



Management Practices in Wastewater, Drinking Water, and Stormwater Utilities – An Overview

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Asset Management Definitions

Asset Management: An integrated set of processes to minimize the life-cycle costs of infrastructure assets, at an acceptable level of risk, while continuously delivering established levels of service.

Implementing Asset Management: A Practical Guide

Asset Management: The systematic and coordinated activities of an organization to optimally and sustainably deliver on its objectives through the cost-effective lifecycle management of assets.

International Infrastructure Management Manual

Asset Management: The coordinated activities that an organization uses to realize value from assets in the delivery of its outcomes and objectives. Realization of value requires the achievement of a balance of costs, risks and benefits, often over different timescales.

Asset management can only be effective in the context of the organizational objectives and when considering the operating environment of the organization.

ISO 55000 (2013 Ratified Standard)

159G-20. Definitions.

The following definitions apply in this Chapter:

(1) Asset management plan. - The strategic and systematic application of management practices applied to the infrastructure assets of a local government unit in order to minimize the total costs of acquiring, operating, maintaining, improving, and replacing the assets while at the same time maximizing the efficiency, reliability, and value of the assets.

Some key elements of Asset Management

- Strategic Plan
- Service Levels
- Risk Management
- Life Cycle Analysis
- CIP Prioritization
- Renewal & Replacement Forecasts
- Triple Bottom Line
- Data and Data Systems
- Role Clarification
- Succession Planning
- Training and Retention
- Business Cases
- Decision Support Systems
- Performance Measurement
- Benchmarking



Effective Utility Management – The 10 Attributes

Product Quality

1. Product quality regulatory compliance
2. Product quality service delivery

Customer Satisfaction

1. Customer complaints
2. Customer service delivery
3. Customer satisfaction

Employee and Leadership Development

1. Employee retention and satisfaction
2. Management of core competencies
3. Workforce succession preparedness

Operational Optimization

1. Resource optimization
2. Water management efficiency

Financial Viability

1. Budget management effectiveness
2. Financial procedure integrity
3. Bond ratings
4. Rate adequacy

Infrastructure Stability

1. Asset inventory
2. Asset (system) renewal/replacement
3. Water distribution/collection system integrity
4. Planned maintenance

Operational Resiliency

1. Recordable incidents of injury or illnesses
2. Insurance claims
3. Risk assessment and response preparedness
4. Ongoing operational resiliency
5. Operational resiliency under emergency conditions

Community Sustainability

1. Watershed-based infrastructure planning
2. Green infrastructure
3. Greenhouse gas emissions
4. Service affordability

Water Resource Adequacy

1. Water supply adequacy
2. Supply and demand management

Stakeholder Understanding and Support

1. Stakeholder consultation
2. Stakeholder satisfaction
3. Internal benefits from stakeholder input
4. Comparative rate rank
5. Media/press coverage



5 Keys to Management Success

1. Leadership
2. Strategic Business Planning
3. Organizational Approaches
4. Measurement
5. Continual Business Improvement Framework



EUM Self-Assessment Tool

- The Self-Assessment Tool includes Practice Areas for each of the 10 EUM Attributes as well as key metrics to measure performance for each of those practices.
- The Tool enables utilities to select and weigh their relevant attributes and practices, and then assess those practices for both current and target performance.
- This guide explains the steps necessary to use the tool and leverage its capabilities.
- For additional information on Effective Utility Management, please visit <http://watereum.org/>

Step 1

Candidly Assess
Current
Conditions

Step 2

Rank Importance of
Each Attribute to
Your Utility

Step 3

Graph Attributes
to Determine
Importance and
Level of
Achievement

Step 4

Choose Attributes

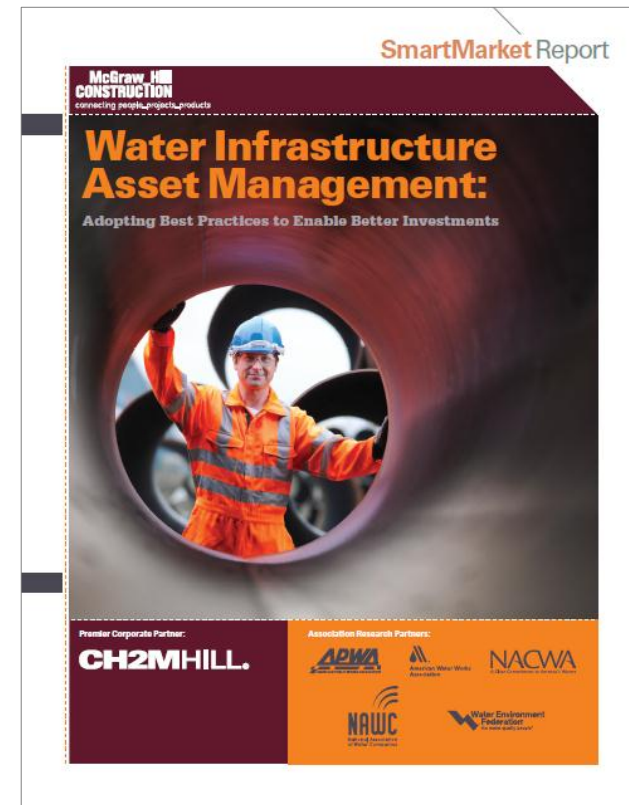
Step 5

Develop and
Implement an
Improvement Plan

Practically Speaking....

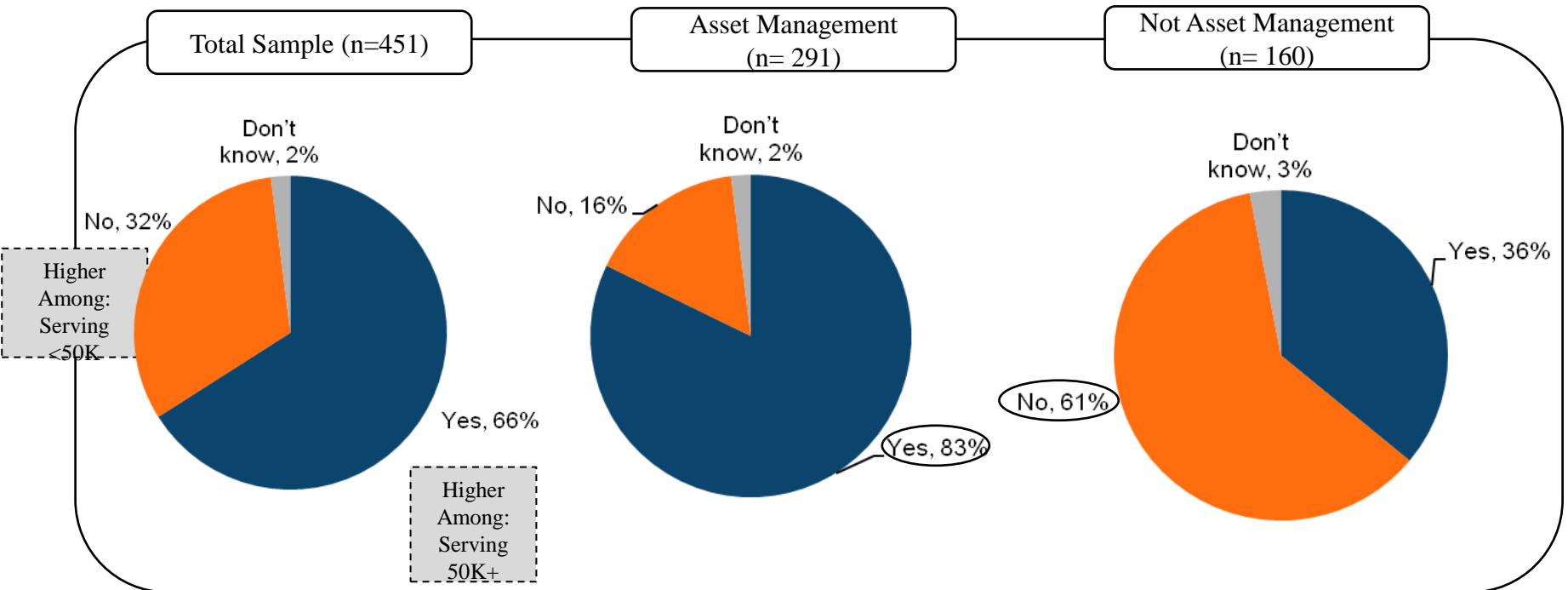
What Are Utilities Really Doing?

- McGraw-Hill Construction conducted the 2012 Water Utility Asset Management Study to explore trends in U.S. and Canadian asset management, including:
 - Strategies for asset maintenance, repair, and replacement
 - Asset management practices undertaken or planning to undertake
 - Decision process to initiate asset management
 - Key criteria and influencers for implementing asset management
 - Drivers of and obstacles to engaging in asset management
 - Methods for evaluating asset management achievements
 - Metrics
- Released at 2013 Utility Management Conference



Self-assessment on having an Asset Management Program

- **Two-thirds of utilities report that they have developed** a water/wastewater asset management program within the past two decades.
- A sizeable minority of those we assessed in our analysis as not doing asset management (defined as having undertaken fewer than four practices*) perceive that they are doing so
- A smaller though still sturdy proportion of those we define asset managers think they are not so engaged.



B1w/ww. Has your organization developed and implemented an asset management program for your water /wastewater infrastructure within the past twenty years?

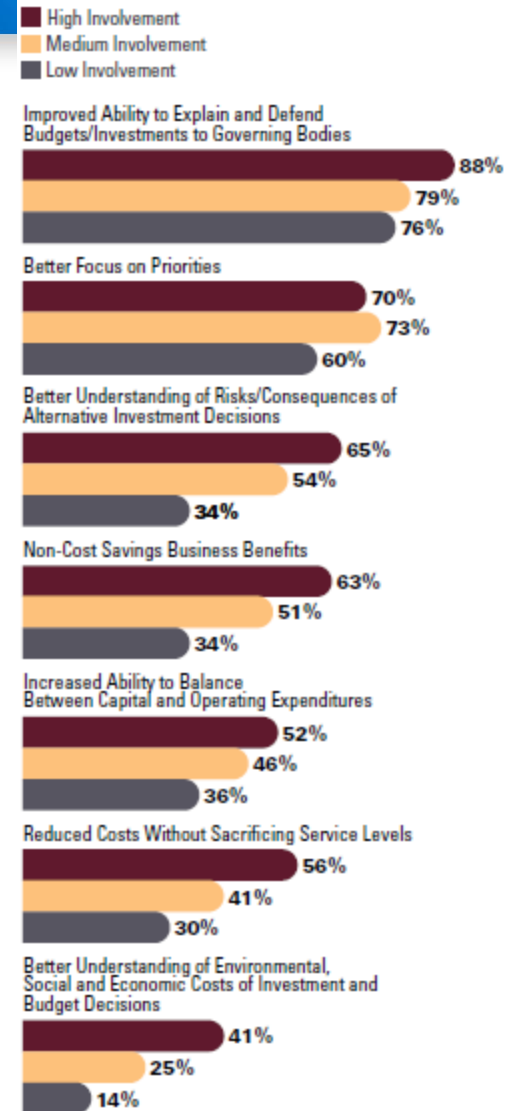
Top Benefits for Asset Management

- 75% to 90% of practitioners cited **“Improved Ability to Explain and Defend Budget/Investments to Governing Bodies”**
- 60 to 70% of practitioners cited **“Better Focus on Priorities”**
- 50% or more of mid-level and high-level practitioners cited:
 - Better understanding of risk & consequences of alternative investment decisions
 - Non-cost saving business benefits
 - Increased ability to balance between capital and operating expenditures

Top Seven Benefits From Asset Management Approach

(According to Practitioners By Position on the Asset Management Spectrum of Use)

Source: McGraw-Hill Construction, 2013



Top 14 Current Practices

- Variation by Region
 - Less in Midwest
 - More in East and South
- Variation by Water vs. Wastewater
 - No statistical difference
- Variation by Size (population)
 - Population 50,000 or less
 - Average of four practices
 - Population of 50,000 to 100,000
 - Average of six practices
 - Population of more than 500,000
 - Average of seven practices

Asset Management Practices Currently in Use

Source: McGraw-Hill Construction, 2013

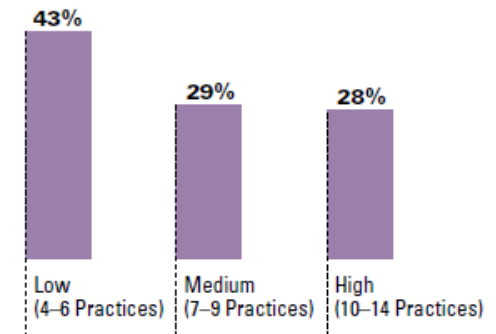


Asset Management “Practitioners”

- 65% of survey participants are using 4 or more asset management practices
 - These are designated as asset management practitioners in the report
- Varying levels of intensity between the asset management practitioners
 - Low-level practitioners need greater intensity of existing practices and more practices
 - High-level practitioners self-reported a need to do better. High level practitioners accounted for 28% of the designated asset management practitioners, or about 18% of the survey respondents as a whole.

Asset Management Spectrum
(Among Asset Management Practitioners)

Source: McGraw-Hill Construction, 2013



We can gather data.....

- 3 of 14 asset management practices help utilities gather and report data
- These three rank in the overall top 5 of implemented practices
 - CMMS ranked #1
 - Condition Assessment for R&R ranked #2
- Use of asset registers was least understood as a tool
 - 12% of practitioners and 22% of non-practitioners were unsure of definition and potential use

Current and Future Use of Asset Management Practices: Data and Technology Practices to Support Programs

Source: McGraw-Hill Construction, 2013

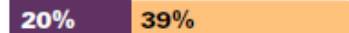
■ Already Implemented ■ Plan to Implement by 2017

Computerized Maintenance Management System

Asset Management Practitioners



Non-Asset Management Practitioners

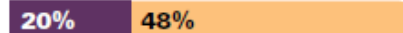


Asset-Condition Assessment for Renewal/Replacement Planning

Asset Management Practitioners



Non-Asset Management Practitioners

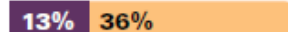


Asset Register to Facilitate Analysis and Planning

Asset Management Practitioners



Non-Asset Management Practitioners



Processes and Methods

- 5 of 14 asset management practices relate to processes and methods to make sound investment decisions
- Since financial benefits and ability to explain financial investments to stakeholders are key outcomes, it is not surprising that the use of 4 of the 5 is already high among practitioners
- Non-practitioners as a whole do not understand the benefit
- While many of the high-level practitioners really get it, overall these 5 practices are still used by less than 50% of all utilities

Current and Future Use of Asset Management Practices: Processes and Methods for Sound Investment Decisions

Source: McGraw-Hill Construction, 2013

■ Already Implemented ■ Plan to Implement by 2017

Staff Training and Development on Asset Management

Asset Management Practitioners

60% 23%

Non-Asset Management Practitioners

8% 45%

Optimization of the Balance Between Operations and Maintenance (O&M) and Capital Improvement Plan (CIP) Investments

Asset Management Practitioners

58% 22%

Non-Asset Management Practitioners

19% 31%

Business Cases for O&M and CIP Investments

Asset Management Practitioners

62% 17%

Non-Asset Management Practitioners

14% 29%

Consideration of Risks and Consequences of Alternative Investment/Budget Decisions

Asset Management Practitioners

55% 19%

Non-Asset Management Practitioners

11% 31%

Reliability-Centered Maintenance

Asset Management Practitioners

29% 23%

Non-Asset Management Practitioners

17% 3%

Strategy & Performance Measures

- 6 of 14 practices fall into this general category
- Practitioners as a whole are over 50% in having a Strategic Asset Management Plan, Developing and Monitoring Customer and Asset-Service Level Performance, and formal use of the Triple Bottom Line
- The industry as a whole self-reports less than 50% use of these tools

Current and Future Use of Asset Management Practices: Strategy and Performance Measurement Practices

Source: McGraw-Hill Construction, 2012

■ Already Implemented ■ Plan to Implement by 2017

Development of an Asset Management Policy

Asset Management Practitioners

46% 38%

Non-Asset Management Practitioners

5% 54%

Strategic Asset Management Plans

Asset Management Practitioners

54% 29%

Non-Asset Management Practitioners

7% 46%

Developing and Monitoring Customer Service and Asset Service-Level Performance Measures

Asset Management Practitioners

50% 23%

Non-Asset Management Practitioners

11% 26%

Consideration of Environmental, Social and Economic Costs and Benefits

Asset Management Practitioners

55% 17%

Non-Asset Management Practitioners

9% 26%

Benchmarking and/or a Needs Assessment to Establish an Asset Management Implementation Plan

Asset Management Practitioners

45% 25%

Non-Asset Management Practitioners

5% 37%

Customer and Asset Service-Level Development

Asset Management Practitioners

34% 27%

Non-Asset Management Practitioners

23%

3%

Continuing and Emerging Trends - 2014

Current and Emerging Trends

- **New Delivery Platforms**
 - Public Private Partnerships (PPP; lease your utility)
 - Contract Operations (retain ownership; no “lease”)
 - Own and Optimize
- **Regionalization and Partnerships**
- **Focus on Core Asset Management Practices**
 - Detailed focus on O&M
 - IT/IS Consolidation – Fewer Systems is Better
 - Better understanding of risk, reliability, and redundancy
 - Resiliency
- **Aging Workforce & fewer high school Graduates Going into Trades**
- **Stormwater as a growing topic**
 - Building backlog of new assets
 - Funding and bonding related questions
 - More aggressive regulatory drivers

Discussion



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Water Infrastructure
Investment:
Investments