



Long-Term Capital Planning



This program is made possible under a cooperative agreement with EPA.

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Session Objectives

- Learn about two aspects of long-term system planning: asset management and capital planning
- Figure out how to pay for the future needs



In the old days...

- Water systems took advantage of the federal government's ambitious construction grants program of the 1970s
- Everybody loved their “free” money



Capital Finance Today

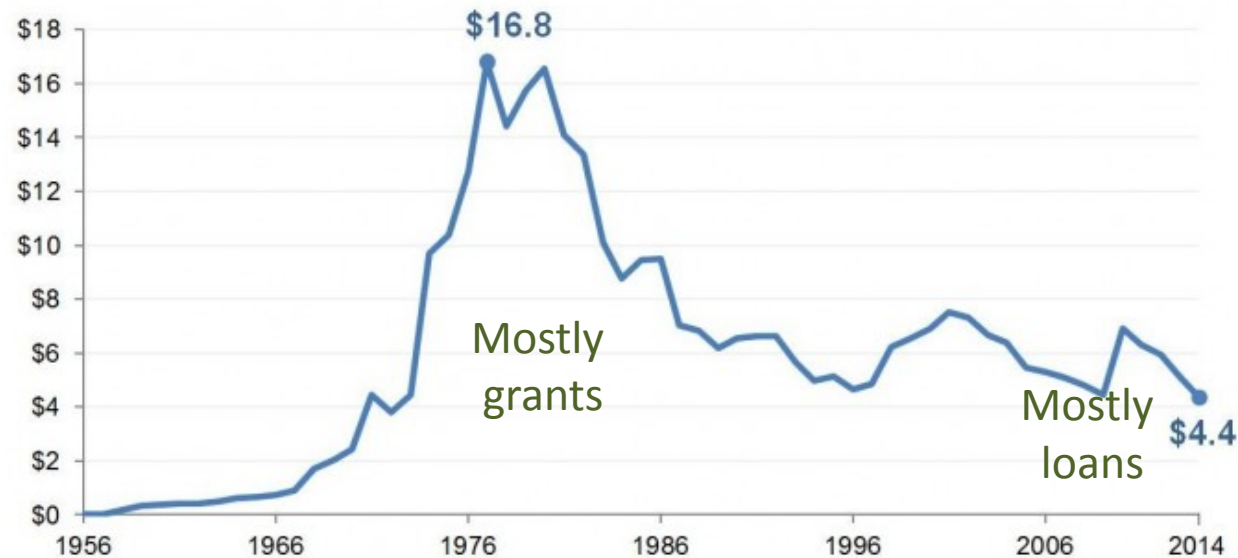
- The money never really was “free”—it came from tax dollars
- Today, the financial burden has been shifted away from federal and state tax dollars (grants) to funds raised by the water system itself (customer sales and loans). For example...



Federal funding has declined

Federal spending on water and wastewater utility infrastructure decreased in the 1980s and after 2000

Reported in billions of 2014 dollars



Source: Congressional Budget Office (March 2015), Public Spending on Transportation and Water Infrastructure, 1956 to 2014.

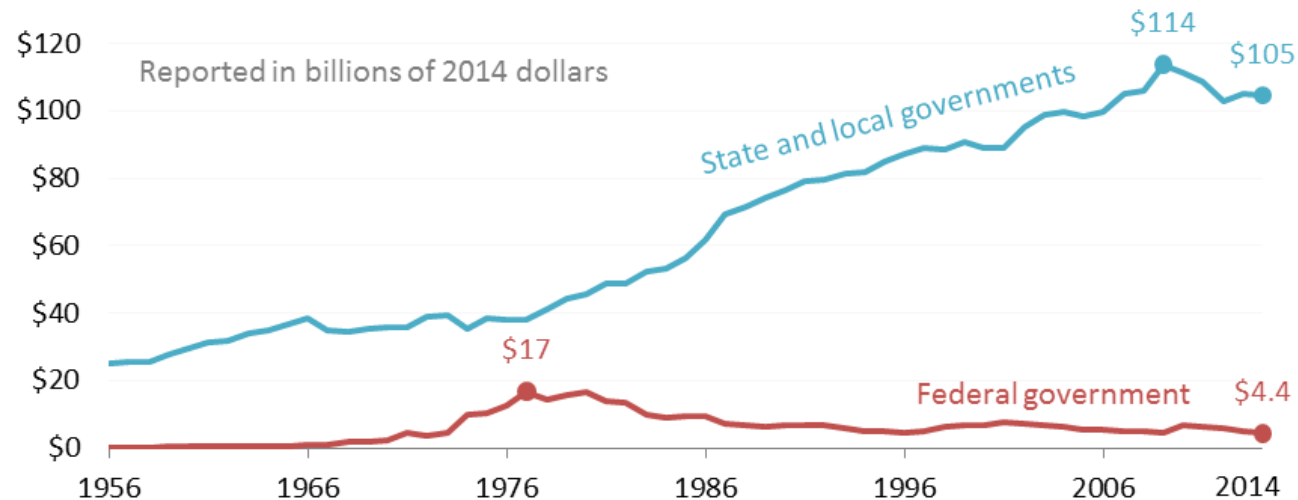
<http://efc.web.unc.edu/2015/05/14/federal-funding-trends-for-water-and-wastewater/>



State and local spending increased

State and local government spending on water and wastewater utilities continued to grow while **federal spending** declined since the 1980s

State and local governments spent 24 times as much as the federal government in 2014



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

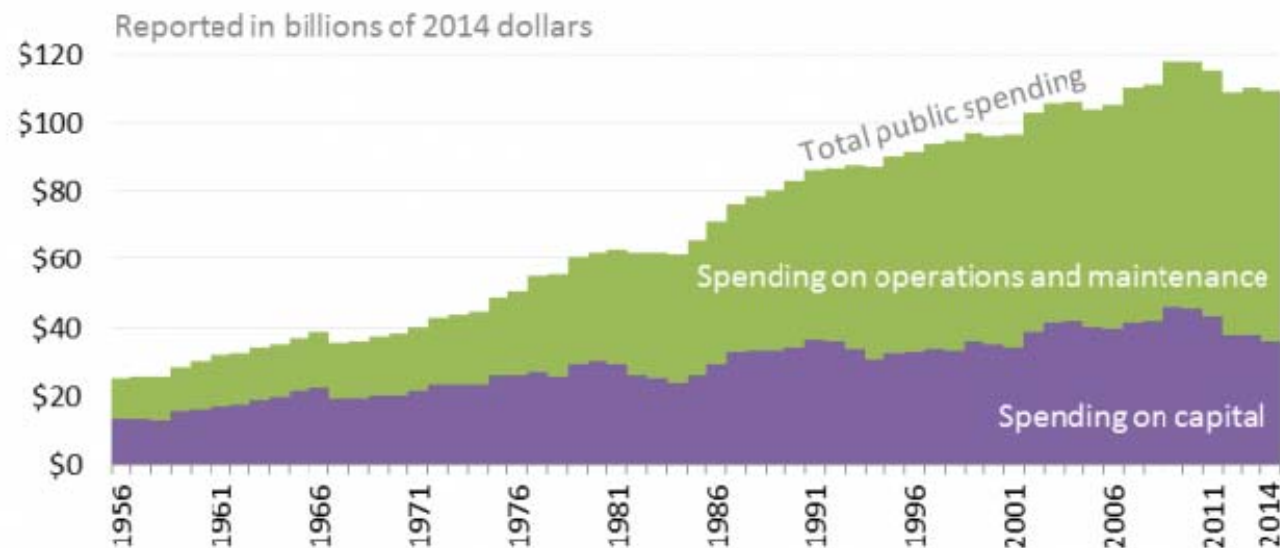
Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure-specific price indexes.

<http://efc.web.unc.edu/2015/09/09/four-trends-government-spending-water/>



...And Mostly for O&M, not Capital

Federal, state and local government spending on water and wastewater utilities, 1956 - 2014



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

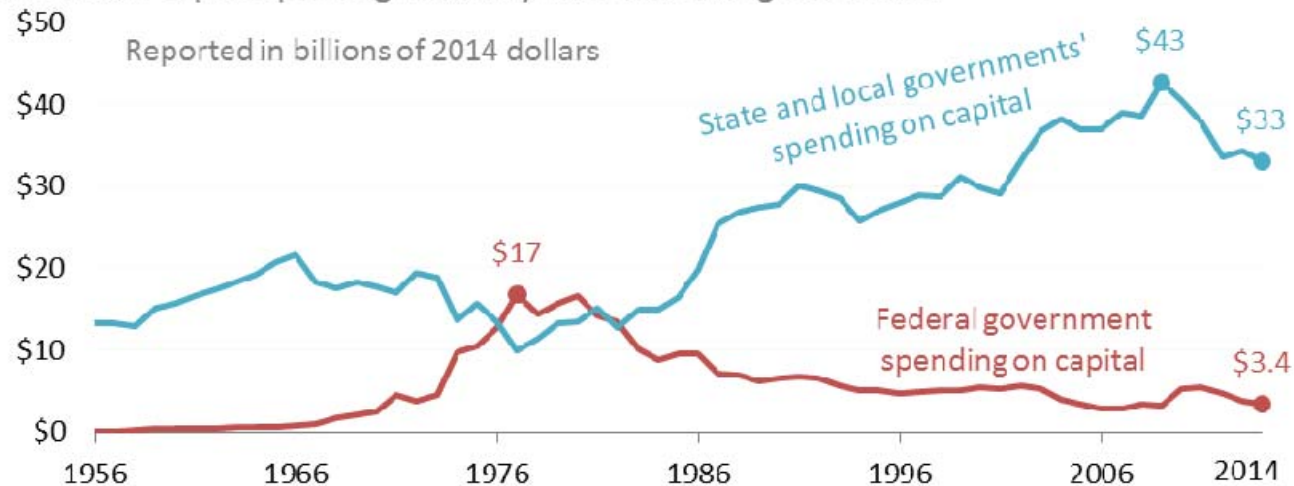
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Feds Used to Spend More on Capital

Spending on capital infrastructure for water and wastewater utilities has increasingly been provided by **state and local governments** while **federal spending on capital infrastructure** declined since the 1980s

Over 90% of capital spending occurs by state and local governments



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure specific price indexes.



In other words: you pay



Two things all water systems
should (or even must) do:

Asset Management Planning
&
Capital Improvement Planning



Mike Daly, White Cliffs, NM **Video Profile**



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What does this type of analysis take?

- Nothing more than following a systematic approach for managing the assets
- 5 core components of Asset Management



Five Core Components of AM



Current State of the Assets



Level of Service



Criticality



Life Cycle Costing

Long-Term Funding





NC Asset Management Requirements for Funding

Don't confuse the AM 5 Core Components with the 4 specific components of an AMP as required by the NC DWI for priority points for funding. These include:

- Inventory of assets
- Condition assessment
- A 10-year C.I.P. with projected cost estimates for 5 years
- An Operation and Maintenance Plan



Start by listing what you have

- Pipes
- Wells
- Pumps
- Treatment plant
- Tanks
- Service equipment: trucks, etc.
- Valves
- Meters – master and standard



Current State of the Assets

- What do I own?
- Where are the assets?
- What condition are they in?
- How much useful life is remaining?
- What is the replacement value?



Example of an Asset Inventory

Asset Inventory

| ID Number | Category | Type | Size | Manufacturer | Serial Number | Location | Installation Date | Condition | Energy user Y/N (if Yes, see Energy Inventory) | Comments |
|-----------|----------|------|------|--------------|---------------|----------|-------------------|-----------|---------------------------------------------------|----------|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |



| Example System Inventory Worksheet | | | | | | |
|-------------------------------------------|----------------------|----------------|-------------------------|----------------------|-----|-----------------------|
| Date Worksheet Completed/Updated: 8/14/02 | | | | | | |
| Asset | Expected Useful Life | Condition | Service History | Adjusted Useful Life | Age | Remaining Useful Life |
| Well 1 (1993) | 30 | Good | | 30 | 9 | 21 |
| Well 1 pump | 10 | Good | Rehab (1996) | 10 | 9 | 1 |
| Well 2 (1993) | 30 | Good | | 30 | 9 | 21 |
| Well 2 pump | 10 | Good | Rehab (1998) | 10 | 9 | 1 |
| Pumphouse (1993) | 30 | Good | | 30 | 9 | 21 |
| Electrical components | 10 | Some corrosion | Rehab (1994) | 10 | 9 | 1 |
| Chlorinator (1993) | 10 | Good | Rehab (1998) | 5 | 3 | 2 |
| Storage tank 1 (1993) | 40 | Good | Rehab (2000) - \$17,000 | 40 | 9 | 31 |
| Storage tank 2 (1993) | 40 | Good | Rehab (2000) - \$17,000 | 40 | 9 | 31 |
| Storage tank 3 (2000) | 40 | Almost new | | 40 | 2 | 38 |
| | | | | | | |
| Distribution System: | | | | | | |
| Hydrants (15) | 40 | Unknown | | 40 | 9 | 11 |
| Valves (45) | 40 | Unknown | 6 valves don't work | 40 | 9 | 11 |
| 6-inch (PVC) | 60 | Unknown | | 60 | 9 | 51 |
| 4-inch (PVC) | 60 | Unknown | | 60 | 9 | 51 |
| 2-inch (PVC) | 60 | Unknown | Repair breaks (2/year) | 60 | 9 | 51 |



Asset Management: A Handbook for Small Water Systems

One of the Simple Tools for Effective
Performance (STEP) Guide Series



http://www.epa.gov/safewater/smallsystems/pdfs/guide_smallsystems_asset_mgmnt.pdf

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Taking Stock of Your Water System

A Simple Asset Inventory for Very Small Drinking Water Systems



http://www.epa.gov/safewater/smallsystems/pdfs/final_asset_inventory_for_small_systems.pdf



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How Long Will it Last?

Typical Life Expectancies of Water System Equipment

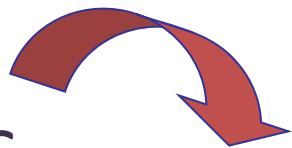
| Component | Worksheet | Useful Life |
|------------------------------------------|-----------------------|-------------|
| Wells and Springs | Drinking Water Source | 25 years |
| Intake Structures | | 35 years |
| Pumping Equipment | | 10 years |
| Disinfection Equipment | Treatment System | 5 years |
| Hydropneumatic Tanks | Tanks | 10 years |
| Concrete and Metal Storage Tanks | | 30 years |
| Transmission Structures (Pipes) | Distribution System | 35 years |
| Valves | Valves | 35 years |
| Mechanical Valves | | 15 years |
| Computer Equipment/Software | Electrical Systems | 5 years |
| Transformers/Switchgears/Wiring | | 20 years |
| Motor Controls/Variable Frequency Drives | | 10 years |
| Sensors | | 7 years |
| Buildings | Buildings | 30 years |
| Service Lines | Service Lines | 30 years |
| Hydrants | Hydrants | 40 years |

Note: These expected useful lives are drawn from a variety of sources. The estimates assume that assets have been properly maintained. The adjusted useful life of an asset will be equal to or less than typical useful life.



Level of Service

Involve
Customers



Measurable
Goals: Internal
and External



Track Progress
Towards
Meeting Goals

Involve
Staff



What would my customers want?



Asset Criticality – Part 1

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 – Part 2

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?

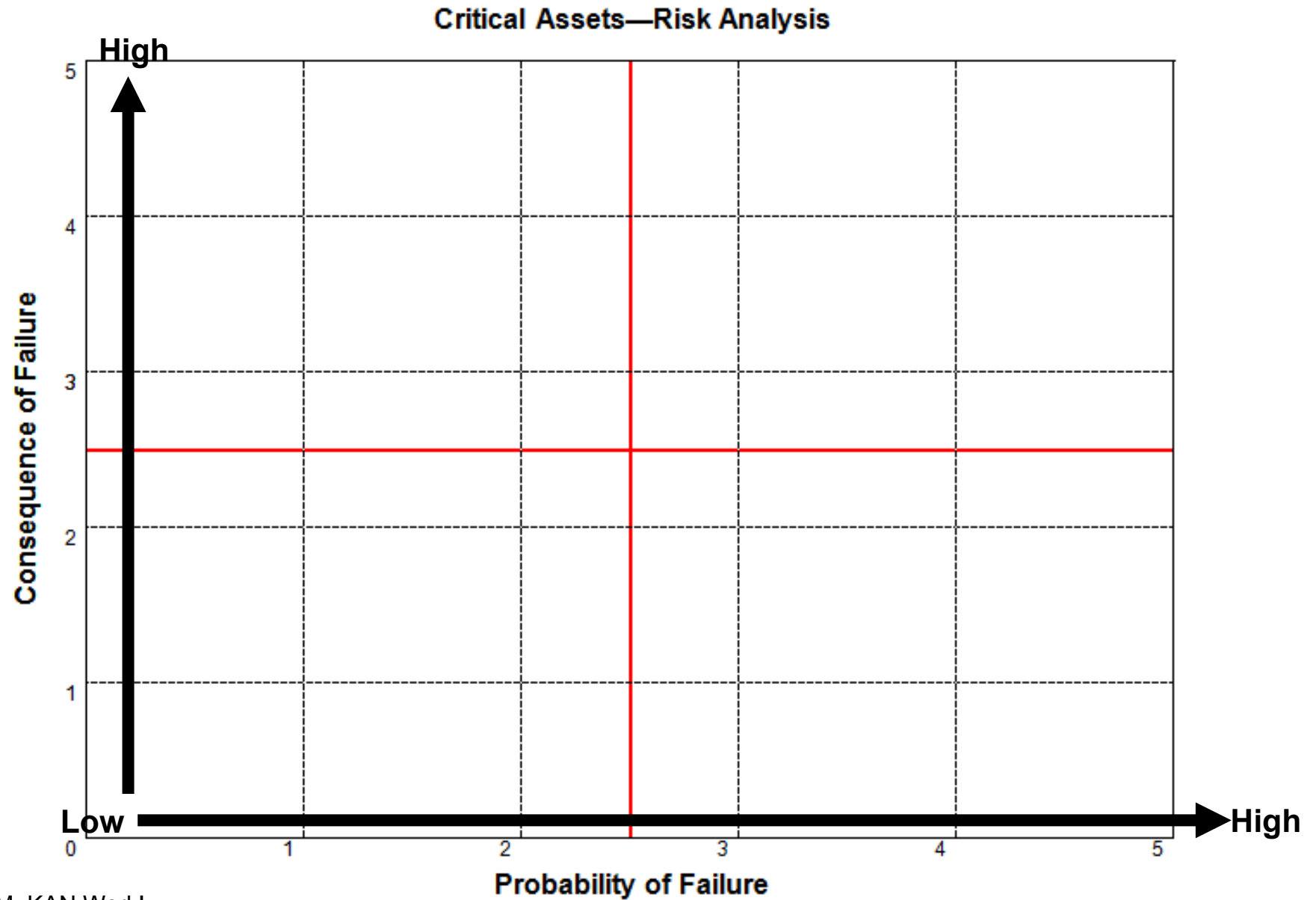




Group Exercise: Assess the condition and criticality of the following assets

- Based on description of the asset, give your opinion on its condition, thinking about how likely/soon the asset might fail
Horizontal axis. 1 = very low 😊, 5 = very high ☹️
- Give your opinion on its importance, thinking about consequence or cost if failure occurs
Vertical axis. 1 = very low 😊, 5 = very high ☹️
- Mark on the handout where you would place that asset

Place the assets on the risk analysis chart





Asset 1: Elevated Storage Tank

- The only storage tank in small groundwater system.
- Installed in 1985. Inspected, sand blasted and repainted in 2002.
- Annual visual inspection shows no observable problems. No structural issues noted.
- Don't know how long it will last.
- Many customers complaining of low pressure.
- Possible to pump water directly to customers but would have problems meeting peak demands and will have no fire flow



Asset 2: Well Pump #1

- 1 of 2 well pumps. Each can supply entire system, but system uses this pump more frequently (the second pump is less reliable).
- Pump located in the well.
- Installed in 1992. No major rehab work since then.
- Manufacturer expects pump to last 25 years.
- Operating within design specifications but is not as efficient as it used to be. Operator not noticing any other visible or audible problems. Routine maintenance is being performed.



Asset 3: Water Main on Elm St.

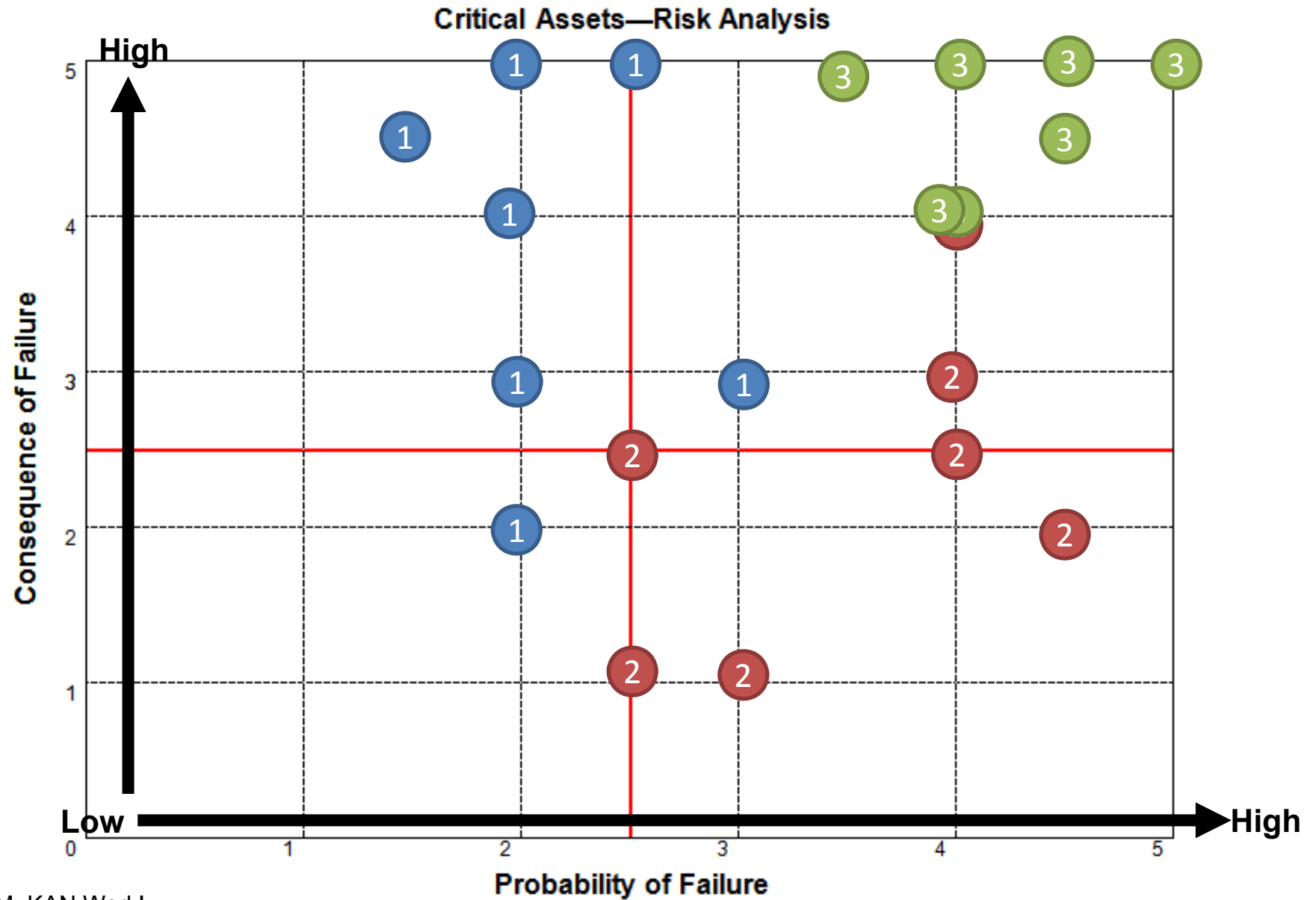
- Main serving half of the system's customers.
- No record of when it was installed. Homes in that area were built in the 1950s.
- Operator and owner cannot recall any major rehab or replacement work since they took over in the 1990s.
- Had 5 breaks in the past 2 years, and numerous leaks.



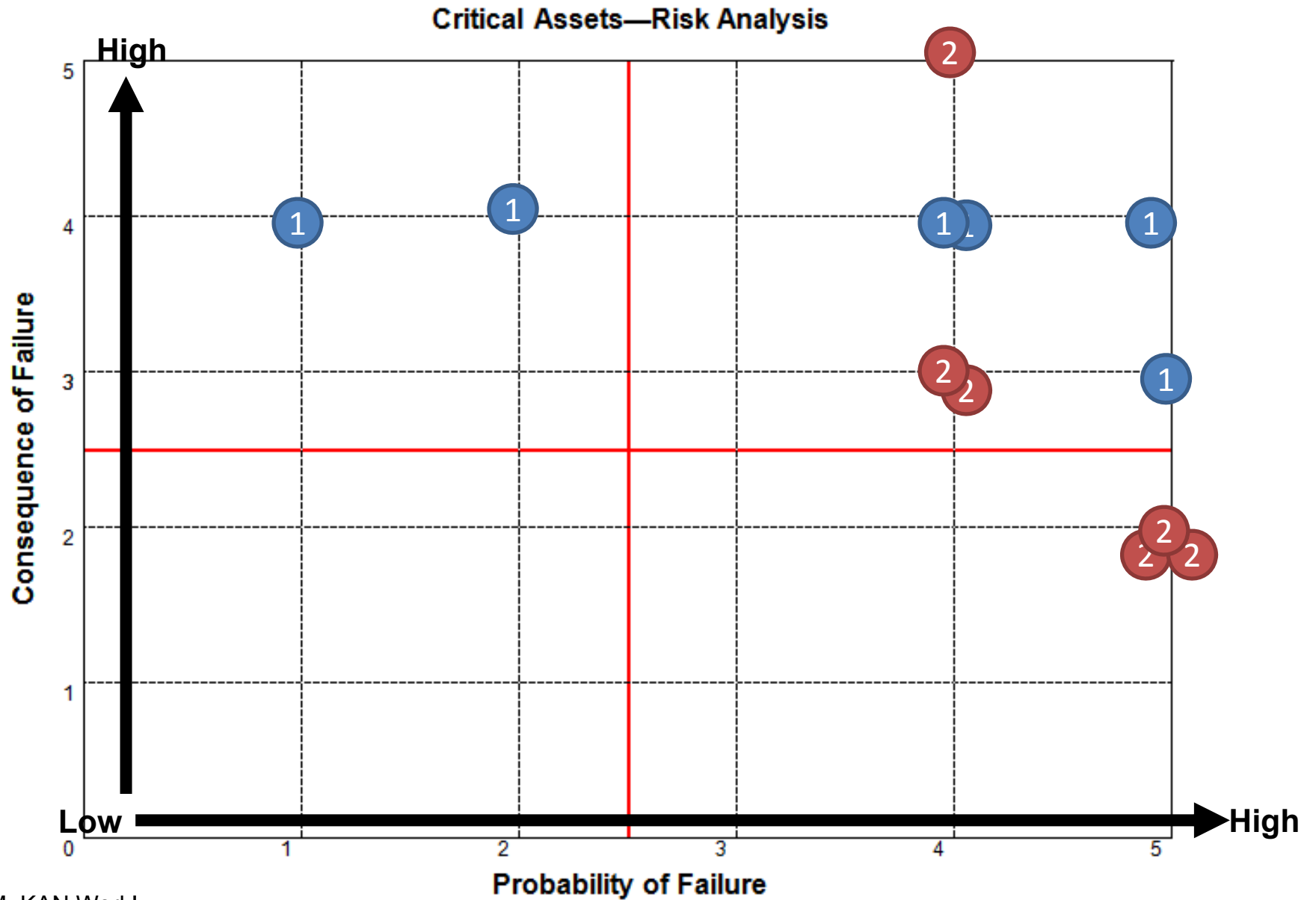
Asset 4: Your Choice!

- Pick any asset from YOUR water system. Describe it to the group and decide on an appropriate condition and criticality score.

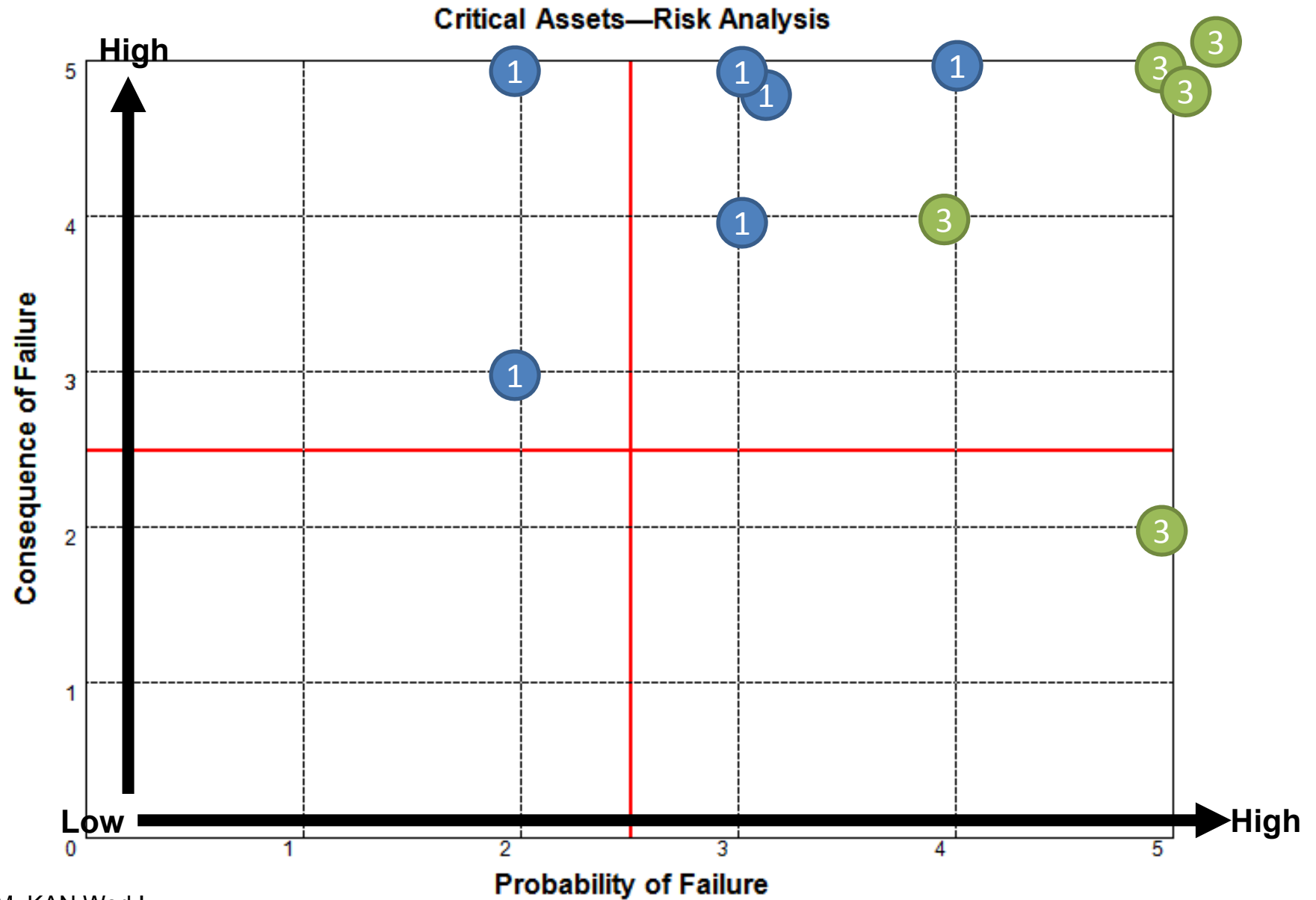
Results from Washington NC: 12/2016



Results from Raleigh NC: 10/2014



Results from Cullowhee, NC: 6/2015



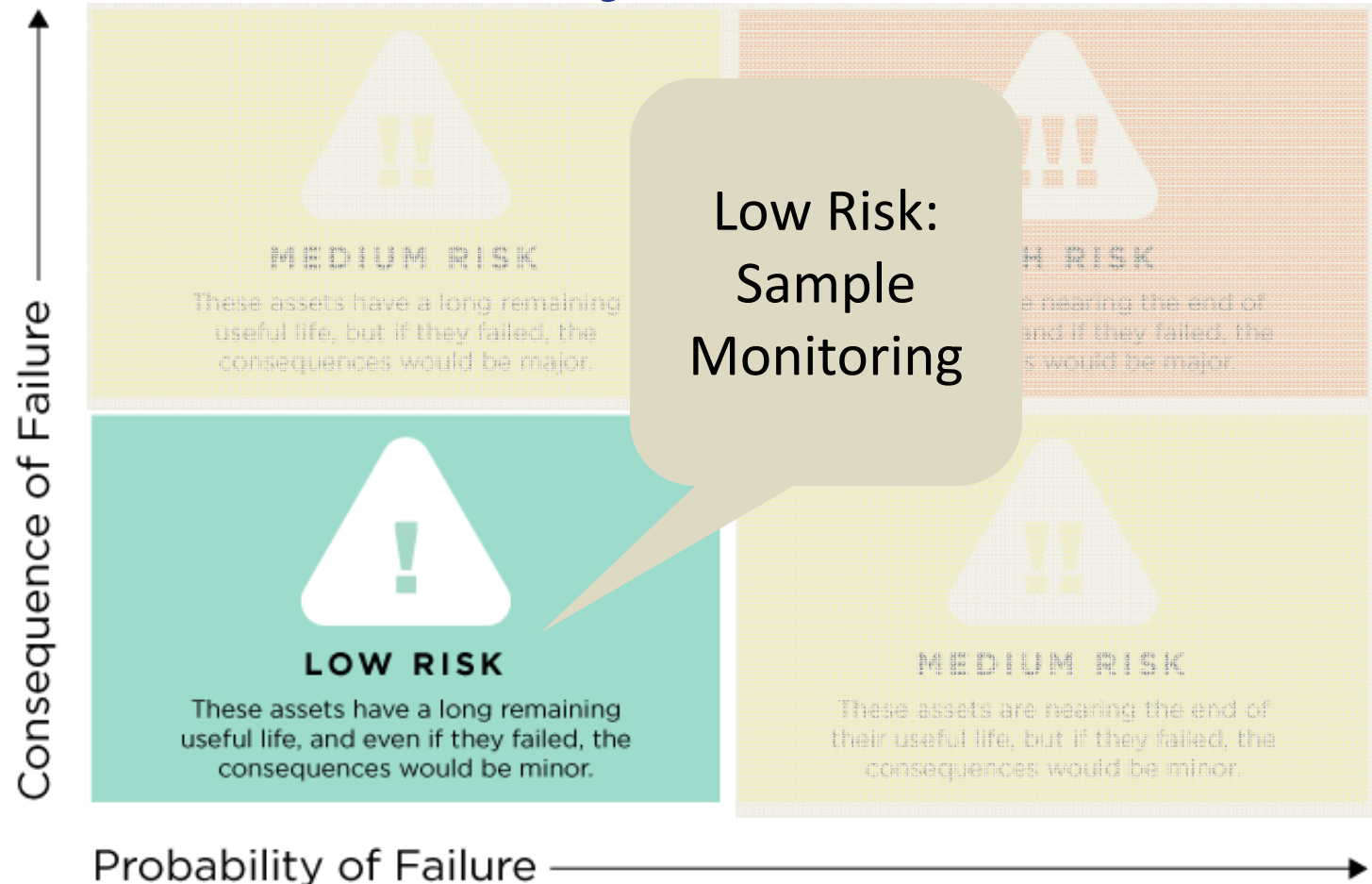


Asset Criticality



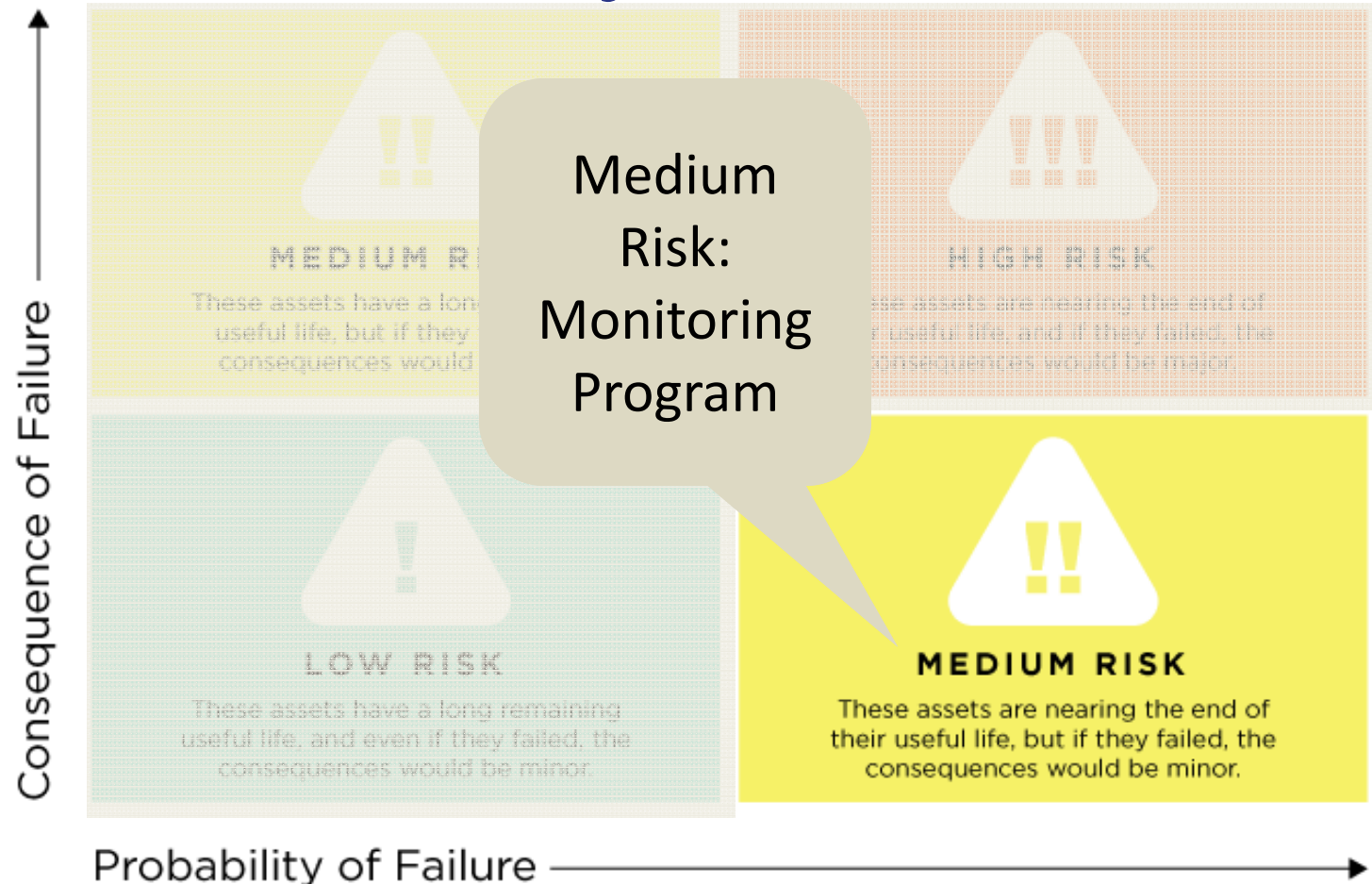


Asset Criticality



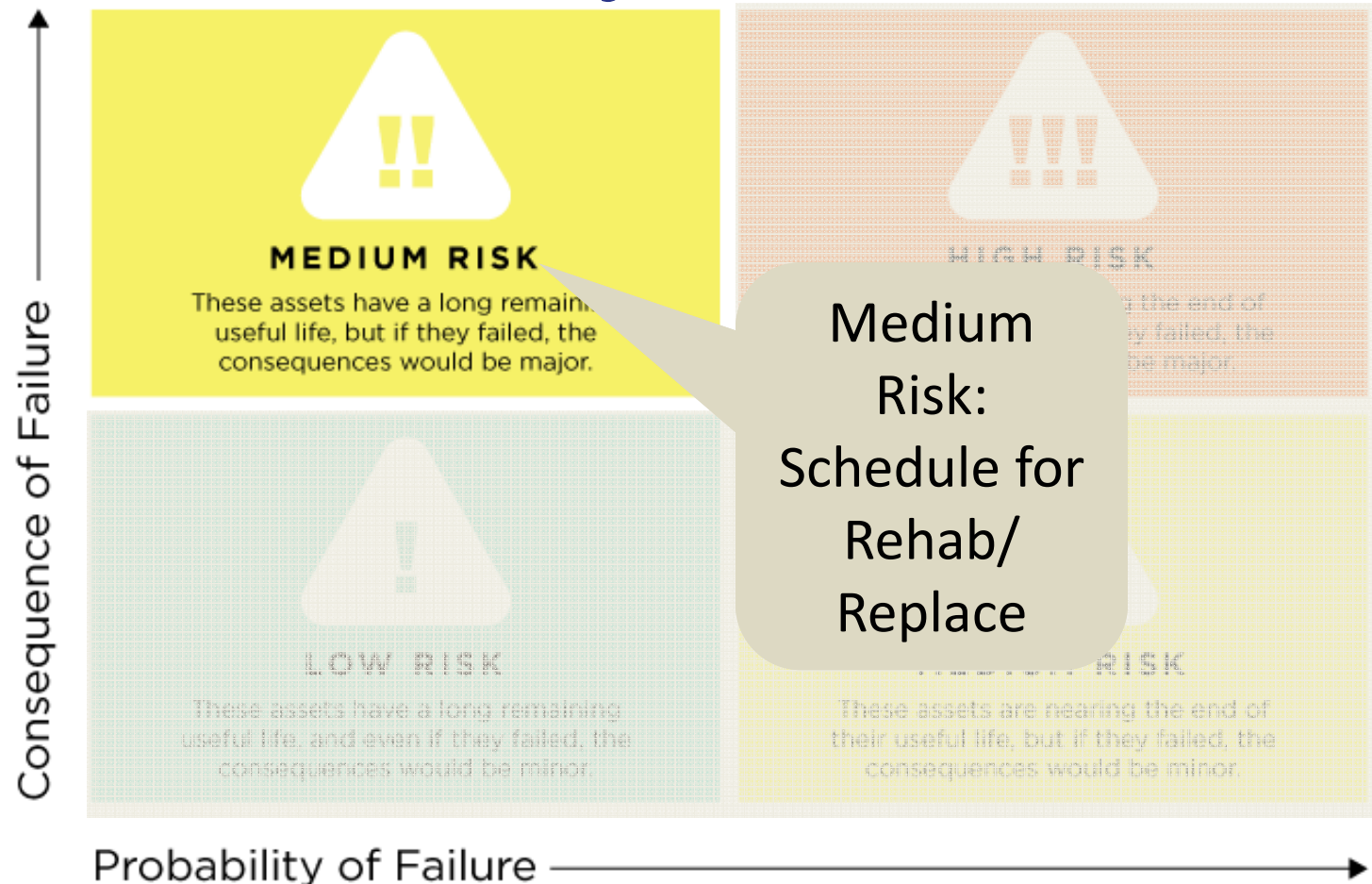


Asset Criticality



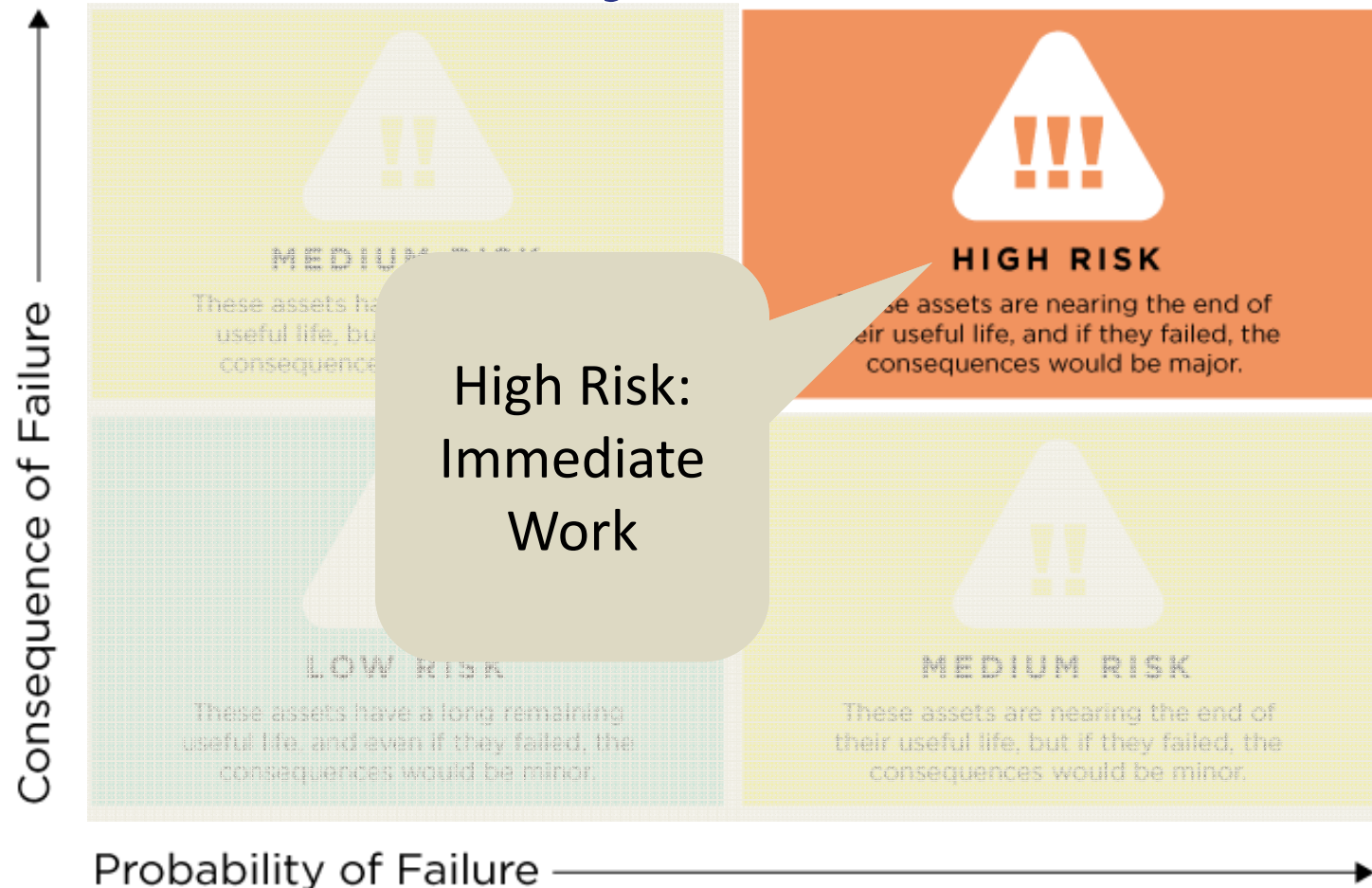


Asset Criticality





Asset Criticality





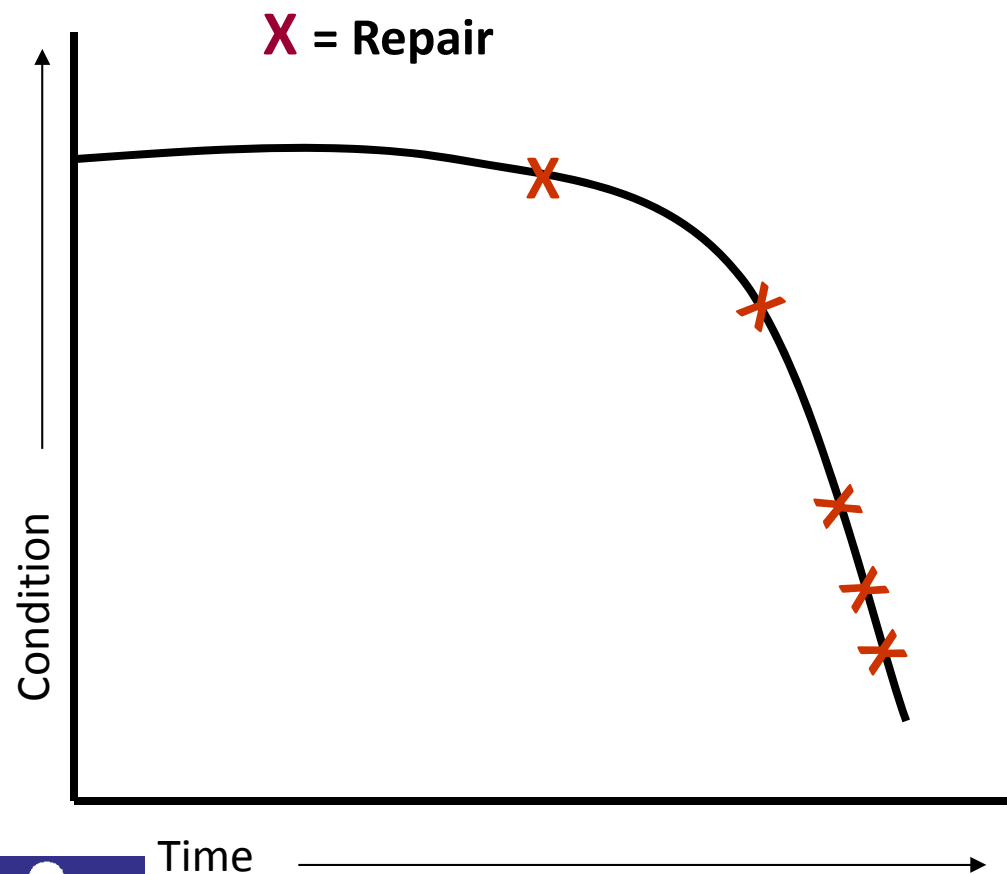
Prioritize Asset Rehab. / Replacement

| EXAMPLE Prioritization Worksheet | | | | |
|-------------------------------------------|-----------------------|-------------------------------|-------------------------------------------|----------------------|
| Date Worksheet Completed/Updated: 8/14/02 | | | | |
| Asset | Remaining Useful Life | Importance | Redundancy | Priority (1 is high) |
| Well 1 (1993) | 21 | Needed for service | Other well, but need backup | 6 |
| Well 1 pump | 1 | Needed for service | Other well, but need backup | 3 |
| Well 2 (1993) | 21 | Needed for service | Other well, but need backup | 6 |
| Well 2 pump | 1 | Needed for service | Other well, but need backup | 3 |
| Pumphouse (1993) | 21 | Needed for service | Other well, but need backup | 6 |
| Electrical components | 1 | Needed for control | No redundancy - corrosion | 2 |
| Chlorinator (1993) | 2 | Mandatory | No redundancy - need backup | 1 |
| Storage tank 1 (1993) | 31 | Need for fire flow and demand | Other tanks | 6 |
| Storage tank 2 (1993) | 31 | Need for fire flow and demand | Other tanks | 6 |
| Storage tank 3 (2000) | 38 | Need for fire flow and demand | Other tanks | 6 |
| | | | | |
| Distribution System: | | | | |
| Hydrants (15) | 11 | Needed for public safety | Other hydrants | 5 |
| Valves (45) | 11 | Needed for isolation | Other valves, but some are out of service | 4 |
| 6-inch (PVC) | 51 | Needed for delivery | No redundancy | 6 |
| 4-inch (PVC) | 51 | Needed for delivery | No redundancy | 6 |
| 2-inch (PVC) | 51 | Needed for delivery | No redundancy | 6 |

Source: EPA's "Asset Management: A Handbook for Small Systems"



Life Cycle Costing: Replacement of Assets



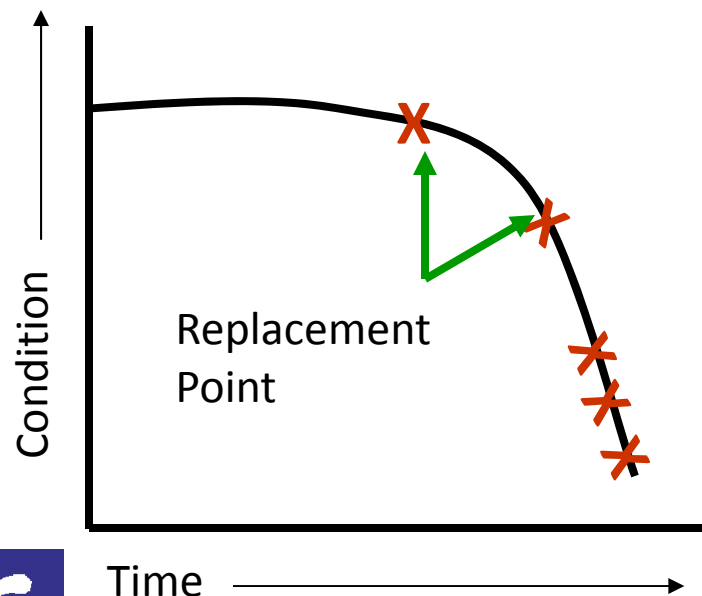
As asset ages, condition will deteriorate more rapidly, and require more (and more expensive) repairs.

So when do you replace that asset?

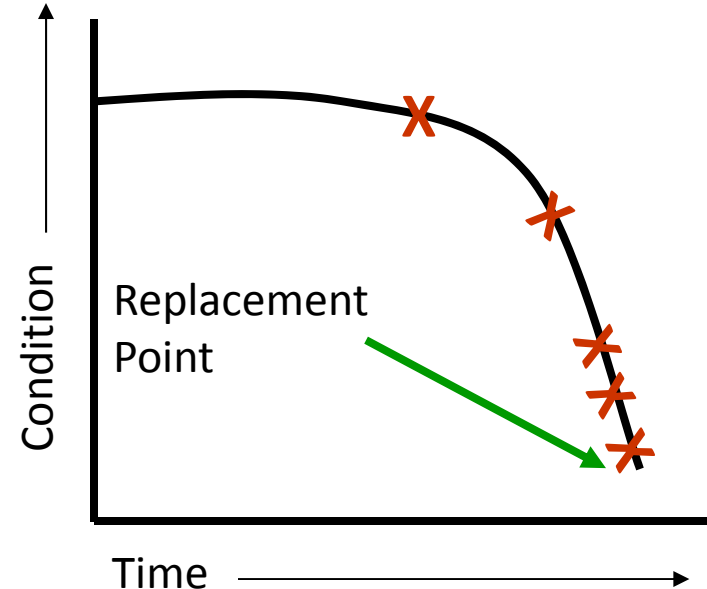


Life Cycle Costing & Risk

High risk assets:
replace assets early,
before failure



Low risk assets: run
to failure and replace
afterwards





Long Term Funding

- This is where capital planning comes in
- Once you figure out how to get the longest life out of your assets, plan to have the money you need to replace them when necessary



Capital Improvement Plan

- This is strongly related to asset management
- An official multi-year document that identifies and prioritizes capital projects, identifies funding sources, and sets timelines



Capital Improvement Program

- Identify regulatory deficiencies (discuss with regulatory agencies, look at proposed regulations, talk to consultants), in a 10-20 year window
- Identify growth needs, expansion



Capital Improvement Program

- Identify deferred maintenance problems or where current service is inadequate
- Prioritize based on need realizing that “hidden” infrastructure tends to be ignored



Capital Improvement Program - Timelines

- Use **Asset Management Plan** to plan for infrastructure rehabilitation and replacements in the long term (20+ years)



Capital Improvement Program - Timelines

- Create a **Capital Improvement Plan** with a narrower timeline (5-10 years) in more detail. Specify the projects and accurate estimates of cost. Plan where money will come from.



Capital Improvement Program - Timelines

- Create a **Capital Improvement Budget** with an even narrower timeline (1 – 2 years) committing funds for the planned capital projects. Get it approved/adopted.



Example Capital Improvement Plan (CIP)

| Project Name | Planning Years (Values in 000s) | | | | | Future | Total |
|------------------------------------------|---------------------------------|--------------|------------|--------------|--------------|--------------|---------------|
| | FY 02 | FY 03 | FY 04 | FY 05 | FY 06 | | |
| Water Supply & Treatment | | | | | | | |
| Water Treatment Objective | | | | | | | |
| Lime pumps and slakers | 740 | | | | | | 740 |
| Chemical Enclosures | | 500 | | | | | 500 |
| Filter 7-18 Control | | | 330 | | | | 330 |
| Filter Gallery Rehab | 1,140 | | | | | | 1,140 |
| High Service Pumps | | 1,500 | | | | | 1,500 |
| Upgrade or Replace Reclaim System Drier | 200 | | | | | | 200 |
| New Membrane Skids | | | | 5,700 | | | 5,700 |
| Sodium Hypochlorite Plant | 2,000 | | | | | | 2,000 |
| Additional Storage Tanks | | | | | 5,000 | 3,300 | 8,300 |
| Repair R/O Capacity | | 150 | | | | | 150 |
| Filter Gallery Mech Parts | 300 | | | | | | 300 |
| MMIS | | | | | | 150 | 150 |
| VFDs - HSP | | 344 | | | | | 344 |
| Membrane Replacement | | 1,600 | | | | | 1,600 |
| Painting of Water Plant | | | | | | 3,000 | 3,000 |
| Phase II Emergency Power Generator | | | | | | 1,500 | 1,500 |
| Portable Generator - South Well Field | | | | 150 | | | 150 |
| Replacement of Fuel Tanks | | | 170 | | | | 170 |
| Upgrade of Existing Control System @ WTP | | | | | | 580 | 580 |
| | | | | | | | |
| | | | | | | | |
| Water Treatment Total | 4,380 | 4,094 | 500 | 5,850 | 5,000 | 8,530 | 28,354 |



Where Can You Find the Prices?

- Call a vendor. Actually, call a few.
- Ask other systems
- Look at past expenses but adjust for increases in costs



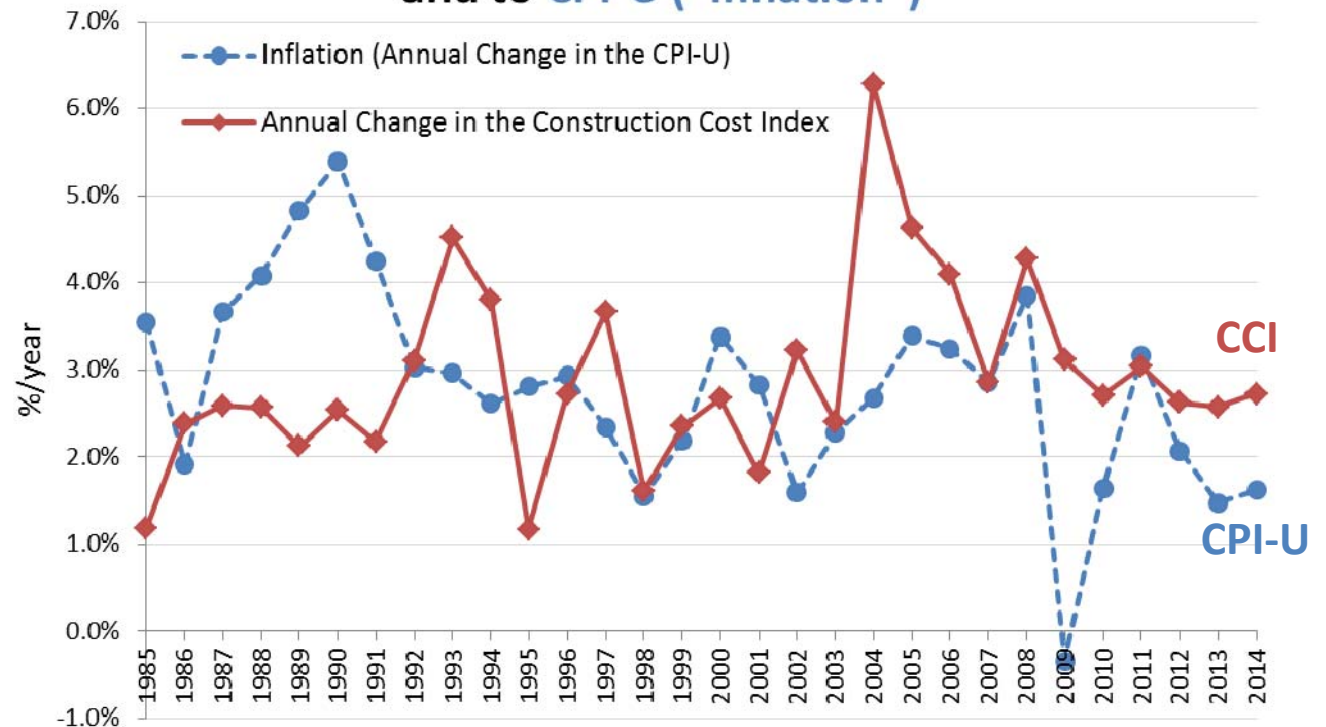
Measures of Inflation

- **Consumer Price Index (CPI)**—measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services
- **Construction Cost Index (CCI)**—average prices for labor and key construction materials from 20 cities across the United States



Annual Changes to the **Construction Cost Index** and to **CPI-U ("Inflation")**

- Instead of looking at Consumer Price Index, look at **Construction Cost Index (CCI)**.
- ~3%/year.



Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
 Data Sources: Bureau of Labor Statistics, Engineering News-Record ENR.com, InflationData.com, USDA Natural Resources Conservation Services.

<http://efc.web.unc.edu/2012/09/26/using-an-index-to-help-project-capital-costs-into-the-future/>



Drive Down the CIP Cost

- Is it possible to
 - Eliminate projects?
 - Defer projects?
 - Repair or refurbish instead of replace?
 - Find a non-asset solution?
 - Find collaboration/partnerships alternatives with neighboring systems?
 - Improve balance of cash vs. debt-financed?
- Re-evaluate water demands of your customers. Many systems are now noticing that *total* demand is *decreasing* over time.

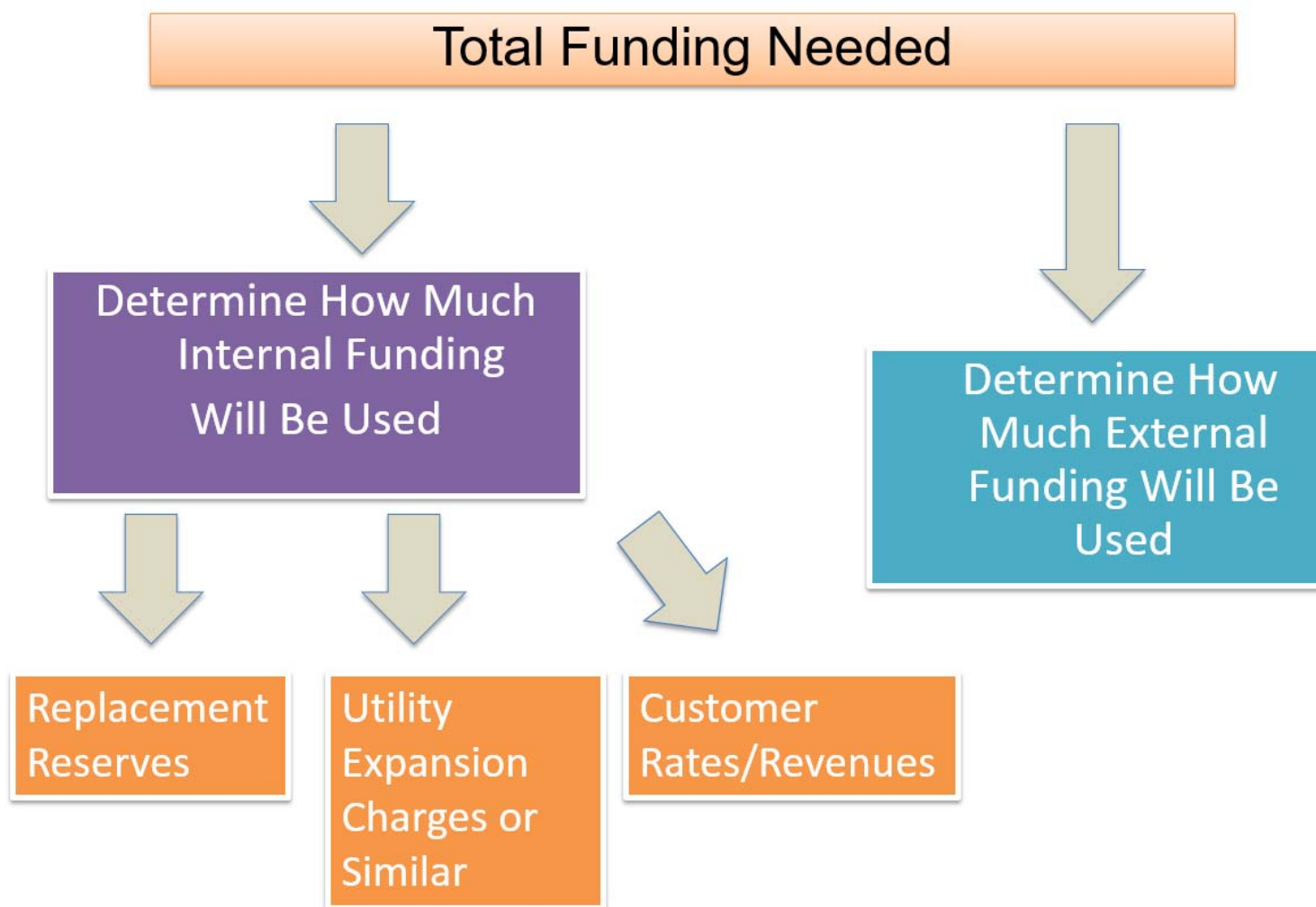


How to pay for capital projects



Ways To Pay

- Pay as you go (current receipts)
- Save in advance and pay
- Pay later (someone loans you money)
- Grants (let someone else pay)





Plan to Pay: Scenarios to Fund your C.I.P.

<http://efc.sog.unc.edu/> Find it in Resources / Tools

Free, simplified Excel tool allowing you to list your capital projects and plans for funding them, and automatically estimates rate increases

Tool developed by
UNC ENVIRONMENTAL FINANCE CENTER

Plan to Pay: Scenarios to Fund your C.I.P. (Capital Improvement Plan)

Version 2.6 (Updated November 2015)

20-year capital planning Debt and/or capital reserve financing options Guided data inputs Simple data needs

Financial dashboard outputs Estimates necessary rate increases over time to pay for capital projects

Start

1) Use tabs at bottom of screen and buttons to navigate to different pages.

2) In **"Data Input 1"**, enter utility characteristics, rates and usage information in blue cells.

3) In **"Data Input 2"**, enter details on capital improvement projects in the light blue cells. Each row is a different project.

4) In **"20-Year Projections"**, view your fund balance projections for 20 years and observe the estimated rate increases needed each year to pay for your Capital Improvement. No data entry required on this page.

5) After all your utility information and capital improvement project details are entered, go to the **"Dashboard"** to view long term trends in your financial reserves, rate increases and average bills, and capital investments.

INSTRUCTIONS

FINANCED
\$ 950,000
et \$ 750,000

Pre-Exist
Input amount incurred for

CAPITAL IMPROVEMENT PROJECTS - 20 YEARS

| Project | Project Description | Project Start Year | Project End Year | Project Construction Period (Years) | Estimated Construction Cost (at FY15) | Annual Construction Cost (at FY15) | Estimated Cost at the Start Year | Estimated Cost at the End Year |
|---------|------------------------|--------------------|------------------|-------------------------------------|---------------------------------------|------------------------------------|----------------------------------|--------------------------------|
| 1 | Water main replacement | 2015 | 2017 | 3 | \$ 1,000,000 | \$ 333,333 | \$ 1,000,000 | \$ 1,000,000 |
| 2 | Water main replacement | 2017 | 2019 | 3 | \$ 1,000,000 | \$ 333,333 | \$ 1,000,000 | \$ 1,000,000 |
| 3 | Water main replacement | 2019 | 2021 | 3 | \$ 1,000,000 | \$ 333,333 | \$ 1,000,000 | \$ 1,000,000 |
| 4 | Water main replacement | 2021 | 2023 | 3 | \$ 1,000,000 | \$ 333,333 | \$ 1,000,000 | \$ 1,000,000 |
| 5 | Water main replacement | 2023 | 2025 | 3 | \$ 1,000,000 | \$ 333,333 | \$ 1,000,000 | \$ 1,000,000 |

Expected Revenues and Expenses - FY15

Annual Operating and Non-Operating Revenues: \$ 5,616,000
Annual Non-Capital Expenses (S&M, Admin., etc.): \$ 4,525,000
Expected Annual Balance of Expenditures (FY15): \$ 1,091,000

Usage Billed to Customers in FY15

Residential: 100,000
Non-Residential: 2,000
Total Monthly (Use 0.0001 of gallons): 102,000
Annual Customer Rate (Monthly): \$ 1.20

Estimated Rate Changes Needed to Maintain the Fund Balance

| | FY15 | FY16 | FY17 | FY18 |
|-----------------------------------------------------------|---------|---------|---------|---------|
| Year Increase (Decrease) in Rate Base and Investment | N/A | 0.0% | 0.1% | 2.0% |
| Increase (Decrease) in the Monthly Bill for 5,000 Gallons | N/A | \$0.00 | \$1.01 | \$0.79 |
| Increase (Decrease) in the Monthly Rate Charge | N/A | \$0.00 | \$0.04 | \$0.34 |
| Monthly Rate Charge ("Minimum Charge") | \$12.34 | \$12.34 | \$12.98 | \$13.31 |
| Volume Rate at 5,000 gallons/month (\$1000 gallons) | \$5.67 | \$5.67 | \$5.96 | \$6.11 |
| Volume Included with the Base Charge (1,000 of gallons) | 2 | 2 | 2 | 2 |
| Approximate Monthly Charge for 5,000 gallons (\$) | \$29.35 | \$29.35 | \$30.96 | \$31.65 |

Projected Fund Balance

| | FY15 | FY16 | FY17 | FY18 |
|-------------------------------------------------------|--------------|--------------|--------------|--------------|
| Total Revenues | \$ 5,616,000 | \$ 5,616,000 | \$ 5,728,300 | \$ 5,764,000 |
| Base Charges | \$ 1,176,000 | \$ 1,176,000 | \$ 1,207,200 | \$ 1,215,720 |
| Usage Charges | \$ 3,176,000 | \$ 3,176,000 | \$ 3,276,000 | \$ 3,287,760 |
| Interest Earned from Previous Year's Positive Balance | \$ 0 | \$ 0 | \$ 9,100 | \$ 9,100 |
| Revenues from Other Sources (Reserve Charges) | \$ 103,200 | \$ 103,200 | \$ 106,300 | \$ 106,430 |
| Total Revenues | \$ 5,616,000 | \$ 5,616,000 | \$ 5,728,300 | \$ 5,764,000 |

Financial Reserves (End of Year)

Total Capital Expenses

Total Cumulative System Investment



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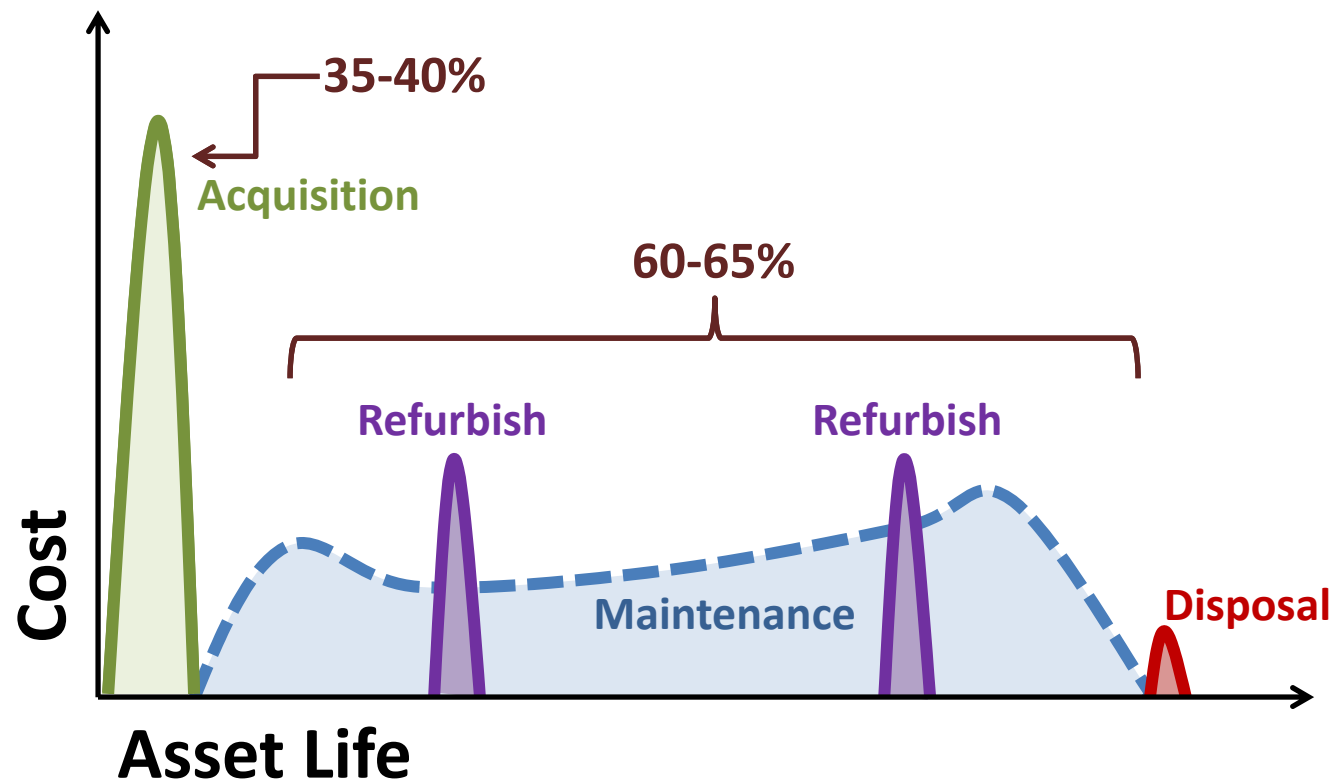


Reminder: Life Cycle Costing

- Purchase Price \neq Total Price



Capital Investments are Just the Tip of the Iceberg...



Source: Adapted from Steve Allbee, USEPA



Resource Webpage for Capital Planning

www.efc.sog.unc.edu/ Search for "Capital Planning"

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search this site

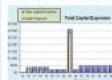
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Mission Statement

We work to enhance the ability of governments and other organizations to provide environmental programs and services in fair, effective and financially sustainable ways.

Project Tools

User-friendly Capital Improvement Plan (CIP) Tool for Water & Wastewater Utilities



Calculator, 03/20/2014 (MS Excel, 802 Kb)

Enter in all capital projects and this tool will project your fund balance (revenues, expenses and reserves), and necessary rate increases for the next 20 years, and more!

What to Include in your Capital Plan:

PROJECT CAPITAL PLANNING AND WASTEWATER



This project, p
Support projec
Department of
together many
water and wast
creation of a C
Management P

Blog Post on "Using an Index to Future"

Read a short blog post on selecting an appropriate

Summary of "What to Include in Your Capital Plan: A Reference Guide for NC Water and Wastewater Utilities"
Last updated: February 2011

| Categories | EPA's Asset Management: A Handbook for Small Water Systems | WPA's Vop 1000 Facility's Capital Budgeting and Finance Guide | DEHM PWS Capacity Development Program | DEHM PWS Loans and Grants | G.S. 156-23 | USDA Loans and Grants | NC Rural Economic Development Center | Local Government Development Center | EPA Drinking Water Needs Survey | DEHM DWA Local Water Supply Plans | EPA Software: CIPPS |
|--------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Goal statement/Introduction to your capital plan | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> |
| Date of documentation of capital plan | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | |
| Capital planning time period | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Description of systems | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Existing capacity and demand | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Description of customers | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Inventory of existing assets (details on each asset) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Condition of systems | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Project-specific details (complete for each project in every year) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Financial planning (complete for each year in time period) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> |
| Long-term planning descriptions (may be not project-specific) | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Approvals | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| Updating the capital plan | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> |
| Ties or links to other studies | <input checked="" type="checkbox"/> | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | |

For updates and to view details in each category, go to <http://www.efc.unc.edu/projects/capitalplanning.html>

Created by the Environmental Finance Center at the UNC School of Government



www.efcnetwork.org



UNC ENVIRONMENTAL FINANCE CENTER



Plan to Pay: Scenarios to Fund your C.I.P.

<http://efc.sog.unc.edu/> Find it in Resources / Tools

Free, simplified Excel tool allowing you to list your capital projects and plans for funding them, and automatically estimates rate increases

Tool developed by
UNC ENVIRONMENTAL FINANCE CENTER

Plan to Pay: Scenarios to Fund your C.I.P. (Capital Improvement Plan)

Version 2.6 (Updated November 2015)

20-year capital planning Debt and/or capital reserve financing options Guided data inputs Simple data needs

Financial dashboard outputs Estimates necessary rate increases over time to pay for capital projects

Start

1) Use tabs at bottom of screen and buttons to navigate to different pages.

2) In **"Data Input 1"**, enter utility characteristics, rates and usage information in blue cells.

3) In **"Data Input 2"**, enter details on capital improvement projects in the light blue cells. Each row is a different project.

4) In **"20-Year Projections"**, view your fund balance projections for 20 years and observe the estimated rate increases needed each year to pay for your Capital Improvement. No data entry required on this page.

5) After all your utility information and capital improvement project details are entered, go to the **"Dashboard"** to view long term trends in your financial reserves, rate increases and average bills, and capital investments.

INSTRUCTIONS

FINANCED
\$ 950,000
et \$ 750,000

Pre-Exist
Input amount incurred for

CAPITAL IMPROVEMENT PROJECTS - 20 YEARS

| Project | Start Year | End Year | Project Description | Estimated Construction Cost | Annual Construction Cost | Estimated Cost in the Start Year | Estimated Cost in the End Year |
|---------|------------|----------|------------------------|-----------------------------|--------------------------|----------------------------------|--------------------------------|
| 1 | 2015 | 2015 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 2 | 2016 | 2016 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 3 | 2017 | 2017 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 4 | 2018 | 2018 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 5 | 2019 | 2019 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 6 | 2020 | 2020 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 7 | 2021 | 2021 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 8 | 2022 | 2022 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 9 | 2023 | 2023 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 10 | 2024 | 2024 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 11 | 2025 | 2025 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 12 | 2026 | 2026 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 13 | 2027 | 2027 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 14 | 2028 | 2028 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 15 | 2029 | 2029 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 16 | 2030 | 2030 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 17 | 2031 | 2031 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 18 | 2032 | 2032 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 19 | 2033 | 2033 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |
| 20 | 2034 | 2034 | Water main replacement | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 |

Estimated Rate Changes Needed to Maintain the Fund Balance

| | FY15 | FY16 | FY17 | FY18 |
|-----------------------------------------------------------|---------|---------|---------|---------|
| Year Increase (Decrease) in Rate Base and Investment | N/A | 0.0% | 0.1% | 2.0% |
| Increase (Decrease) in the Monthly Bill for 5,000 Gallons | N/A | \$0.00 | \$1.01 | \$0.79 |
| Increase (Decrease) in the Monthly Rate Charge | N/A | \$0.00 | \$0.04 | \$0.34 |
| Monthly Rate Charge ("Minimum Charge") | \$12.34 | \$12.34 | \$12.98 | \$13.31 |
| Volume Rate at 5,000 gallons/month (\$1000 gallons) | \$5.67 | \$5.67 | \$5.96 | \$6.11 |
| Volume Included with the Base Charge (1,000 of gallons) | 2 | 2 | 2 | 2 |
| Approximate Monthly Charge for 5,000 gallons (\$) | \$29.35 | \$29.35 | \$30.96 | \$31.65 |

Projected Fund Balance

| | FY15 | FY16 | FY17 | FY18 |
|-------------------------------------------------------|--------------|--------------|--------------|--------------|
| Total Revenues | \$ 1,116,000 | \$ 1,001,000 | \$ 1,208,307 | \$ 1,364,000 |
| Rate Charges | \$ 1,176,900 | \$ 1,795,322 | \$ 1,907,280 | \$ 1,970,720 |
| Usage Charges | \$ 3,170,800 | \$ 3,094,000 | \$ 3,276,100 | \$ 3,287,760 |
| Interest Earned from Previous Year's Positive Balance | \$ 0 | \$ 9,400 | \$ 9,167 | \$ 9,007 |
| Revenues from Other Sources (Reserve Charges) | \$ 103,200 | \$ 106,200 | \$ 106,340 | \$ 106,433 |
| Total Revenues (including Interest) | \$ 4,460,000 | \$ 4,995,922 | \$ 5,299,194 | \$ 5,464,913 |

Financial Reserves (End of Year)

Rate Increases

Total Capital Expenses

Total Cumulative System Investment



Software: CUPSS (EPA)



<http://www.epa.gov/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 |



For More Information

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