incremental or inflationary increases (Phase 4) during the years between comprehensive rate analyses to keep your rates at the right level. You will make these adjustments on your own but you will use the results of the comprehensive analysis to do it. Think of it this way. The comprehensive rate analysis will get you started right. The incremental rate adjustments will keep you going right.

Because many systems have not consistently made the small course corrections over the years and many are facing substantial system improvements in the next five years, almost all systems now need comprehensive rate analysis, large rate increases and significant rate restructuring. Therefore, your system almost certainly needs a comprehensive rate analysis right now.

To figure out who should do your rate analysis you need to consider a few questions.

Question: Should you have your engineer, accountant, financial advisor or investment banker do your comprehensive rate analysis?

Answer: By all means, yes, if they have demonstrated expertise in this field and they would be your best choice. In other words, if they are rate specialists, use them.

Question: How can you tell if someone is a rate specialist?

Answer: Aside from the technical aspects, which are difficult to assess, there is a very quick, easy test you can apply. Simply ask your prospects what percentage of their revenue comes from rate analysis. One third and you know they focus strongly on rate analysis. More, like over 75 percent, is even better. If they make less than one-third from rate analysis you need to wonder if they are just rate analysis opportunists or hobbyists. You definitely don't want an opportunist and you probably don't want a hobbyist either.

Wise saying, "You can't beat an expert at his own game."

You may be hesitant about asking service providers how they make their money but it is completely germane to the issue of their ability to help you. If they are rate setting specialists, they will be excited to tell you that rate setting is just about the only thing they do and they love it. If a prospect "hems and haws," or talks about how they do something else really well, you don't want them analyzing your rates. At least, you don't want to have to pay them for that service.

Would you hire an accountant to keep your books, prepare your financial statements, audit your books, receive payments and write your checks, too? If you did you would be setting them up for conflicts and you for potential loss. Keep people out of this situation and everyone will be better off.

Many engineers and accountants disagree with my thinking that those who are not rate setting specialists should not do comprehensive rate analysis. Yes, most of them are plenty smart and could learn rate analysis on the job. A rocket scientist is pretty smart, too. But I would prefer to have a plumber fix my water heater. While I could draw a pretty mean water tower and set up some really good looking financial statements for you, all as a sideline to a rate analysis I would do for you, you don't want me doing engineering or accounting. Those are not my specialties. Rate setting is. We cannot all be experts at everything. When you need an expert, get an expert in what you need.

The previous issue was one of competence. Questioning rate setting competence gets me into a pot of hot water with professionals who don't specialize in rate setting.

The following issue is one of integrity. When I bring this one up some people want to drop me into a pot of BOILING water. Everyone just step away from the stove, put down that pot and listen up.

There can be a conflict of interest when professionals from other fields do rate analyses. Consider this example. You engage an engineer to design a water system. Someone will also need to analyze your financial and rate adjustment needs so you can support that project.

Would engaging your design engineer to help you set rates be convenient? Yes.

Would it save you money? Maybe.

Would it get you appropriate rates? Maybe.

Would it place that firm in a potential conflict of interest situation? Yes.

That is not to say they wouldn't handle the conflict issue just fine; almost all do. However, wouldn't it be better to just avoid such conflicts? The best way to avoid them is to simply have a third party who specializes in rate setting do your rate analysis.

The forgoing is not to impugn engineers in particular. By the very nature of what engineers do, only the most intelligent and capable among us can even become an engineer. They are problem solvers with perhaps the highest level of integrity you can find. You can't solve natural law problems without adhering to the natural laws. No, engineers are just a convenient example because they happen to frequently be in the neighborhood when rate setting comes up. The point you need to remember is this. Before hiring anyone to analyze your rates, consider how that service might conflict with other services they provide for you or others.

That takes care of several sticky points. Let's move on to some how-to and why points of acquiring rate analysis services.

How to acquire rate analysis services

There are two basic "open" approaches; value-based and process oriented, and one "closed" approach. The value-based approach is very results oriented. I almost always recommend this approach. The process oriented approach is oriented to procedures. I seldom recommend the process oriented or the closed approaches but because they are here to stay, they are also described in the following.

Closed acquisition approach

Consultant Insight – The first thing I do when I receive a request for proposals and qualifications (RFPQ) is call the system to find out, if I can, if they already have a service provider they want to hire and they're just doing the RFPQ for show. If it's a show RFPQ, I decline to respond.

This is when you hire a pre-determined service provider to do your rate analysis. This is most often called "sole-sourcing" and it has gotten a bad reputation because of misuse. However, sometimes a closed acquisition process can actually work best.

It is common for systems to ask their engineer or accountant to also help them set new rates. Primarily because they already have a relationship and contract with that firm, they simply add this project to the contract. This is certainly a quick and easy approach and that is important in rate setting. If your existing service provider is a rate analysis specialist as described above, this will probably work wonderfully. If they are not, this approach might lead to disaster.

A self-serving but good example of good use of the closed acquisition approach is this. Clients sometimes hire my firm to analyze the rates of one of their utilities. In the course of that project they find that they love my work and the rate setting results I enable them to achieve. That makes them realize that their other utility rates need analysis, too so they hire me on the fly to do those analyses, as well. They are using a closed acquisition approach but I am a rate setting expert, they know and like my work and we can roll the new work into the existing project quickly and easily. I will almost certainly end up doing the work cheaper as a project add-on than anyone else. And, it will absolutely be done more quickly, allowing them to collect far more rate revenue.

If you intend to give your rate analysis project to an existing service provider please go immediately to them and do not solicit qualifications or proposals from others. Doing a solicitation for "show" will give you no benefits. Simply make the case to your decision-making body why the closed acquisition approach is best for this situation and get on with it quickly.

Value-based acquisition approach

This approach is quick, easy and hassle-free. I recommend this approach for almost all rate analysis service acquisitions. It will almost always cost less than the closed and process oriented approaches and because it is completed quickly, it will enable you to collect more rate revenue because you start collecting it sooner. This will usually enable you to collect enough extra rate revenue to pay the analyst's fees several times over. The value-based acquisition approach will normally yield the greatest overall value, hence its name.

Steps:

1. You call one or more rate specialists. We (I'm playing the analyst's role) talk for about 30 minutes about what is needed and we get to know each other enough to know if we want to work together on this project. You might do this with several rate specialists during the same time period. You may have a written out scope of work but you don't need one. A good rate analyst will quickly figure out what your situation is, what initially needs to be done and where that course of action may lead.
2. One or more specialists will send you a service and fee proposal, an estimate of the return on investment you can expect for getting the analysis, reference information and a sample rate analysis.
3. You review your prospect(s) proposal(s), check their references and review articles and whatever else you can find on them.
4. You accept a base service and maybe some optional services as described in the proposal and enter into a "contract" with your chosen consultant for services. (The accepted proposal is the only written agreement I require of my clients).

5. Finally, your analyst does the analysis and helps you adjust your rates quickly.

There are three critical things you need to do to make the value-based acquisition approach work for you:

- Require a strong guarantee, such as, "You will be satisfied with the results I enable you to achieve or I don't get paid."
- Require complete references, not just the good ones. (And check references to make sure past clients were pleased with the specialist's work. These are people who have been completely through the rate setting process with the analyst. If anyone knows their work, these people do.)
- Before starting the project, get to know each other well enough that you both are confident you will perform well together. (It's not enough that their references were pleased. You need to figure out if you will enjoy working with this person, too.)

Value killer: Requiring millions of dollars of insurance coverage for things that will never happen and that have nothing to do with rate analysis. I, for example, would have to provide the coverage, at high cost, or pass on your project.

As an analyst I might never set foot in your city hall or district office. If I do I will go only where the public goes. I will never have direct access to your computer or any other valuable assets. I will never be considered your employee. And I will never design or build an asset that will be a permanent albatross or that could kill someone.

The worst thing I could do is recommend rates that wouldn't raise enough money. Though that is unlikely, if it did happen I would reanalyze and recommend higher rates that would be adequate or you would invoke my guarantee and not pay me.

Sure, it's melodramatic but, I'm the goose that lays the golden eggs. Don't kill me and my rate specialist colleagues with unnecessary insurance requirements.

However and from whomever you acquire rate setting assistance, I recommend this – do not even solicit the help of anyone who you have not already gotten to know and feel good about. You should be confident that you would be comfortable with them and what they could do for you before you even ask them for a proposal. Nature gave you a wariness gene for a reason. Use it. Yes, it takes time to call service providers and have conversations. It takes time to call references. But it actually takes a lot less time to do that than it does to prepare a written RFPQ[13] and administer that process. This smart time investment is your best assurance you will get good results and enjoy working with your specialist. Written RFPQs cannot be substituted for getting to know people.

You can do steps 1, 2 and 3 of the value-based acquisition approach with several rate specialists at the same time and you have no obligation to tell them you are doing that. However, once you move to step 4 with a specialist, tell the other prospects so they are not left hanging. If you want to use the value-based approach, also read the Tips below, and then proceed, quickly.

Process oriented acquisition approach

This approach doesn't work as well for rate analysis service acquisition as the value-based approach, but it is likely that you will use it anyway. For lots of reasons, some of them good, local governments just do it that way.

This approach will take more of your time and it will probably cost you more money and deliver lower value than the value-based approach and possibly even the closed approach. Why? The process oriented acquisition approach takes lots of time, and time is money for everyone.

[13] RFPQ stands for request for proposals and qualifications. The term RFPQ combines the more common terms "RFP" and "RFQ." Visit http://carlbrownconsulting.com/, sign in to the "Tool Shed" and click the "Exmples" tab to download a two-page "RFQ Model" designed specifically for acquiring comprehensive rate analysis services.

Consultant Insight – All you really need to do to get a great rate analyst:

- Get to know them before hiring one,
- Call past clients to make sure they were pleased,
- Ask how they make their money, and
- Require a full satisfaction guarantee.

More is less.

A related problem is this. Cities and districts commonly use an engineering request for qualifications (RFQ) model which works poorly for acquiring rate analysis services. The engineering RFQ seeks design of hard assets. The rate analysis RFPQ seeks analysis of soft assets – rates, fees, financial condition, affects on ratepayers and the like. Both concern a common issue – the utility – but they look at it from different angles. Solution: When requesting proposals for a rate analysis use the right tool for the job, the rate analysis RFPQ. You still might end up hiring an engineering firm to do your rate analysis. However, by using a rate analysis RFPQ you will end up hiring the right engineering firm, one that specializes in rate analysis.

If you must formally RFPQ the project, start by reading your current acquisition process and compare it to the steps below. If your process will allow you to do these things, just follow your existing process and add the following steps to it. If your process is so ridged that it won't allow you to do some of the steps described below, try to get a variance for this project so you can use the following steps. Otherwise, fudge your process as much as you can so you can at least proceed more quickly and effectively.

The key things to keep in mind are these:

- Your approach must be simple for both you to handle and your prospective rate specialists to respond to. You don't want to discourage prospects from responding by using a complex RFPQ. Many of the best qualified rate specialists simply will not respond to an overly restrictive RFPQ, and
- It must not add much to the net cost and time for getting those services.

Steps

1. Talk to a rate specialist about your basic financial situation, future capital improvement plans and the like to get their advice on what kinds of services (scope) you probably need.
2. Develop a scope of services you desire, but be open to change. When you receive proposals and as the project goes forward, you and your analyst will probably find that your needs are different than you originally thought. Maintain flexibility in the scope so whatever needs to be done can be done without having to make scope and contractual revisions.
3. Ask service providers such as your rural water association, municipal league and water and waste water permitting agency for firms that specialize in user charge analysis. Don't be surprised if they don't know any; we are rare.
4. Prepare a request for proposals and qualifications (RFPQ) that includes the probable scope of services. Your RFPQ should be two pages at most. It is critical that you request three things in the RFPQ: a statement of the responder's guarantee, their references and how rate analysis ranks as a revenue source for that service provider. If your decision-making body likes to be involved in this type of issue, be sure to inform them about what you think your needs are and how the RFPQ will satisfy those needs, and get their concurrence to proceed. If they have already empowered you to act, which is preferable, proceed on your own.

(An excerpt from the RFQ Model)

ANTICIPATED SCOPE OF WORK, APPROACH AND STAFF SUPPORT

The city anticipates that the analyst will:

- Develop proposed rates and fees that will be adequate to pay the system's costs for the near term (10 years), and that will be fair to the ratepayers,
- Make all necessary recommendations to help the city to effectuate all needed changes now and in the near future, and
- Prepare a report that demonstrates how the analysis was performed and make a presentation at a public meeting that convincingly and clearly portrays the importance of making the changes as recommended.

5. Talk first with all prospective rate specialists before you solicit them in writing. Don't solicit in writing any you haven't talked to first. After talking to them and deciding that they would serve you well, send them the RFPQ. Remember, sending an RFPQ is not a substitute for getting to know your prospects. You need to get a sense of their expertise, personality and how quickly they can perform before even reviewing their written RFPQ response.
6. On or soon after the response due date, review the responses. Judging by the way responders reply you will have a good idea of their ability or inability to perform for you. Most critical, check out their guarantee and review and call at least a few of the references of the most promising specialists at this stage. Review even more of the references of your preferred specialist to verify that past clients felt well served.
7. If, after talking with the specialists and receiving their RFPQ responses you have decided that your scope does not need to be changed, select the specialist you want to award the project to. Call that specialist to let them know and to verify that they still want to do the project.
8. If the project scope needs to be changed, request a revised proposal from your chosen specialist covering those changes.
9. Once you have a final acceptable proposal, quickly present it to your decision-making body for approval or disapproval. If they approve it, you're off. If not, find out why. If going to the next responder may solve the problem, move to the next responder and go back to step 6 above.
10. If you will seal the service agreement with the specialist's proposal, say so in writing in a letter or by e-mail. If you or they want to use a separate contract, you or they should prepare that contract quickly. (Separate contracting takes time and money, both of which you should avoid so use the specialist's proposal as the basis for your agreement, if possible.)
11. Once you have chosen a specialist, tell all other responders which specialist you have chosen so they won't be left hanging. Be prepared to tell them why you chose that specialist, if they ask. All good analysts want to learn how to serve their prospective clientele better in the future. That could be you next time.
12. Finally, as your specialist does the work, ask questions, be involved and assure yourself that things are going well. If they are not, tell your specialist immediately. If your specialist cannot satisfy you that things are going well, inform them that you must pull the plug, not pay them if their guarantee allows that, and move on to another analyst. Then, do so by going back to step 6 above, quickly.
13. See the whole project through as quickly as possible.

As Buddy Aycock, a past employee and friend of mine used to say, "Speed is the mainest thing." Well, that's not always true but in rate setting, speed IS very important. If you want to increase your rate revenues, and that is what it is always about for the system, adjusting your rates quickly will be the most important thing you can do. In fact, if your analyst is good, they will help you adjust your rates so much quicker than you could have done it alone that the additional time at the higher rates will pay their fees very quickly.

Tips for getting a great rate analysis

1. Visualize that you are on a sinking boat. You need a good Boatwright to prevent the sinking. Don't give up that visual until your specialist has plugged all the holes and pumped out all the water.
2. Using business vernacular, time is money. Get the project underway as soon as you reasonably can. You probably need a rate increase exceeding $1,000/month if your system is very small, several thousand dollars per month if it is small to medium and several thousand dollars per day if it is large in size. Thus, you cannot afford to give a five week deadline for RFPQ responses. A couple of weeks will do. If you will be soliciting one or just a few specialists, one week is plenty of time. You also don't want to wait several more weeks for the next

council or board meeting to finish the steps your board or council controls, if you can help it. Weeks of lag time will usually cost a small system more in lost rate revenues than the price of the analysis. For a medium sized system one week's extra revenues will usually pay the analyst's fees. These kinds of delays would make the cost of the process oriented acquisition approach unacceptable.

The boat is going down! You get to choose how to spend your time. Are you going to spend it by starting up the pumps and finding that hole-fixing kit? Or, are you going to start reviewing the union agreement to see if it is OK to ask the deck hands to work below deck?

3. For rate analyses, a scope of services in a solicitation or RFPQ is mainly for your benefit, not the analyst's. A good rate analyst is able to talk with you and determine your needs fairly quickly. As the analysis proceeds they will be able to determine what changes in course they need to make to reach the desired goal: developing rates that are adequate for the system's current and future needs and fair to the ratepayers.
4. Your analyst should do almost every aspect of your analysis electronically and do it quickly, so e-mail is a natural tool for this work. If you use e-mail at all, use it for the entire rate analysis project, including sending solicitations or the RFPQ to potential rate analysts and receiving their responses.

The boat is going down! Are you going to handle everything about this event by committee? Or, are you going to assign some duties to individuals so more can get done quickly?

5. Systems sometimes have the entire board or council plus a few others serve on a selection team. That is excessive, causes delays, raises costs and lowers net returns. The decision-making body should pre-authorize the contact person to contact rate specialists, review their submittals, check references and perhaps even hire the candidate they choose. If the decision-making body cannot trust the contact person with these functions, it should appoint only a small team, perhaps three people, to review proposals and report back to them.
6. Do not require responders to provide mass paper copies of their proposal packages. Some clients require 12 copies of proposals. With 12 people reviewing their own proposal copy for what usually should be a $5,000 to $10,000 project, it's no wonder these projects sometimes balloon up to $20,000 to $30,000. Streamline. Get the bureaucracy out! In themselves, mass copies of proposals consume hundreds or even thousands of pages and represent hundreds or thousands of dollars in wasted paper, printing and especially time if you have several responders. These costs can exceed the total cost of the analysis project itself. While you don't have to pay those costs directly, if they are incurred you will pay them in some form. That will probably be in the form of inflated fees for the winning service provider to cover the extra costs. What will you do without all those copies to review? First, you only need a small team to review proposals. They can do it on screen electronically or print one out and pass it around. The written proposal should only put into writing, in a bit more detail, what the specialist and the system's contact person have already agreed to anyway.
7. Do not require your RFPQ responders to provide things that are not useful to you, that will add expense to the project and deter rate setting specialists from responding. A critical example is this. Standard engineering RFPQs call for millions of dollars of various kinds of liability insurance. This coverage is needed when you are building a physical asset such as a bridge or a treatment plant that could fail and actually hurt or kill someone. There are many critical and dangerous things about water, sewer, electric and other infrastructure systems. You need insurance that this infrastructure will be designed and built properly. However, there is essentially no opportunity for catastrophic failure if your rates are set incorrectly. If they are wrong, you simply reset them. Require your rate analysis RFPQ responders to have auto and general liability insurance, and to provide a money back guarantee that you will be pleased with their work. That is all you need. In the case of a small firm like mine, professional liability coverage for a covered client costs about $10,000. I charged over $10,000 for less than 20 of my 140+ past client's rate analysis projects. I have yet to charge more than $20,000 to any client. Thus, you can see why my 100 percent satisfaction or my work is free guarantee instead of providing engineering-related insurance saves money for me and my clients.

8. If you must use an RFPQ, keep it short to proceed quickly and so your responders can demonstrate if they really are rate setting specialists.
9. Among other things, make sure you require solicitation or RFPQ responders to state their guarantee policy, give you references and tell you what part of their revenue comes from doing rate analyses. The guarantee is your "out" just in case things don't go as you desire. The references will tell you if the service provider has pleased others. The revenue breakdown will tell you if they truly are a rate analysis specialist.

The boat is going down! A ship builder who restores damaged ships happens to be on-board. Are you going to require them to show proof of insurance and fill out a bunch of paperwork that doesn't apply to ship builders? Or, are you going to say this, "Glad you're here, now go fix it."

10. Check references before hiring. (You want a good Boatwright so you should verify that the specialist's past clients are floating high, dry and happy.) Coupled with the guarantee, good references will assure you that you will be pleased with the results. An hour talking with references will be the best investment you can make to assure you will be pleased. Besides, if this specialist's past clients were well pleased, they will be a pleasure to talk with and they will tell you about pitfalls and issues they discovered, or that the specialist discovered for them, as their analysis proceeded. This could be instructive for you.

Tip: Move quickly and efficiently. Start by accepting service proposals by e-mail only. Give a short response time. Use your chosen service provider's proposal as your 'contract.' Accept their proposal by e-mail. Do the entire analysis by e-mail and telephone. Only at the end, when you need to 'sell' the results to the ratepayers and to the board or council do you need to have the rate analyst physically appear.

Be quick, efficient, effective and cheap.

11. Develop a good relationship with your specialist. How well this project turns out will depend largely on this relationship. E-mail is fine for transmitting data and proposals but don't be shy. Call people and talk to them. Rate analysis and rate setting is a relationships game between you and your analyst, you and your ratepayers, and others.
12. While "cranking the numbers" correctly is important, it is even more important that the specialist you select be attentive to your situation and needs, they understand how to satisfy them and most important, they can convince your council or board and ratepayers to take the necessary actions. The fact that your "boat" is sinking or it is sinking faster than anyone thought is probably not evident to your decision-makers and ratepayers – that's why it is sinking. Your specialist needs to have the ability to convince the decision-makers to act upon the specialist's recommendations.
13. If you have their guarantee and trust, and you shouldn't proceed if you don't, use the specialist's proposal as your "contract," saving time and hundreds of dollars in legal expense. A good rate analyst will spend the necessary time to learn what you want so they can please you, rather than spend dollars to have an attorney try to lock you into a payment arrangement. Their concern should be serving you well, not collecting their fee.
14. Never hire a rate analysis on an hourly or cost-plus basis. (When the ship is sinking, racking up hours is exactly what you DON'T want your Boatwright to do.) You should only pay for results, not time. If a prospective assistance provider cannot scope your project on their own well enough that they can give you a lump-sum fee proposal, you should find a specialist. The almost exclusive exception to the lump-sum fee generality is this. The specialist should give you options to request additional services such as extra on-site visits or financial check-ups in the future. However, even these services should be priced on a per instance basis, not on an hourly basis.

15. If you want to pay the specialist before they start the project, ask for a pre-payment discount. Pre-payment demonstrates your trust in the specialist and your commitment to the analysis project. And, since you will have already made your investment, it will help you remain focused on seeing the project through. Besides, if everyone hustles like they should the analysis is only going to span over a couple of months or so. Thus, you can probably get a five percent discount and only be out the money for two extra months.

> Tip – Everyone has 24 hours in a day. But one hour of one person's time is not worth the same as another person's time. Don't hire time. Hire results.

16. Be aware, there will almost certainly be two major problems that will slow you down.
    - You may be busy with other duties and not want to set them aside to gather data or make decisions for the analysis. Remember, each day of delay is costing you serious money in uncollected revenues. Focus on that to stay motivated. Get data and information to your specialist as soon as possible.
    - Once the analysis is well along and you can see it calls for a large rate increase, you are going to hesitate about being party to taking that recommendation to your decision-makers and ratepayers. If your analyst is good, and that's why you hired them, they will carry the council or board and the ratepayers through this issue. In essence, they will be your "cover" for making the rate adjustments that are needed.
17. As a part of their solicitation or RFPQ response, require specialists to estimate your return on investment for having them do the project. At the end of the project have them calculate the return on investment that the proposed rate and fee changes will yield. Actually, specialists should do that for their own records anyway to measure one of the benefits they provide their clients. These calculations will quantify one of the values of getting the analysis done. This will help you to put the costs and returns from this project into perspective along side other investments you have made or will make. Granted, this information will be estimated before proceeding and only calculated later on after-the-fact but it will be useful to your decision-makers to see how smart it was (or wasn't) to take on this project. It will also tell you that, in a few years it will be worthwhile to do a new analysis to keep your rates in shape. To give you a bearing, rate analyses for most small systems should pay for themselves in higher rate revenues within 30 days. Medium and larger sized systems often enjoy a one week payback period.

Conclusion

Rate analysis and correct rate and fee setting are critical to the well-being of your system. The project can be unnerving to consider before you do it. After you have done it you will wonder why you didn't do it months or years ago. During that time lag before getting your rates analyzed and raised you will have lost thousands of dollars in revenues that you should have collected. However, going forward, your system's financial condition will recover, enabling you to please your ratepayers for years to come.

The closed acquisition approach often yields poor results if you don't get a rate setting specialist. The process oriented approach can yield good results, although the fees you pay will probably be too high. The value-based approach will yield good to excellent results at modest cost. However you choose to do it, do it quickly because time is money.

Chapter 15 – The Great Rates Game Plan

(This chapter pertains to all phases of rate setting)

Summary

Rate setting has a beginning, middle and end (although the process is circular), and it has some basic steps one must complete to do it well. Those steps encompass determining the state of mind of all involved and carrying out the four phases of rate setting.

Introduction

Here we are, wrapping up your indoctrination in rate setting. You have learned much about the process. Soon you must transition from learning it to actually doing it. If you don't do that, we have failed.

You may be one of those readers who wanted a checklist or an easy to use template to make this rate setting task a sure thing. I told you early on in this book that there is no simple checklist for this kind of work. Now you're thinking, "He lied! He has a checklist."

While there is no one-size-fits-all checklist for rate setting, there are some basic things you need to be aware of and do. These were discussed at some length earlier in this book so they are summarized in bullet-point fashion here. Keep this checklist nearby as you go about resetting your rates.

> "What we gonna do is, saw the top of your head off, root around in there with a stick 'til we find that dad-burn clot..."
>
> – Jeff Foxworthy

The game plan

Take stock of your frame of mind, and the frame of mind of your ratepayers

1. Are you a short-range planning style of elected official or staff person or do you want to look out for the long-range best interests of your system and ratepayers?
2. Are you a do-it-yourselfer and good at rate analysis or should you farm this task out?
3. Are you good at presenting a difficult message, like "our rates need to double." Are your ratepayers inclined to listen to such a message from you? Begin preparing them for the rate analysis and rate adjustment message to come.

Phase 1 – Set goals

4. Make a first cut decision about how financially fit you want your system to be. The analysis will refine this so don't labor over it but you still need to have at least general goals in mind. Don't think that the analysis will set the goals for you; it won't.

Assess your system's financial situation

5. If you got a comprehensive analysis by a specialist within the last three years, review that analysis. Is the system on track financially compared to the analysis predictions? If so, skip down to the section on Phase 4. Otherwise, read on.
6. Decide if you want to use advanced asset management strategies, which ones, when and how. Again, don't labor over this. The analysis itself will do several asset management tasks for you and point the way to others.

Phase 2 – Do or get a comprehensive rate analysis

7. If you or someone else associated with your system has been trained in comprehensive rate analysis, you're good at it and you are inclined to do it, do your own rate analysis. Otherwise, seek outside help.
8. If an assistance provider like your rural water association or a state technical assistance agency has a rate analysis specialist, their references show that they produce excellent results and they can complete your comprehensive analysis promptly, use them.
9. If none of the above works for you, seek the services of a consultant who specializes in rate analysis. Acquire their services smartly and promptly.
10. Work closely with your rate analyst to make sure they get good data to work with, that they clearly understand what you are trying to do, and to make sure that you clearly understand the actions that the analyst recommends you take.

View part of a comprehensive rate analysis by clicking the rate analysis example link at http://carlbrownconsulting.com.

Phase 3 – Do the initial rate and fee adjustments

11. Inform your decision-making body, and then your ratepayers, what the analysis results indicate they should do with rates, fees, policies and other issues. In all likelihood, your analyst's service will include doing this for you, giving you "cover" to adjust rates appropriately.
12. Based upon feedback from your decision-makers, prepare proposed changes to the rate ordinance or draft a rate resolution, as appropriate, that will enact the new rates.
13. Present the ordinance or resolution to the decision-making body for their consideration.
14. Pass an ordinance or resolution. Also make all recommended changes to policies and procedures. Start with the high-dollar and most critical items first. However, if an item or issue is particularly difficult or time consuming to solve, temporarily skip it, solve other issues quickly then return to the difficult issue. Don't let a small but difficult issue hold up progress on other fronts. Time is money.
15. Make the needed changes to your rate chart, your billing software program, Web page and wherever else it is necessary to effectuate the new rates.
16. Continue or begin to set aside funds as recommended for equipment replacement, capital improvements and the like.
17. After the new rates go into effect, do checks to see that the system's finances begin to perform as modeled. If they don't, figure out what to do about it.

Phase 4 – Do follow-up rate adjustments

18. Periodically, preferably annually when you are preparing your budget for the new fiscal year, adjust rates incrementally. To get the template GettingGreatRatesLater© to make budgeting and incremental rate increases easier, visit http://carlbrownconsulting.com/ and click the "Resources" link. If the financial indicators and especially the current position from the analysis closely match the actual performance of the system, adjust rates by the percentages or amounts recommended in the comprehensive analysis for that year. If variances are larger, make larger adjustments on an equivalent percentage basis. When the analysis and actual performance cease to match well, it is time for a new comprehensive analysis – restart the process at Phase 1.

Conclusion

Speaking for all other rate analysts, our livelihood depends on you using us. But you should strive to use us only when needed. That should be just once every three to five years or so or when something big is happening, like a capital improvement project. The first Phase 2 rate analysis recommendations will probably have you raise rates a lot and restructure rates markedly because your rates are currently out of whack. The second Phase 2 exercise, if you adjusted your rates properly the first time around and have since kept them current, should primarily be a rate restructuring. It probably will be a light one at that.

You will enjoy the greatest success if you can spend almost all of your time in Phase 4 and little time in the other phases. Frequent but small adjustments will be well-received by your ratepayers. And, such adjustments will enable you to maintain a nice, even funding stream for your system with few problems.

Recall that early in this book I made the point that people don't think of you at all unless there is a problem. Well then, eliminate the problems. They won't think of you. Voila, you have success!

Your charge

Having learned how to get great rates, you now have a decision to make. Are you going to actually do this stuff? Or, are you going to think, "Gee, I never really thought about rate setting like that before. Maybe someday someone in the system should look into this rate adjustment thing further."

I hope you will just do it, do it well and do it promptly. "Time is money," "sooner is better than later," "the only thing we have to fear…" and all those other great adages apply to rate setting, too.

Jump in. My experience tells me you will discover this. It looks overwhelming now. But, it will look easy when it is done and behind you. And, the next time it will be a snap.

Glossary of Terms

Advanced Asset Management	A comprehensive and structured approach to the long term management of assets as tools for the efficient and effective delivery of community benefits (American Public Works Association, Asset Management Task Force)
Affordability Index	The monthly charge for (typically) 5,000 gallons of residential service divided by the median monthly household income for the area served by the system. An index of 1.0 percent, meaning a household pays one percent of its income to pay its bill for 5,000 gallons of service, is generally considered affordable.
Capacity Charge	Commonly called an Impact Fee or Availability Charge – A charge that buys a new customer system capacity. This is a charge levied on a new customer that recovers all or part of the capital costs to build capacity to be able to serve that customer's actual or potential demand. This charge may be a few thousand dollars for a residential customer to many thousands of dollars for a large industrial customer.
Capital Improvement Plan or Program (CIP)	Anticipated capital improvements. These are the more expensive items such as water towers, treatment plants and lines. They generally require bond or grant funding. They do not include equipment replacement items.
Capital Improvement Reserves	Cash reserves dedicated to funding the CIP
Comprehensive Rate Analysis	Commonly called rate study – A thorough examination of a system's operating, capital improvement, equipment replacement and all other costs, revenues, current rates, number of users and their use of the system, growth in usage and all other issues surrounding the system. This examination will determine how rates and fees should be set in the future to cash-flow the system properly, to build appropriate reserves and to be fair the ratepayers. It also will determine how policies should be adjusted to enable the system to operate well now, operate well in the medium-range future (about 10 years) and prepare for expected and expectable events such as capital improvements and equipment replacement.
Connection Charge	A charge that buys a new customer connection to the system. This charge is levied on a new customer to recover all or part of the costs a system incurs in the course of connecting the new customer to the system. This may include labor costs for staff or others on-site; equipment sold by the system to the new customer for making the connection; equipment, tools and supplies used by system staff for making the connection; and the like. This charge may be a few hundred dollars for a residential customer to thousands of dollars for a large industrial customer.
Conservation (Inclining) Rates	Unit charges that go up as the volume used goes up
Cost to Produce	There are several ways to define cost to produce. Each is acceptable for different purposes. Generally, cost to produce is the total of all variable costs required to get service to a utility's customers during one year divided by the total units of service delivered during that year. In a proportional to use rate structure, this will be the unit charge.
Cost to Serve Rates	Rates where fixed, variable and capital costs generated by each user class are paid by that class with minimum and unit charges, respectively.
Coverage Ratio (CR)	Incomes and debt reserves available to pay debt divided by the amount of the debt for that year. Most systems should have a CR of 1.25 or higher.
Current Position	For a year, the sum of all incomes and undedicated reserves minus all current financial obligations for that year. Future obligations (next year's loan payments) and depreciation are not included. Current position is a good measure of overall financial health.
Declining Rates	Rates where unit charges go down as the volume used goes up

Flat Rates	Rates where all users pay exactly the same fee regardless of the volume of service they use
Incremental Rate Adjustments	Rate increases done during years between comprehensive rate analyses. The goal of these rate increases is to keep the system's income and reserve levels on track with the system's financial needs. Such increases are usually small, in the two to five percent per year range.
Infrastructure	Hard assets, such as water towers, treatment plants and lines needed to provide service to customers connected to the system
Life-cycle Cost	The total cost to design, build, operate, maintain and eventually dispose of an asset. One asset may cost less to build but be more expensive to operate and maintain, yielding a higher life-cycle cost. Life-cycle costs of different alternative actions can best be compared by bringing all costs back to the present using a present value calculation.
Operating Ratio (OR)	Current incomes and working capital reserves divided by current expenses, not including debt. An OR of 1.0 is break even. Most systems should have an OR of 1.25 or higher.
Present Value	The current dollar value of a stream of costs and revenues. A present value calculation yields the annual annuity (savings deposit) needed to pay for a stream of costs at stated inflation and interest rates for a certain period of time.
Potential Demand	The volume of service that a user could demand for a short period of time at full volume use. Potential demand is an important factor in deciding what type and size of system to build.
Proportional to use Rates	Rates where the minimum charge recovers all fixed costs, the unit charge recovers all variable costs, the unit charge is the same for all volume sold, and there is no usage allowance in the minimum charge. Required by EPA's Clean Water State Revolving Fund Loan Program.
Replacement Schedule	A timetable that describes equipment replacement and important repairs that are too infrequent and/or too expensive to cover as annual operating costs but not so expensive that they need to be covered as capital improvements.
Replacement Reserves	Cash reserves used to fund the Replacement Schedule.
Request for Proposals and Qualifications (RFPQ)	RFPQ combines the more common "request for proposals" and "request for qualifications" terms. RFQs are required for certain technical services, most notably engineering. RFPs are commonly issued to establish pricing on other types of services. Combining the two variants gets qualifications and pricing at the same time. The template "RFQ Model" is available at http://carlbrownconsulting.com/ by signing into the "Tool Shed" and clicking the "Power Tools" tab.
Tap Fee	Also called a Hook up Fee – A charge that gives a new customer the right to connect to the system. This fee may include the costs of administering the connection program, such as staff time to "sign up" new customers, get them into the system's billing program, do an inspection of the service connection to assure that it meets the system's standards and the like. This charge is usually minimal for a residential customer and maybe a few thousand dollars for a large industrial customer. Capacity and connection fees are commonly added to tap fees and the total fee is just called a "tap" fee.
Test Year	The one year period from which data was gathered to be the basis of the analysis
User Fee, User Charge	Fees assessed to customers to cover use of the system and fixed costs of the system.
Working Capital (Net Income)	The amount left in the operating fund after paying all costs due during that month, year or other time period. Working capital of $0 is break even – incomes just pay for costs.
Working Capital Goal	The desired percentage or amount above break even for the operating fund. Small systems (a few hundred connections) generally should target 35 percent or greater. Larger systems can target less, down to a minimum of about 20 percent for systems with 5,000 or more connections.