



Proudly Serving Our
Partners in Development

- Local Government Technical Assistance
- GIS Data Development & Hosting
- Capital Project Management
- SCADA Services

Advancing the
North Country
www.danc.org

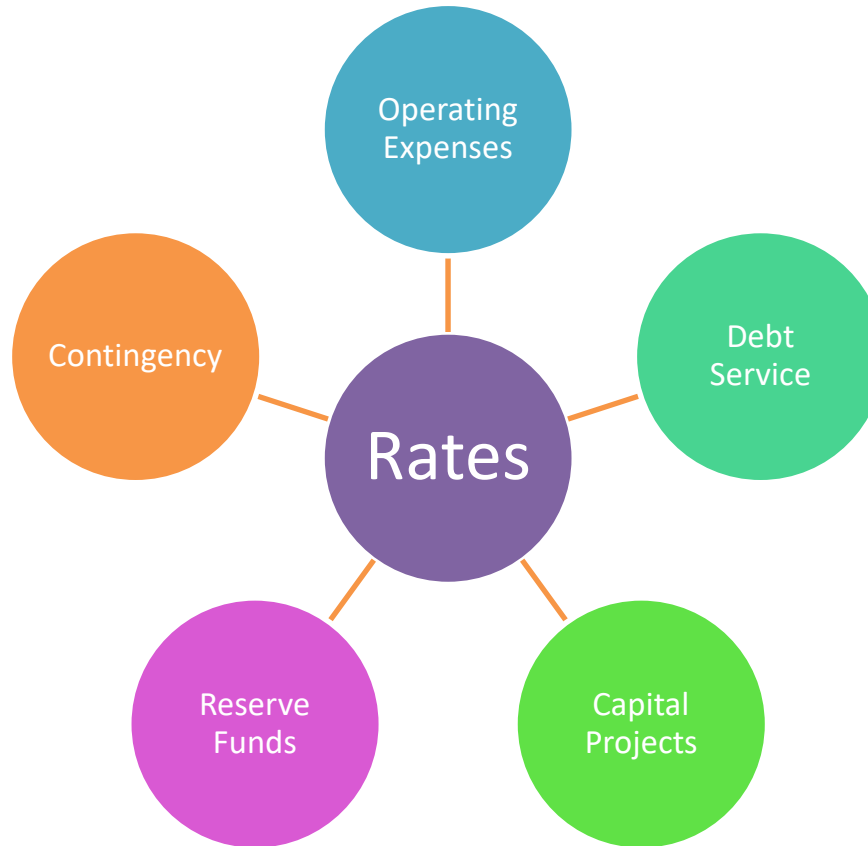
Setting Water & Sewer Rates

Carrie Tuttle, PhD, PE, CSP
Director of Engineering

Importance of Properly Set Rates

- Water & Sewer utilities are essential services
 - Environmental & health purposes
 - Public service (basic services that everyone needs)
- Poorly maintained or lacking infrastructure can limit development
- Assuring that utilities are maintained requires a financial plan
- Responsibility for financial planning resides with the Municipal Boards
- External funds available to do capital improvement projects are declining
- Agencies are expecting communities to incorporate replacement reserves into their user rates

Components of Water & Sewer Rates



Operating Expenses:

Expense Categories

- Wages
- Training
- Labor Fringes (Insurance, Benefits, Retirement)
- Utilities (Electricity, Phone, Gas)
- Chemicals
- Lab Costs
- Repairs & Maintenance (should include PM programs for equipment)
- Engineering (reports, permit updates, etc.)
- Legal and permitting
- Wholesale costs for W/S, if applicable
- Other (sludge disposal, etc.)
- Treatment vs. Collection System or Distribution

Review 3 Years of Annual Update Documents (AUDs)

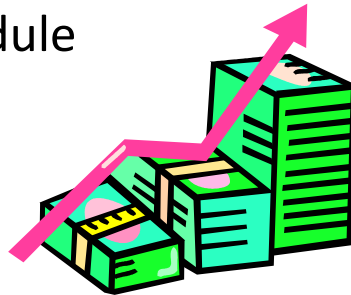
- Ensure that all W/S expenses are charged to appropriate account
 - Is internal labor being allocated to water, sewer and general fund accounts?
 - Are software/computers; environmental permit fees; operator training and certification; postage; clerk time; etc. being accounted for in your W/S budgets?
- Track treatment costs and distribution/collection costs separately
 - Determine the cost to produce or treat 1 gallon of W/S; especially if wholesale supplier of services
- Determine which expenses are fixed and variable

Debt Service

- Annual principal and interest payment scheduled for water and sewer debt
- Many projects were financed with escalating debt service payments
 - Every year your payment amount increases
- Know your debt payment schedules and factor them into your budget
 - If you don't have copies you can request them from your lender
 - Most water and sewer projects are funded by NYS Environmental Facilities Corp. and USDA Rural Development
 - When do existing debt payments end?

Estimate Future Expenses

- Project operating expenses over the next 5 years (include 1-3% for inflation)
- Track costs to categorical expenses
 - Utilities
 - Treatment & Collection
 - Repairs and maintenance
 - Debt Service
 - Revenues
 - Wages
 - Training (licensing fees)
- Incorporate debt schedule



Asset Management Planning

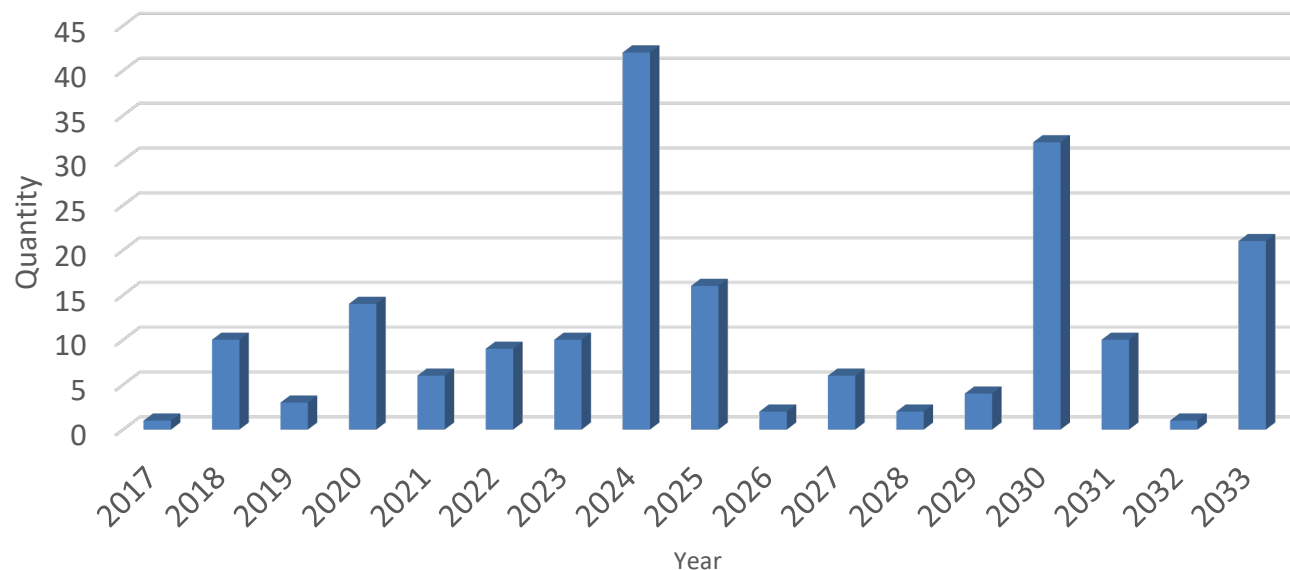
- Inventory your assets
 - Location
 - Estimate original asset life
 - Determine equipment age
 - Compute remaining asset life
 - Estimate cost of replacement (include all cost – engineering, construction, direct purchase, etc.)
 - Assess condition
 - Keep it simple – good, fair, poor
- Build a spreadsheet that lists all assets over a certain \$ amount. Start big...say >\$5000 or at high risk of theft



Example: AMP Results

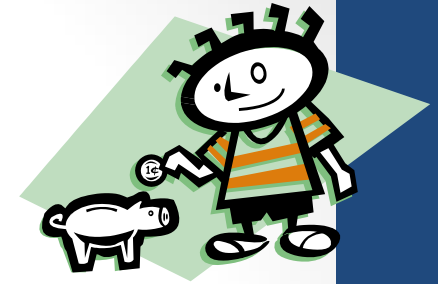
- The majority of the Village's fixed and non-fixed tangible assets are currently within their useful life.
- Many of those assets will exceed their useful life by 2025.

Assets Reaching Useful Life - 15 Year



Reserve Funds

Establish Dedicated & Short-Lived Asset Reserves



- Dedicated
 - Establish for major projects (>\$20k) to ensure funds are not “redirected” to other priorities
 - Utilize for long-term capital projects (>20 Yr)
 - Water tank replacement, blocks of distribution system or collection system upgrades, lift station replacements, major STP improvements
- Short-lived asset reserves
 - Control equipment, meters, grinder pumps, etc.
- Save enough \$ each year so that funds are available when project is needed
- Stay the Course
 - It’s like saving for your kids college fund
 - Saving now will earn interest and reduce the amount of future borrowing
 - Don’t plan on funding agencies to “bail you out”

Example:

Reserve Recommendations

- The Authority estimated annual operating reserves for the Village's assets by dividing asset replacement cost by useful life in years.

Facility/Location	Annual Operating Reserve
Wastewater Treatment Plant	\$80,000
Wastewater Treatment Collection System (General)	\$42,000
Main Sewer Lift Station	\$6,500
Golf Course	\$32,500
Fire Department	\$4,000
Department of Public Works (DPW)	\$35,000
Ice Arena	\$11,000
Old Water Plant	\$1,500
Municipal Building	\$2,000
Water Treatment Plant	\$9,000
Obrien Well Site	\$3,000
Barrett Well Site	\$3,000
Dinsdale Well Site	\$5,000
Flow Control Building	\$500
Water Distribution System (General)	\$35,000
Village Owned Structures	\$240,000
Village Owned Vehicles	\$85,000
Village Owned Small Equipment	\$5,000
TOTAL ->	\$600,000

Capital Projects

- List and prioritize your capital projects
 - Keep it simple – high, medium, low
- Consider imminent risk of public health or environmental damage
- Consider outcome/cost of failure
- Consider probability of failure
- Utilize existing maintenance records and inspections; good records help
- Operator input critical



Capital Projects

- Estimate costs
 - Utilize contractor/engineer's/vendor quotes or estimates
 - Include soft costs (engineer, municipal labor, etc.)
 - Include contingency
 - Account for inflation
 - Be conservative
- Determine when projects will be scheduled and how they will be funded (operating budget, borrowing, grants, etc.)
 - Utilize asset inventory and priorities
 - Include an annual budget to perform needed repairs (hydrants & valves, collection system infiltration, treatment system upgrades, etc.)
 - Level larger projects over multiple years
 - Consider cost savings from decreasing infiltration, loss of water from leakage, etc.

Example: Capital Project List

Description of Project	Facility	Budgetary Estimate	Recommended FY
Golf Course Equipment Replacement; includes replacing aged mowers, tractors and golf carts	Golf Course	\$60k	FYE18
Fire Department Equipment Replacement; includes replacing aged hose dryers	Fire Department	\$20k	FYE18
Water System Upgrades; includes new well and water main as recommended in Tisdell 2016 PER	Water	\$7.65M	FYE18
Water Treatment Plant Upgrades; includes upgrading the well site main control panel and WTP water heater	Water	\$60k	FYE18
Wastewater Treatment Plant Upgrades; includes upgrading equipment at the WWTP and Main Sewer Lift Station	Wastewater	\$2.5M	FYE24
Village Owned Vehicle Replacement; Replace vehicles that have reached their useful life	Village	\$325k	FYE18-FYE22
Village Owned Small Equipment Replacement; Replace equipment that has reached its useful life	Village	\$20k	FYE18-FYE22
Repair and re-surface 17,155 linear feet of pavement in poor condition	DPW	\$1.1M	FYE17-FYE22
Repair and replace 20,729 linear feet of curb in poor condition	DPW	\$800k	FYE17-FYE22
Repair and replace 19,364 linear feet of sidewalk in poor condition	DPW	\$750k	FYE17-FYE22

Contingency Funds



- Setup budget account to cover unexpected costs
 - Unplanned repair and maintenance (equipment breakdowns, water leaks, etc.)
 - Unforeseen increases in utility costs (fuel, electricity, etc.)
- The older the system the more contingency you should budget
 - Consider the cost to replace one piece of equipment that is nearing the end of its useful service life (\$5k, \$10k, \$20k+)
- If you don't have contingency then you risk using your "planned" project funds for "unplanned" breakdowns

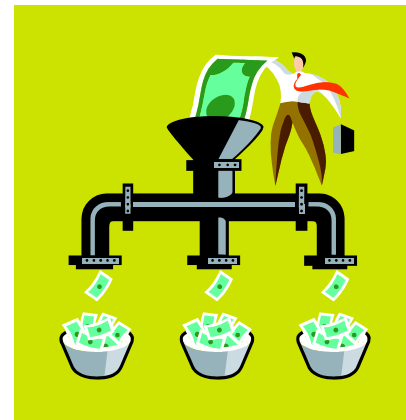
Operating Expense Summary

- The total cost of managing your W/S system equals:
 - Annual O&M Expenses
 - Annual Debt Service Payments
 - Annual Allocation for Capital Projects
 - Annual Reserve Contribution
 - Contingency!

Revenue

Understand Your Current Billing System

- Classes of customers
 - Internal
 - External
 - Metered
 - Non-Metered
 - Residential
 - Commercial
 - Industrial
 - Wholesale
- Number of customers
- Fixed customer charges
- Variable consumption charges



Setting Rates:

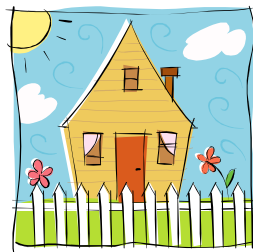
General Rate Guidelines

- Make sure your rates are fair
 - Know the charge per gallon of W/S for each customer
 - Compare rates across customer classes and make sure one group of users isn't subsidizing another
- External customer rates are higher than internal
 - It costs more to provide the service (20% markup is typ.)
- Wholesale customer rates are typically discounted
 - Make sure their rate is more than your cost to produce
 - The more you sell the less it costs
- Industrial customer WW rates incorporate fees for strength
 - Your cost to treat stronger WW is higher
 - Competitive rates for industries can promote economic development

Setting Rates:

General Rate Guidelines

- To fairly establish rates, users should be charged based on the number of EDUs not hook-ups.
 - 1 EDU (equivalent dwelling unit) is equal to a typical single family household
 - 1 hook-up could consume many times more than a single EDU (i.e., schools, hospitals, apartment complexes, etc.)
 - Vacant lots which have service available are charged a portion of an EDU (0.25 to 0.5 EDU typically)



Setting Rates: Fixed Charges

- The fixed portion of the bill is calculated to recover the fixed costs of the utility, such as labor, debt service, a portion of fixed operating expenses, etc.
- Set fixed charges based on EDUs not hook-ups
 - If your fixed expenses = \$70,000/year and you have 350 EDUs, then each EDU will pay \$200/year
 - Some communities incorporate into Town/County tax bill
- Even if a household doesn't use any W/S there are still costs to provide the service

Setting Rates: Variable Charges

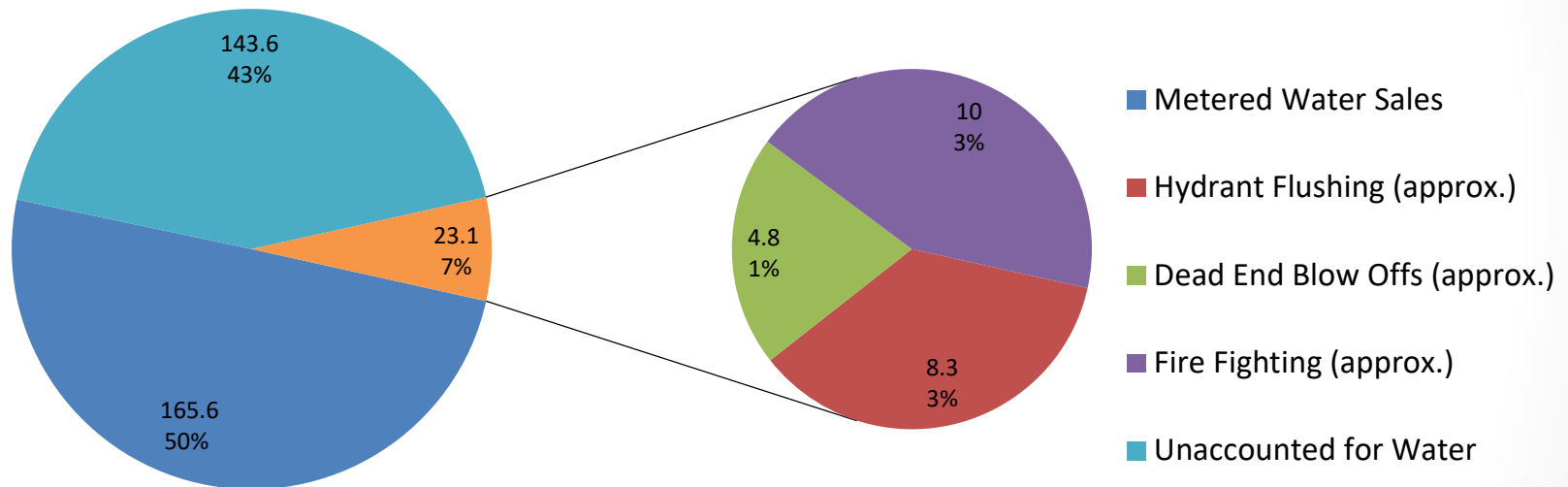
- Variable rates are set based on consumption
- Ensure variable rates cover variable expenses
 - Review last three years of usage expenses and revenue
 - An avg. household (1 EDU) uses 150-200 gpd of water; know what your community uses
 - Set variable rates so you cover the cost to supply the average household
- Examples include
 - Quarterly amount up to avg. usage then \$/1,000 gallons for additional (i.e. \$40/qtr up to 13,500 gal/qtr. then \$10/1000 gallons above that amount)
 - Scaled based on incremental usage (i.e., 0-10,000 gallons = \$40; 10,000-20,000 = \$25, etc.)
 - Set based on \$/1,000 gallons beginning with 1st gallon used

Setting Rates: Metered Users

- Meters should be installed for all users to reduce waste and compute water loss
 - Water waste in communities w/o meters is high
- **The Facts on Leaks**
<http://www.epa.gov/WaterSense/pubs/fixleak.html>
 - The average household's leaks can account for more than 10,000 gallons of water wasted every year, or the amount of water needed to wash 270 loads of laundry.
 - Household leaks can waste more than 1 trillion gallons annually nationwide. That's equal to the annual household water use of more than 11 million homes.
 - 10% of homes have leaks that waste >90 gal/day.
- Private wells that discharge to sewer should be metered to compute sewer bill
- Non-metered charges will be fixed and must incorporate a conservative estimate for consumption to ensure costs are covered



Water Usage (Million Gallons)



W/S Rate Modeling

Analyze Rate Scenarios & Select Best Option

- Simplifies annual budget/rate setting process
- Helps maintain continuity through administrations
- Use the guidelines & run different scenarios to see how rate changes will impact different user classes
- Make adjustments and determine effect on budget and rates over next 5-10 yrs.
- Calculate required rates if all high priority projects are completed in plan (best case)
- Calculate amount of high priority projects that will not be completed if rates remain flat (worst case)
- If best case rate increase is too high then re-assess project priorities
- Discuss risks of not doing needed repairs
- Balance rates and project loading so all high priority projects can be completed in reasonable time frame
- Prepare multiple scenarios so Board can pick optimal solution considering competing wants

Variables

	Fixed Rate	70%		
	Variable Rate	30%		
	EDU Water Equivalent (gpd)	120		
	Annual EDU Water Usage (Gal)	43800		
	Estimated Metered Water Sales (Gal/Year)	160,000,000		
	Proposed EDU Contingency	1%		
	Proposed Rate Contingency	1%		
		2016 (Budget)	Budget + Contingency	
Expenditures				
Water	\$	1,403,748.00	\$	1,417,785.48
Sewer	\$	1,611,045.00	\$	1,627,155.45
Revenues				
Water	\$	1,403,748.00		
	Fixed	\$ 982,623.60	\$	992,449.84
	Variable	\$ 421,124.40	\$	425,335.64
	Water EDU's	4580		
	Water EDU Rate (\$/EDU)	\$ 214.56	\$	216.71
	Water Rate (\$/KG)	\$ 2.63	\$	2.66
Sewer	\$	1,611,045.00		
	Fixed	\$ 1,127,731.50	\$	1,139,008.82
	Variable	\$ 483,313.50	\$	488,146.64
	Sewer EDU's	4580		
	Sewer EDU Rate (\$/EDU)	\$ 246.24	\$	248.71
	Sewer Rate (\$/KG)	\$ 3.02	\$	3.05

Challenges

- Demand for public funds is much greater than the funds that are available
- Competition is great – ranking will consider community plans, reserves and rates, shared services
- Federal and state agencies consider the affordability to pay for W/S projects
- Some funding utilizes median household income of community to determine above what level rates could be subsidized with low interest loans/grants

Watch Outs



- Be careful when comparing rates with other communities, it's all relative
- Low rates may mean that the community is...
 - Not reinvesting in their equipment
 - Not building reserves
 - Not properly accounting for all their W/S expenses and paying for some costs through general taxes
 - Has a lower MHI than your community and received grants/loans to complete a project when funds were more readily available

Summary

- Create a Asset Management Plan
- Incorporate Asset Management Planning into budget setting process
 - Define roles and responsibilities: What will board, supervisor, department heads do?
- Review rates and project 5 year expenses/revenues
- Review and update plan annually
- Communicate to the public 
 - Show the data
 - Post the AMP on the website
 - Educate public about rates & grants
- For larger projects, go after grant funding
 - Start early – it takes time
 - Many projects require funding from multiple sources
 - Get help
 - DANC, Tug Hill Commission, County, Private Consultants

Thank You

Carrie Tuttle , PHD, PE, CSP
Director of Engineering
Engineering & Environmental Services Division

23557 NYS Route 37
Watertown, NY 13601
[Email: ctuttle@danc.org](mailto:ctuttle@danc.org)
[Website: www.danc.org](http://www.danc.org)
315/661-3259

