Evaluating a Rate Structure:
How to Complete a Rate Analysis

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What is RCAP?

- **R**ural **C**ommunity **A**ssistance **P**rogram
- Provide technical assistance at no cost to rural communities
  - less than 20,000 in population
  - low to moderate income
- To assure safe drinking water and sanitary waste disposal for the low income, rural communities and individuals in Oklahoma and across the nation
- National non-profit organization formed in 1972
- Federal and State funded
  - USDA Rural Development - Rural Utilities Service
  - US Health and Human Services
  - US EPA

Rate Analysis:

We Want To Answer The Following Questions . . .

- Is your community charging enough for water or sewer?
- Do revenues and fees cover all expenses and debt?
- Do you have adequate financial reserves? (Do you have *ANY* financial reserves?)
- Are your rates fair? (Is one user group subsidizing others?)

What This Presentation Covers

- Types of Rate Structures
- Developing the Data
- Key Financial Ratios
- Running Rate Scenarios
- Conclusions / Keys to Success
- Website Resource Links

Why Analyze Rates?

- Small towns face a greater challenge in providing services (such as water and sewer) because they have a smaller user base to pay for it.
- It is critically important for small towns to periodically evaluate rates to ensure that ***revenues cover expenses***.

Key Questions

- Are revenues covering current expenses?
- Will revenues cover future expenses?
- Is there money available for unexpected expenses?
- Are we planning ahead for the future?
- Are the rates fair?
- Are we financially able to build new facilities?
- Are we going to apply for grants and/or loans?
- What if the economy, inflation, or interest rates change?
- Is population increasing or declining?

Evaluating Types of Rate Structures

- Types of rates structures:
  - Flat rate
    - A single rate charged for each customer, no matter what the level of usage is by individual users. Eliminates the need for water metering
    - Everyone pays either too much or too little for water they use
  - Uniform rate or single block rate
    - It is usually coupled with a “minimum charge” where customers pay constant price per gallon regardless of amount used.
    - Cost is in direct proportion to the amount of water used
  - Increasing rate or “Inclining Rate”
    - A rate that is based on the level of water used by each customer. The more you use, the more you pay
    - Recommended structure for three reasons: (1) The most fair; (2) Less water used means less wastewater generated; and (3) Promotes conservation!
  - Decreasing rate or “Declining Rate”
    - Rates based on customer usage level but the more you use, the less you pay. Based on the assumption that economies of scale exist because it is “cheaper to produce more”. Very attractive to agricultural and industrial users!
    - Not Recommended because it is unfair to small users, and does not foster water conservation by larger users.

Developing Customer Usage Data

- Obtain customer usage data for a 12-month period
- If 12 months of usage is not available, obtain February, May, August, and November for a representative sample of water usage by all your customers
- Separate the data by usage amount categories, by month, and then calculate the average for the entire period being used

Customer Usage Data Example:

CHART NO. 1: CUSTOMER USAGE CHART

For _____ **Period:**_____

Water Usage for Month in gallons	No of Customers Using This Amount of Water	Total # Customers in this Usage Level
Under 1000		=
1001-2000		=
2001-3000		=
3001-4000		=
4001-5000		=
5001-6000		=
6001-7000		=
7001-8000		=
8001-9000		=
9001-10000		=
10,001-15,000		=
15,001-20,000		=
20,001-30,000		=
30,001-40,000		=
40,001-50,000		=
Over 50,001		=

List actual usage for each customer over 50,000 _____ _____ _____ _____ _____ _____

Developing a Usage Profile

CHART NO. 2: CUSTOMER USAGE PROFILE

For: **YEAR**

No of Customers from Monthly Customer Usage Charts

Water Usage per Month in thousands	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL A	Avg # Cust. B	Cust % of Total C
Under 1													0	0.00	
1 - 2													0	0.00	
2 - 3													0	0.00	
3 - 4													0	0.00	
4 - 5													0	0.00	
5 - 6													0	0.00	
6 - 7													0	0.00	
7 - 8													0	0.00	
8 - 9													0	0.00	
9 - 10													0	0.00	
10 - 15													0	0.00	
15 - 20													0	0.00	
20 - 30													0	0.00	
30 - 40													0	0.00	
40 - 50													0	0.00	
Average use over 50,001 gallons															
Average use over 50,001 gallons															
TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	TOTAL A	0.00	

Developing Needed Financial Data

- Hand Calculations:
  - Can be done. Initially faster than a database or spreadsheet. In the long run slower as EVERY calculation must be done by hand.
- Develop a spreadsheet or database
  - With basic information and a few equations a spreadsheet can be developed.

Developing Needed Data

- Use an Existing Spreadsheet
  - There are a number of existing spreadsheets that can be used.
  - Not a precise fit for any one community.
  - Very helpful for running comparisons and “what if” scenarios that are much more difficult with paper calculations.

Developing Needed Data

- Use some kind of accounting software
  - Simple examples include Intuit's QuickBooks or Microsoft's Money. These software programs take into account all types of accounting needs and can be user friendly but they are not a precise match for a water or wastewater utilities accounting needs.

Key Ratios

- Operating ratio.
- Coverage ratio.

Key Ratios

- Operating Ratio is a comparison of your system's revenues to expenses

$$\text{Operating Ratio} = \frac{\text{Operating Revenue}}{\text{Operating Expenses}}$$

Does not include debt, that comes later . . .

Operating Ratio

- What to include in the income for operating ratio:
  - User fees
  - Hook-up and impact fees
  - Interest
  - Cash carry-over and fund transfers
  - And income not dedicated to something else

Operating Ratios

- What to include in the expenses for operating ratio:
  - Administration
  - Wages and benefits
  - Utilities
  - Supplies
  - Other operating expenses

  - *No debt! That comes next . . .*

Operating Ratios

- What does the operating ratio mean?
  - = 1 and the system is breaking even.
  - <1 and the system is losing money (in the red)
  - >1 revenues are ahead of expenses (in the black)

The BIGGER the number – The BETTER

Another Key Ratio

- Coverage Ratio:

$$\text{Coverage Ratio} = \frac{\text{(Total Revenue – Operating Expenses)}}{\text{Debt Service Costs}}$$

This tells how well your system can repay debt, including principle and interest on loans and bonds!

Coverage Ratios

- What does the coverage ratio mean?
  - It is an indicator of the system's financial ability to repay debt.
  - <1 and banks, bond buyers, and lending agencies are unlikely to lend the system the money.
  - 1.25 is a normal target for loan/debt coverage.

The BIGGER the number – the BETTER!

Key Data - Revenues

- Revenue Components to Include:
  - Rate Charges
  - Fees and Service Charges
  - Hook-up Charges
  - Other Revenue (Insurance Reimbursements, Rental Charges, Bank Reconciliation, Sale of Assets)

Key Data – Revenues

Example of Revenues Portion of Spreadsheet from "Show Me Rate Maker"

Operating Incomes	
User Charges (Actual or Projected Receipts)	
Surcharges	
Working Capital Carried Over From Previous Year	
(for Operating Expenses)	
Working Capital Interest Earned (or Paid)	
Hookup Fees Devoted to Operating Costs	
Other Charges (late payments, forfeited deposits, etc.)	
Transfers From Capital Improvements Reserve	
Withdrawals From Debt Reserve	
Debt Reserve Interest Earned (or Paid)	
Withdrawals From Other Reserves	
Other Reserve Interest Earned (or Paid)	
Other Income	**fund transfer from General Revenue**
Other Income	
Other Adjust.	**(+ or -) Describe**
Total Actual or Projected Operating Revenues	

Key Data – Revenues

Example of Revenues Portion from Jarocki-Environmental Finance Center Spreadsheet

	Water Rates [assumes increase based on new customers]			
	Fees and Service Charges			
	Hookup Charges [Enter Average Charge]			
	Revenues Derived from Rental Charge	hydrant rental		
	Interest Income			
	Other Revenues	insurance reimbursement, bank reconcilliation, sale of truck		
TOTAL REVENUES AVAILABLE (Lines 6 through 13)				

Key Data - Expenses

- Expense Components to Include:
  - Administration
  - Wages and benefits
  - Utilities
  - Supplies
  - Maintenance and repair charges
  - Other operating expenses

Key Data – Expenses

Example of Expense Portion of Spreadsheet from "Show Me Rate Maker"

Item	Total Annual Cost for Each Item	Fixed Cost Percen-tage for Each Item		Costs Adjusted for Surcharge-able Service & Water Loss		Adjusted Fixed Cost
Salaries & Benefits for Administration Staff	$6,000	100%	X	$4,486	=	$4,486
Billing, Office Operation & Utilities, Rent & Other Overhead	$4,000	100%	X	$2,990	=	$2,990
Insurance & Bonding	$1,000	100%	X	$748	=	$748
Accounting, Legal, Engineering & Other Professional Services	$900	100%	X	$673	=	$673
Debt Repayment & Related Expenses	$12,000	50%	X	$12,000	=	$6,000
Debt Reserve Payments	$0	50%	X	$0	=	$0
Other Reserve Payments	$200	0%	X	$200	=	$0
Salaries & Benefits for Operations Staff	$12,000	0%	X	$8,971	=	$0
Electricity & Utilities for Operations	$8,500	0%	X	$6,355	=	$0
Operating Supplies & Equipment	$4,500	0%	X	$3,364	=	$0
Chemicals	$2,000	0%	X	$1,495	=	$0
Equipment Leases	$0	0%	X	$0	=	$0
Regular Maintenance & Repairs	$8,500	0%	X	$6,355	=	$0
Auto & Other Rolling Stock	$3,000	0%	X	$2,243	=	$0
Permits, Training	$1,500	0%	X	$1,121	=	$0
Taxes and Franchise Fees	$3,000	0%	X	$2,243	=	$0
Payment to R & R Account	$12,900	0%	X	$9,644	=	$0
Surchargeable Services (Adjustment)	N.A.	N.A.	X	$2,000	=	N.A.
Water Loss (Adjustment)	N.A.	100%	X	$15,113	=	$15,113

Key Data – Expenses

Example of Expenses Portion from Jarocki-Environmental Finance Center Spreadsheet

EXPENSES		
Operating and Maintenance		
Salaries and Benefits		18679
Purchased power*		141
Chemicals and Testing*		6576
Contracted work-non grant related work		1819
Materials, Supplies, and Parts		7542
Wellhead protection plan		2000
Miscellaneous*		0
Total Operating and Maintenance (Lines 17 through 23)		**36757**
General and Administrative		
Rent		920
Postage*		1201
Insurance		3299
Membership dues		132
SBA audit		2035
		0
Miscellaneous*		0
Total General and Administrative (Lines 26 through 32)		**7587**
Other Expenses		
Other Deductions, Fees and Expenses		
Income Taxes		
Public Utilities Excise Tax	[enter to override excise tax rate]	
Sales Tax, Gross Tax		2764
Total Other Expenses (Lines 35 through 38)		**2764**
Subtotal Expenses (Lines 24, 33 and 39)		**47108**
Emergency Reserve	*According to NETC, Emergency Reserve is 1/8 of non-debt expenditures (Jarocki c	
Operating Reserve should be sufficient to meet 1/8 of annual O&M expenses, plus general and administrative expenses (OMGA)	***OMGA Reserve Target***	5889
	Current Year OMGA Reserve Balance	0
	***Required* OMGA Reserve Amount**	**5889**
	***Budgeted* OMGA Reserve Amount**	0
TOTAL EXPENSES (Lines 40 + 45)		**47108**

Input Usage & Financial Data into Spreadsheet for Revenue Analysis

RATE BREAKS & RATE BLOCKS

Line		
a.	Enter Total No. Customers	
b.	Enter Total Annual Fixed Expenses	
c.	Enter Tot'l Annual Variable Exps.	
d.	Enter Total Annual Budger (b.+ c.)	
e.	Enter Min. Monthly Bill/Customer	
f.	Enter Min. Bill Usage Allowance	
g.	Enter Breakeven Flow Charge/1000	

Line	RATE ALTERNATIVE NO.			Current Rates	
h.	First		000 Gal.		per thousand
i.	Next		000 Gal.		per thousand
j.	Next		000 Gal.		per thousand
k.	Next		000 Gal.		per thousand
l.	All Over		000 Gal.		per thousand

	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L
ROW No.	Begin RATE BREAK Lines This Column (Draw Line__)	Water Use/Mo. Per Customer in 1000s	Avg. No. of Customers this Cat.	Median Use This Category in 1000s	Total Avg. Usage (C X D)	Minimum Gals. Use Allowance (C X f.)	Net Billable Gallons Per Flow Chg. (E - F)	Total Monthly Rev. from Min. Bill (C X e.)	Flow Chg. Per 1000 Gallons This Block	Total Mo. Rev. from Flow Charges (G X I)	Total Monthly Revenue (H + J)	Avg. Mo. Bill Per Customer (K / C)
1		Under 1000		0.5	0	0	0	0		0	0	#DIV/0!
2		1 - 2		1.5	0	0	0	0		0	0	#DIV/0!
3		2 - 3		2.5	0	0	0	0		0	0	#DIV/0!
4		3 - 4		3.5	0	0	0	0		0	0	#DIV/0!
5		4 - 5		4.5	0	0	0	0		0	0	#DIV/0!
6		5 - 6		5.5	0	0	0	0		0	0	#DIV/0!
7		6 - 7		6.5	0	0	0	0		0	0	#DIV/0!
8		7 - 8		7.5	0	0	0	0		0	0	#DIV/0!
9		8 - 9		8.5	0	0	0	0		0	0	#DIV/0!
10		9 - 10		9.5	0	0	0	0		0	0	#DIV/0!
11		10 - 15		12.5	0	0	0	0		0	0	#DIV/0!
12		15 - 20		17.5	0	0	0	0		0	0	#DIV/0!
13		20 - 30		25	0	0	0	0		0	0	#DIV/0!
14		30 - 40		35	0	0	0	0		0	0	#DIV/0!
15		40 - 50		45	0	0	0	0		0	0	#DIV/0!
16		*Over 50 (Use Actual Amt)										
	MONTHLY TOTALS				0.00		0.00	$0.00		$0.00	$0.00	#DIV/0!
	ANNUAL TOALS		0		0.00		0.00	$0.00		$0.00	$0.00	#DIV/0!

Running a Rate Scenario

- FIRST STEP: Key data has been obtained
- SECOND STEP: Software has been selected and ready for use
- THIRD STEP: Financial and customer usage information has been entered
- FOURTH STEP: Actual analysis and “what if” scenarios can be studied

TWO Keys to Successful Rate Setting

- Key to Success #1: Set the rates higher than you think you will need them to be.

  This extra money will help weather unexpected "bumps"—an upturn in costs, a downturn in revenue, an unexpected equipment failure.

TWO Keys to Successful Rate Setting

- Key to Success #2: Analyze rates often and adjust them as needed without delay.

Somewhere between annually and every two years is best. This ensures reality meets projections and detects needed changes before a crisis arrives.

TWO Keys to Successful Rate Setting

- *And when the local officials say:* "You want me to set the rates HIGH <u>and</u> recheck them often!!!"
- *You say:* "Planning ahead will keep a crisis away. The negatives of ONE financial crisis will overshadow ANY short term savings from setting rates low."

Increasing Revenue not Rates:

- Review Customer Billing Practices
- Bill All Users
- Collect on Overdue Accounts
- Put your Money To Work
- Leak Detection – Fix Leaks
- Make sure Meters are Accurate – they are the cash registers of your system!
- Review your rate structure
- Charge a System Development Fee
- Bulk Purchasing/Selling Rates
- Reduce expenses where feasible

Significance of Rates

- Water is a commodity and its NOT free!
- System needs to be managed like a business
- Rates must cover the FULL cost of production and service
  - Cost of water production
  - Debt Service – Loan Payments
  - Any Reserve Account Requirements
  - Capital Replacement/Asset Management Savings

Do You Need a Rate Study?

- Operating Ratio will be an early indicator that you need to do a rate study
- You regularly need to use reserves to cover Operation & Maintenance expenses
- You have to transfer money from general fund to cover water/sewer expenses
- You must manipulate how you pay your creditors, you juggle your bills monthly…..

Website Resources:

- http://www.epa.gov/OGWDW/smallsystems/index.html
- http://watercenter.montana.edu/
- http://efc.boisestate.edu/efc/
- http://www.nesc.wvu.edu/drinkingwater.cfm
- http://www.owp.csus.edu/
- http://www.efc.unc.edu/publications/pdfs
- http://rcap.org/

QUESTIONS???

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