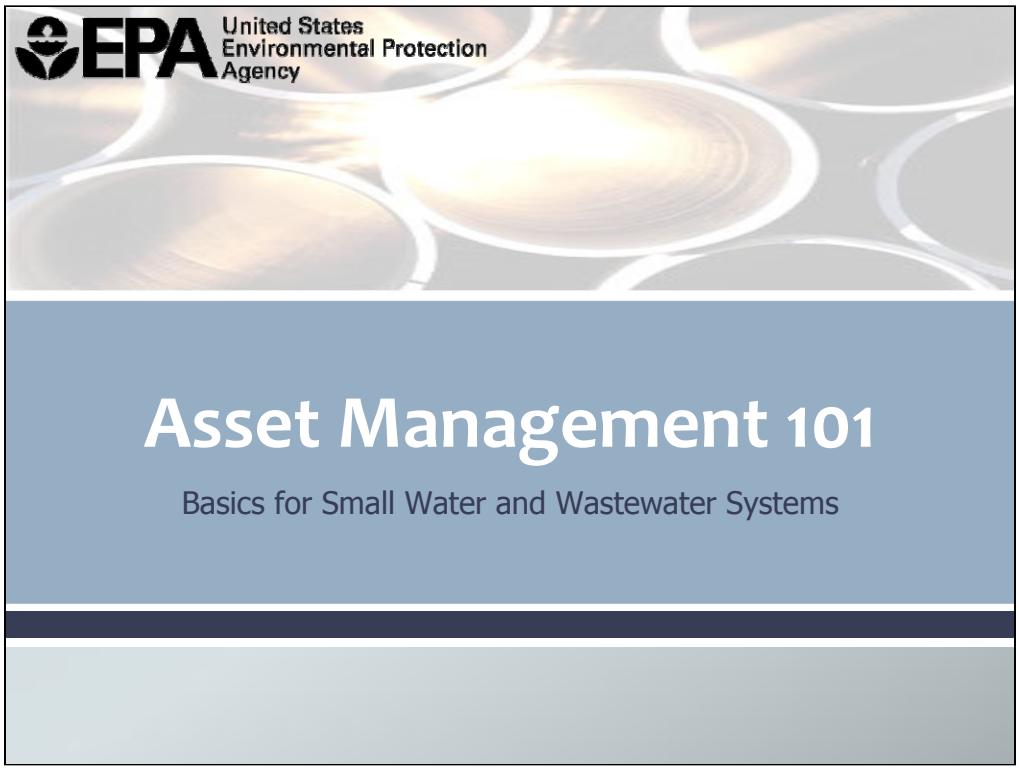


This presentation will cover the basics of asset management for small water and wastewater systems.

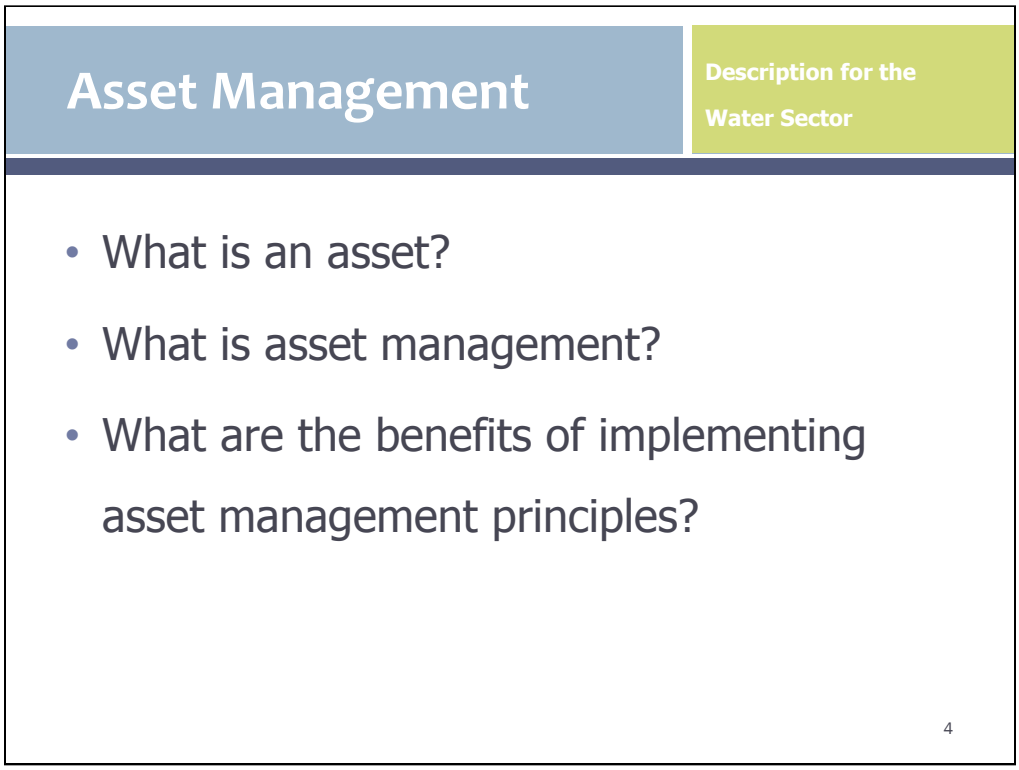
Disclaimer

This guidance does not confer legal rights or impose legal obligations upon any member of the public. While EPA has made every effort to ensure the accuracy of the discussion in this presentation, the obligations of the regulated community are determined by statutes, regulations, or other legally binding requirements. In the event of a conflict between the discussion in this presentation and any statute or regulation, this presentation would not be controlling.

2

Here is a disclaimer just basically saying that this presentation does not supersede any regulations or legally binding agreements.

This presentation will talk about the who's, what's, when's, where's, why's, and how's of asset management.



We'll go over

-What is an asset?

-What is asset management?

-What are the benefits of implementing asset management principles?

We're going to begin with talking a little bit about what assets are and what it means to manage those assets.

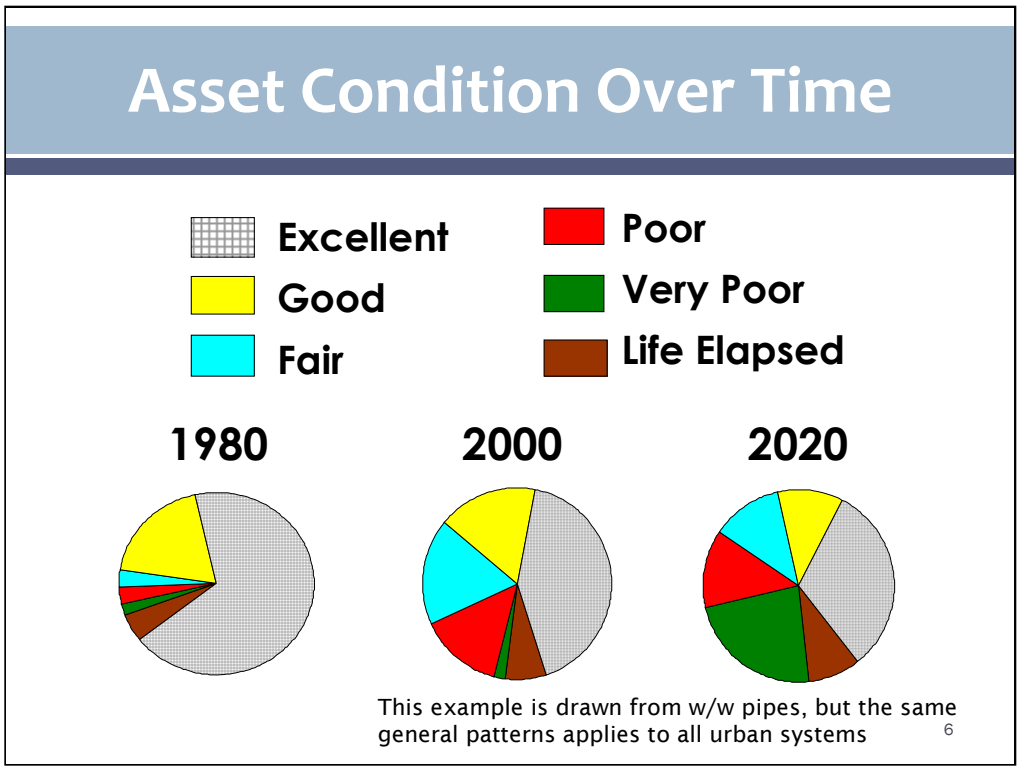
Assets are…

- All the equipment, buildings, land, people, and other components needed to deliver safe and clean water
  - Large, expensive, long-lived, and often buried
  - Essential to protect public health

5

What are assets?

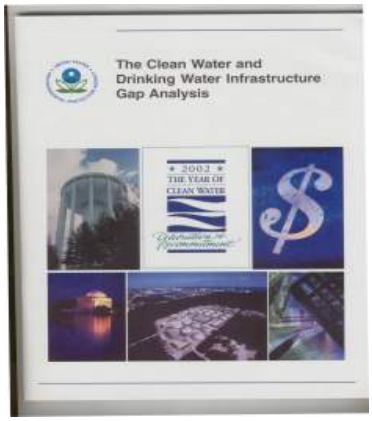
Well assets are essentially all the equipment, buildings, land, people, and other components needed to deliver safe and clean water.
Assets are generally large pieces of complicated equipment or infrastructure that can be very expensive. They usually last a fairly long time so utilities really want to keep them in good shape. We all know that some of the infrastructure in this country is aging and failing at an alarming rate. And the reality is we don't even know where it all is! It's important to remember not only the large pieces of equipment that we see above ground, but also all the equipment that it located underground. And it's important to take note of all of this for these assets are essential to protecting public health as well as for economic development.



When looking at the condition of assets over time, we're seeing that more and more assets are falling into the poor range and are projected to be in the very poor range in the near future. Prior to the 1980s, the expansion and upgrade of assets was unprecedented; and thinking of that, the resulting renewal investments for these assets is also going to be unprecedented.

EPA Infrastructure Gap Analysis

- The Gap Analysis Was Released -- WEFTEC 2002
- The Purpose -- To reach a common quantitative understanding of the (Funding Gap) the potential magnitude of increase in investment needed to:
  - Address growing population and economic needs, and
  - Renew our existing aging infrastructure



http://www.epa.gov/ogwdw/gapreport.pdf

7

Following up that, a Gap Analysis was released to provide a starting point for thinking about the challenge of how much it's going to cost to maintain and replace these assets. The Gap Analysis essentials projects the amount of gap of funding that will be needed for this investment in our assets. The Gap Analysis can be found at: http://www.epa.gov/ogwdw/gapreport.pdf

An Emphasis on Asset Management Emerged as a Central Response to the Gap Analysis

No Revenue Growth Scenario

Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water
Capital	$122	$102
O&M	$148	$161
Total	$271	$263

Revenue Growth Scenario

Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water
Capital	$21	$45
O&M	$10	$0
Total	$31	$45

(Annual Rate of Increase - 3% Real)

8

The Gap Analysis showed the amount of funding that is needed for our water sector assets – through repair, rehabilitation, and replacement. What really came out of it was the notion that we need to manage our assets, throughout their entire life cycle. Managing assets is just really knowing what we have, how they should be maintained, and how much it will cost to maintain them until they are no longer useful.

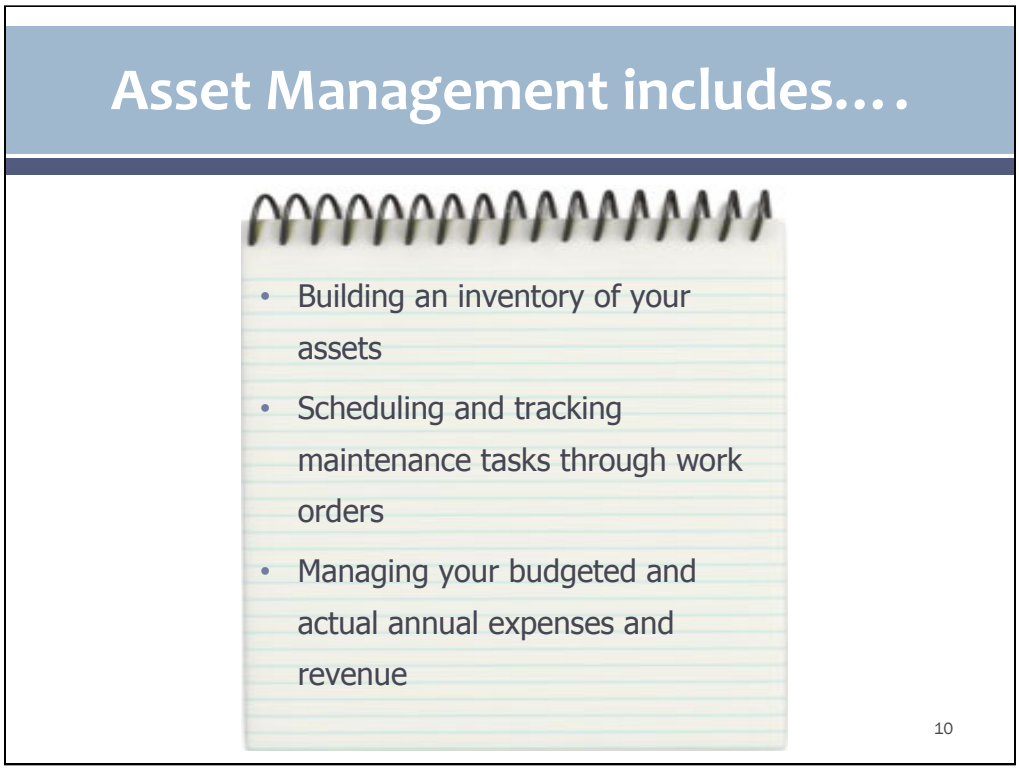
Asset Management is…

"A process for maintaining a desired level of customer service at the best appropriate cost."

One simple definition we have for asset management is thinking of it as "A process for maintaining a desired level of customer service at the best appropriate cost."

-When we say "Desired level of service" = this is what utilities want their assets to provide
-And when we say "Best appropriate cost" = this is the lowest life cycle cost (but it's not necessarily without cost)

Basically we want to provide safe, reliable service while thinking about what the costs will be for those services. Essentially we're thinking more like a business.



Comprehensive asset management includes:

1. Building an inventory of your assets
2. Scheduling and tracking your maintenance tasks through work orders, and
3. Managing your budgeted and actual annual expenses and revenue

Doing all of these will help you determine your system's future needs.

Implementing asset management will help you identify all the assets that a utility has, how long they are going to last, and how much it's going to cost to repair, rehabilitate, or replace them.

All of this information will allow utilities to see financial projections 5 years from now and even 10 years from now. Knowing how much money is needed to fund maintenance and investments in assets will help the utility determine if rates and other revenue generating mechanisms are enough.

Asset Management will help you stop…

and/or

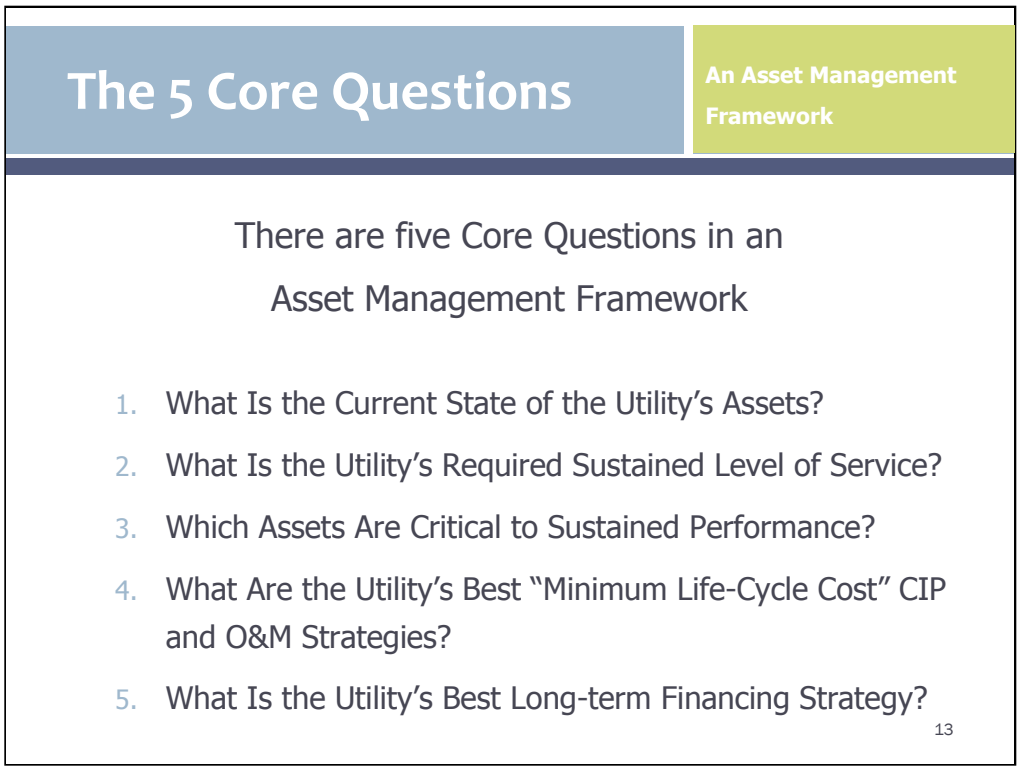
12

Basically asset management will help you stop:

Having your money go down the drain

and/or

Flushing your money down the toilet



Asset management best practices aim to improve utility operations. Utilities will become more familiar with these approaches as an asset management program is implemented. A good starting point for any size system is the 5 Core Questions framework. This framework walks you through all the major activities associated with asset management and can be implemented at the level of sophistication reasonable for a given system.

The 5 core questions of an asset management framework are
1. What Is the Current State of the Utility's Assets?
2. What Is the Utility's Required Sustained Level of Service?
3. Which Assets Are Critical to Sustained Performance?
4. What Are the Utility's Best "Minimum Life-Cycle Cost" CIP and O&M Strategies?
5. What Is the Utility's Best Long-term Financing Strategy?

1 What Is The Current State Of The Utility's Assets?

- What does the utility own?
- Where is it?
- What is its condition?
- What is its remaining value?
- What is its remaining useful life?

Ruptured Wooden Water Tower, March 1999

The first step in managing a utilities assets is knowing their current state. Because some of this information may be difficult to find, estimates can be used when necessary. Over time, as assets are replaced or rehabilitated, the utility's inventory will become more accurate.

Questions to ask:
-What does the utility own?
-Where is it?
-What is its condition?
-What is its remaining value?
-What is its remaining useful life?

The photo on the right is an example of an old water tower that has reached the end of its useful life.

Generating an Asset Inventory

What we already have — retrospective

- Critical first
- Use existing crews as they respond to Work Orders

What we are about to acquire — prospective

- Tie to commissioning or handover process
- Use contract retainage to ensure control

15

There are two ways to approach generating an asset inventory.

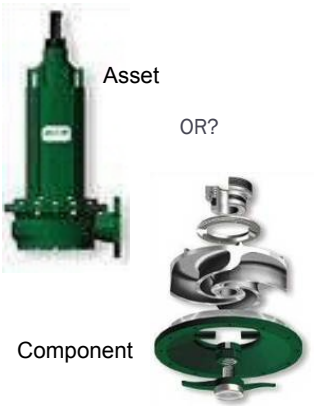
The first way is retrospective. What does your utility already have? Begin first listing your utility's critical assets. Also as, existing crews respond to work orders they can build the asset inventory by collecting information on assets such as the age, condition, location, etc.

The second way to generate an asset inventory is prospective. As you are acquiring new assets into your utility immediately add the assets into the asset inventory. This can be done in the handover process from the engineers to the utility. A system could include a requirement to receive the asset information in a form that is easy to include in their inventory as a part of their contract.

Whether retrospective or prospective or both your utility begins their asset management journey building an asset inventory.

Maintenance Managed Item

- ***Maintenance managed item*** (MMI) is an item at the lowest level—***the smallest subdivision***—of an asset inventory composed as a nested hierarchy
- Typically, it is the level at which an asset is ***maintained*** (for example, parts are identified), or ***decisions*** are made to repair, refurbish, or replace

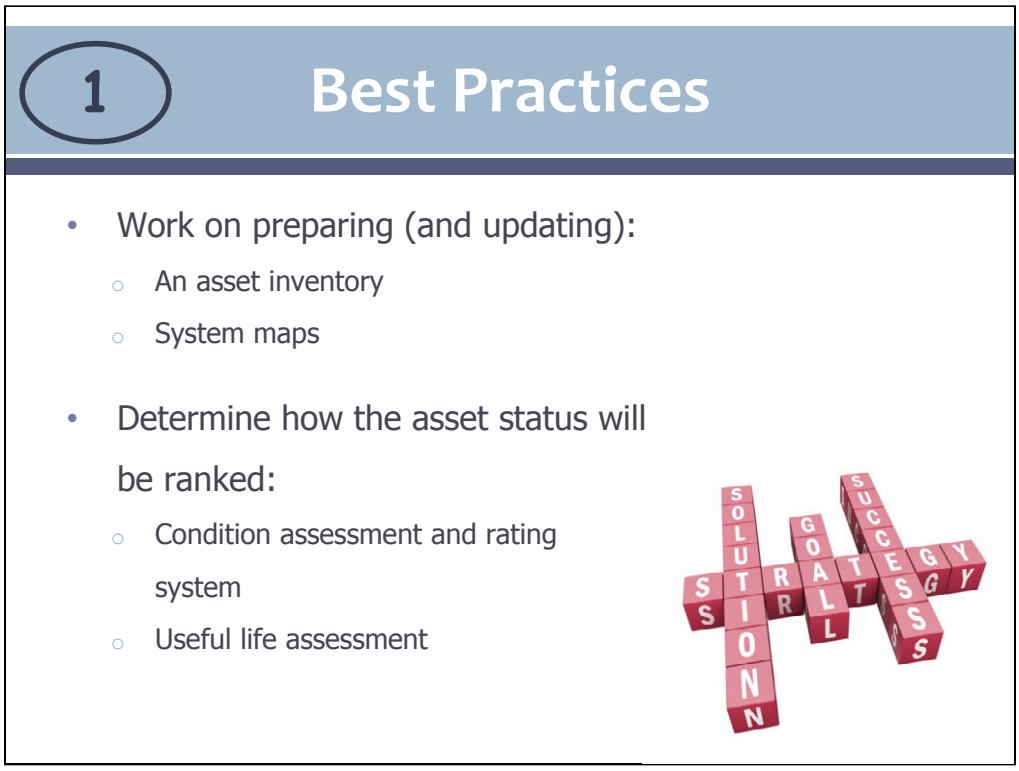


Think "work order"

16

A utility is made up of several assets and some bigger assets have several components. So, you may ask where do I start in building my inventory? How far must I drill down?

Well, your asset inventory's lowest level is the maintenance managed item. Think "work order." At what level is an asset maintained? Do you create a work order for the asset or the component? What level are decisions made to repair, refurbish, or replace? The answers to these questions determine the lowest level of your utility's asset inventory.



The best practices in figuring out the current state of a utility's assets are:

-Work on preparing (and updating):
-An asset inventory
-System maps

-Determine how the asset status will be ranked:
-Condition assessment and rating system
-Useful life assessment

2 What Is The Utility's Required Sustained Level Of Service (LOS)?

- What do the regulators require?
- What are the utility's performance goals?
- What LOS do the utility's customers demand?
- What are the physical capabilities of the utility's assets?

Rusted iron water pipe

Credit: Timothy Ford, Montana State University

18

Knowing the utility's required "sustainable" level of service will help them implement an asset management plan and communicate to stakeholders what is being done. The required sustainable level of service is the set of features that describe the utility's short- and long-term performance standards as well as the customer's expectations. Quality, quantity, reliability, and environmental standards are elements that can define level of service and associated system performance goals. Information about customer demand, data from utility commissions or boards, and information from other stakeholders can be used to develop the statement.

Questions to ask in determining Level of Service:
-What do the regulators require?
-What are the utility's performance goals Or

-What level of service do the utility's stakeholders and customers demand or expect? Another way to ask this is what is the best way to meet the needs of the customers?

-What are the physical capabilities of the utility's assets? Or

Would your community be satisfied with receiving their drinking water from a pipe like the one in the photo on the left?

Why LOS?

It helps us…

- Concentrate (focus) efforts and resources
  - On agreed on service levels
  - Less service-level-defined-by-notion
- Communicate service expectations and choices
  - Increased services equal increased costs
  - Discussion of trade-offs and risks
- Negotiate (regulators and council/commission/board)
  - Service levels
  - Costs and budgets
  - Rate impacts
  - Reinvestments for renewal
  - Level of risk

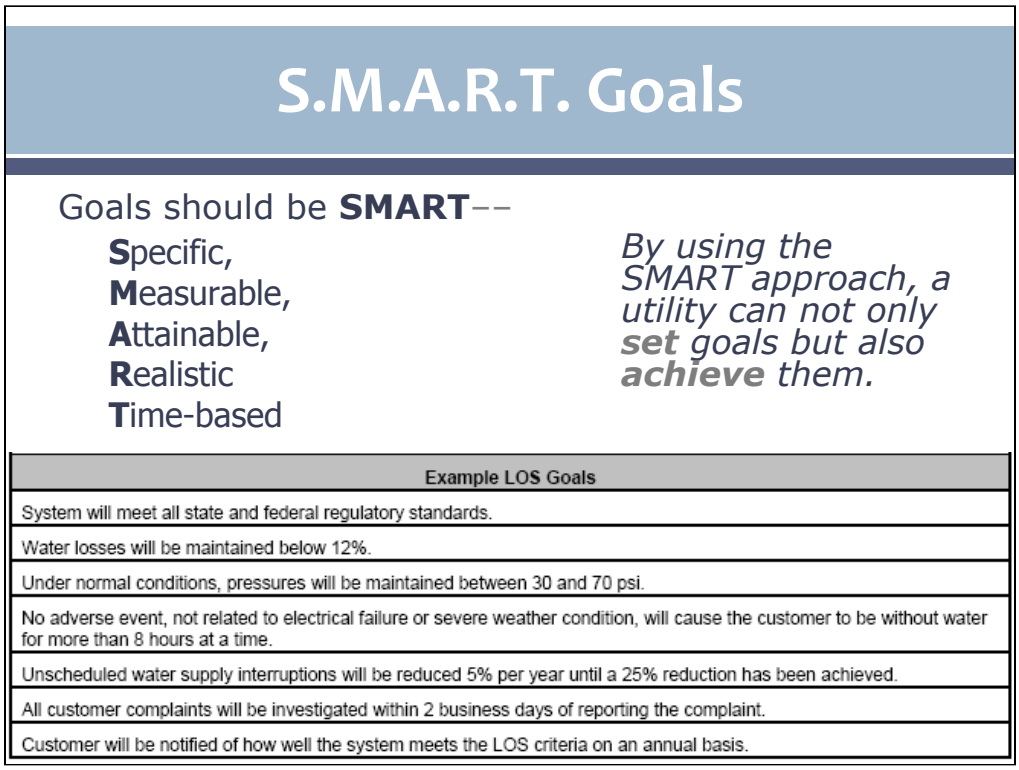
Why are level of service goals so important?

Level of service goals help the utility focus efforts and resources agreed on between stakeholders and the system.

They create a communication of service expectations and the costs associated.

Trade-offs and risks are discussed.

Level of service goals help a utility negotiate among stakeholders:
-Service levels
-Costs and budgets
-Rate impacts
-Renewal reinvestments and
-Level of risk



When developing level of service goals think SMART!

Use these concepts to implement SMART goals
The goal should be **S**pecific
-Well defined
-Clear to anyone who has a basic knowledge of the utility

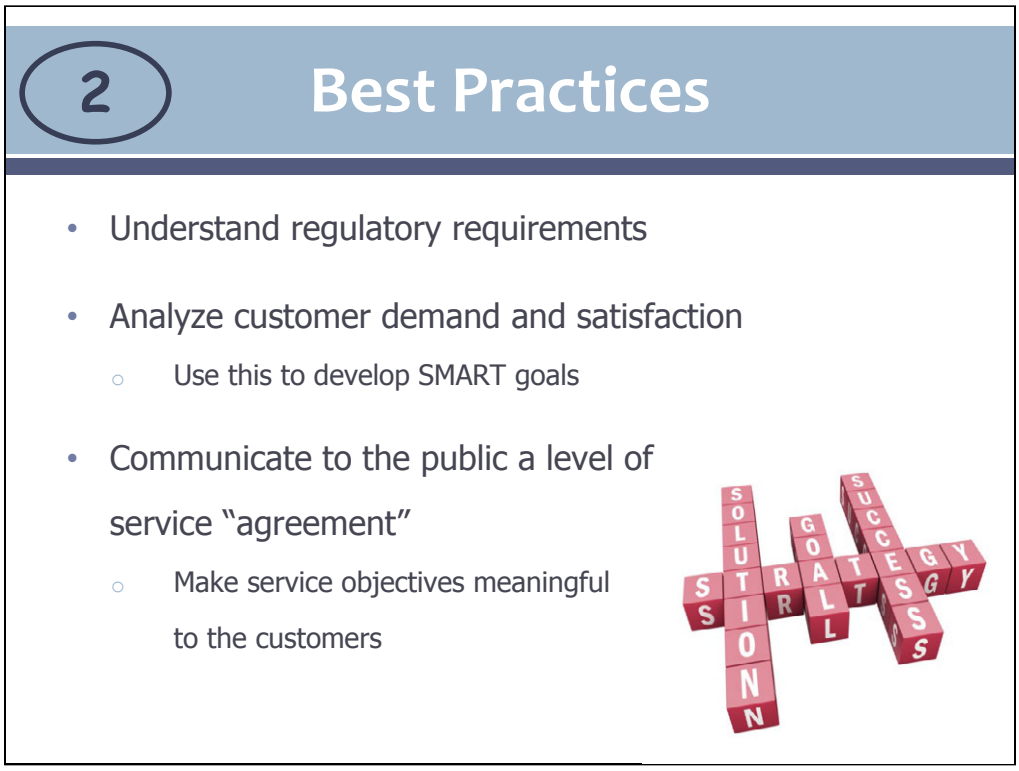
The goal should be **M**easurable
-Know if the goal is obtainable and how far away completion is
-Know when it has been achieved

The goal should be **A**ttainable
-Capable of being reached

The goal should be **R**ealistic
-Within the availability of resources, knowledge, and time

The goal should be **T**ime-based
-Enough time to achieve the goal
-Not too much time, which can affect utility performance

By using the SMART approach, a utility can not only set goals but also achieve them.



Best practices for maintaining a utility's required sustained level of service are:

Understand regulatory requirements

Analyze customer demand and satisfaction
Use this to develop SMART goals

When developing level of service goals think SMART!

Use these concepts to implement SMART goals
The goal should be
Specific
Measurable
Attainable
Realistic
Time-based

Communicate to the public a level of service "agreement"

Remember to make service objectives meaningful to the customers

3 Which Assets Are Critical To Sustained Performance?

- How can assets fail?
- How do assets fail?
- What are the likelihoods and consequences of asset failure?
- What does it cost to repair the asset?
- What are other costs that are associated with asset failure?

Leaking valve
22
Credit: Rural Community Assistance Corporation

Because assets fail, how the utility manages the consequences of failure is vital. Not every asset presents the same failure risk, or is equally critical to the drinking water or wastewater system's operations. Therefore, it is important to know which assets are required to sustain the utility's performance. Critical assets are those the utility decides have a high risk of failing (like if the asset is old or in poor condition) and major consequences if they do fail (major expense, system failure, safety concerns, etc.). The utility can decide how critical each asset is and rank them accordingly.

Questions to ask:
-How can assets fail? Different things contribute to an asset failing including: Demand exceeds design capacity (which comes from population growth); or physical deterioration from age, usage, or nature.
-How do assets fail? The type of failure depends on the type of asset: Water pipes can leak or disinfection equipment can stop working.
-What are the likelihoods (probabilities) and consequences of asset failure? Likelihoods of failure depend on age and condition. Consequences of failure depend on how critical the asset is: Is it the Chlorinator in small system that has no other backup?

We call this a criticality analysis, but all that really means is looking at the importance of an asset and thinking about how bad it would be if it failed tomorrow.

There are two more important questions to ask:
-What does it cost to repair or replace the asset? Cost depends upon if the utility has to repair, rehabilitate, or replace the asset.
-What are the other costs (such as social costs or environmental costs) that are associated with asset failure?

These are important values to know, understand and consider in any decision-making process. Running a utility is fundamentally a business operation and we have to treat it that way.

Understanding Asset Risks

Perfect World = Knowing Asset Risks

- Predict when an asset will fail (i.e., likelihood)
- Fully understand consequences of failure (i.e., impact)

- What are the utility's highest risk activities?
- What is the likelihood of failure of the utility's assets?
- What is the consequence of failure of the utility's assets?

23

In a perfect world, you would know all your asset risks. But in reality we have to predict when an asset will fail and more importantly, we need to understand the consequences of an asset's failure. Questions to ask in understanding asset risks are:

What are the utility's highest risk activities?
What is the likelihood of failure of the utility's assets?
What is the consequence of failure of the utility's assets?

3 Best Practices

- Look at the asset inventory
  - List assets based on criticality
- For the critical assets
  - Conduct a failure analysis to determine their probability of failure
  - Analyze failure risk and consequences

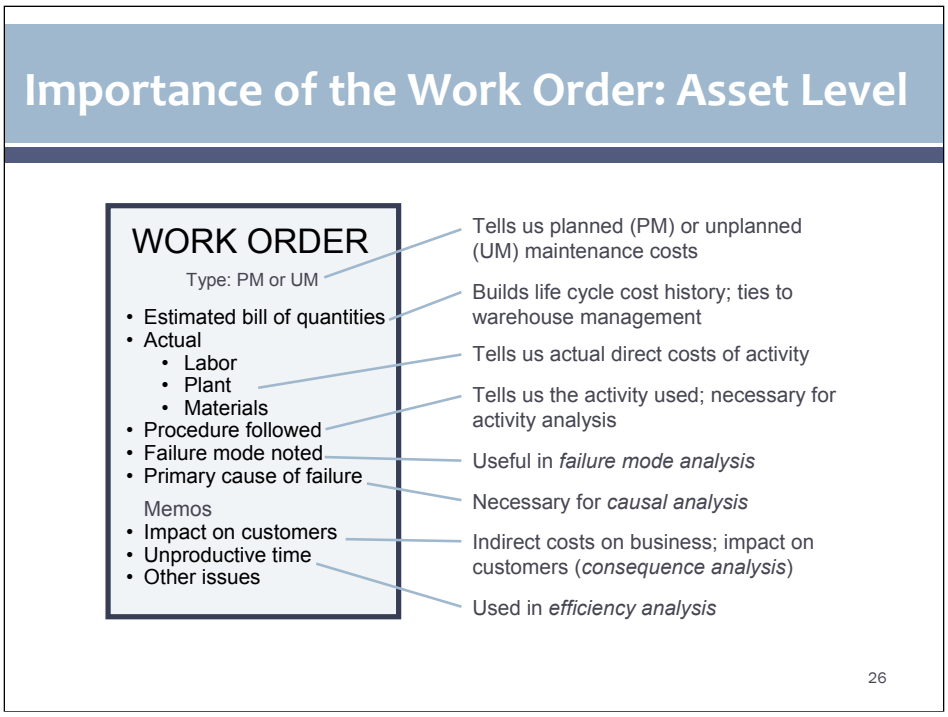
What are some of the best practices?

-Look at the asset inventory
-List assets based on criticality

-For the critical assets
-Conduct a failure analysis to determine their probability of failure
-Analyze failure risk and consequences

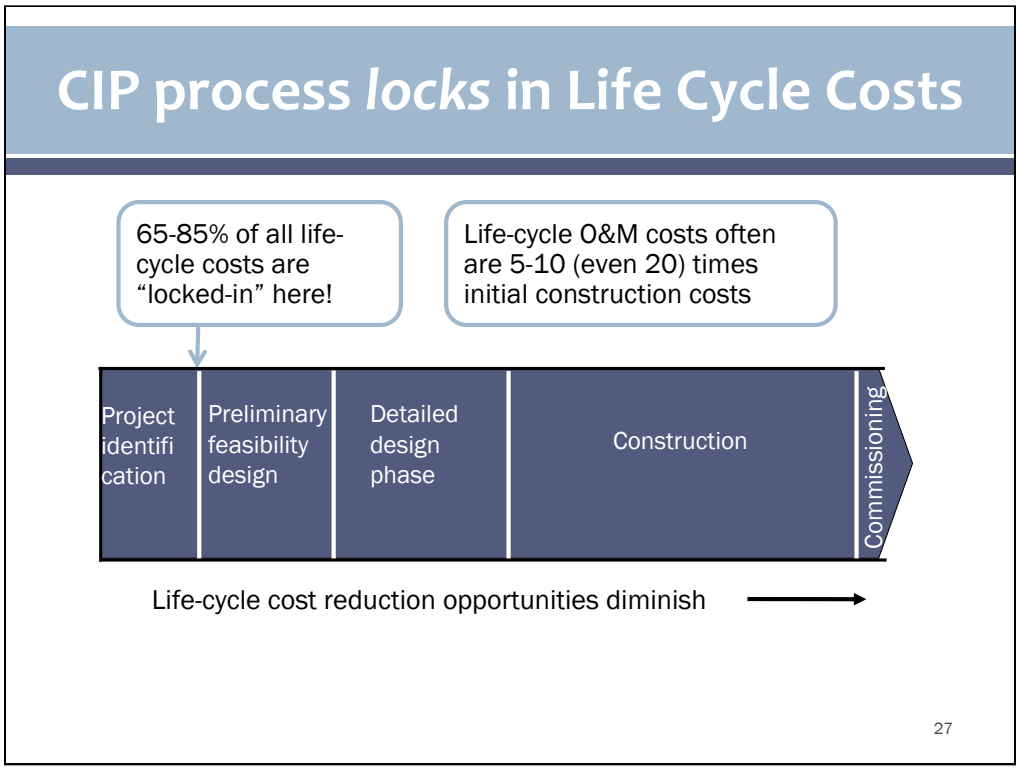
Our fourth core question is What are the Utility's Best Capital Improvement Plan and Operations and Maintenance Strategies? It's important to recognize that operations and maintenance (O&M), personnel, and the capital budget account for an roughly estimated 85 percent of a typical system's expenses. Asset management enables a system to determine the lowest cost options for providing the highest level of service over time. Utilities want to optimize their work O&M crews are doing, where they are doing it, and why. An asset management program helps a utility make risk-based decisions by choosing the right project, at the right time, for the right reason.

Additional questions to ask yourself when tacking this question include:
-What alternative management strategies exist? Run to failure may be a very real option for some utilities. Is it necessarily the best option, all of the time?
-What strategies are the most feasible for my organization?



When thinking about our O&M strategy, what is included in a work order is very important.

First we want to know if this maintenance was planned or unplanned
We want to know the estimated total cost so that we have a history of the cost of maintenance for this particular asset
Within that we want to know the actual labor and materials costs
We want to know what was done to complete the work order
We want to know why the asset failed
And we also want to know the impact that this work order had on the customers.



When looking at strategies for your capital improvement plan, you're really looking at what when your assets will be replaced and how much it's going to cost to replace them. A significant portion of all life-cycle costs are determined at the very beginning of the planned asset's lifecycle. Having a plan in place for maintenance will decrease the total life-cycle costs of your assets.

A few best practices for determining the utility's best "minimum life-cycle-cost" CIP and O&M strategies include:

-Think about the current Maintenance Strategy
    -If it's reactive, move to proactive maintenance
    -Know the costs and benefits of rehabilitation vs replacement

-Develop and update the Capital Improvement Plan
    -Look at lifecycle costs for critical assets
    -Focus available resources based on asset conditions

5 What Is The Utility's Best Long-Term Financing Strategy?

- Do we have enough funding to maintain our assets for our required level of service?
- Is our rate structure sustainable for our system's long-term needs?

Our fifth core question is What is the Utility's Best Long-Term Financing Strategy? Well knowing the full economic costs of services provided is critical for making sound financial decisions and also for developing an effective long-term funding strategy. Having this information in an asset management plan will help tell your utility's "story." An asset management plan that refers to the utility's sustainable level of service is good for communicating this information to decision makers and customers. And the utility can decide how to fund it's strategies by knowing the system's financial forecast.

Additional questions to ask for the fifth core question include:
-Do we have enough funding to maintain our assets for our required level of service?
-Is our rate structure sustainable for our system's long-term needs?

Investment Planning Types

- Capital investment
  - Renewal (repair, refurbish, replace)
  - Augmentation (capacity, functionality)
- Maintenance investment
  - Planned
    - Preventive
    - Predictive
    - Corrective
  - Unplanned
- Operations investment
  - Operations cost trends

When thinking about future investments in a utility, you'll need to consider money going to your capital expenditures like your assets and your overall infrastructure as well as your operating expenditures like your maintenance and your day to day activities.

Rate Structures

When reviewing customer rates, think about:

- Revenue Requirement Projections
  - How much money is needed?
- Cost of Service Analysis
  - From whom should the money be collected?
- Design of recommended rates
  - How should services be priced?

When determining rate structures, think about:

- Fixed/Flat Fee
- Single/Uniform Block
- Decreasing Block
- Increasing Block
- Seasonal Rate
- Single-Tariff Pricing (or Consolidated Rates)

The Board should have a clear understanding of the rate review and any changes needed to the rate structure

31

The money that you charge for delivering safe and clean water make up the bulk of your revenue. A water rate structure is basically a fee or schedule of fees designed to recover the utility's costs.

When looking about your current rates, think about:

-If your rates address both your current and future system's needs. You'll want to determine your 10 year financial forecast –
-How much money is needed for your capital improvement projects?
-Who should have to pay for the future rehabilitation and replacement of the water assets?
-How should different services be priced for equitable distribution of water treatment and delivery services?
-The board or local decision makers should have a clear understanding of the rate review and should plan for informing the public of any rate adjustments.

Now when you're thinking about some of the different water rate structures that you could use, these structures include:

Fixed/Flat Fee - All customers pay the same amount each month regardless of quantity of water used. Used in unmetered systems.
-Advantages:
Eliminates the cost of installing and reading meters.
-Disadvantages:
Everyone pays too much or too little for what they use.
Promotes high consumption
-Example:
Each customer will be charged a flat rate of $X per month.

Single/Uniform Block - Customers are charged a constant price per gallon regardless of the amount of water used. Often coupled with a Minimum Rate for having service available.
-Advantages:
Cost to the customer is in direct proportion to amount used.
Easy to administer, may encourage water conservation.
-Disadvantages:
Could discourage high water consuming industries from locating in the community.
-Example:
$X Minimum service availability charge (optional) plus $X per 1,000 gallons used

Decreasing Block - The price of water declines as the amount used increases. Each succeeding consumption block is cheaper. This structure is based on the assumption that costs decline as consumption goes up.
-Advantages:
Attractive to agricultural and industrial users.
-Disadvantages:
May reach a point of diminishing returns.
High water consumption increases the need for wastewater treatment facilities.
Industrial wastewater could be much higher in certain regulated pollutants than sanitary sewage.
-Example:
$14 Minimum for the first 2,000 gallons
$2.00 per 1,000 from 2,001-10,000 gallons
$1.00 per 1,000 for everything over 10,000 gallons

Increasing Block - The price of water increases as the amount used increases. Each succeeding consumption block is more expensive. Structure based on the assumption that water rates should promote water conservation.
-Advantages:
Promotes water conservation, especially important in areas with limited water supplies or high treatment costs.
Less water use means less wastewater, and smaller, less expensive wastewater treatment.
Provides a reasonable amount of water at reasonable price and charges a premium for higher usage.
-Disadvantages:
Higher costs for high usage may discourage industry from locating within the system's service area.
-Example:
$14 Minimum for the first 2,000 gal.
$2.00 per 1,000 from 2,001-10,000 gal.
$3.00 per 1,000 for everything over 10,000 gal.

Seasonal Rate - The rate varies by time of year, establishing a higher price for water consumed during a peak-demand season. Rates can be uniform, increasing, or decreasing block rates.
-Advantages:
Promotes water conservation, especially important in areas with limited water supplies or high treatment costs.
Can potentially postponing or eliminate the need for expensive upgrades or new equipment
-Disadvantages:
Does not work as well with quarterly billing cycles.
Penalizes customers with high peak-demand usage requirements
-Example:
$2.50 per 1,000 from October 1st through April 30th
$4.00 per 1,000 from May 1st through September 30th

Single-Tariff Pricing (or Consolidated Rates) - is the use of a unified rate structure for multiple water (or other) utility systems that are owned and operated by a single utility, but that may or may not be contiguous or physically interconnected.
-Advantages:
Can be an incentive for larger water utilities to acquire small water systems that lack capacity because it makes it possible to spread costs over a larger service population and maintain more stable and affordable rates for customers of some smaller and more expensive systems.
Physical interconnection is not considered a prerequisite
Addresses small-system viability issues
-Disadvantages:
Conflicts with cost-of-service principles
Provides subsidies to high-cost customers
Fails to account for variations in customer contributions
-Example:
Under a system of single-tariff pricing, all customers of the utility pay the same rate for service, even though the individual systems providing service may vary in terms of the number of customers served, operating characteristics, and stand-alone costs. Single-tariff pricing essentially allows for allocating the average costs of combined systems in the course of ratemaking.

Funding Decisions

- System revenues
  - User fees
  - Hook up fees
  - Late fees
  - Reconnect charges
- Reserve funds
  - Emergency reserves
  - Capital improvement reserves
  - Debt reserves
- Other revenues
  - Federal or state grants, or both
  - Federal or state loans, or both

The first four questions of the asset management framework help a utility realize what actions are most appropriate to take to manage the system at the desired level of service at the lowest life-cycle cost. The final factor in the asset management strategy is determining the best manner in which to fund the O&M, repair, rehabilitation, and replacement of assets. For those assets that need to be replaced on the basis of your condition assessment, determine an appropriate replacement year and then calculate how much you'll have to save each year to replace that asset at the time needed.

There are different ways to fund the system's improvements:
System revenues from
-User fees
-Hook up fees
-Late fees
-Reconnect charges

System reserve funds such as
-Emergency reserves
-Capital improvement reserves
-Debt reserves

Other revenues
-Federal or state grants, or both
-Federal or state loans, or both

5 Best Practices

- Think about what is best for the long-term sustainability of the system
  - Routinely review and revise the rate structure
  - Fund a dedicated reserve from current revenues
  - Finance asset renewal and replacement through borrowing

Best practices for determining the utility's best long-term financing strategy.

Think about what is best for the long-term sustainability of the system
-Routinely review and revise the rate structure
-Fund a dedicated reserve from current revenues
-Finance asset renewal and replacement through borrowing

The first four questions of the asset management framework help a utility realize what actions are most appropriate to take to manage the system at the desired level of service at the lowest life-cycle cost. The final factor in the asset management strategy is determining the best manner in which to fund the O&M, repair, rehabilitation, and replacement of assets. For those assets that need to be replaced on the basis of your condition assessment, determine an appropriate replacement year and then calculate how much you'll have to save each year to replace that asset at the time needed.

Getting Started

To Implement the Asset Management Framework

- Building your team
- Deciding where to start first
- Creating an asset management plan
- Implementing an asset management plan

34

Now that you have a understanding of five core question framework Your next question is most likely, how do I get started?

Getting started first begins with building a dedicated team of personnel and stakeholders.

Second, decide where to start first. What sources of data are available to begin your inventory, financial records, etc?

Next, with your data gathered create an asset management plan.

Last, a plan is no use unless it is put to use.

Let's discuss more one ways to get started.

Successful asset management requires a dedicated team.

Key team members include:

Utility operators and engineers (including upper management) These team members have:
-Knowledge of the current state of water infrastructure assets.
-Ability to describe the costs and benefits of changes to infrastructure assets.
-Experience with the current capital improvement plan and the operations and maintenance strategy.

Local and elected officials (e.g., mayor, council, town manager) These team members have:
-Authority to commit resources.
-Knowledge of the political landscape.
-Ability to create new financing mechanisms and restructure ineffective institutions.

Accounting. These team members have:
-Ability to help estimate the replacement cost of assets.
-Knowledge of the existing financing strategy, potential financial resources and challenges, and the need for rate changes.

Information Technology. These team members have:
-Ability to determine the most practical way to collect, store, and present the information needed to make strategic decisions.

Treasurer. These team members have:
-Ability to implement new financing mechanisms (e.g., bonds, loans, and other debt instruments) and create dedicated reserve accounts

Don't forget other stakeholders such as:
-Other infrastructure managers and utilities (e.g., roads, sewers, and electric)
-Conservation and environmental groups
-Neighboring water districts
-Community members

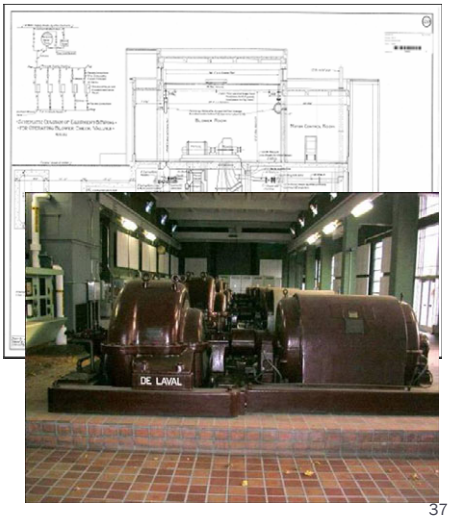
Once your team is assembled clarify roles, responsibilities, accountabilities and decision making authority.

Establish a mission statement for the utility. Think about why you have come to asset management and how you want your utility to be in the end.

Here is an example mission statement: "Our mission is to operate in an efficient and cost-effective manner without jeopardizing the health of an employee and/or the quality of service we provide to the public."

Sources of Data

- As-built drawings
- Design drawings
- Manufacturers' manuals
- Bid documents
- Staff—current and previous
- Photos and videos



37

An additional beginning step in getting started is gathering data. Remember that you can gather data both retrospectively and prospectively.

Sources of data to consider are:
-As-built drawings
-Design drawings
-Manufacturers' manuals
-Bid documents
-Staff – current and previous
-Photos and videos

An asset management plan should be developed based on the best current information that is readily available. The more information the utility has, the better the plan can be.

What is the utility's cash flow projection for the next five to ten years? Knowing how much money will be coming in and going out will help with managing assets.

It's very important for the plan to establish financial and performance benchmarks – lack of goals equals lack of growth (both financial and capacity).

An asset management plan should be reviewed at least once a year, noting any relevant changes. Throughout the year, systems should keep a running list of items to consider or include in the annual update.

A Paradigm Shift…

- Transition from building and operating to managing assets
  - Extending asset life
  - Optimizing maintenance and renewal
  - Developing accurate long-term funding strat
  - Sustain long-term performance!
- Organizational and cultural change
  - Centered on team
  - Public knowledge and acceptance
- Will not work overnight
- Start up may increase budget

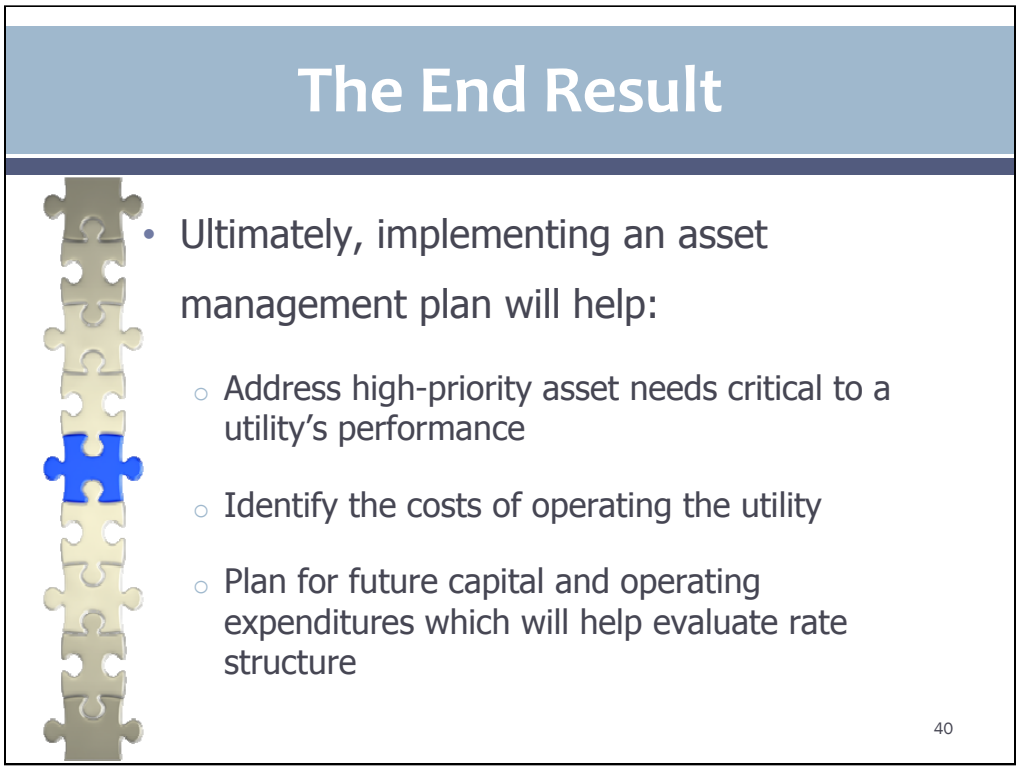
39

A paradigm shift will occur for the utility has you transition from building and operating to managing assets.

Asset life will be extended, maintenance and renewal optimized, long-term funding strategies. All leading to sustaining long-term performance.

Asset management results in an organizational and cultural change that is centered on team.

Asset management is not an overnight process and sometimes requires and increase budget during start up.



As asset management is implemented, it really becomes a broader way of thinking about utility management.

Ultimately, implementing an asset management plan will help:

Address high-priority asset needs critical to a utility's performance

Identify the costs of operating the utility

Plan for future capital and operating expenditures

Once you know what it takes to run a system, you might not want to be in the business of running a system and can look to other alternatives

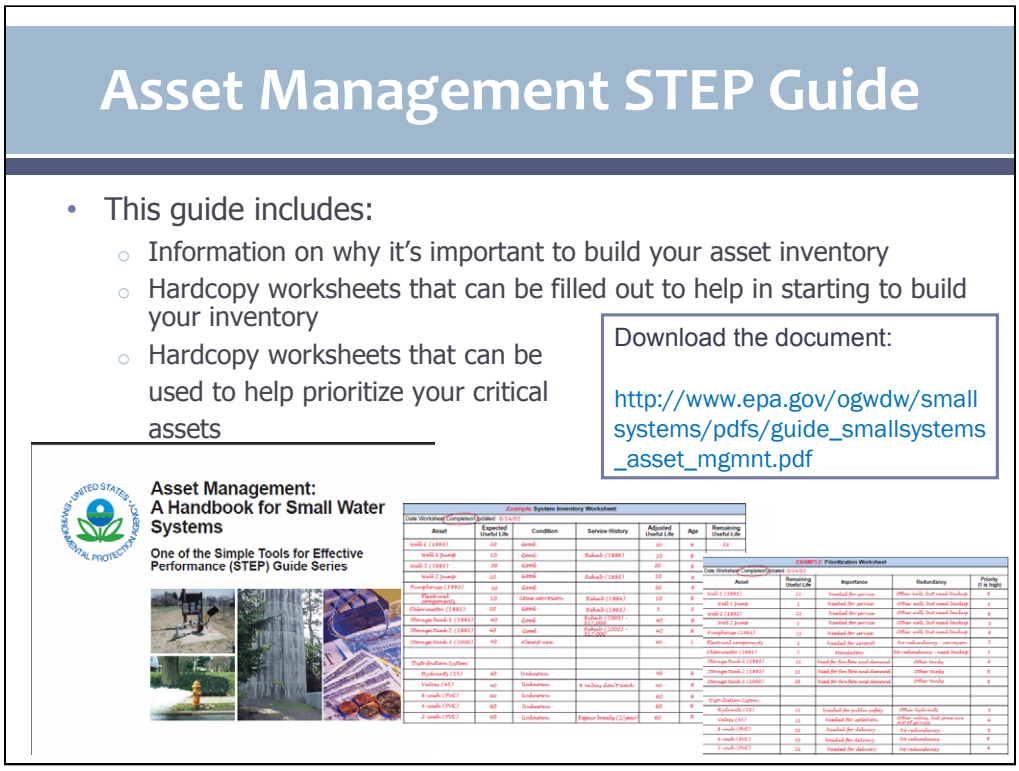
EPA Resources

To Help Implement Asset Management Practices

- Worksheets
- Fact Sheets
- Desktop Software
- Research
- Web-based Training
- Other Resources

41

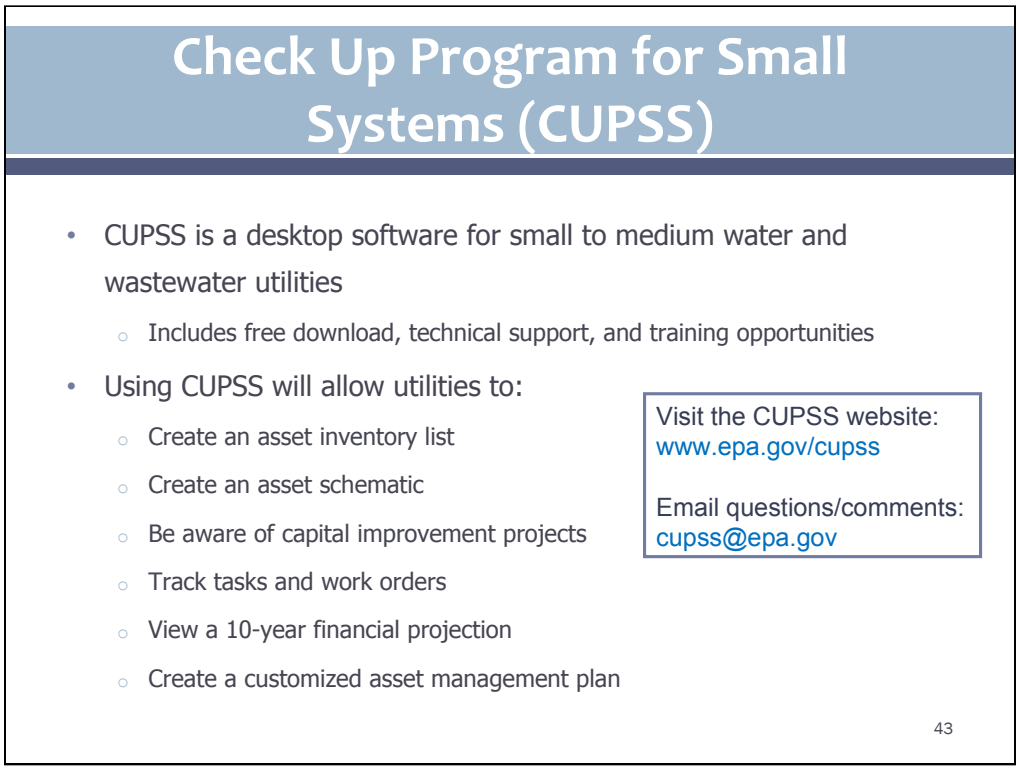
EPA has developed many asset management resources whether you're just getting started or are well along your journey. These resources include paper worksheets that you can use to help build your inventory, to software that will help you build your inventory, manage your work orders, and track your finances.



This guide was developed in 2002 and talks about the importance of building your asset inventory and determining which of your assets are critical assets.

Hardcopy worksheets are included in the guide to step you through the process as well as examples that are already filled out.

Download the document at:
http://www.epa.gov/ogwdw/smallsystems/pdfs/guide_smallsystems_asset_mgmnt.pdf



Some of you may have heard about the Check Up Program for Small Systems or CUPSS software.

CUPSS is a desktop software for small to medium water and wastewater systems. It's free of cost to download and technical support and training opportunities are also offered.

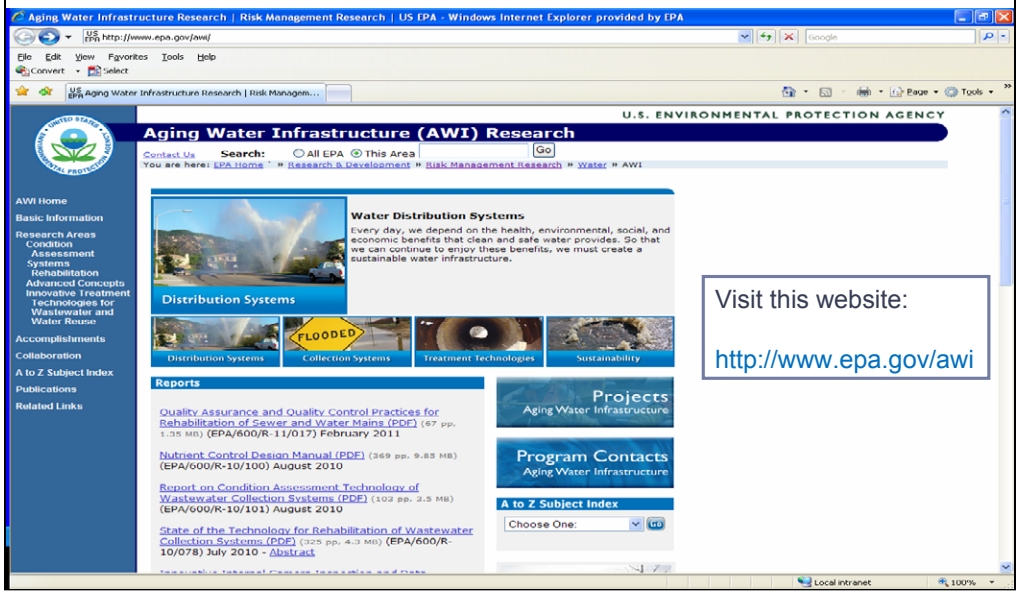
With CUPSS a utility will be able to:
-Create an asset inventory list
-Create an asset schematic (or a picture of where their assets are located)
-Be aware of capital improvement projects
-Track tasks and work orders
-Track annual revenues and expenditures
-View a 10-year financial projection
-Create a customized asset management plan

Visit the CUPSS website:
www.epa.gov/cupss

Email questions/comments:
cupss@epa.gov

Here is the CUPSS homepage, you can:
-Do some training
-Create or update a schematic
-Enter inventory
-Enter tasks or work orders
-Enter finances
-Generate Check Up reports
-Ultimately CUPSS will help a utility prepare an asset management plan

Asset Management Research



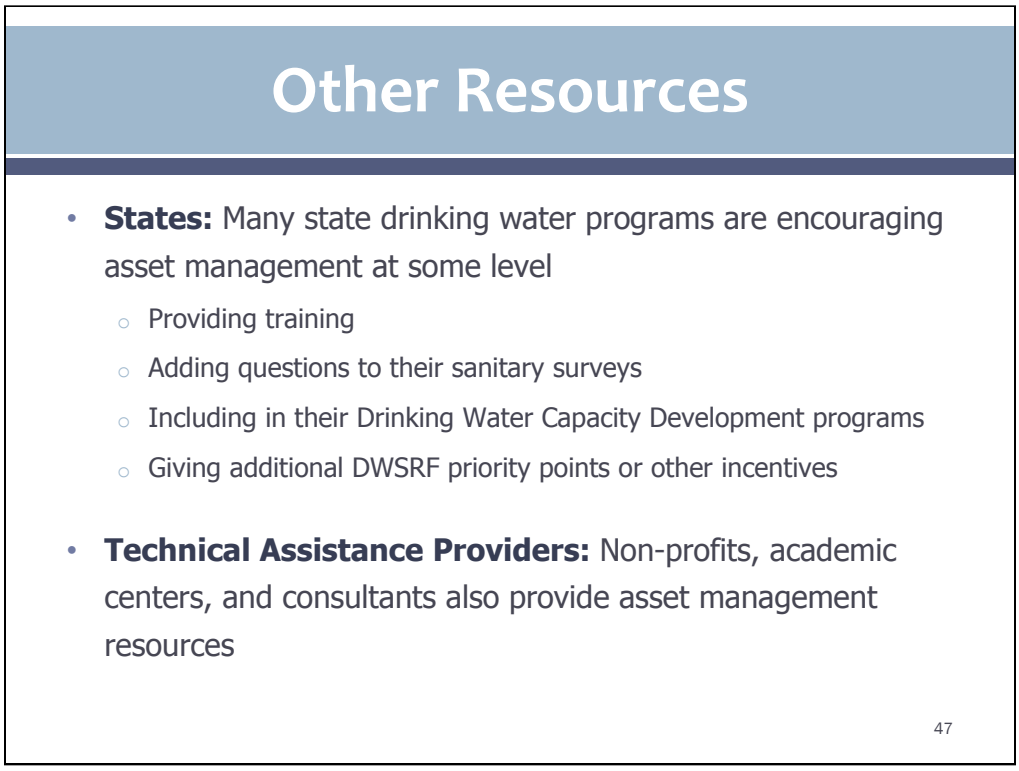
EPA's Office of Research and Development has an Aging Water Infrastructure website. Their research areas include condition assessments, system rehabilitation, advanced concepts relating to the application or adoption of new infrastructure designs, management procedures and operational approaches, and also innovative treatment technologies for wastewater and water reuse. These different research areas include questions, activities, and projects related to each.

Visit this website at: http://www.epa.gov/awi

Online Training
CUPSS Self-Paced Training lessons available at:
http://water.epa.gov/infrastructure/drinkingwater/pws/cupss/training.cfm

Webinars
Register for the CUPSS Train-the-Trainer webinars at:
http://water.epa.gov/infrastructure/drinkingwater/pws/cupss/training.cfm

Register for specialized asset management webinars as they become available at: http://water.epa.gov/learn/training/dwatraining/calendar.cfm

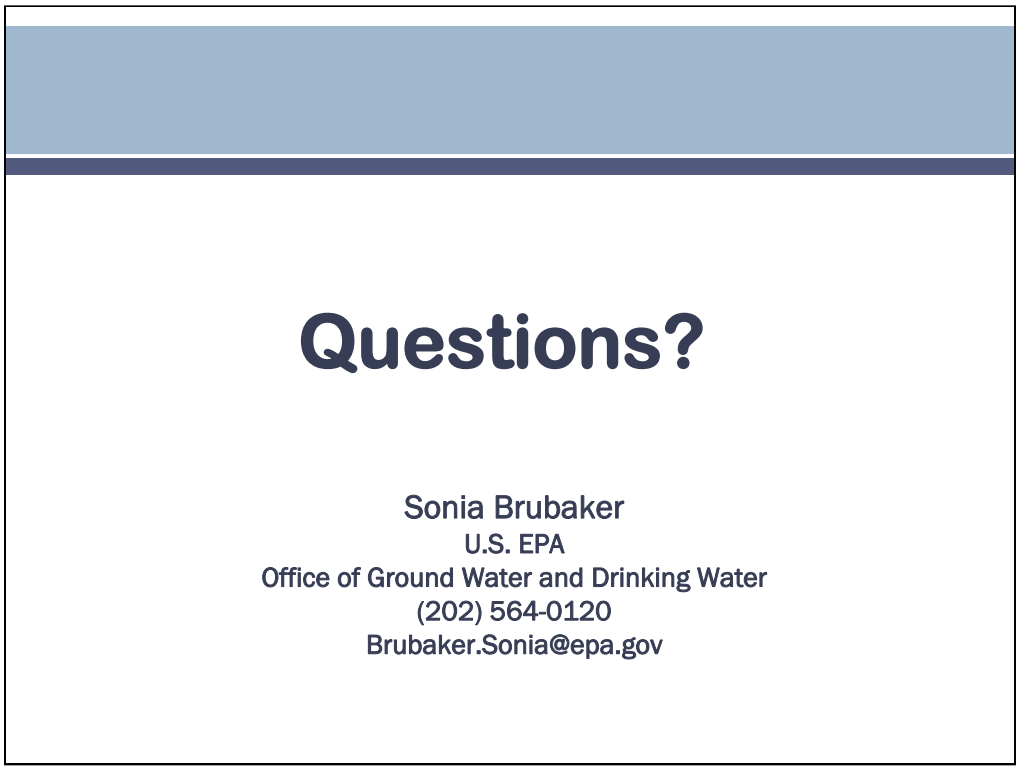


States:
Many state drinking water programs are encouraging asset management at some level

-Providing training
-Adding questions to their sanitary surveys
-Including in their Drinking Water Capacity Development programs
-Giving additional DWSRF priority points or other incentives

Technical Assistance Providers:

Non-profits, academic centers, and consultants also provide asset management resources



If you have a question about asset management or CUPSS, contact:

Sonia Brubaker
U.S. EPA
Office of Ground Water and Drinking Water
(202) 564-0120
Brubaker.Sonia@epa.gov