



PDHonline Course C320W (4 PDH)

Effective Water Utility Management (Live Webinar)

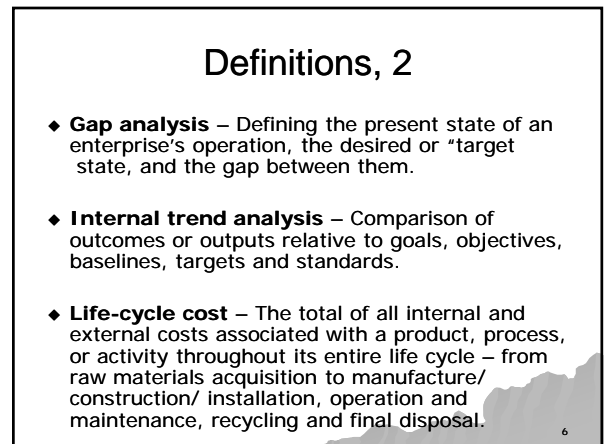
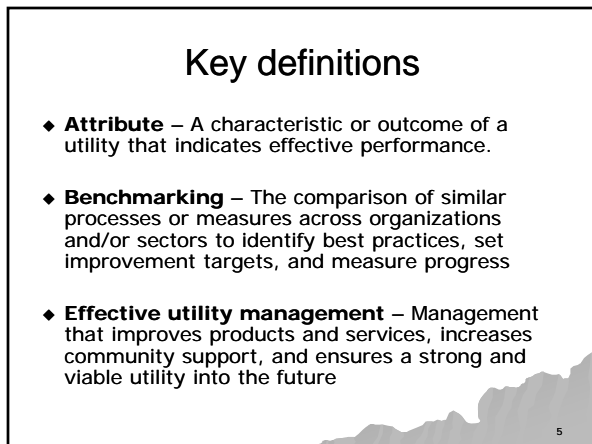
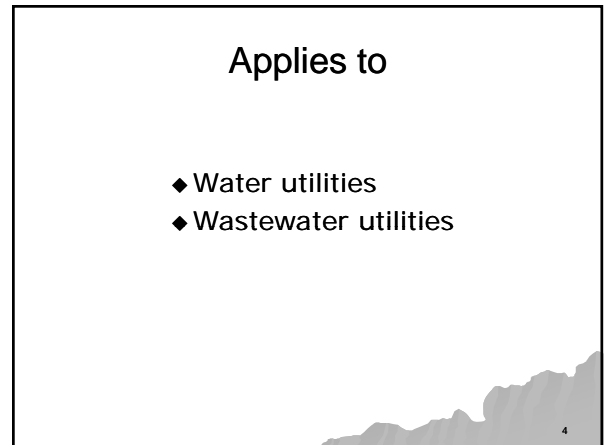
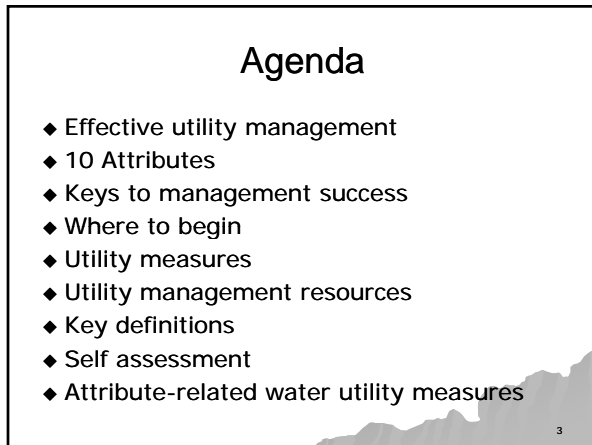
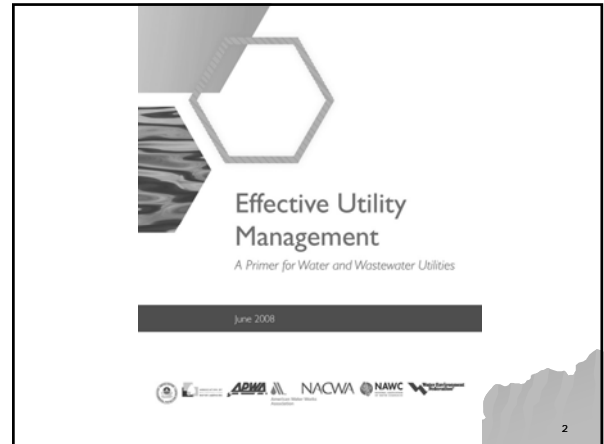
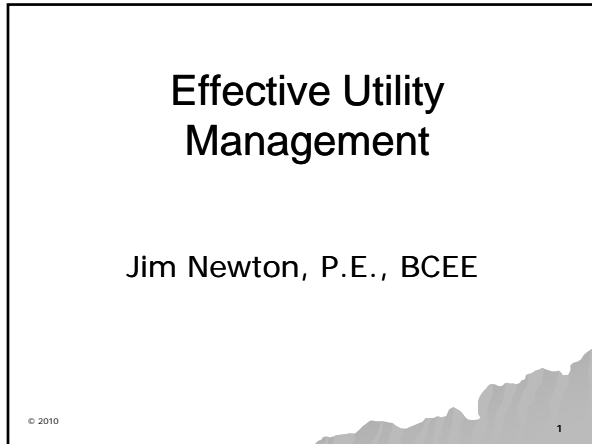
Instructor: Jim Newton, P.E., DEE

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PDH Online | PDH Center

5272 Meadow Estates Drive
Fairfax, VA 22030-6658
Phone: 703-988-0088
www.PDHonline.com

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Definitions, 3

- ◆ **Operations and maintenance expenditure** – Expenses used for day to day operation and maintenance of a facility.
- ◆ **Operating revenue** – Revenue realized from day to day operations of a utility.
- ◆ **Performance measurement** – Evaluation of current status and trends, can also include comparison of outcomes or outputs relative to goals, objectives, baselines, targets, standards and other organizations; performance or processes.

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Definitions, 4

- ◆ **Performance measure** – A particular value of characteristic designated to measure input, output, outcome, efficiency, or effectiveness,
- ◆ **Source water protection** – Efforts to prevent water quality degradation in streams, rivers, lakes, or underground aquifers used as public drinking water supplies
- ◆ **Standard operating procedures** – A prescribed procedure to be followed routinely, a set of instructions having the force of a directive, covering those features of operations that lend themselves to a definite or standardized procedure without loss of effectiveness.

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Definitions, 5

- ◆ **Strategic plan** – An organization's process of defining its goals and strategy for achieving those goals. Often entails identifying an organization's vision, goals, objectives, and targets over a multiyear period of time, as well as setting priorities and making decisions on allocating resources, including capital and people, to pursue the identified strategy.
- ◆ **Stewardship** – The careful and responsible management of something entrusted to a designated person or entity's care; the responsibility to properly utilize its resources, including its people, property, and financial and natural assets.

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Definitions, 6

- ◆ **Sustainability** – The use of natural, community and utility resources in a manner that satisfies current needs without compromising future needs or options.
- ◆ **Watershed health** – The ability of ecosystems to provide the functions needed by plants, wildlife, and humans, including the quality and quantity of land and aquatic resources.

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Common challenges

- ◆ Rising costs
- ◆ Aging infrastructure
- ◆ Increasingly stringent regulatory requirements
- ◆ Population changes
- ◆ Rapidly changing workforce
 - Aging
 - Salaries

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Effective utility management can

- ◆ Enhance the stewardship of their infrastructure
- ◆ Improve performance in many critical areas
- ◆ Respond to current and future challenges
- ◆ Require collaboration between government, industry, elected officials, and other stakeholders

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Collaborating agencies

- ◆ US EPA
- ◆ Association of Metropolitan Water Agencies (AMWA)
- ◆ American Public Works Association (APWA)
- ◆ American Water Works Association (AWWA)
- ◆ National Association of Clean Water Agencies (NACWA)
- ◆ National Association of Water Agencies (NAWC)
- ◆ Water Environment Federation (WEF)

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Primer components

- ◆ The 10 attributes of effectively managed water sector utilities (attributes)
 - Clear set of reference points
 - Intended to help utilities maintain a balanced focus on all important operational areas
- ◆ Keys to management success
 - Help maximize their resources
 - Help to improve performance
- ◆ Where to begin – a self-assessment tool
 - Helps utility managers identify where to begin
- ◆ Provides a set of sample measures to help gauge performance and assess improvement

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How to use the primer

- ◆ Educate utility staff and stakeholders regarding the range of responsibilities faced
- ◆ Provide a framework for a utility's strategic planning efforts
- ◆ Integrate the attributes with existing strategic, business and/or asset management plans
- ◆ Provide guidelines and tools that are relevant to any utility

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TEN ATTRIBUTES OF EFFECTIVELY MANAGED WATER SECTOR UTILITIES

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Attributes

- ◆ Provide useful and concise reference points to seek to improve organization-wide performance
- ◆ Describe outcomes that are applicable to all water and wastewater utilities
- ◆ Comprise a comprehensive framework related to
 - Operation,
 - Infrastructure,
 - Customer satisfaction
 - Community welfare
 - Natural resource stewardship
 - Financial performance

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Use attributes to

- ◆ Select priorities for improvement
 - Based on each organization's strategic objectives
 - Based on the needs of the community served
- ◆ Address more of the attributes will help a utility to
 - Deliver increasingly efficient service
 - Deliver high quality service

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10 Attributes

1. Product quality
2. Customer satisfaction
3. Employee and leadership development
4. Operational optimization
5. Financial viability

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Attributes continued

6. Infrastructure stability
7. Operational resiliency
8. Community sustainability
9. Water resource adequacy
10. Stakeholder understanding and support

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1. Product quality

- ◆ Produce
 - Potable water
 - Treated effluent
 - Process residuals
- ◆ In full compliance with regulatory and reliability requirements
- ◆ Consistent with
 - Customer needs
 - Public health needs
 - Ecological needs

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2. Customer satisfaction

- ◆ Provide reliable, responsive and affordable services
- ◆ Meet explicit customer service needs
- ◆ Receives timely customer feedback in order to maintain responsiveness to customer needs and emergencies

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3. Employee and leadership development

- ◆ Recruits and retains a workforce that is
 - Competent
 - Motivated
 - Adaptive
 - Safe-working
- ◆ Establishes a participatory, collaborative organization dedicated to continual learning and improvement
- ◆ Ensures employee institutional knowledge is retained and improved upon over time

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3. Continued

- ◆ Provides a focus on and emphasizes opportunities for professional and leadership development
- ◆ Strives to create an integrated and well-coordinated senior leadership team

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4. Operational optimization

- ◆ Ensures ongoing timely, cost effective, reliable and sustainable performance improvements in all facets of its operations
- ◆ Minimizes resource use, loss, and impacts from day to day operations
- ◆ Maintains awareness of information and operational technology developments in order to anticipate and support timely adoption of improvements

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5. Financial viability

- ◆ Understands the life cycle costs of the utility and establishes and maintains an effective balance between long term debt, asset values, operations and maintenance expenditures and operating revenues
- ◆ Establishes predictable rates that are consistent with community expectations and acceptability
- ◆ Rates are adequate to cover costs, provide for reserves, maintain support from bond rating agencies, and plan and invest for future needs

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6. Infrastructure stability

- ◆ Understands the condition of and costs associated with critical infrastructure needs
- ◆ Maintains and enhances the condition of assets over the long term at the lowest life cycle costs
- ◆ Assets should be consistent with customer, community and regulatory supported service level

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6. Continued

- ◆ Assets should be consistent with anticipated growth and system reliability goals
- ◆ Assures asset repair, rehabilitation and replacement efforts are coordinated with the community in order to minimize disruptions and other negative consequences

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7. Operational resiliency

- ◆ Ensures utility leadership and staff work together to anticipate and avoid problems
- ◆ Proactively identifies, assesses, establishes tolerance levels for and effectively manages a full range of business risks

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7. Continued

- ◆ Business risks include
 - Legal
 - Regulatory
 - Financial
 - Environmental
 - Safety
 - Security
 - Natural disaster related
- ◆ Handles risks in a proactive way that is consistent with industry trends and system reliability goals

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8. Community sustainability

- ◆ Explicitly cognizant of and attentive to the impacts its decisions have on current and long term future community and watershed health and welfare
- ◆ Manages operations, infrastructure and investments to protect, restore and enhance the natural environment.

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8. Continued

- ◆ Efficiently uses water and energy resources
- ◆ Promotes economic vitality and overall community improvement
- ◆ Explicitly considers a variety of pollution prevention, watershed and source water protection approaches as a part of an overall strategy to maintain and enhance ecological and community sustainability

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9. Water resource adequacy

- ◆ Ensures water availability consistent with current and future customer needs through long term resource supply and demand analysis, water conservation and public education
- ◆ Explicitly considers its role in water availability and manages operations to provide for long term aquifer and surface water sustainability and replenishment

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10. Stakeholder understanding and support

- ◆ Engenders understanding and support from oversight bodies, community and watershed interests, and regulatory bodies for:
 - Service levels
 - Rate structures
 - Operating budgets
 - Capital improvement programs
 - Risk management decisions
- ◆ Actively involves stakeholders in the decisions that affect them

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KEYS TO MANAGEMENT SUCCESS

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Keys

1. Leadership
2. Strategic business planning
3. Organizational approaches
4. Measurement
5. Continual improvement programs

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1. Leadership

- ◆ Critical to effective utility management
- ◆ Refers to both
 - Individuals who can be effective champions for improvement
 - Teams that provide resilient daily management continuity and direction
- ◆ Effective leadership ensures that throughout the management cycle, the utility's direction is:
 - Understood
 - Embraced
 - Followed

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1. Continued

- ◆ Leadership communicates with the utility's stakeholders and customers
- ◆ Leadership reflects a commitment to organizational excellence
- ◆ Leadership leads by example to establish and reinforce an organizational culture that embraces positive change and strives for continual improvement
- ◆ Organizational improvement efforts require commitment from the utility's leadership

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2. Strategic business planning

- ◆ Important tool for achieving balance and cohesion across the 10 attributes
- ◆ A strategic plan
 - Assesses current conditions, strengths and weaknesses
 - Assesses underlying causes and effects
 - Establishes vision, objectives and strategies

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2. Continued

- ◆ It establishes specific implementation steps that will move a utility from its currently level of performance to achieving its vision
- ◆ After the plan is developed, the utility should integrate tracking of progress with respect to the plan into its management framework

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Preparing a strategic business plan

- ◆ Involves taking a long term view of utility goals and operations
- ◆ Establishes a clear vision and mission
- ◆ Will drive and guide utility objectives, measurement efforts, investments, and operations
- ◆ Help explain the utility's conditions, goals, and plans to staff and stakeholders, stimulate change and increase engagement in improvement efforts

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3. Organizational approaches

- ◆ Actively engaging employees in improvement efforts
 - Helping to identify improvement opportunities
 - Participating in cross-functional teams
- ◆ Deploying an explicit change management process that anticipates and plans for change and encourages staff at all levels to embrace change
- ◆ Utilizing implementation strategies that seek, identify and celebrate early, step by step victories

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4. Measurement

- ◆ Critical to management improvement efforts
- ◆ Backbone of a successful continual improvement management and strategic business planning
- ◆ Serves many purposes
 - Focusing attention on key issues
 - Clarifying expectations
 - Facilitating decision making
 - Learning and improving

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Successful measurement efforts

- ◆ Viewed as:
 - A continuum starting with basic internal tracking,
 - Moving sophisticated baselining and trend analysis,
 - Development of key performance indicators, and
 - Inclusion of externally oriented measures which address community sustainability interests

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Successful measurement 2

- ◆ Driven by and focused on answering questions critical to effective internal management and external stakeholder needs
 - Information needed to allow governing bodies to comfortably support large capital investments
- ◆ Supported by a well defined decision framework assuring results are evaluated, communicated, and responded to in a timely manner

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Measurements

- ◆ Deciding where to start and what to measure can be challenging
- ◆ Measures can also be taken out of context
- ◆ Measurement is important in the self-improvement process, but not the only tool
- ◆ Should be
 - Approached
 - Structured
 - Used thoughtfully

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5. Continual improvement management framework

- ◆ Implemented through a complete, start to finish management system
- ◆ Follows the Plan-Do-Check-Act (PDCA) framework
- ◆ PDCA framework is critical to making progress on the attributes and central role in effective utility management

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Continual improvement includes

1. Conducting an honest and comprehensive self-assessment to identify management strengths, areas for improvement, priority needs
2. Conducting frequent sessions among interested parties to identify improvement opportunities
3. Following up on improvement projects underway

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Continual improvement 2

4. Establishing and implementing performance measures and specific internal targets associated with those measures
5. Defining and implementing related operational requirements, practices and procedures
6. Establishing supporting roles and responsibilities

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Continual improvement 3

7. Implementing measurement activities such as regular evaluation through operational and procedural audits
8. Responding to evaluations through the use of an explicit change management process

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PDCA framework

- ◆ Quite effective when applied internally
- ◆ Enhanced by
 - Using gap analysis
 - Establishing SOP's
 - Using internal trend analysis
 - Using external benchmarking
 - Using best practice review
 - Using other improvement tools

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PDCA framework 2

- ◆ Can help utilities
 - Understand improvement opportunities
 - Establish explicit service levels
 - Guide investment and operational decisions
 - Form the basis for ongoing measurement
 - Provide the ability to communicate clearly with customers and key stakeholders

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WHERE TO BEGIN

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Steps

1. Candidly assess current conditions
2. Rank importance of each attribute to your utility
3. Graph attributes to determine importance and level of achievement
4. Choose attributes
5. Develop and implement an improvement plan

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Introduction

- ◆ Look for ways to improve
 - Start small and make improvements step by step
 - Work on projects that will yield early successes
 - Take several ambitious change efforts simultaneously
 - Enhance strengths
 - Focus on addressing weaknesses
 - Determine for itself the important issues to address based on strategic objectives, priorities, and community needs

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1. Assess current conditions

- ◆ Use a 1-5 scale to assess current conditions
- ◆ Rate your systems and approaches and current level of achievement against each attribute
- ◆ Consider the degree your utility's current management systems effectively supports each attribute
- ◆ Consider all components of each attribute

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Scale

Rating	Description
1	Effective, systematic approach and implementation ; consistently achieve goals.
2	Workable systems in place; mostly achieve goals.
3	Partial systems in place with moderate achievement, but could improve
4	Occasionally address this when specific need arises.
5	No system for addressing this.

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Step 2: Rank the importance of attributes

- ◆ Rank each of the 10 attributes based on the utility's
 - Vision
 - Goals
 - Specific needs
- ◆ Ranking should reflect the interests and considerations of all stakeholders
 - Managers
 - Staff
 - Customers
 - Regulators
 - Elected officials
 - Community
 - Watershed interests
 - Shareholders
 - Others

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Rankings

- ◆ Most important gets 1, least important a 10
- ◆ Importance could be influenced by:
 - Current or expected challenges in that area
 - Recent accomplishments in addressing these issues
 - Other issues
- ◆ Importance ranking likely to change over time

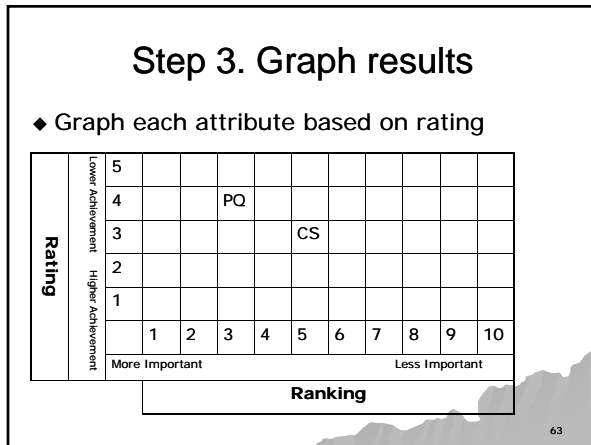
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Attribute	Component	Step 1, Rate Achievement (1-5)	Step 2, Ranking (1-10)
Product Quality (PC)	<ul style="list-style-type: none"> ◆Complies with regulatory and reliability requirements ◆Consistent with customer, public health and ecological needs 		
Customer Satisfaction (CS)	<ul style="list-style-type: none"> ◆Provides reliable, responsive, and affordable services ◆Receives timely customer feedback ◆Responsive to customer needs and emergencies 		
Employee Leadership Development (ED)	<ul style="list-style-type: none"> ◆Recruits and retains competent workforce ◆Collaborative organization dedicated to continual learning and improvement ◆Employee institutional knowledge retained and improved ◆Opportunities for professional and leadership development ◆Integrated and well-coordinated senior leadership team 		
Operational Optimization (OO)	<ul style="list-style-type: none"> ◆Ongoing performance improvements ◆Minimizes resource use and loss from day-to-day operations ◆Awareness and timely adoption of operational and technology improvements 		

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Attribute	Component	Step 1, Rate Achievement (1-5)	Step 2, Ranking (1-10)
Financial Viability (FV)	<ul style="list-style-type: none"> Understands full life-cycle cost of utility Effective balance between long term debt, asset values, O&M expenditures, and operating revenues Predictable and adequate rates 		
Infrastructure Stability (IS)	<ul style="list-style-type: none"> Understanding the condition and costs associated with critical infrastructure assets Maintains and enhances assets over the long term at the lowest possible life cycle cost and acceptable risk Repair efforts are coordinated within the community to minimize disruptions 		
Operational Resiliency (OR)	<ul style="list-style-type: none"> Staff work together to anticipate and avoid problems Proactively establishes tolerance levels and effectively manages risks 		
Community Sustainability (CS)	<ul style="list-style-type: none"> Attentive to impacts on community and watershed health and welfare Operations enhance natural environment Efficiently uses water and energy resources; promote economic vitality; and engenders overall community improvement Maintains and enhances ecological and community sustainability, including pollution prevention, watershed and source water protection 		

Attribute	Component	Step 1, Rate Achievement (1-5)	Step 2, Ranking (1-10)
Water Resource Adequacy (WRA)	<ul style="list-style-type: none"> Ensures water availability through long term resource supply and demand analysis, conservation, and public education Manages operations to provide for long term aquifer and surface water sustainability and replenishment 		
Stakeholder Understanding and Support (SS)	<ul style="list-style-type: none"> Engenders understanding and support from oversight bodies, community and watershed interests, and regulatory bodies for service levels, rate structures, operating budgets, capital improvement programs, and risk management decisions Actively involves stakeholders in the decisions that will affect them 		



- ### Step 4. Choose attributes
- ◆ Goal is to establish high achieving systems and approaches for each attribute
 - ◆ Strive to improve performance for all attributes
 - ◆ May focus on one or a few attributes at a time
 - ◆ Candidates for improvement would be those attributes that are both very important and underdeveloped

- ### Look at graph
- ◆ Candidates that score in lower left hand quadrants are both important and well developed; may focus on these due to their long term importance
 - ◆ Examining lower left hand quadrant attributes may help utilities identify success factors helpful in addressing areas needing improvement
 - ◆ May want to focus on attributes that could lead to early successes in order to build confidence in effecting change

- ### Improvements
- ◆ Choice to embark is up to the utility managers
 - ◆ May involve consideration of:
 - Resources
 - ◆ Staff
 - ◆ Financial
 - Leadership support
 - Other competing activities
 - ◆ Apply keys to management success to move attributes over towards the well developed quadrants, specifically:
 - Strategic business planning
 - Measurement

Step 5. Develop/Implement an improvement plan

- ◆ Effective improvement plans include:
 - A gap analysis to identify root causes of underperformance
 - Development of a utility specific plan and/or strategy to achieve performance goals and address the root causes
 - Specific tasks, tactics or management adjustments necessary to implement the utility's strategy
 - Utility specific measure to track progress toward achievement of goals
 - A timeframe for follow up measurements to assess the degree of accomplishment and potential need for additional effort.

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Improvement plans

- ◆ Useful to appoint an overall improvement manager to oversee individual projects
- ◆ Developed and implemented within
 - Strategic business planning
 - "PDCA" continual improvement framework
 - Other components of the Keys to Management Success

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UTILITY MEASURES

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Two approaches

- ◆ Internal performance measurement
 - Focus of Primer
 - Evaluating current internal utility performance and trends
 - Comparison of outcomes or outputs to goals, objectives, baseline status, targets and standards
- ◆ Benchmarking
 - Not focus of Primer
 - Comparison of similar measures or processes across different organizations to:
 - ◆ Identify best practices
 - ◆ Set improvement targets
 - ◆ Measure progress within or across sectors

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Measurement guidelines

1. Select measures that support the organization's strategic objectives, mission and vision and the 10 attributes
2. Select the right number, level and type of measures for your organization
 - Consider how measures can be integrated into a cohesive group
 - Consider measures that can be used by different audiences within the organization

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Guidelines, 2

3. Measuring performance will not necessarily require additional staff, but will require resources
 - Allocate adequate resources to get the effort off to a good start
 - Fine tune over time to balance the level of measurement effort with the benefit to the organization
4. Develop clear, consistent definitions for each measure.
 - Identify who is responsible for collecting the data
 - Identify how the data will be tracked and reported

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Guidelines, 3

- 5. Engage the organization at all levels in developing, tracking and reporting measures, but also assign someone in the organization the role of championing and coordinating the effort
- 6. Set targets rationally, based on criteria such as customer expectations, improvement over previous years, industry performance or other appropriate comparisons
 - Tie targets to improving performance in the attributes

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Guidelines, 4

- 7. Select and use measures in a positive way to:
 - Improve decision making
 - Clarify expectations
 - Focus attention
 - Not just to monitor, report and control
- 8. When selecting measures, consider how they relate to one another.
 - Look for cause and effect relationships
 - How improvements in product quality could result in increased customer satisfaction

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Guidelines, 5

- 9. Develop an effective process to evaluate and respond to results
 - Identify how, when and to whom to communicate results
- 10. Incorporate the "PDCA" approach into evaluating both the specific measures and the system as a whole
 - Regularly review the performance measurement system for opportunities to improve

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Attribute-related measures

- ◆ Measures provide a cohesive, approachable and generally applicable starting place relative to 10 attributes
- ◆ Choose and tailor the measure to own needs and unique, local circumstances
- ◆ Intended for internal use
- ◆ Measure are relevant to the attributes
- ◆ Measures have been tested and in use by utilities
- ◆ Measures supported by reference information
- ◆ Measures useful for implementation
- ◆ Measures can act as a good starting point for attribute-related progress assessment

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Measures

- ◆ Measures both qualitative and quantitative
- ◆ Quantitative measures include generally applicable example calculations
- ◆ Qualitative measures encourage active assessment of the management area and most have a yes/no format
- ◆ Measures focus on core utility operations
- ◆ Several measures reflect
 - Emerging utility issues
 - Challenges
 - Opportunities that have received increasing attention from a growing number of utility managers
- ◆ Other measures may reflect broader interests that are worthy of considerations from a broader community perspective

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Measures

- ◆ **Product Quality**
 1. Product quality regulatory compliance
 2. Product quality service delivery
- ◆ **Customer Satisfaction**
 1. Customer complaints
 2. Customer service delivery
 3. Customer satisfaction

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Measures, 2

- ◆ **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

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Measures, 3

- ◆ **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 and replacement
 3. Water distribution and collection system integrity
 4. Planned maintenance

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Measures, 4

- ◆ **Operational Resiliency**
 1. Recordable incidents of injury and illness
 2. Insurance claims
 3. Risk assessment and response preparedness
 4. Ongoing operational resiliency
 5. Operational resiliency under emergency conditions

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Measures, 5

- ◆ **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

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Measures, 6

- ◆ **Stakeholder Understanding and Support**
 1. Stakeholder consultation
 2. Stakeholder satisfaction
 3. Internal benefits from stakeholder input
 4. Comparative rate rank
 5. Media and press coverage

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Product quality measures

1. Regulatory compliance
 - ◆ SDWA
 - ◆ NPDES
 - ◆ State/local regs
- Quality scope types
 - ◆ Drinking water
 - ◆ Fire suppression
 - ◆ Treated effluent
 - ◆ Reused
 - ◆ Biosolids
 - ◆ Operating pressure
 - ◆ Sanitary sewer overflows

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PQ, 2

- Example measures
 - ◆ No. of days in full compliance
 - ◆ Percent of days of noncompliance
 - ◆ No. and frequency of compliance near misses
- 2. Quality service delivery
 - Assesses the delivery of product quality service based on utility established objectives and service level targets

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PQ,3

- Product service delivery example measures
 - ◆ Drinking water flow and pressure
 - ◆ Fire suppression water flow and pressure
 - ◆ Service interruptions
 - ◆ Water quality goals met/not met
 - ◆ Sewer backups
 - ◆ Sanitary sewer overflows
 - ◆ Water reuse (amount and percent)
 - ◆ Biosolids put to use (percent)

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Customer service measures

1. Customer complaints
 - Assesses the complaint rates experienced by the utility, with individual quantification of customer service and core utility service complaints
 - Passive measure and not likely to be numerically representative
 - May want to subcategorize complaints by type and aspect and type of customer
 - Examples
 - ◆ Customer service complaint rate
 - ◆ Technical quality complaint rate

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CS, 2

2. Customer service delivery
 - Require the utility to set desirable customer service levels then determine an appropriate percentage of time to meet the performance levels
 - Can track how often it meets the target levels to determine how well customer needs are being met
 - Can average across individual measures to determine an overall percentage of service level

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CS,3

- Example measures
 - ◆ Call responsiveness (percent)
 - ◆ Error-driven billing adjustment rate in percent
 - ◆ Service start/stop responsiveness
 - ◆ First call resolution
- 3. Customer satisfaction

Overall customer satisfaction level based on surveys

 - Can measure after service provision or periodically performed
 - After service surveys are the easiest, but tend to over measure the most satisfied
 - Comprehensive surveys can provide statistical validity
 - Examples
 - ◆ Overall customer satisfaction

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Employee and leadership development

1. Employee retention and satisfaction
 - Gauges a utility's progress towards developing and maintaining a competent and stable workforce
 - Example measures
 - ◆ Employee turnover rate
 - Voluntary turnover
 - Retirement turnover
 - Experience turnover
 - ◆ Employee job satisfaction
 - Compensation and benefits
 - Management
 - Professional development and long term achievement opportunities
 - Work and teamwork
 - Procedures
 - Fairness and respect
 - Communication

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ED,2

2. Management of core competencies

- Assesses the utility's investment in and progress towards strengthening and maintaining employee core competencies
- Example measures
 - ◆ Presence of job descriptions and performance expectancies
 - ◆ Training hours per employee
 - ◆ Certification coverage
 - ◆ Employee evaluation results
 - ◆ Presence of employee focused objectives and targets

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ED, 3

3. Workforce succession preparedness

- Assesses utility's long term workforce succession planning efforts to ensure critical skills and knowledge are retained and enhances over time
- Focus in on preparing entire groups or cohorts for needed workforce succession, including continued training and leadership development
- Examples
 - ◆ Key position vacancies
 - ◆ Key position internal/external recruitment
 - ◆ Long term succession plan coverage

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Operational optimization

1. Resource optimization

- Examines resource use efficiency including labor and material per unit of output or mile of collection/distribution system; might be based on the volume of water delivered or processed
- Example measures
 - ◆ Customer accounts per employee
 - ◆ MGD water delivered or processed per employee
 - ◆ Chemical use per volume delivered or processed
 - ◆ Energy use per volume delivered or processed
 - ◆ O&M cost per volume delivered or processed

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OO, 2

2. Water management efficiency

- Assesses drinking water production and delivery efficiency by considering resources as they enter and exit the utility system
- Example measures
 - ◆ Production efficiency
 - ◆ Distribution system water loss
 - ◆ Meter function

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Financial viability

1. Budget management effectiveness

- Short term evaluation uses commonly used financial performance indicators
- Long term evaluation is a comprehensive approach to assess budget health over several decades
- Example measures
 - ◆ Revenue to expenditure ratio
 - ◆ O&M expenditures as a percent
 - ◆ Capital expenditures as a percent
 - ◆ Debt ratio
 - ◆ Life cycle cost accounting

95

FV, 2

2. Financial procedure integrity

- Gauge the presence of internal utility processes to ensure a high level of financial management integrity
- Example measures
 - ◆ Existence of financial accounting policies and procedures
 - ◆ Annual auditing of financial results and internal controls
 - ◆ Reduction of the number of control deficiencies and material weaknesses

96

FV, 3

3. Bond ratings

- General indicator of financial viability
- Not always within the control of a utility
- Not important if the utility does not participate in the capital market
- Smaller utilities often struggle to obtain a high rating
- Higher bond rating is often desirable, but should not be considered alone
- Example measures
 - ◆ Note any recent changes in rating
 - ◆ Reasons for any ratings changes

97

FV,4

4. Rate adequacy

- Helps the utility consider its rates relative to factors such as
 - ◆ External economic trends
 - ◆ Short term financial management
 - ◆ Long term financial health
- Recognizes that each utility is unique and a "one size fits all" measure is not possible or desirable

98

FV,5

- Example questions/asures

- ◆ How do rate changes compare currently and over time with the inflation rate and CPI?
- ◆ Has the utility established rates that fully consider the life cycle cost of service and capital funding options?
- ◆ Does the utility maintain a rate stabilization reserve to sustain operations during cycles of revenue fluctuations

99

Infrastructure stability

1. Asset inventory

- Gauges the utility's efforts to assess assets and asset conditions towards building a comprehensive asset management program
- Example measures
 - ◆ Inventory coverage in percent looking at
 - Age/location
 - Asset size and/or capacity
 - Valuation data
 - Installation date and expected service life
 - Maintenance and performance history
 - Construction materials and recommended maintenance practices
 - ◆ Condition assessment coverage in percent

100

IS, 2

2. Asset system renewal and replacement

- Assesses asset renewal and replacement rates over time
- Should reflect the utility's targets
- Usually factor in internally agreed upon risks and objectives
- Example measures
 - ◆ Asset renewal/replacement rate (total number of assets replaced per year)
 - ◆ Asset system renewal/replacement rate (total actual renewal/replacement expenditures)

101

IS, 3

3. Water distribution/collection system integrity

- For drinking water this quantifies the number of pipeline breaks and leaks
- Important for health, customer service, operational and asset management reasons
- For wastewater examines the frequency of collection system failures
- Tracked over time can be used to determine if failure rate is decreasing, stable or increasing

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IS, 4

- Should characterize data by:
 - ◆ Pipe type
 - ◆ Pipe age
 - ◆ Type of failure
 - ◆ Cost of repairs
- Example measures
 - ◆ Leakage and breakage frequency rate
 - ◆ Collection system failure rate

103

IS, 5

4. Planned maintenance
 - Includes both preventive and predictive
 - Preventive is performed based on a predetermined schedule
 - Predictive is when defined signs indicate that maintenance is due
 - Measure in either costs or hours, costs are preferable for business decisions
 - Hours are less variable than costs
 - Example measures
 - ◆ Planned maintenance ratio by hours in percent
 - ◆ Planned maintenance ratio by cost in percent

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Operational resiliency

1. Recordable incidents of injury or illness
 - Helps determine problem areas and progress in preventing work related injuries and illnesses
 - Example measures
 - ◆ Total recordable incident rate
2. Insurance claims
 - Examines the number, type and severity of insurance claims in order to understand insurance coverage strength and vulnerability
 - Example measures
 - ◆ Number of insurance claims
 - ◆ Severity of insurance claims

105

OR, 2

3. Risk assessment and response preparedness
 - Asks whether utilities have assessed their all hazard vulnerabilities and risks and made corresponding plans for critical needs
 - Risk assessment includes vulnerability assessment with respect to:
 - ◆ Power outages
 - ◆ Lack of access to chemicals
 - ◆ Curtailed staff ability
 - ◆ Natural and man made disasters
 - Example questions
 - ◆ Does the facility have an emergency response plan?
 - ◆ Number of ERP training classes per year
 - ◆ Frequency with which the ERP is reviewed and updated
 - ◆ Number of ERP exercises per year
 - ◆ Is there a process for identifying and addressing system deficiencies?

106

OR, 3

4. Ongoing operational resiliency
 - Assess a utility's operational reliability during ongoing and routine operations
 - Example measure
 - ◆ Uptime for critical utility components on an ongoing basis in percent
5. Operational resiliency under emergency conditions
 - Assesses the operational preparedness and expected responsiveness in critical areas under emergency conditions
 - Example measures
 - ◆ Power resiliency
 - ◆ Treatment chemical resiliency
 - ◆ Critical parts and equipment resiliency
 - ◆ Critical staff resiliency
 - ◆ Treatment operations resiliency
 - ◆ Source water resiliency

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Community sustainability

1. Watershed based infrastructure planning
 - Utility efforts to consider watershed based approaches when making management decisions affecting infrastructure planning and investment options
 - Example questions
 - ◆ Does the utility employ alternative water shed based approaches to align decisions with overall watershed goals and potentially reduce infrastructure costs?

108

CS, 2

2. Green infrastructure

- Includes both the built and natural/unbuilt environment
- May support water conservation and source water protection
- Approaches may include:
 - ◆ Low impact development techniques
 - ◆ Protection of green spaces and wildlife habitat
 - ◆ Incentives for water-efficient appliances and landscaping
 - ◆ Green building standards (LEED)
 - ◆ Management of energy, chemicals, and material use
 - ◆ Often coordinated with local planning agencies

109

CS, 3

- Example Questions

- ◆ Has the utility explored green infrastructure approaches and opportunities that are aligned with the utility's mandates, goals, and objectives and community interest
- ◆ Does the utility have procedures that incorporate green infrastructure approaches and performance into new infrastructure investments

110

CS,4

3. Greenhouse gas emissions

- Will help drinking water and wastewater utilities to understand and reduce their individual contributions to area greenhouse gas emissions
- Emissions will likely be of interest to stakeholders
- Monitoring of these emissions is becoming more common
- Some utilities are beginning to voluntary efforts to reduce their emissions
- Example measures
 - ◆ Net greenhouse emission in tons of CO₂, N₂O, CH₄, and HFCs

111

CS, 5

4. Service affordability

- Centers on community members' ability to pay for water services
- True cost may be higher than some low-income households can afford, particularly when rates are set under full cost accounting
- May need to balance keeping services affordable while ensuring rates cover long term infrastructure needs and financial integrity
- Example measures
 - ◆ Bill affordability
 - ◆ Low income billing assistance program coverage

112

Water resource adequacy

1. Water supply adequacy

- Assesses short term and long term water supply adequacy and explores related long term supply considerations
- Example measures and questions
 - ◆ Short term supply adequacy
 - ◆ Long term supply adequacy to include:
 - Future, normal, wet, dry, and very dry scenarios
 - Anticipated population changes
 - Future service areas
 - Availability of new water supplies
 - Levels of uncertainty around the above

113

WRA, 1

2. Supply and demand management

- Explores whether the utility has a strategy for proactive supply and demand management in both the short and long terms
- Strategy needs will depend on
 - ◆ Community circumstances and priorities
 - ◆ Anticipated population growth
 - ◆ Future water supply in relation to anticipated demand
 - ◆ Demand management and other conservation options
 - ◆ Other local considerations

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WRA, 2

– Example questions

- ◆ Has the utility developed a source water protection program
- ◆ Does the utility have a demand management reduction plan
- ◆ Do demand scenarios account for changes in rates, and conservation oriented demand management pricing structures
- ◆ Does the utility have policies in place that address availability of adequate dry year supply
- ◆ Does the utility have a commitment to deny service commitments unless a reliable drought year supply is available

115

Stakeholder Understanding and Support

1. Stakeholder consultation

- Addresses utility’s actions to reach out to and consult with stakeholders about matters including utility goals, objectives and management decisions
- Example questions
 - ◆ Does the utility identify stakeholders, conduct outreach and actively consult with stakeholders about utility matters
 - ◆ Does the utility maintain the number of active contacts with stakeholders

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SUS, 1

- ◆ Does the utility actively seek input from stakeholders
- ◆ What is the frequency with which the utility actively consult with stakeholders
- ◆ Does the utility actively consider and act upon stakeholder input

2. Stakeholder satisfaction

- Addresses stakeholder perceptions of the utility as measured through surveys, formal feedback and stakeholder events
- Example measures
 - ◆ Overall satisfaction
 - ◆ Responsiveness
 - ◆ Message collection for outreach programs targets to specific stakeholder groups

117

SUS, 2

3. Internal benefits from stakeholder input

- Addresses the value utility employees believe stakeholder engagement has provided to utility projects and activities
- Can focus on utility employees running projects
- Example measures
 - ◆ Overall value added in percent
 - ◆ Overall number of projects with stakeholder input

118

SUS, 3

4. Comparative rate rank

- Depicts how utility rates compare to similar utilities of the same type with the same or similar geographic region, size of population served
- Can use the measure internally or to educate stakeholders
- Example measure
 - ◆ Monthly bill for the average household as a percentage of typical monthly bills for similar area utilities

119

SUS, 4

5. Media or press coverage

- Captures media portrayal of the utility in terms of awareness, accuracy and tone including
 - ◆ Newspaper
 - ◆ TV
 - ◆ Radio
- Example measures
 - ◆ Amount of coverage
 - ◆ Media coverage tone
 - ◆ Media coverage accuracy

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Resources

- ◆ Tool box
– www.watereum.org
- ◆ Collaborative agencies

Agency	Website
American Public Works Association	www.apwa.net
American Water Works Association	www.awwa.org
Association of Metropolitan Water Agencies	www.amwa.net
National Association of Clean Water Agencies	www.nacwa.org
National Association of Water Companies	www.nawc.org
US EPA	www.epa.gov/waterinfrastructure
Water Environment Federation	www.wef.org

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Additional Resource

Effective Water and Wastewater Utility Management Case Studies, April 2009

- ◆ Columbus Water Works
- ◆ Green Bay Metropolitan Sewerage District
- ◆ Gwinnett County Dept. of Water Resources
- ◆ Massachusetts Water Resources Authority

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Additional Resources

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