

Asset Management: A Best Practice

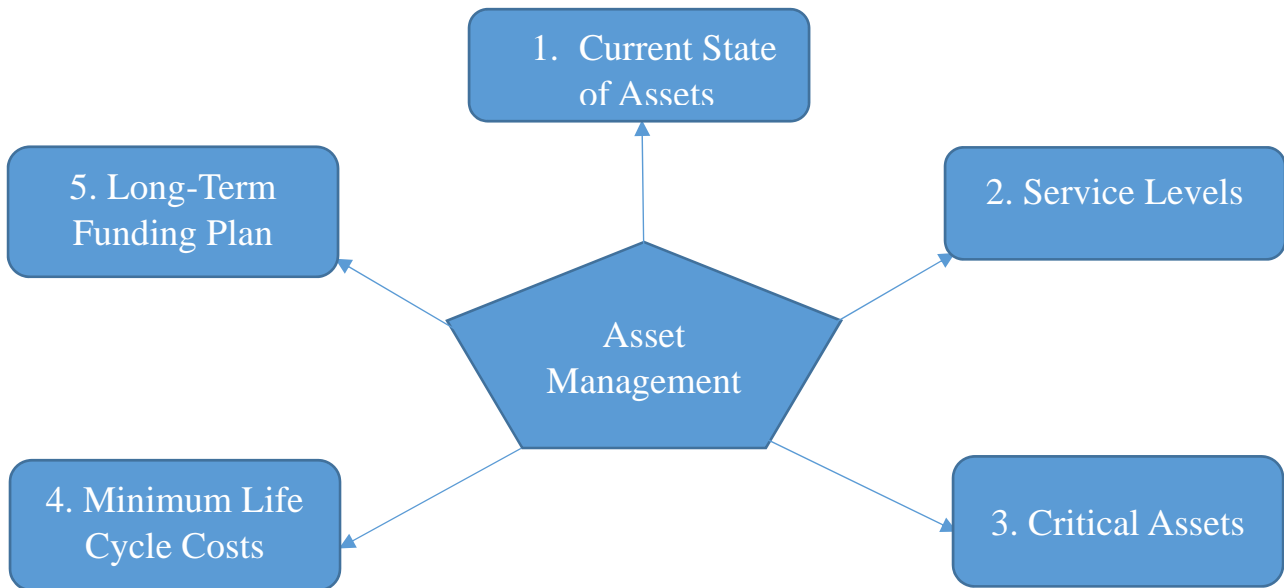
Introduction	
Purpose	<p>This guide will help you understand:</p> <ul style="list-style-type: none">• The definition of “Asset Management”.• Why asset management is important to your utility.• The best practices in asset management.
Target Audience	<p>This guidance is intended for owners, managers, and operators of water, sewer, and stormwater systems, local officials, technical assistance providers and state personnel. The primary focus of this guidance is for Massachusetts’ water, sewer and stormwater systems, but this guidance may be applied to any utility.</p>

Asset Management
<p>Asset management is defined as achieving a desired level of service from your assets through maintenance at the lowest life cycle cost. Lowest life cycle cost refers to the best appropriate cost for rehabilitating, repairing or replacing an asset. Asset management includes three major categories of physical assets: land and buildings, equipment and consumable supplies and materials. Reliable utility service can be provided through an asset management program and typically includes a written asset management plan.</p>

Challenges faced by Utilities	Benefits of Asset Management
<ul style="list-style-type: none">• Determining the best (or optimal) time to rehabilitate/repair/replace aging assets.• Increasing demand for services.• Overcoming resistance to rate increases.• Lack of asset investment, deferred maintenance and insufficient resources.• Rising service expectations of customers.• Increasingly stringent regulatory requirements.• Responding to emergencies as a result of asset failures.• Aging asset infrastructure.• Need to build more “resilient” infrastructure that can mitigate potentially devastating effects of severe storms• Protecting assets.	<ul style="list-style-type: none">• Prolonging asset life and aiding in rehabilitate/repair/replacement decisions through efficient and focused operations and maintenance.• Meeting consumer demands with a focus on system sustainability.• Setting rates based on sound operational and financial planning.• Budgeting focused on activities critical to sustained performance.• Accounting focused on providing operating and maintenance costs by asset.• Meeting service expectations and regulatory requirements.• Improving response to emergencies.• Improving security and safety of assets.

Implementing Asset Management: The Core Framework
<p>A good starting point for any size water system is the five core questions framework for asset management. This framework walks you through all of the major activities associated with asset management and can be implemented at the level of sophistication reasonable for a given system. These five core framework questions provide the foundation for many asset management best practices. Several asset management best practices are listed for each core question on the following pages.</p>

Flow Chart: The Five Core Elements of Asset Management



1. What is the current state of the system's assets?

The first step in managing assets is knowing their current state. The accounting officer should have an inventory of fixed assets which generally consists of land, buildings, improvements to buildings, machinery and equipment, vehicles, pipes, pump stations, wells, appurtenances, and/or infrastructure consistent with a capitalization policy. A capitalization policy is used to set a threshold, above which qualifying expenditures are recorded as fixed assets, and below which assets are charged as expenditures. There should be a capitalization policies for fixed assets and for infrastructure¹.

The fixed assets inventory should identify the asset description, the asset location, the original cost, the useful life, the accumulated depreciation and the net book value. The net book value is the original cost less accumulated depreciation. The fixed assets inventory may or may not contain the asset condition and typically does not include replacement costs.

The fixed assets accounting system may include capital budgeting, depreciation, impairment, and disposal and includes other areas of interest to the accounting officer, including the record keeping, operating and maintenance line item accounting, controls, policies and procedures, measurements, asset tracking, and auditing procedures related to fixed assets.

Over time, as assets are rehabilitated, repaired or replaced, the inventory will be updated. An asset management plan is not a static report but a live inventory best housed in a database that is updated when new information is available.

You should ask:

- What do I own?
- Where is it?
- What is its condition?
- What is its useful life?
- What is its value?

Best practices include:

- Reviewing the asset inventory with the accounting officer.
- Preparing an asset inventory and system map.
- Adjusting the asset inventory with the accounting officer.
- Developing a condition assessment and rating system for each asset.
- Assessing remaining useful life by consulting projected-useful-life tables or decay curves.
- Determining asset values and repair/rehabilitating/replacement costs.

¹ See recommended policies in Appendix 1, Table 1 of the Department of Revenue's GASB 34 Implementation Guide, <http://www.mass.gov/dor/docs/dls/publ/misc/gasb-34.pdf>

2. What is my required “sustainable” service level for assets?

Knowing the required “sustainable” level of service will help implement an asset management program and communicate to stakeholders what is being done. Quality, quantity, reliability, and environmental standards are elements that can define level of service and associated system performance goals, both short- and long-term. Information about customer demand, data from utility commissions or boards, and information from other stakeholders should be used to develop the level of service requirements. Level of service requirements can be updated to account for changes due to growth, regulatory requirements, and technology improvements.

You should ask:

- What level of service do stakeholders and customers demand?
- What do the regulators require?
- What is the actual performance?
- What are the physical capabilities of assets?
- Which assets are critical to support current and planned programs?
- Does the organization have sufficient resources (people and systems) to plan and manage assets?

Best practices include:

- Understanding the current service level of each asset.
- Analyzing current and anticipated customer demand and satisfaction with the system.
- Understanding current and anticipated regulatory requirements.
- Deciding how critical each asset is and rank them accordingly.
- Writing and communicating to the public a level of service “agreement” that describes the system’s performance targets.
- Using level of service standards to track system performance over time.

3. Which assets are critical to sustained performance?

Because assets fail, how the consequences of failure are managed is vital. Not every asset presents the same failure risk, or is equally critical to the system's operations. Therefore, it is important to know which assets are required to sustain the system's performance. Critical assets are those that have a high risk of failing (old, poor condition, etc.) and major consequences if they do fail (major expense, system failure, safety concerns, etc.). You can decide how critical each asset is and rank them accordingly. Many water systems may have already accomplished this type of analysis in vulnerability assessments.

You should ask:

- How do assets fail?
- What are the likelihoods (probabilities) and consequences of asset failure?
- What does it cost to repair the asset?
- What are the other costs (social, environmental, etc.) that are associated with asset failure?

Best practices include:

- Listing assets according to how critical they are to system operations and what can run to failure?
- Conducting a failure analysis (root cause analysis, failure mode analysis).
- Determining the probability of failure and listing assets by failure type.
- Analyzing failure risk and consequences.
- Using asset decay curves.
- Reviewing and updating the system's vulnerability assessment (if one is available).
- Developing an inventory of commonly used parts and equipment.

4. What are my minimum life cycle costs?

Operations and maintenance (O&M), personnel, and the capital budget account for an estimated 85% 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.

The accounting system will provide asset operations and maintenance costs typically by line item account, not by asset. For example, the accounting system will typically detail costs for electricity, repairs, and the like, but not by each asset. You should work with the accounting officer to establish a system that will record or allocate costs by asset. In that manner, the current costs to operate and maintain each of your asset can be identified.

You should work with your accounting officer to identify a replacement plan for each asset, especially for critical assets. Each asset has a useful life. The fixed assets system will provide the information to determine the assets' service date (the date the asset became serviceable), the number of years of use, and the remaining useful lives of the assets. Based on that information, a replacement plan to replace each asset needs to be developed.

You want to optimize the work O&M crews are doing, where they are doing it, and why. An asset management program helps make risk-based decisions by choosing the right project, at the right time, for the right reason.

You should ask:

- What are the asset maintenance costs, both reactive and predictive?
- What alternative strategies exist for managing O&M, personnel, and capital budget accounts?
- What strategies are the most feasible for my organization?
- What are the costs of rehabilitation, repair, and replacement for critical assets?

Best practices include:

- Moving from reactive maintenance to predictive maintenance.
- Knowing the costs and benefits of rehabilitation versus replacement.
- Looking at lifecycle costs, especially for critical assets.
- Deploying resources based on asset conditions.
- Analyzing the causes of asset failure to develop specific response plans.

5. What is my best long-term funding strategy?

Based on the minimum life cycle costs, you should work with the accounting officer to develop a long-term capital improvement plan and budget. Capital improvement plans and budgets typically cover a five, ten or twenty years. The capital improvement plan should be based on replacing existing assets based on their useful lives. The capital improvement budget should be based on replacement costs or major repair / rehabilitation costs.

The long-term funding strategy should be based on the extent to which reserves have been established for capital replacements and the ability to finance capital replacements through capital outlay and / or borrowings. You should work with the accounting officer to determine the extent to which capital replacements can be financed from capital reserves, capital outlay or borrowings.

Sound financial decisions and developing an effective long-term funding strategy are critical to the implementation of an asset management program. Knowing the full economic costs and revenues generated by the system will enable you to determine the system's financial forecast. The system's financial forecast can then help you decide what changes need to be made to the system's long-term funding strategy.

You should ask:

- What are our capital reserves?
- How much are we funding annually for capital outlay?
- What are our debt service obligations?
- What are our debt service retirements?
- 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?

Best practices include:

- Revising the rate structure and / or raising rates.
- Funding dedicated reserves from current revenues (i.e., creating and using capital and other reserve funds).
- Financing asset rehabilitation, repair, and replacement through borrowings or other financing sources.
- Spacing or phasing capital replacements over time to match your funding schedule.

Implementing asset management: Follow-up and continuing steps

The five core questions framework for asset management is the starting point for asset management. Beyond planning, asset management should be implemented to achieve continual improvements through a series of "plan, do, check, act" steps.

- Plan: Five core questions framework (short-term), revise asset management plan (long-term).
- Do: Implement asset management program.
- Check: Evaluate progress, changing factors and new best practices.
- Act: Take action based on review results.

What can I do if my utility is not staffed to manage this functions, what skill sets do I need to look for in asset management consultant? Is there off the shelf software? Etc.