



Smart Management for
Small Water Systems

Ask the Expert: Capital Improvement Planning

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Government Finance Officers Association

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Why Create a Capital Improvement Plan?

- Regulatory compliance
- Health & safety
- Organize & prioritize needs & desires
- Coordinate projects
- Exercise care & diligence
- Needs meet projects



Image from ericgartner.com



What is a Capital Improvement Plan?

- Document which:
 - Covers 5 or more years
 - Details expensive projects &/or equipment
 - Details financing
 - Details timeframes
 - Justifies projects
- Non-binding document
- Updated annually

HOW TO MAKE A CAPITAL IMPROVEMENT PROGRAM





What goes in a capital improvement plan?

- Projects over a certain price threshold
 - Arbitrary or
 - Related to purchase authority of senior-most employee
- Physical assets
 - Streets, pipelines, equipment, treatment
- Intangible assets?
 - Studies
 - Planning efforts
 - i.e., water distribution model, treatment study



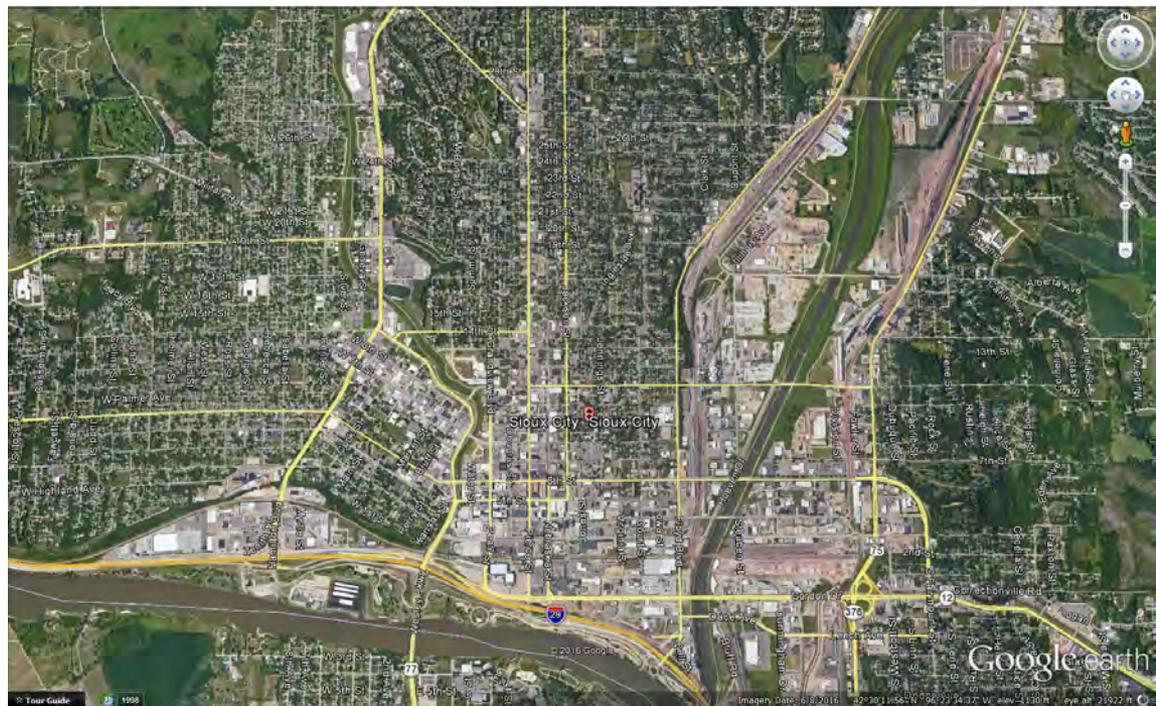
Helpful Hints for Inclusion & Exclusion

- Include capacity expansions
- Include remove/replacement of infrastructure
- Include upgrades
- Include first-time new purchases
 - i.e. 1st time purchase of valve exercise trailer
- Avoid most replacement items
 - Maintain separate equipment replacement plan
 - Trucks
 - Pumps
 - Motors



Beginning a Capital Improvement Plan

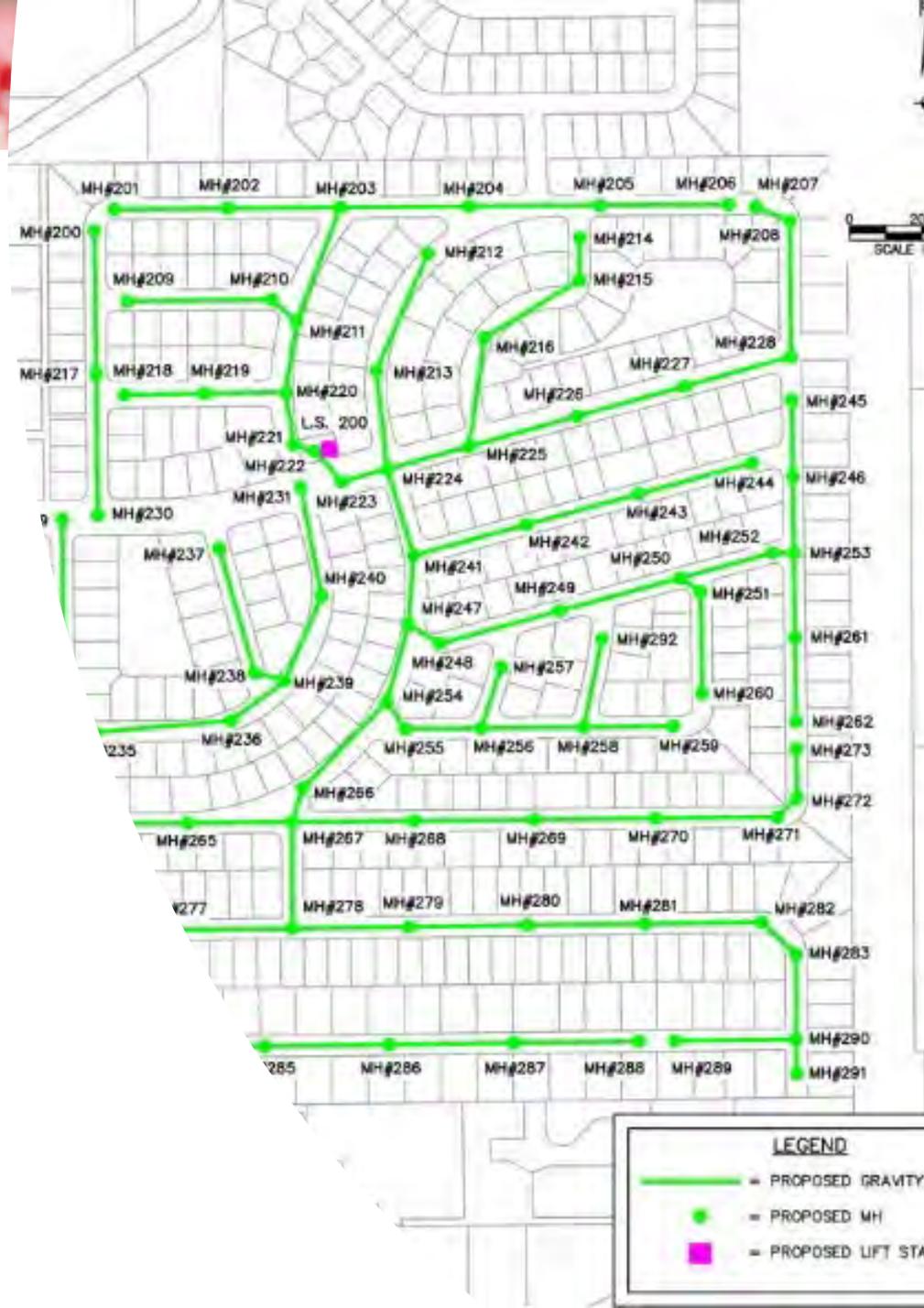
- Plan should reflect:
 - Values of community
 - Desires of multiple stakeholders
 - Needs of critical facilities





Incorporate other plans & goals

- Utility Master Plans
- Zoning
- Boundaries
- Financial policies
- Comprehensive Plans
- Regional Planning Organizations
- Regulatory demands
- Cooperative agreements





Project Development for CIP

- Best Practices
 - Standard project sheet
 - Details:
 - Justification/need
 - Costs
 - O&M impacts
 - Pictures & Maps
 - Fund Numbers
 - Priorities
 - Consequences of not proceeding
 - Regulatory impacts



PROJECT FORM

PROJECT: Installation of new CO2 tank at Water Production Plant
FISCAL YEAR: 2017
FUND: Water Production & Distribution
DEPARTMENT: Water Resources



PROJECT DESCRIPTION: This project will purchase and install a larger carbon dioxide (CO2) tank at the water treatment plant.

NEED, JUSTIFICATION, BENEFIT: The existing CO2 tank has a capacity of 6 tons. During the summertime, the plant is ordering new deliveries of CO2 as frequently as once per week. Because of the small capacity, suppliers are sometimes hesitant to deliver such a small load. Additionally, there is very little time between the point at which CO2 is ordered and delivered, leaving a risk of running out during high water production periods.

In recent years there has been only one bidder for CO2 supplies. This results in higher prices and places the City at risk of running out of CO2 in case of supplier closure. Discussion with various suppliers has indicated a larger tank is the only way they will submit bids.

For comparison purposes, the City of Russell has a 12 ton CO2 tank and experiences demands approximately 1/3 of Hays' during the summertime. The current small size of the CO2 tank is a remnant from the days when PepsiCo operated a bottling plant in Hays. At the time, the water softening plant received whatever was remaining after PepsiCo had received their CO2 delivery. This worked well, but with PepsiCo's closing, there is no other major demand locally.

CONSEQUENCES OF DELAYING OR ELIMINATING THIS PROJECT: The main risk in not obtaining a larger CO2 tank is running out of supply due to supplier issues. Should supply completely deplete, the City will be forced to cease the water softening process until supplies can be restored. Financially, staff expects better bid prices, but plant reliability is the driving issue.

THIS PROJECT IS RELATED TO THE FOLLOWING: Continued operation of the water softening process.

EXPLANATION OF IMPACT ON OPERATING BUDGET: \$300,000 has been added to the projects line item in the Water Production & Distribution 2017 budget.

TIMELINE/CURRENT STATUS:

COMMENTS:

IMPACT ON OPERATING BUDGET:		FINANCING:	
2017	\$300,000	Operating Budget- Projects	\$300,000
2018	\$		\$
2019	\$		\$
2020	\$		\$
2021	\$		\$
5-YEAR TOTAL:	\$300,000		\$300,000

From City of Hays, KS 2017 budget



Question 1

“I’m interested in how to begin. Our Mutual Water Company is very small, 47 hookups.”

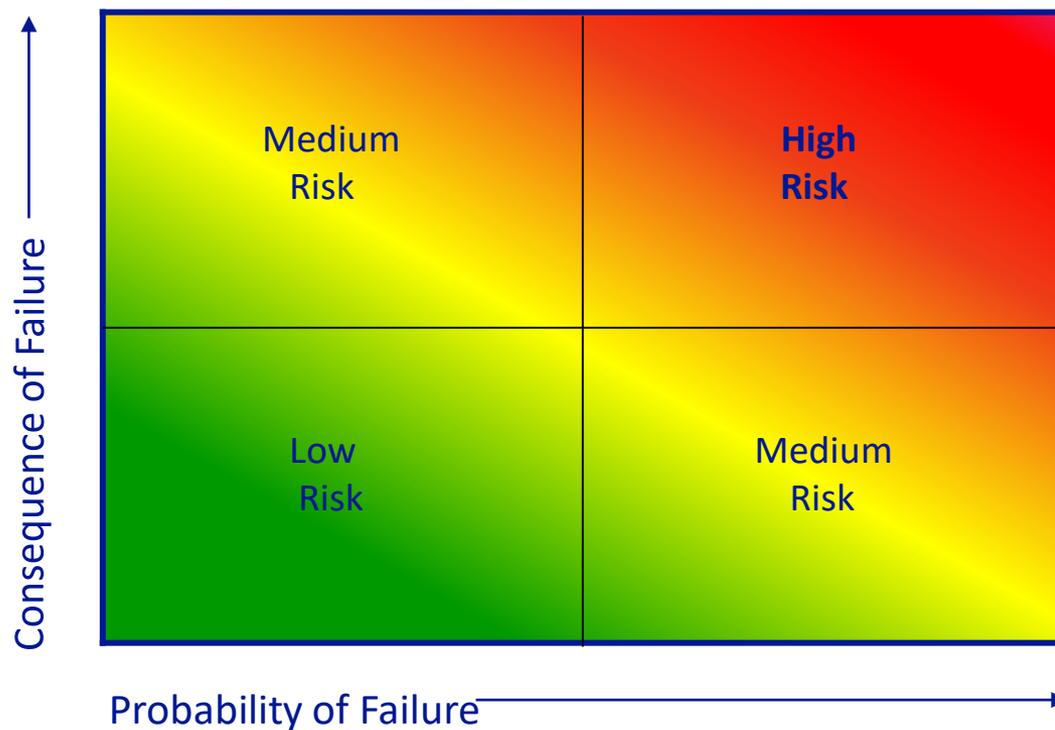


Where to begin:

- Regulatory Compliance/Safety of Public & Employees
- Critical Assets High in Priority/High Risk
- Financially Impactful Assets
 - Meters that read slow
 - Inefficient equipment



Critical Assets



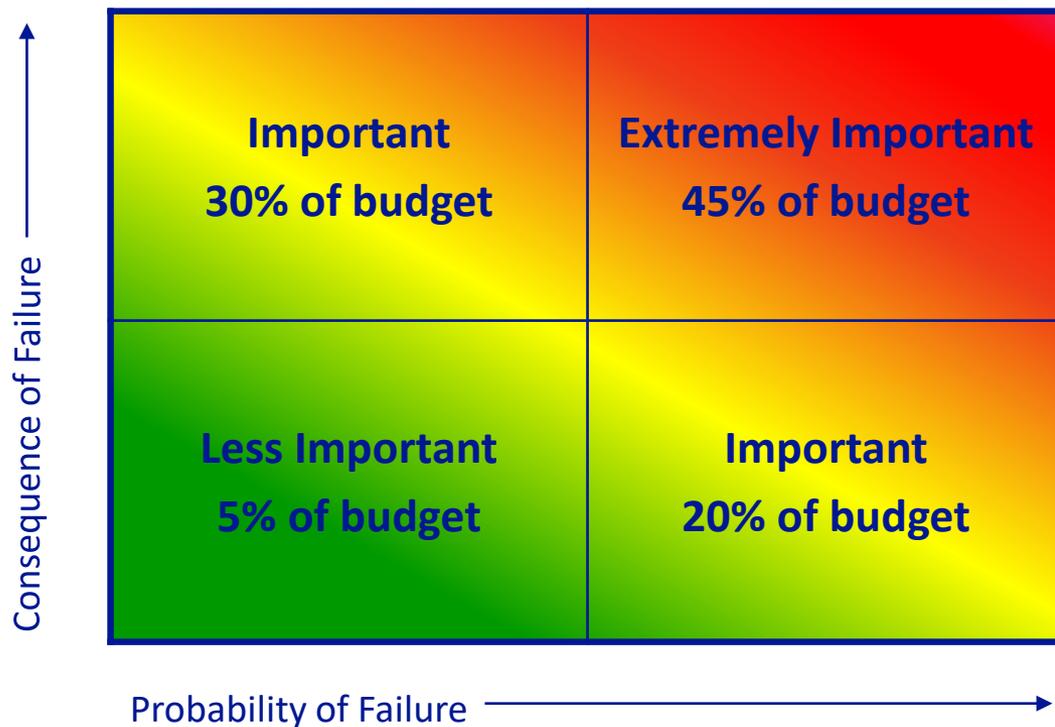
Which category of assets do I care about the most?

The least?

Where do I invest my maintenance & capital dollars?



Criticality & Investments



Numbers are illustrative only.



Question 2:

Where does funding for capital improvement land on the annual budget? Does it come out of the year's expenses or a separate fund?



Ratepayers/Customers Pay

- With grant/loan forgiveness exceptions, customers ultimately pay for capital improvements.
- Grants/loan forgiveness almost always include local matching funds.
- When?
- How?



Outside Funding

- Grants & Loan Forgiveness
 - Rare & Competitive
 - Can lead to higher project costs
 - Contact funders to see if you may be a good candidate
- State Revolving Fund & USDA Rural Development
 - Cheap interest/good terms
 - Must be repaid by future customers
- Bonds, loans & leases
 - Fewer stipulations attached
 - Future customers still pay



Budget Impacts of Outside Funding

- Loans, bonds and leases
 - Check accounting rules/state rules to show accurate portrayal in your system
 - All payments shown as a current expense in annual budget
 - May be broken out individually or aggregated
 - i.e. “2008 Water Tower Loan payment” or
 - i.e. “State Revolving Loans payments”
 - Paid by the current & future customers
- i.e., if your system takes out a 40 year USDA Rural Development Loan, customers of the utility in 2058 will pay paying on the debt.



Self Funding/Savings

- Pay real-time
 - Rare for small systems
 - Current year income pays for current year capital improvements
 - i.e. “Annual pipe replacements”
 - May be shown as a line-item in budget or transfer to reserve account
- Save over time
 - Transfer to a reserve account
 - “Transfer to capital reserves”
 - i.e., \$400,000 pipe replacement in 10 years
 - Current budget shows \$40,000 transfer annually



Combining Options

- Capital Improvements Funding in Practice
 - Often combined
 - Project receives grant, state revolving loan & USDA RD loan
 - Project paid partially in cash & bond issued for balance
 - Project is phased with multiple funding options



Question 3:

“How often should a water system plan on replacing pipeline – what is the anticipated lifetime of various materials?”



For Many Small Utilities

- Pipeline is largest asset by value
- Significant savings may exist by stretching lifespan
- Significant long-term rate impacts
- Due diligence with replacement planning & new pipe installations necessary



Pipe Life

- Varies significantly
- 100+ years is common
- ~20 years on the low end



Functionality vs. Age

- Generally
 - Keep pipe if not causing a problem & not posing a large risk
 - Replace pipe if problematic, if poses a large risk or is obsolete
 - Consider inspections in very large mains
- Age is not a good indicator of condition!
- Condition may not be uniform in a pipeline.



Signs of Failure & Obsolescence

- Failure
 - Frequent breaks or leaks
 - Poor water quality/red water
 - Thin pipe/high corrosion found
 - Unexplained poor pressure
- Obsolescence
 - Too small for demand or fire coverage
 - Lead and asbestos concrete





Ensuring Longer Pipe Life

- Match material to environment
 - Low pH soils, salty/saline soils corrode
 - Rocky soils damage – ensure proper backfill
 - Below frost line
 - Talk with local technical service providers/neighboring utilities
- Keep stresses low
 - Eliminate pressure transients
 - Close hydrants slowly
 - Use soft starts/VFDs on pumps
 - Reduce pressure where possible, if very high



New Mains

- All new materials should have long life if:
 - Properly specified
 - Handled properly during transit
 - Inspected during installation
 - Operated properly/within limits



Final Question:

How much of the Capital Improvement Plan budget should go towards projects providing resilience against the future effects of climate change?



Resilience vs. Mitigation

- Resilience
 - Increases the ability to withstand
 - i.e., hardening infrastructure, protect against flood, expand supplies for droughts
- Mitigation
 - Decreases contribution towards
 - i.e., more efficient pumping, less chemical usage, electrified vehicle fleets, etc.
- Both
 - Capital projects can increase resilience and mitigate.
 - Water efficiency projects, plant upgrades



What to spend on resilience?

- Very low percent:
 - Stable groundwater levels, not flood prone, hardened against high winds & power interruptions
- Very high percent:
 - Coastal community, sea-level rise is an issue, saltwater intrusion on groundwater supplies
 - Arid community, intense water supply competition, wildfire risk increasing
- Mitigation:
 - All systems should consider spending to mitigate climate change. Many investments very favorable.



Resilience in your system

- Is your system well-equipped for the current threats?
- Talk to local emergency managers/first responders
- Resilience is also planning & staff education



Technical Assistance

- If your system serves under 10,000 people:
 - Contact me or the EFC Network for no cost technical assistance on any topic discussed today.
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316-978-6538
 - <https://efcnetwork.org/assistance/request-assistance/>