



Asset Management, Rates, and Affordability Considerations Session

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A blue-tinted photograph of industrial machinery, likely a pump or valve assembly, serves as the background for the top portion of the slide.

Asset Management Discussion

- What do you think of when you hear “asset management”?
- What are some essential steps to asset management?
- What do you do in the area of asset management?



ASSETS

What assets do you manage, where are they, what condition are they in, what is their useful life, how much are they worth, and what is their energy use?

CRITICALITY

What is the overall business risk based on probability and consequence of asset failure? Is there redundancy to reduce risk?

FUNDING

Do you have funding sources to provide the capital you need for O&M, capital replacement and energy efficiency improvement?



SERVICE LEVEL

What level of service do you want to provide for your customers? How will you measure performance?

LIFE CYCLE

Is there a strategic plan for operating and maintaining system assets? Is a process, based on risk, in place to determine when to repair, rehabilitate or replace assets? Are you considering energy efficiency?

One View of Asset Management

Asset Management – The Way it Fits Together

ASSETS

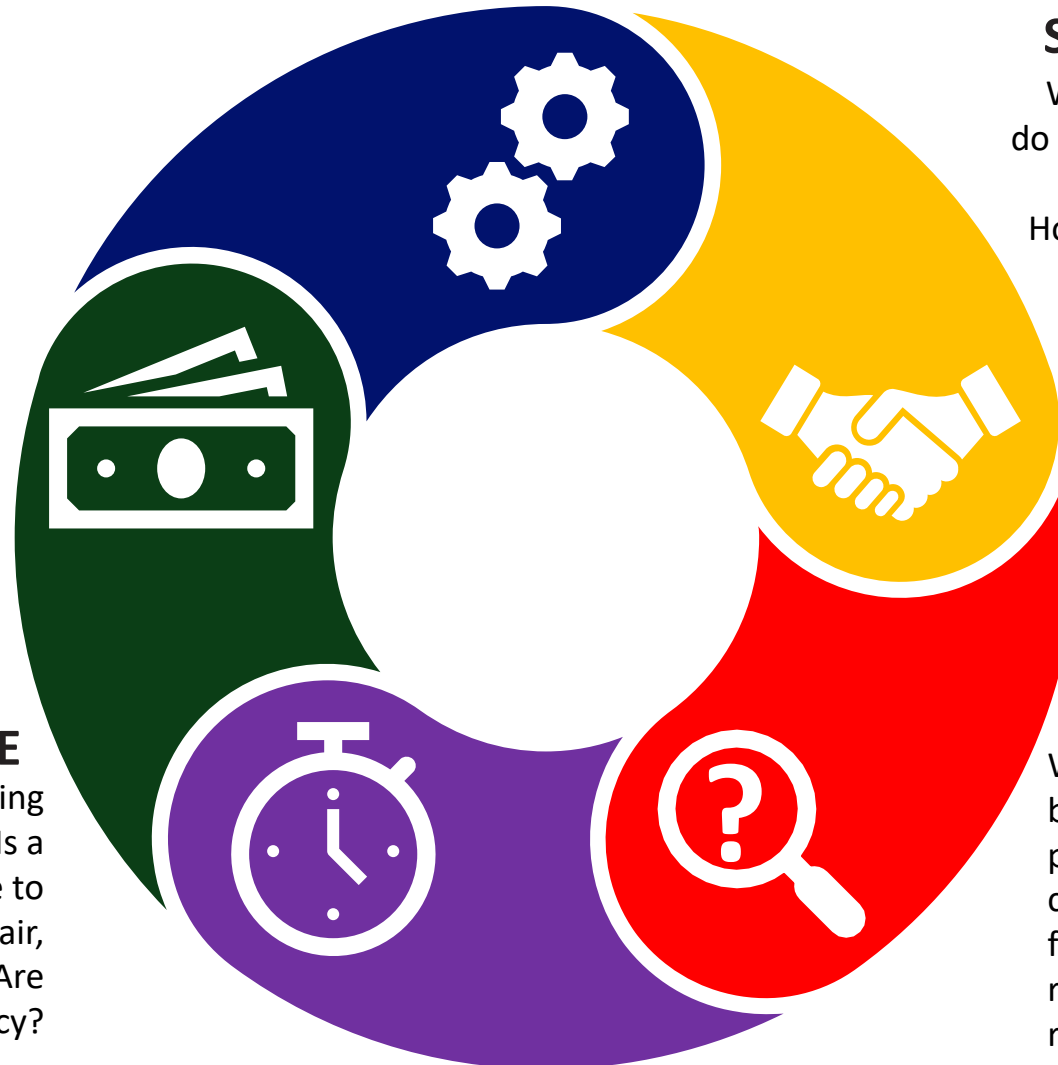
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SERVICE LEVEL

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CRITICALITY

What is the overall business risk based on probability and consequence of asset failure? Is there redundancy to reduce risk?



Why do an asset management plan?

- Increased efficiency
- Reduce costs
- Increased level of service
- Funding requirements
- Succession planning

Asset Criticality

What is the probability or likelihood that a given asset will fail?

How do my assets fail?

What's the condition of my assets?



Asset Criticality

What is the consequence if the asset does fail?

What is the cost of the repair?

Are there legal consequences, environmental consequences, social consequences?

Are there redundant assets?



Asset Criticality



Quick Exercise

1. Brand new overhead storage tank
2. Aging booster pumps that serve a hospital and neighborhood
3. 20 year old lines on Forest Drive, a typical residential neighborhood
4. 20 year old meters



Planning Grants

- Community and Non-profit
- NTNC
- <10,000 persons served
- Documented evidence of non-compliance with State and/or Federal Regulations
- Must show need based on existing rates, MHI, etc.
- Must be discrete areas of the waterworks



A blue-tinted photograph of industrial machinery, possibly a water treatment plant, featuring large pipes and valves.

Planning Grants

- \$35,000 maximum grant
 - Local match of funds not required
- Applications - Year-round
 - Reset January 1
- If not funded immediately reviewed in September
- Planning on funding 6 -8 Grants for FY2019
- 15 Month project schedule ***firm***
 - Starts after all paperwork is signed



Examples

- Preliminary Engineering Reports
- Hydraulic Evaluation - Distribution System
Improvements related to excessive water loss
- **Asset Management Plan (as funding allows)**
- Rate Studies (as funding allows)
- Leak Detection Study
- Drill exploratory well and test water quality

Software: CUPSS (EPA)

<http://www.epa.gov/cupss/>

CUPSS Mobile App

CUPSS Check Up Program for Small Systems Set-up | Switch Utility | Create User | Help | Training | Exit

My Home My Inventory My O & M My Finances My Check up My CUPSS Plan

Welcome Back Helen, Beauty View Acres Subdivision - DW

What would you like to do today?

[Do Some Training](#) [Enter a New Task or Work Order](#)

[Create or Update My Schematic](#) [Search Asset and Maintenance](#)

[Create or Update My Inventory](#) [Enter My Finances](#)

[Print My Check Up Reports](#) [Work on My CUPSS Plan](#)

My Calendar

| April 2008 | | | | | | |
|------------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| 30 | 31 | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |

My Messages and Alerts

Popup Messages Are Off. Click To Turn On.

| Reminder - Today's Tasks | 8 |
|----------------------------|-----|
| Tasks Currently Past Due | 160 |
| Assets Needing Update | 0 |
| Number of High Risk Assets | 2 |

Verizon 10:25 PM 62%

New Asset - 0.4.0

+ Basic information

+ Status and Condition

+ Cost and Maintenance

+ Manufacturer and Supp...

Errors

- * Name is required
- * Location is required
- * Category is required
- * Type is required
- * Condition is required
- * CoF is required
- * Redundancy is required

New Asset My Assets Export



Rate Setting



Tell us about your rates?

- Do they provide enough money for operation?
- Do they provide enough money for capital investment?
- How often are they changed?
- What's the process for changing them?

What word or phrase comes to mind when you hear water rates?





Rates can.....

- A. Provide adequate funds to support public health
- B. Provide adequate funds to support environmental protection
- C. Support local and state policies and objectives
- D. Communicate in a certain way with customers
- E. Allocate costs in an intentional and fair way



Or rates can.....

- A. Provide **inadequate** funds to support public health
- B. Provide **inadequate** funds to support environmental protection
- C. **Contradict** local and state policies and objectives
- D. Communicate in a certain **undesirable** way with customers
- E. Allocate costs **unfairly**



The Big Rate Setting Questions

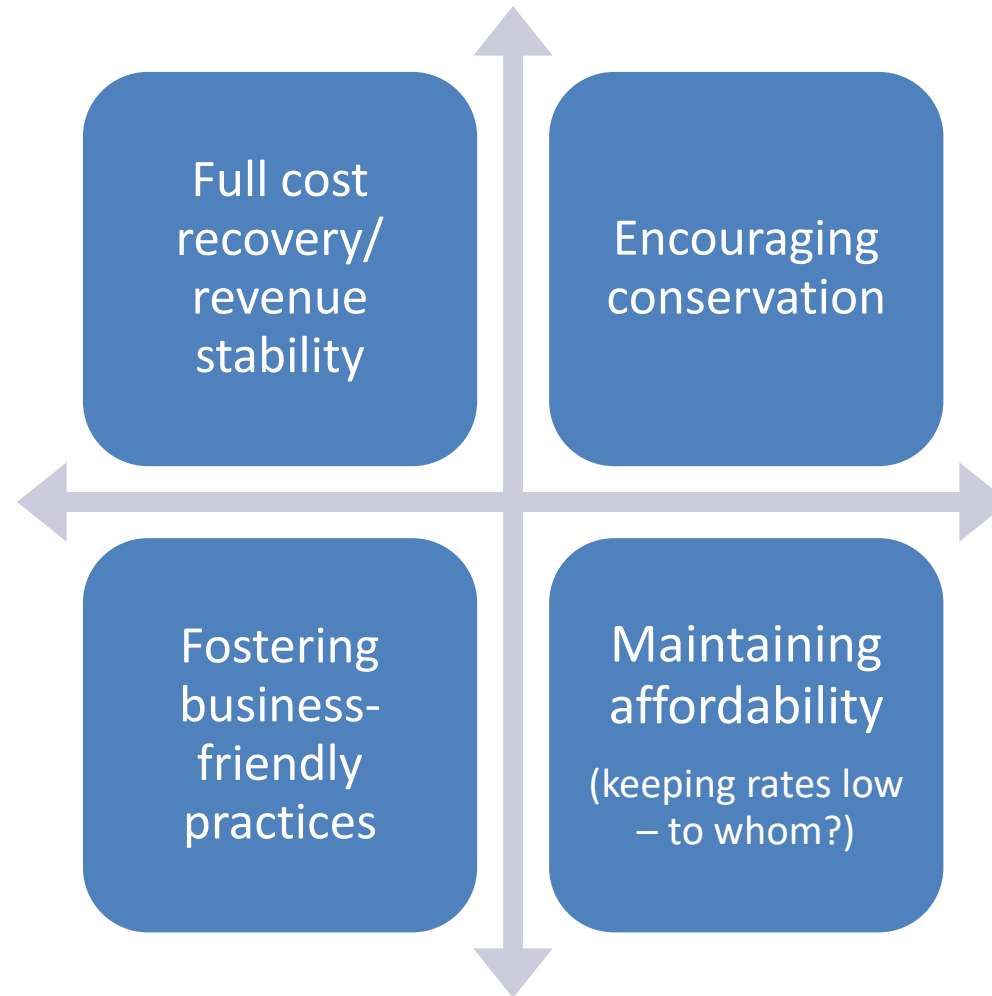
- How much revenue do you need? (Revenue Requirements)
- How are you going to allocate costs among your customers? (Rate Structure)



Revenue requirements

- Operation and maintenance?
- Capital renewal?
- New capital?
- Source water protection?
- Customer assistance program?

Example of Four Rate Setting Objectives



What is the
priority for
your system?

How This Impacts Customers



1,000 gallons/month



4,000 gallons/month



12,000 gallons/month



34,000 gallons/month

A blue-tinted photograph of industrial machinery, likely a pump or valve assembly, with various pipes and mechanical components.

There are lots of ways to get to the same place..

Option 1: Payment for Access:
\$63.79/month

Option 2: Payment for Volume of Product Received:
\$10.48/1,000 gallons

Option 3: Base Charge for Fixed Costs; Volumetric Charge for Variable Costs:
\$54.08/month + \$1.59/1,000 gallons

Option 4: \$25 Base Charge; Volumetric Charge for Rest:
\$25.00/month + \$6.37/1,000 gallons

Option 1: Payment for Access



\$63.79

\$63.79

\$63.79

\$63.79

Option 2: Payment for Volume of Product Received



\$10.48

\$41.92

\$125.76

\$356.32

Option 3: Base Charge for Fixed Costs; Volumetric Charge for Variable Costs



\$55.67

\$60.44

\$73.16

\$108.14

Option 4: \$25 Base Charge; Volumetric Charge for Rest



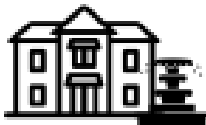



\$31.37

\$50.48

\$101.44

\$241.58

| |  1,000 gallons/month |  4,000 gallons/month |  12,000 gallons/month |  34,000 gallons/month |
|---|--|---|--|--|
| Payment for Access (Fixed Monthly Bill) | \$63.79 | \$63.79 | \$63.79 | \$63.79 |
| Payment for Volume of Product Received | \$10.48 | \$41.92 | \$125.76 | \$356.32 |
| Base Charge for Fixed Costs; Volumetric Charge for Variable Costs | \$55.67 | \$60.44 | \$73.16 | \$108.14 |
| \$25 Base Charge; Volumetric Charge for Rest | \$31.37 | \$50.48 | \$101.44 | \$241.58 |



Some resources and tools



Water and Wastewater Rates Analysis Model
<http://efc.sog.unc.edu> or <http://efcnetwork.org>

<http://efc.sog.unc.edu> or <http://efcnetwork.org>

Find the most up-to-date version in [Resources / Tools](#)

Water & Wastewater Rates Analysis Model

Version 2.8.2 (last updated August 4, 2015)

UNC

ENVIRONMENTAL FINANCE CENTER

Developed by the Environmental Finance Center at the University of North Carolina, Chapel Hill
http://efc.sog.unc.edu

Funded by the U.S. Environmental Protection Agency and the Public Water Supply Section of the North Carolina Department of Environment and Natural Resources

Get Started

Download a copy of the model populated with data from an example utility

DESCRIPTION

A do-it-yourself, simplified financial model to assist utility managers and private system owners in setting water and wastewater rates.

FEATURES

- Comparisons of annual fund balance projections (for up to 20 years) under proposed new rates vs. staying with existing rates
- Adjust rates for the next 1-5 years
- Up to 12 rate structures
- Uniform or block rates (up to 10 blocks)
- Model changes to accounts and water use
- Customizable list of operating and capital expenses
- Building up reserves through rates
- Compare monthly bills under new rates vs. existing rates
- Assess revenue sufficiency and fund balance
- Error notifications

INSTRUCTIONS

1) Navigate using worksheet tabs at bottom of screen or following arrows and clicking on buttons

2) In the green "Data Input" worksheets, input data in the dark green cells

View Results

Financial forecast of the next few years under 'Existing' rates versus 'New' rates (graphs of cost recovery and end-of-year fund balance)

How new rates compare to existing rates (graphs of monthly bills)

| Year: | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------------------------|---------|---------|---------|---------|---------|---------|
| Existing | New | | | | | |
| Rate | \$11.50 | \$13.00 | \$14.00 | \$17.00 | \$20.00 | \$24.00 |
| charge (gallons/month) | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Block End | | | | | | |
| 1mo 4,000 gal/mo | \$2.78 | \$2.78 | \$2.78 | \$3.00 | \$3.50 | \$4.00 |
| 1mo 7,000 gal/mo | \$4.00 | \$4.50 | \$5.00 | \$5.50 | | |
| 1mo 10,000 gal/mo | \$6.00 | \$6.50 | \$7.00 | \$8.00 | \$9.00 | \$9.00 |

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| Debt Service and Other Known Annual Expenses for Next 20 Years | \$ 2,000,000 | \$ 2,000,000 | \$ 2,000,000 | \$ 2,000,000 | \$ 2,000,000 | \$ 2,000,000 |

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|------------|------------|------------|------------|------------|------------|
| Personal Utility Expenses that Grow Every Year (\$ per year) | \$ 280,000 | \$ 280,000 | \$ 280,000 | \$ 280,000 | \$ 280,000 | \$ 280,000 |
| Regional Sewer Authority operations & maintenance | \$ 100,000 | \$ 100,000 | \$ 100,000 | \$ 100,000 | \$ 100,000 | \$ 100,000 |
| Electrical services | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 |
| Repairs and maintenance | \$ 40,000 | \$ 40,000 | \$ 40,000 | \$ 40,000 | \$ 40,000 | \$ 40,000 |
| Other charges | \$ 80,000 | \$ 80,000 | \$ 80,000 | \$ 80,000 | \$ 80,000 | \$ 80,000 |

Back to top

Error: missing block rates
Error: missing block size

Watch out for red "Error" messages describing where data entry errors

Created by the Environmental Finance Center at the University of North Carolina, Chapel Hill
Funded by the U.S. E.P.A. and the N.C. Department of Environment Quality



Rates Analysis Tool

What do you need?

- Rate sheet
- Billing data revealing customers' usage
- Number of accounts
- Budget

Step 1

Input the year below and input up to 12 rate structures (e.g. water, wastewater, residential, commercial, inside, outside, etc.) in the dark green cells.

Input existing rates in the first column and the [new] rates in the next five years.

| Rate Structure(s) | | Fiscal Year: | | | | | | |
|--|------------------------|-------------------|---------|---------|---------|---------|---------|---------|
| | | 2019 | FY2020 | FY2021 | FY2022 | FY2023 | FY2024 | |
| | | Existing | New | | | | | |
| Rate Structure 1: | Rate 1: In-City | | | | | | | |
| Monthly Base Charge: | | \$46.36 | \$55.63 | \$63.98 | \$70.37 | \$75.30 | \$77.18 | |
| Consumption allowance included with the base charge (gallons/month): | | | | | | | | |
| | <i>Block Start:</i> | <i>Block End:</i> | | | | | | |
| Block rate 1 (\$/1,000 gal) | - gal/mo | gal/mo | \$6.06 | \$7.27 | \$8.36 | \$9.20 | \$9.84 | \$10.09 |
| Block rate 2 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 3 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 4 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 5 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 6 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 7 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 8 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Block rate 9 (\$/1,000 gal) | - gal/mo | gal/mo | | | | | | |
| Final block rate (\$/1,000 gal) | - gal/mo | and beyond | | | | | | |

Step 2

Input customer water use that was charged volumetric rates in the dark green cells corresponding to all rate structures in analysis.

| Monthly Consumption that was Charged Volumetric Rates All Volume Above Consumption Allowance in FY2019, by Blocks See example of how to determine volumes by blocks | | | | | | | | | | | | |
|---|---|-------------------------|-----------|--|--|--|--|--|--|--|--|--|
| Rate 1: In-City | | | | | | | | | | | | |
| Total monthly volume | <table><tr><th>Gallons/month in FY2019</th></tr><tr><td>1,081,152</td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr></table> | Gallons/month in FY2019 | 1,081,152 | | | | | | | | | |
| Gallons/month in FY2019 | | | | | | | | | | | | |
| 1,081,152 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Total: | 1,081,152 | | | | | | | | | | | |

Step 3

Input number of accounts, growth rate, trends in water use, and connection fees for all applicable rate structures.

| Accounts and Uncollected Bills | Number of Accounts in FY2019 | Growth Rate %/year | Uncollected Bills Per Year |
|--------------------------------|---------------------------------|--------------------|-------------------------------|
| Rate 1: In-City | 421 | 0.0% | 2.0% |
| Rate 3: Outside-City | 201 | 0.0% | 2.0% |

| Average Monthly Consumption | Approx. average per account (gallons/month) is less than | Projected Change in Average Consumption Based on Trends (%/year) | Modeled Reduction in Average Consumption after a 10% Increase in Rates |
|-----------------------------|--|--|--|
| Rate 1: In-City | 5,200 | -1.0% | -3.0% |
| Rate 3: Outside-City | 4,100 | -1.0% | -3.0% |

| Total of One-Time Fees to Connect New Customer (e.g. tap, connection, system development, impact fees) | Existing in FY2019 | New in FY2020 and beyond |
|---|-----------------------|-----------------------------|
| Rate 1: In-City | | |
| Rate 3: Outside-City | | |

Step 4

Enter debt service (principal + interest) and all other capital and non-capital expenses that are known for each individual year in the future and are excluded from the 'Additional Utility Expenses' box.

| Step 4 | | |
|---|-------------------|---------|
| Enter debt service (principal + interest) and all other capital and non-capital expenses that are known for each individual year in the future and are excluded from the 'Additional Utility Expenses' box. | | |
| Debt Service and Other Known Annual Expenses for Next 20 Years | | |
| Year | Expected Expenses | |
| FY2019 | \$ | 125,000 |
| FY2020 | \$ | 125,000 |
| FY2021 | \$ | 125,000 |
| FY2022 | \$ | 125,000 |
| FY2023 | \$ | 125,000 |
| FY2024 | \$ | 125,000 |
| FY2025 | \$ | 125,000 |
| FY2026 | \$ | 125,000 |
| FY2027 | \$ | 125,000 |
| FY2028 | \$ | 125,000 |
| FY2029 | \$ | 125,000 |
| FY2030 | \$ | 125,000 |
| FY2031 | \$ | 125,000 |
| FY2032 | \$ | 125,000 |
| FY2033 | \$ | 125,000 |
| FY2034 | \$ | 125,000 |
| FY2035 | \$ | 125,000 |
| FY2036 | \$ | 125,000 |
| FY2037 | \$ | 125,000 |
| FY2038 | \$ | 125,000 |
| FY2039 | \$ | 125,000 |
| FY2040 | \$ | 125,000 |

Step 5

Enter all other expenses in FY2019 that are not listed in the 'Debt Service and Other Known Annual Expenses' box. All expenses in this box are assumed to grow linearly at a constant rate. You can change the titles for the expenses and use up to 11 categories.

| Additional Utility Expenses that Grow Every Year | |
|---|------------|
| (\$ per year) | |
| | In FY2019 |
| Personell, Admin | \$ 354,068 |
| Repairs, Maintenance, Equipment | \$ 67,950 |
| Utilities | \$ 14,000 |
| Dues, Memberships, Fees, Charges | \$ 8,225 |
| Water Lab, Chemicals, Hook-Ups | \$ 16,200 |
| Contracted Services, Training | \$ 8,750 |
| Misc. | \$ 22,000 |
| | |
| | |
| | |
| | |
| | |
| Total: \$ 491,193 | |
| All expenses in this box are assumed to grow linearly every year at a constant rate | |
| Inflation of Utility Expenses (%/year) | 3.00% |

Step 6

If you are using rates to generate more revenue to build up your reserves (after paying for all expenses in the 'Debt Service...' and 'Additional Utility Expenses' boxes), enter your reserve build-up requirements.

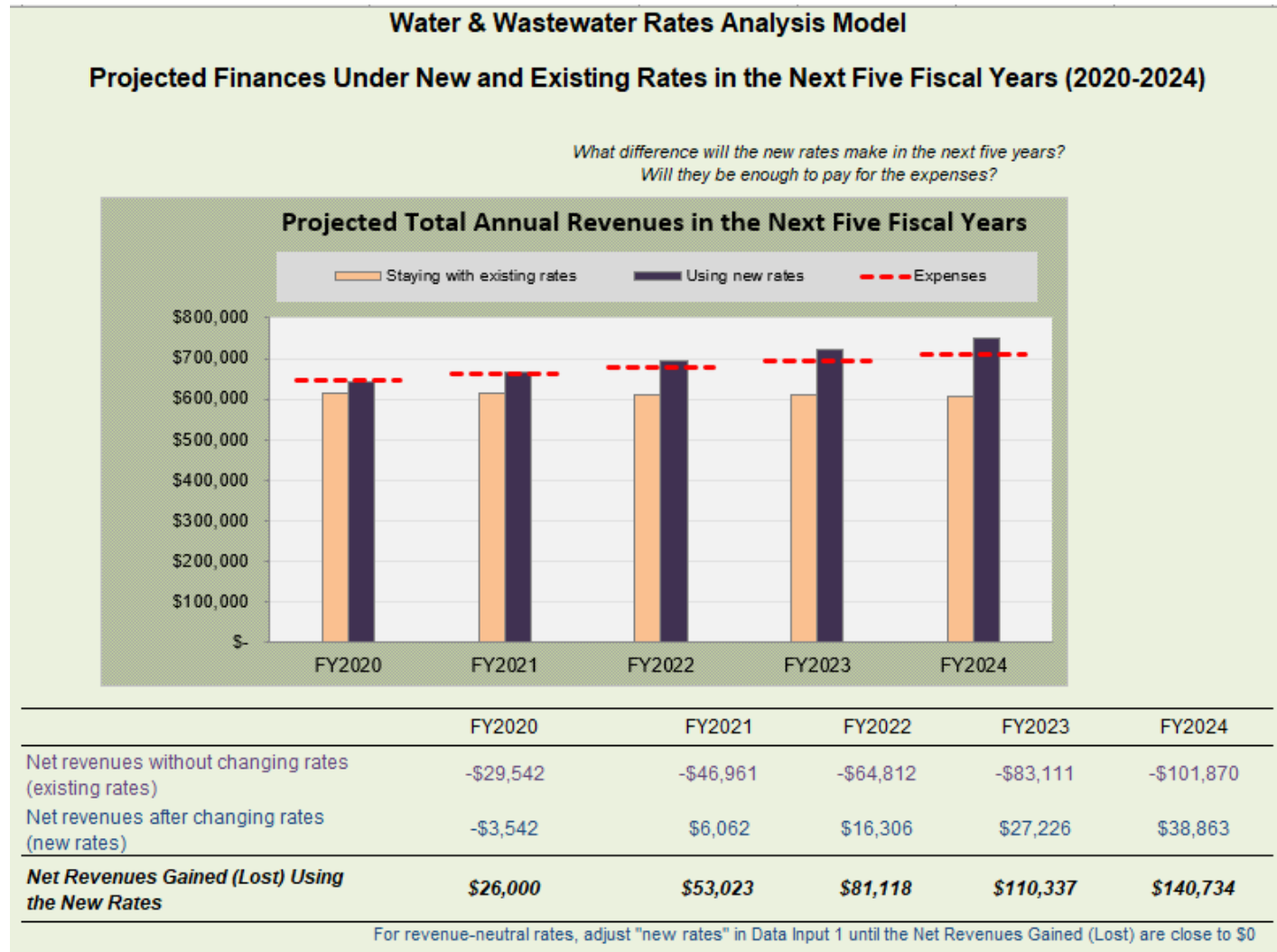
| Building Up Reserves from Rates | |
|--|----------------------------------|
| Enter as negative if transferring money IN from other fund | |
| Year | Revenue Needs to Adjust Reserves |
| FY2019 | \$ 15,000 |
| FY2020 | \$ 15,000 |
| FY2021 | \$ 15,000 |
| FY2022 | \$ 15,000 |
| FY2023 | \$ 15,000 |
| FY2024 | \$ 15,000 |
| FY2025 | \$ 15,000 |
| FY2026 | \$ 15,000 |
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| FY2032 | \$ 15,000 |
| FY2033 | \$ 15,000 |
| FY2034 | \$ 15,000 |
| FY2035 | \$ 15,000 |
| FY2036 | \$ 15,000 |
| FY2037 | \$ 15,000 |
| FY2038 | \$ 15,000 |
| FY2039 | \$ 15,000 |
| FY2040 | \$ 15,000 |

Step 7

Input how much cash (fund balance was available for the water/wastewater fund at the start of FY2019 and what the minimum fund balance should be every year.

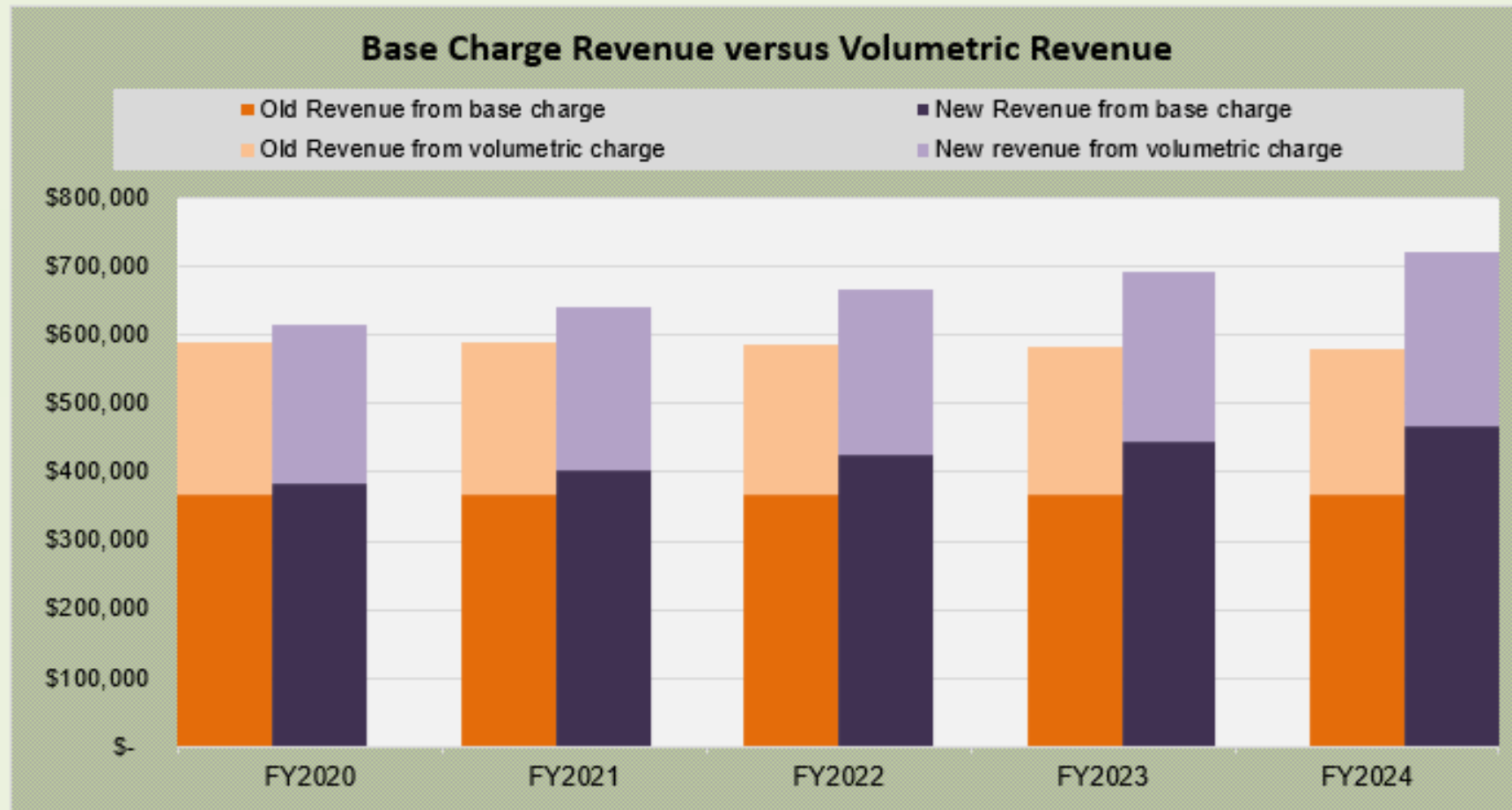
| Fund Balance | |
|---|--------------|
| Fund balance at the beginning of FY2019 (or end of FY2018) | \$ 1,043,950 |
| OR .. fund balance estimated at the end of FY2019 | |
| End of year fund balance should always exceed (minimum target): | |

Financial Forecast



Financial Forecast

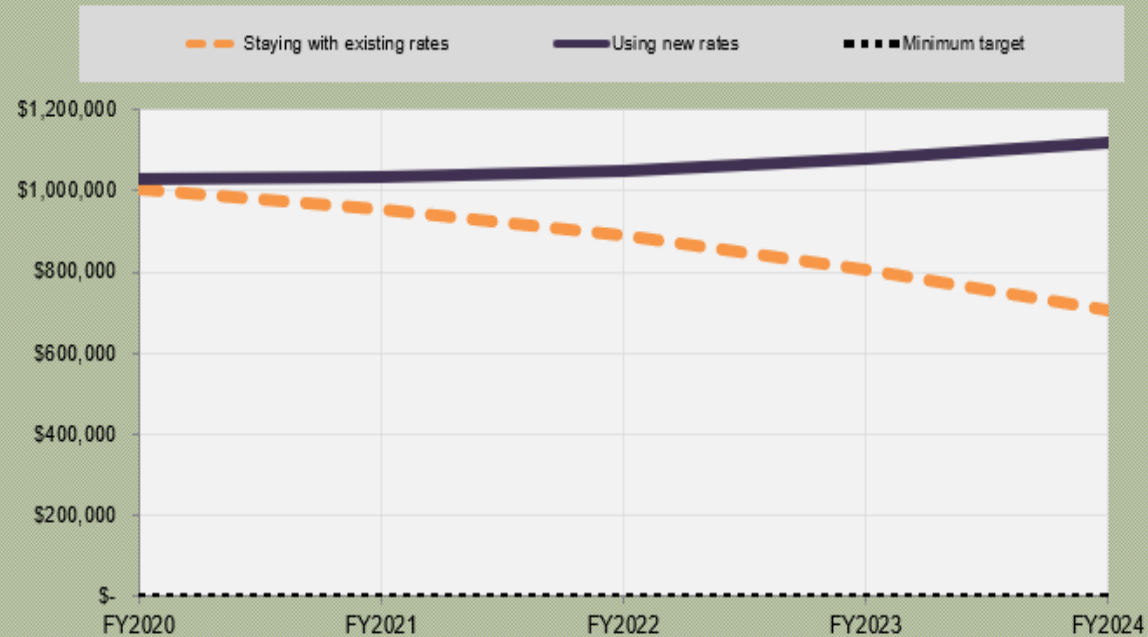
If we stay with our existing rates, how much of our revenues will from fixed (base) charges, and how much will be from volumetric charges? If we change our rates, how will that affect the revenues from both fixed and volumetric charges?



Financial Forecast

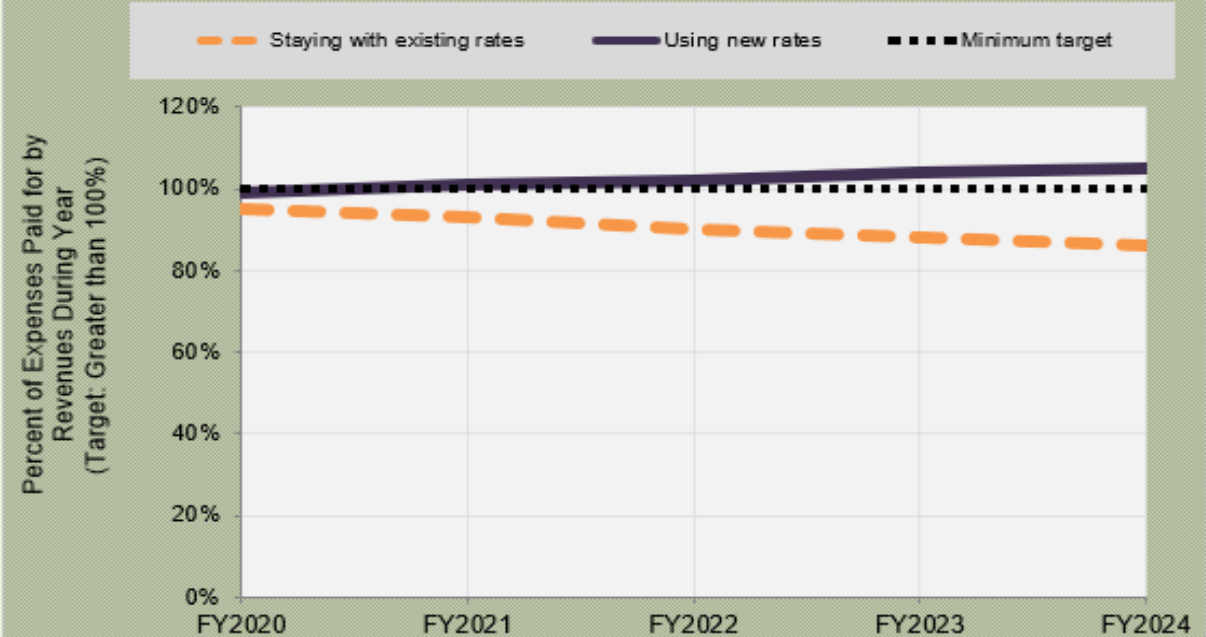
*Will the existing rates or new rates ensure that our fund balance remains above our minimum target?
Will we be depleting, maintaining, or building up our fund balance if we stay with the existing rates or if we change our rates?*

Projected End-of-Year Fund Balance in the Next Five Fiscal Years



*Will the existing rates or new rates generate enough revenues each year to pay for all expenses of that year
(or will we dip into our reserves)?*

Revenues as Percent of Expenses in the Next Five Fiscal Years



A blue-tinted photograph of industrial machinery, likely a large pipe or valve, serves as the background for the top portion of the slide.

Rates Small Group Work

- What impact does you rates have?