

June 29, 2020

Mr. Kent Chandler
Executive Director
Kentucky Public Service Commission
P.O. Box 615, 211 Sower Blvd.
Frankfort, KY 40602-0615
PSCED@ky.gov

Dear Mr. Chandler:

The Kentucky Water Resources Research Institute (KWRRRI) is applying for approval of a proposed water district commissioner training program pursuant to KRS 74.020 and 807 KAR 5:070. The proposed training will be held virtually August 25-26 and September 29-30, 2020 and includes material from the “Sustainable Management of Rural and Small Systems Workshop.”

The multi-utility training was developed by the US EPA and the USDA and focuses on ten key management areas for small drinking water and wastewater utilities. The workshop is being offered at no cost to the participants through financial support provided by USDA. The training will be limited to 16 attendees to encourage attendees to interact virtually with the presenters. The training event will be recorded, and water commissioners will be required to be visible throughout the training event to verify attendance. The summary of the content of the program and a copy of the proposed agenda is attached as Exhibit A.

KWRRRI respectfully requests the proposed training be accredited and approved for six hours of continuing educational credits as management training for commissioners of water districts as referenced in 807 KAR 5:070. The sustainable management workshop has previously been approved by the PSC, the Kentucky Board of Certification of Drinking Water Treatment and Distribution, and the Kentucky Board of Certification of Wastewater System Operators for training events held in 2017, 2018, and 2019. The material has been rearranged to accommodate attendance virtually due to the Coronavirus emergency and the logistics necessary to protect public health.

The name and relevant qualifications and credentials of each instructor presenting the program are attached as Exhibit B.

A copy of written materials to be provided to attendees are attached as Exhibit C. The materials will be mailed to registrants and include PowerPoint Presentations and a copy of the *Rural and Small Systems Guidebook to Sustainable Utility Management*. After the training event concludes, attendees will be provided final reports of the three online activities they completed to obtain full continuing credit hours and as preparation for the specific sessions (details are outlined in Exhibit C). Should the presentations be revised, or additional written materials be provided to attendees, KWRRRI will include a copy of those materials with the sworn statement and report regarding the instruction.

see blue.

Mr. Kent Chandler
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June 29, 2020

With this transmittal letter and enclosed exhibits, KWRRI requests the Commission to approve and accredit the proposed training program for six hours of annual water district management continuing education credit. If you have any questions or require any further documentation, please do not hesitate to contact me.

Sincerely,

Dr. Lindell Ormsbee, Director
Kentucky Water Resources Research Institute
Lindell.Ormsbee@uky.edu
<https://www.research.uky.edu/kwrri>

LO:dlm

Enclosures

see blue.

EXHIBIT A

The multi-utility training was developed by the US EPA and the USDA and focuses on ten key management areas for small drinking water and wastewater utilities. The PowerPoint presentations are based upon the *Rural and Small Systems Guidebook to Sustainable Utility Management*. To promote attendee interaction, each attendee will be required to complete three online activities as preparation for the specific sessions and to receive full credit for attending the training. Each online survey will include video instructions and a brief explanation of the materials. The three activities are as follows:

1. Utility Self-Assessment – attendee assessment of ten management areas as they relate to their Utility.
 - a. Due two days prior to Day 1 to allow enough time for KWRRRI to compile ranking report.
 - b. Ranking report will be provided to attendee for the interactive session entitled *Utility ‘Self-Assessment’ Exercise*.
2. Priority Management Area – attendee focus on how to improve one of their three management areas considered a priority for improvement.
 - a. Due by 3:00 pm after the conclusion of the Day 1 training.
 - b. The report will be provided to the attendee for the interactive session entitled *Improving Outcomes*.
3. Sustainable Management Action Plan – attendee will provide information discussed during the interactive session entitled *Creating a Sustainable Management Action Plan*.
 - a. Due one day after the conclusion of the Day 2 training.
 - b. The report will be provided to the attendee.

Each attendee will be provided a copy of all three reports to share with their Utility at their discretion. Additionally, attendees will be provided a certificate documenting their continuing education credit hours.

Sustainable Management of Rural and Small Water Systems Workshop

8:30 am – 12:10 am daily (3 CEU Credits)

FACILITATOR(S): Lindell Ormsbee, Kentucky Water Resources Research Institute
Donna McNeil, Kentucky Water Resources Research Institute
Scott Yost, UK Department of Civil Engineering
Greg Heitzman, PE, MBA, BlueWater Kentucky
Chris Wells/Kim Padgett, Kentucky Rural Community Assistance Program

Time	Session
Day 1	
8:45	Sign-in/Registration/Review Materials
9:00	Introductions and Workshop Objectives (15 minutes) [Lindell]
9:15	Session 1: Overview of Key Management Areas – Presentation (30 minutes) [Donna] <ul style="list-style-type: none">• Presentation of Key Management Areas• Group Discussion: Other Important Management Areas for Sustainability
9:45	Session 2: Sharing Success Stories (30 minutes) [Greg Heitzman]
10:15	Break
10:25	Session 3: Utility ‘Self-Assessment’ Exercise (55 minutes) [Donna and Scott] <ul style="list-style-type: none">• Review “Sustainable Management Self-Assessment Process” (10 minutes)• Review Survey Results (15 minutes)• Review and Discuss Summary Results (30 minutes)<ul style="list-style-type: none">○ What high priority, poor performance areas (red boxes) do you need to focus on?○ Why is your performance poor in that area?○ What high priority, fair performance areas (yellow boxes) could you improve in?○ Why is your performance fair in that area?○ What high priority, good performance areas (green boxes) have you done well?○ Why is your performance good in that area?○ Are there any lessons can you learn from the other utilities that you could use to improve your performance in high or medium priority areas?
11:20	Session 4: RCAP Resources (30 minutes) [Chris Wells/Kim Padgett]
11:50	Session 5: Explain Homework Assignment and Group Discussion (20 minutes) [Lindell] <ul style="list-style-type: none">• Look over your assessment worksheet and pick one management area to focus on.• Complete the online survey about that management area.
12:10	End First Day

Sustainable Management of Rural and Small Water Systems Workshop

8:30 am – 12:10 am daily (3 CEU Credits)

FACILITATOR(S): Lindell Ormsbee, Kentucky Water Resources Research Institute
Donna McNeil, Kentucky Water Resources Research Institute
Scott Yost, UK Department of Civil Engineering

Time	Session
Day 2	
8:30	Sign-in/Registration
9:00	Review of Project Objectives (15 minutes) [Lindell]
9:15	Session 6: Improving Outcomes (60 minutes) <ul style="list-style-type: none">• Tips from previous Improving Outcomes Exercises (20 minutes) [Donna]• Review “Management Area Selection and Evaluation Process” (10 minutes) [Lindell]• Review and Discuss Summary Results (30 minutes) [Donna and Scott]• Discussion Questions:<ul style="list-style-type: none">○ What will constitute ‘good performance’ in this management area?○ What are the causes of your performance gaps?○ What will be the biggest challenges to improving performance in this area?○ What changes will the utility need to make to improve performance○ Who will need to be involved for these changes to take place?
10:15	Break
10:25	Session 7: Creating an Action Plan (45 minutes) [Scott] <ul style="list-style-type: none">• Discuss Utility Management Improvement Plan• Complete a Sustainable Management Action Plan Worksheet
11:10	Session 8: Tools, Guides and Technical Support (30 minutes) [Lindell] <ul style="list-style-type: none">• Presentation of Additional Tools, Guides and Other Resources
11:40	Session 9: Feedback Session (20 minutes) [Donna]
12:00	Session 10: Course Evaluation Instructions (10 minutes) [Donna]
12:10	End Second Day

EXHIBIT B

Dr. Lindell Ormsbee is the Director of the Kentucky Water Research Institute and the Kentucky Center of Excellence for Watershed Management. He has served in several other research administrative capacities including, the Associate Director of the UK Superfund Research Center, Director of the Kentucky Research Consortium for Energy and Environment, Director of the Tracy Farmer Center for the Environment, Director of the UK-PRIDE Water Quality Assessment Program, the Chair of the Kentucky Environmental Quality Commission, and the Chair of the Scientific Advisory Board of the Kentucky Watershed Watch Program.

Dr. Ormsbee joined the faculty of the University of Kentucky in 1983 and is the Raymond-Blythe Professor of civil engineering at the University of Kentucky. He has been actively engaged in research, teaching, and consulting in water resources and environmental engineering with more than 250 technical papers and reports published on various topics in this field. In addition to serving on numerous international, national, and state committees, Dr. Ormsbee has spoken to hundreds of audiences at various technical conferences and other meetings across the United States as well as overseas.

Dr. Ormsbee received his Bachelor of Science Degree in civil engineering from the University of Kentucky, his Master of Science from Virginia Polytechnic Institute and State University, and his Ph.D. from Purdue University. He is a licensed Professional Engineer in Kentucky; Professional Hydrologist with the American Institute of Hydrology; and Diplomate with the American Academy of Water Resource Engineers.

Donna McNeil joined the Kentucky Water Research Institute as a Research Engineer Associate in May 2020. Prior to KWRI, Donna served as Executive Director of the Kentucky Infrastructure Authority, was a compliance specialist with Kentucky Rural Water Association, and as the Environmental Control Manager of Kentucky's Drinking Water program. Donna's experience includes over 30 years of experience providing technical assistance to drinking water and wastewater utilities staff, decision-makers, the engineering community, elected officials, and the public. In addition to serving on national, and state committees, Ms. McNeil has spoken to hundreds of audiences at various conferences and meetings the United States.

Donna received a Bachelor of Science Degree in Civil Engineering from the University of Kentucky and has an Engineer-In-Training Certification in Kentucky.

Scott Yost joined the faculty of the University of Kentucky in 1995 and serves as the Director of Undergraduate Studies and is an Associate Professor in Civil Engineering. He has been actively engaged in research, teaching, and consulting in civil and environmental engineering with numerous technical papers and reports published on various topics in this field. Dr. Yost has participated in several workshops in the past and has provided one-on-one consultations to individual utilities on topics ranging from water loss, water audits, and network modeling.

Dr. Yost received his Bachelor of Science, Master of Science, and Ph.D. in Civil Engineering from the University of Michigan. He also has a Bachelor of Arts in Mathematics from Asbury College in Wilmore, Kentucky. Additionally, he is a licensed Professional Engineer in Kentucky.

Greg Heitzman is President of BlueWater Kentucky, a management consulting firm serving the water and wastewater industry. From 2011 to 2015, he served as Executive Director/CEO of the Louisville Metropolitan Sewer District (MSD). Prior to MSD, he worked 31 years with the Louisville Water Company serving as Chief Engineer from 1991 to 2007 and President/CEO from 2007 to 2013.

In his executive roles for Louisville MSD and Louisville Water, Greg provided leadership for Mayor Fischer's One Water Partnership to consolidate water services and administrative functions of Louisville MSD and Louisville Water. Greg also led strategic initiatives to expand water and wastewater services in the region, develop high performance teams, establish model programs for corporate controls (policy, procedures and work instructions), and develop new lines of business and technology to enhance revenue and reduce costs.

Greg obtained his Bachelor and Master of Science degrees in Civil Engineering from the University of Kentucky and an MBA from the University of Louisville. He is a licensed Professional Engineer in Kentucky and recipient of AWWA George Warren Fuller Award. He is an active member in both AWWA and the Water Environment Federation/Association. He currently serves on the following industry and community Boards: Water Research Foundation; Water Information Sharing and Analysis Center (Water ISAC); Louisville Water Foundation; Better Business Bureau; and Tree Louisville Commission.

Kimberly Padgett has worked with Kentucky's RCAP program since 1997 and as the State Director since 2000. Although as State Director she manages Kentucky's eight

RCAP programs and the Technical Assistance Providers, she prefers providing direct assistance to small communities with infrastructure needs, particularly drinking water and wastewater. Assistance varies from project to project and includes tasks such as assessing project environmental impacts; preparing environmental reviews; training operators and decision makers on federal and state regulatory requirements; and assisting each system with developing a strategic plan to provide services at an affordable price to all its customers to ensure sustainability for that system. Kimberly participates in statewide trainings due to her expertise and success with incorporating effective teaching strategies and learning styles for the adult learner. Prior to RCAP, Kimberly earned a Bachelor of Science Degree in Mathematics and Biology and was employed as a Senior Chemist.

Christopher A. Wells has worked as a Technical Assistance Provider for RCAP since 2001 and he provides direct assistance to small communities with both water and wastewater needs. Assistance varies from project to project and includes activities such as preparation of: vulnerability assessments, emergency response plans, operation and maintenance manuals, financial reports, budgets, cross connection prevention plans, consumer confidence reports (CCRs) and water/wastewater rate studies; conducting: energy audits, board trainings and Technical, Managerial, and Financial Capacity Development on-site utility trainings for small systems. Prior to RCAP, Mr. Wells was a Client Relations Representative and Field Technician with Commonwealth Technology, Inc. and he has an Associate Degree in Applied Science, Business Management.

EXHIBIT C

- Powerpoint Presentations
- *Rural and Small Systems Guidebook to Sustainable Utility Management*
- Each attendee will be provided a copy of all three online reports to share with their Utility at their discretion.
- Additionally, attendees will be provided a certificate documenting their continuing education credit hours.

Sustainable Management of Rural and Small Systems Workshop

Kentucky Water Resources Research Institute

Virtual Training
August 25 – 26, 2020
September 29 – 30, 2020

1

Welcome and Introductions

- Welcome
- Purpose of Workshop
- Introduction of Team Members
 - Lindell Ormsbee
 - Scott Yost
 - Donna McNeil
 - Greg Heitzman
 - Kim Padgett
 - Chris Wells
- Participant Introductions – Name, Community, Role
- Workshop Materials
- Meeting Logistics
- Meeting Agenda

2

Program Overview

- Phase I
 - Regional workshops
 - Explain 10 basic management areas
 - Perform general utility assessments
 - Identify possible goals and strategies
- Phase II
 - Individual utility workshops
 - Involve operators, managers, and decision makers
 - Develop feasible goals and strategies
 - Provide technical resources to help support implementation

3

Meeting Agenda

<u>Day 1</u> <ul style="list-style-type: none">• Welcome and Introductions• Workshop Objectives• Key Management Areas• Success Stories• Self Assessment Results BREAK <ul style="list-style-type: none">• RCAP Resources• Homework• Adjourn	<u>Day 2</u> <ul style="list-style-type: none">• Welcome and Introductions• Review Project Objectives• Improving Outcomes• BREAK• Creating an Action Plan• Practices, Tools, and Measures• Feedback• Course Evaluation• Homework/Next Steps
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Public Expectations

Public Water Systems

Provide **safe** drinking water at most **appropriate cost**

- ✓ Water Quality
- ✓ Reliability
- ✓ Affordability



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Common Challenges for Utilities

- Aging infrastructure needs more intensive repair and replacement.
- Continuing regulatory changes, including the need to often balance priorities among multiple compliance endpoints.
- Workforce challenges, including an aging workforce and difficulties in recruiting and retaining qualified staff.
- Uncertainties about future funding opportunities.
- Competing local priorities and a dwindling resource base.
- Uninformed or disengaged board members.

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Key Utility Personnel

- The effective management of a water utility will require the active participation of a range of individuals:
 - Customers
 - Operators
 - Managers
 - Decision-makers
 - City Officials
 - Mayors
 - City council members
 - Utility board members
 - County Officials
 - Judges
 - Members of the fiscal court



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Water Utility Management Involves a Range of Issues

Managerial Clear Roles, Effective Policies, Thorough Planning

Financial Budgeting, Accounting, Planning, Internal Controls

Technical Infrastructure, Source, Standards, Rights, Operators

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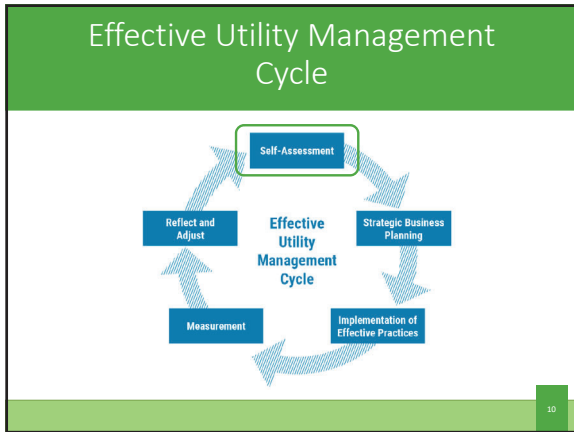
Keys To Management Success

- Leadership
- Strategic Business Planning
- Knowledge Management
- Measurement
- Continual Improvement Management



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Session 1: Overview of the Ten Key Management Areas

Outcomes that well-managed utilities strive for

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The Ten Key Management Areas

1. Water Resource Adequacy	6. Financial Viability
2. Product Quality	7. Operational Optimization – Energy and Water Efficiency
3. Customer Satisfaction	8. Infrastructure Stability
4. Community Sustainability & Economic Development	9. Operational Resiliency
5. Employee and Leadership Development	10. Stakeholder Understanding and Support

12

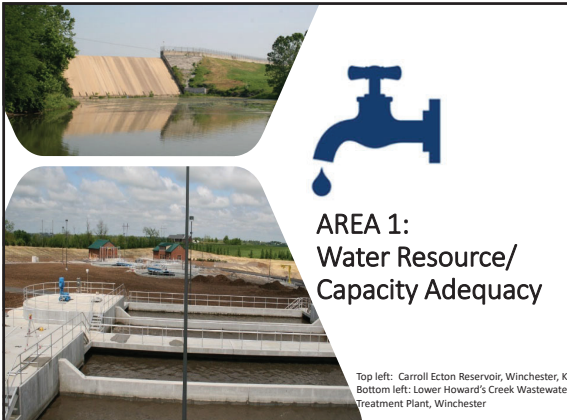
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The Well-Managed Utility

- 10 Management Areas are framed as outcomes.
- Building blocks for improving performance:
 - Where to focus?
 - What to strive for?
- Most utilities pay attention to each of these areas and likely perform well in some of them.
- The 10 areas used to support asset management, long-term business planning, and to continue improving the system's management.

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**AREA 1:
Water Resource/
Capacity Adequacy**

Top left: Carroll Ecton Reservoir, Winchester, KY
Bottom left: Lower Howard's Creek Wastewater Treatment Plant, Winchester

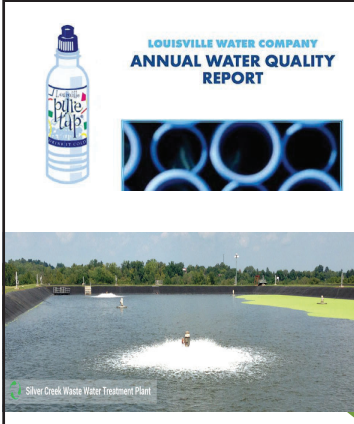
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1. Water Resource/Capacity Adequacy

- Ensure system able to meet water and sanitation needs of its customers:
 - Long-term resource supply and demand analysis.
 - Conservation practices/incentives.
 - Public education.
- Manage operations to provide for long-term aquifer and surface water sustainability and replenishment:
 - Water loss management.
 - Utility rates.
 - Return flows.

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LOUISVILLE WATER COMPANY
ANNUAL WATER QUALITY
REPORT

Silver Creek Waste Water Treatment Plant

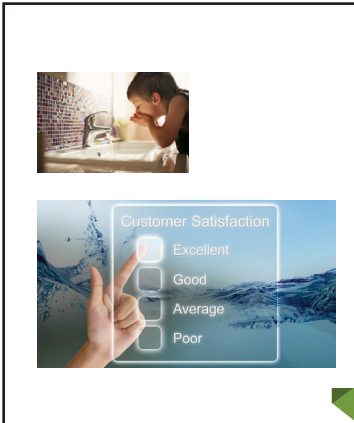
AREA 2.
Product
Quality

16

2. Product Quality

- Produces **potable water** or **quality treated effluent** that are:
 - In compliance with permit and regulatory requirements.
 - Meets customer, public health, and environmental needs.
 - Supports economic development and business needs.

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Customer Satisfaction

- Excellent
- Good
- Average
- Poor

AREA 3.
Customer
Satisfaction

18

3. Customer Satisfaction



- Helps customers understand the value of water and their local utility.
- Developed a way to gather feedback from their customers, review the data, and then act on it.
 - For example: service, water quality, and rates.
- Sets goals to meet customer expectations.
- Responds to emergency conditions in a timely and efficient manner.

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AREA 4. Community Sustainability & Economic Development

20



Quicksand, Ky. (Sept. 25, 2017) – Hemp grown for CBD production and testing is seen at the Robinson Center for Appalachian Resource Sustainability in Quicksand, Kentucky. (Photo by Brittany Gresson)



LEBANON, Ky. (July 17, 2019) – Diageo broke ground today on its new \$130 million distillery in Marion County's Lebanon, Kentucky. Diageo executives joined Marion County elected and community leaders to celebrate the milestone and view the facility's first public renderings. The "Diageo Lebanon Distillery" is expected to be fully operational in 2021.



ASTOUNDING NATURAL BEAUTY & ABUNDANT OPPORTUNITY

Benton, KY – Kentucky Lake Economic Development just launched a comprehensive website to elevate its online presence and showcase Marshall County, Kentucky's abundant opportunities and business advantages. This will serve as an important asset for site selectors and investors.



AREA 4. Community Sustainability & Economic Development

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4. Community Sustainability & Economic Development

- Aware of and takes part in discussions of community and economic development planning.
 - Local business needs.
 - Possible new residential or business customers.
- Align utility goals to support:
 - Current and future community needs.
 - Watershed protection.
 - Economic vitality.
 - Growth.

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**AREA 5.
Employee and
Leadership
Development**

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5. Employee & Leadership Development

- Hire and keep skilled, dedicated staff.
- Encourage two-way communication.
- Retain and improve institutional knowledge.
- Provide for professional and leadership development.

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AREA 6. Financial Viability



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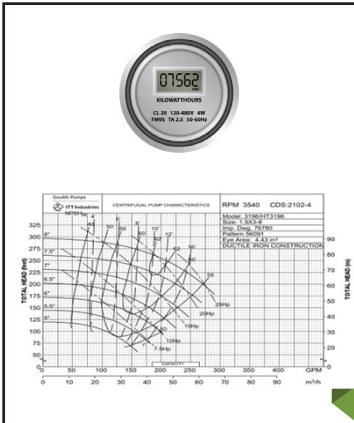
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6. Financial Viability

- Rates are adequate and based on the full life-cycle costs of the utility, which includes:
 - Long term debt.
 - Asset values.
 - Operations and maintenance expenditures.
 - Operating revenues.
- Rates are evaluated routinely discussed with customers, board members, etc. – adequate to:
 - Recover costs.
 - Provide for reserves.
 - Address maintenance needs.
 - Plan and invest for future needs.
 - Maintain support from bond rating agencies.

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AREA 7. Operational Optimization Water/Energy Efficiency

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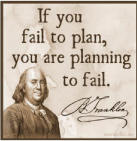
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7. Operational Optimization

- Ensure ongoing, timely, cost-effective, and reliable performance in all parts of operations.
- Track operational performance factors (e.g., reliability of service, pressure, DBPs, overflows).
- Minimize resource use, loss, and impacts from day-to-day operations (e.g., energy audit, chemical use, water loss audit, Infiltration/Inflow).
- Keeps up-to-date of technology improvements that could be used by the Utility.

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AREA 8. Infrastructure Stability

ASSET MANAGEMENT

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8. Infrastructure Stability

- Maintains inventory, the condition, and cost of each system component (Asset Management Plan).
- Maintains plan to repair, replace, and upgrade system components (Capital Improvement Plan).
 - Usually long-term but at the lowest possible cost.
- Discusses/updates the community on asset repair, rehabilitation, and replacement.
 - Minimize disruptions and other negative consequences.

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**AREA 9.
Operational
Resiliency**



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9. Operational Resiliency



- Ensures utility leadership and staff work together to anticipate and avoid problems.
- Conducted vulnerability assessment to identify **all** threats to the system:
 - Legal
 - Financial,
 - Compliance
 - Safety,
 - Security,
 - Environmental
 - Natural Disaster
- Establishes **acceptable** risk levels to support goals.
- Prepare all-hazards emergency response plan.
 - Detail how to manage risks and response actions.


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**AREA 10.
Stakeholder
Understanding
& Support**

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10. Stakeholder Understanding & Support



- Engage stakeholders in decisions that will affect them:
 - Identify key stakeholders: decision makers, community members, regulators, etc.
 - Provide structure or protocol to include stakeholders.
 - Identify stakeholder goals, resources, etc.
 - Promote the value of providing clean and safe water.
- Build relationship through public education:
 - Service levels.
 - Rate structures.
 - Operating budget.
 - Capital improvement program.
 - Risk management decisions.

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Session 2: Success Stories for Effective Utility Management (Large, Medium, Small Systems)



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1. Louisville Water Company (LWC) Louisville Metro Sewer District (MSD)

- LWC and MSD partnered in 2014 to begin using Effective Utility Management (EUM) for performance metrics and benchmarking.
- 9 of 10 attributes were evaluated by a joint utility team (water resource omitted due to abundant Ohio River).

Louisville Water/MSD - KY	Water	Sewer
Customers Served	250,000	230,000
Miles of Pipe	4,500	3,200
Plant Capacity	240 MGD	190 MGD

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Louisville Water Company Louisville Metro Sewer District

5 Initial focus areas:

- Stakeholder Support.
- Product Quality.
- Customers Satisfaction.
- Employees/Leadership.
- Finance Viability.

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Louisville Water Company Louisville Metro Sewer District

- EUM has been integrated into strategic planning process.
- EUM team was assembled to perform assessment of each area and identify areas of priority.
- Performance metrics were established for both water and wastewater.
- Performance is reported to the governing Board monthly.
- Employee performance is tied to utility performance.

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Louisville Water Company Louisville Metro Sewer District

On-Line Dashboard for Tracking Performance in 9 Areas

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2. Murfreesboro Water Resources, TN

- Murfreesboro Water Resources initiated EUM in 2011 for both water and wastewater.
- Completed Self Assessment in 2012 and presented to City Council (governing body).
- Sets Goal to become “Utility of the Future” by 2016.



Murfreesboro - TN	Water	Sewer
Customers Served	78,000	130,000
Miles of Pipe	442 miles	646 miles
Plant Capacity	20 MGD	24 MGD

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Murfreesboro Water Resources, TN



EUM helped Murfreesboro:

- Develop a cohesive, strategic vision.
- Communicate the vision to governing board, management, staff and stakeholders.
- Prioritized areas for improvement.
- Achieved “utility of the future” designation.
- Continuous Improvement.

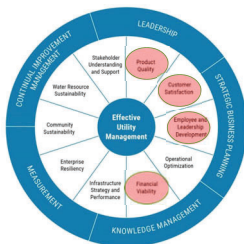
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Murfreesboro Water Resources, TN

Murfreesboro Strategic Areas of Focus:

- Product Quality.
- Customer Satisfaction.
- Employee and Leadership Development.
- Financial Viability.



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3. Martin County Water/Sewer, KY

Martin County considered one of the worst performing water systems in Kentucky:

- Financial instability, near bankruptcy.
- Insufficient revenue to cover expenses, requires 50% plus rate increase.
- Water Quality Violations (DBPs).
- Poor Customer Service/No Community Trust.
- Failing Infrastructure (main breaks and service leaks).
- High water loss (>70%).



Martin County Water/Sewer - KY	Water	Sewer
Customers Served	3,500	900
Miles of Pipe	230	20
Plant Capacity	2 MGD	0.46 MGD

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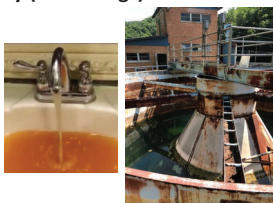
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Martin County Water/Sewer, KY

EUM Workshop conducted August 16, 2018

Areas of significant deficiency (low ratings):

- Product Quality.
- Finance Viability.
- Infrastructure.
- Customer Satisfaction.
- Stakeholder Support.



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Martin County Water/Sewer, KY

Benefits Received by Martin County:

- Educated Board members/management on immediate challenges.
- Established priority areas for improvement.
- Resulted in grant requests for infrastructure improvements (over \$5 million awarded).
- Resulted in partnership with Concerned Citizens Group.
- PSC granted Debt Service Surcharge to pay off \$1M in credit obligations.
- 10 Year Capital Plan being developed.
- Need to re-assess in late 2019, to measure improvement.

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Getting Started (Tab 3) –
Contained in Online Survey

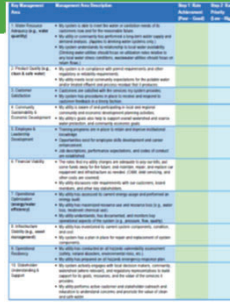
- Step 1: RATE your system's level of achievement (practice and performance) for each management area
- Step 2: RANK the importance (priority) of each area

Utility Management	Good			
	Fair			
	Poor			
		Low	Medium	High
Ranking (Priority)				

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STEPS 1 & 2: Rating Achievement and Ranking Priority

Self-Assessment Demonstration



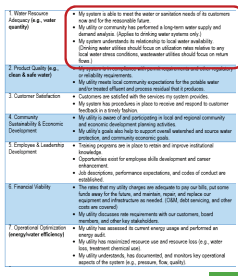
- Use the table to rate your utility's **achievement (first blank column)** rate in the 10 key management areas: P –poor, F – fair, G–good.
- Use the table to rate the **priority (second blank column)** of each of the 10 key management areas for your utility: L –low, M – medium, H–high.

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STEP 1: Rating Achievement

Scale from LOW to HIGH performance


- Select **Poor** if your system has no workable practices in place for addressing this area – very low capacity and performance.
- Select **Fair** if your system has some workable practices in place with moderate achievement, but could improve – some capacity in place.
- Select **Good** if your system has effective, standardized, and accepted practices in place. It either usually or consistently achieves goals – capacity is high and in need of very little or no further development.



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STEP 2: Ranking Priority

Scale from LOW to HIGH priority



- Review each of the five prioritization elements:
 - Crisis situations / urgency (near term or long term).
 - Current or expected challenges.
 - Consequence severity (non-compliance, costs, health, safety).
 - Customer impacts (water quality, reliability of service).
 - Community priorities (economic development, quality of life).
- Select **High** if concerns for most elements (4-5) or a strong concern in several.
- Select **Medium** if concerns for some elements (2-3) or a strong concern for one.
- Select **Low** if concerns for few or none of the elements (0-1) and no strong concerns.

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STEPS 3: Plotting Results

Self-Assessment Demonstration— completed by KWRR

WA	Water Resource Adequacy	FV	Financial Viability
PQ	Product Quality	OO	Operational Optimization
CS	Customer Satisfaction	IS	Infrastructure Stability
CE	Community Sustainability & Economic Development	OR	Operational Resiliency
ED	Employee & Leadership Development	SS	Stakeholder Understanding & Support

Rating (Achievement)	Good		CS, ED	
	Fair	OO		PQ
	Poor	CE		WA, FV
		Low	Medium	High
Ranking (Priority)				

55

Plotting Results (Tab 3, Page 5) – completed by KWRR

- Using the provided stickers for your utility, place a sticker on each of the 10 Key Management Boards located around the room in each of the same boxes that you recorded on your own plot.

Your Utility Plot

Good		CS, ED	
Fair	OO		PQ
Poor	CE		WA, FV
		Low	Medium
Ranking (Priority)			

One of 10 boards located around the room (e.g. Consumer Service)

Good		Utility Name	
Fair			
Poor			
		Low	Medium
Ranking (Priority)			

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Step 4: Self-Assessment Discussion Questions

- Review your plotted results.
- Evaluate and share report information.
- Evaluate your performance.
- What is the difference of your performance and your utility's performance?

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Step 4: Self-Assessment Discussion Questions

What factors make a management area to be considered as low or fair performance?

1. High priority, low performance
 - What do you need to focus on?
 - Why is performance low?
2. High priority, fair performance
 - What do you need to focus on?
 - Why is performance fair?

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Step 4: Self-Assessment Discussion Questions

• What factors make a management area to be considered as good or high performance?

3. High priority, high performance
 - What have you done well?
 - Why is performance high?
 - Can you improve high performance?
 - Have you made changes in the past to improve performance?
 - If so, do you have any tips to share with the group?

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Step 4: Self-Assessment Discussion Questions

- Are your areas of focus different or similar to the other utilities on this webinar? What changes will your utility need to make to improve performance?
- What ideas or tips can you learn from the other utilities that you could use to improve your performance?
- How might your perspective on these priorities change if your role is:
 - Operator
 - Board Member/Council Member
 - Judge Executive/Mayor

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Session 4: RCAP Resources

Chris Wells/Kim Padgett, Kentucky Rural Community Assistance Program



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Session 5: Homework Assignment and Group Discussion



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Improving Outcomes Homework

- Complete an online survey for discussion tomorrow on *Improving Outcomes*.
- The survey contains:
 - Two basic questions.
 - Five improving outcome questions.
- Please complete by 3:00 today.
- KWRRRI staff will forward you a copy of your homework electronically.

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Pick Priority Management Area & Answer Two Basic Questions

- From your assessment worksheet, pick one management that is **High priority, low or fair** performance.
- Two basic questions:
 1. Which assessment area did you pick?
 2. Why did you choose that management area?

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Answer Five Improving Outcomes Questions

1. What will constitute 'good performance' in this management area?
2. What are the causes of your performance gaps?
3. What will be the biggest challenges to improving performance in this area?
4. What changes will the utility need to make to improve performance?
5. Who will need to be involved for these changes to take place?

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Adjourn For Day One



66

Day 2: Review Project Objectives



67

Session 6: Improving Outcomes

Creating a Plan, Taking Action, Measuring Results



68

Session 6A: Tips From Improving Outcome Exercise




69

Tips from Previous Improving Outcomes Exercises

- Key management areas selected and discussed at previous workshops:
 - Financial Viability.
 - Infrastructure Stability.
 - Operational Optimization.
 - Operational Resiliency.
 - Stakeholder Understanding and Support.
 - Employee and Leadership Development.

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Financial Viability



71

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Financial Viability

- **Examples of High Performance:**
 - Strong bond rating
 - Positive cash flow
 - Maintain effective balance between
 - long-term debt,
 - asset values,
 - operations and maintenance costs, and
 - operating revenue.

72

Challenges/Changes

- Discontinue service to people you know or people that live on fixed income and have not paid their bills.
- Keep elected officials and consumers informed about the real costs to produce drinking water and process wastewater when trying to get a rate increase passed.
- Elected officials change and may make campaign commitments to no rate increases.
- Flat rate billing practices are observed as unfair (low volume users paying the same as high volume users).

Try this:

Undertake a rate study to determine if current rates are adequate to meet both current and future needs.

More suggestions in Tab 6: Page 14 73

73






Infrastructure Stability

Dependent Upon:

1. Asset Management
2. Capital Planning

74

Infrastructure Stability

Asset Management


Asset **Management** is maintaining a **desired level of service**
(what you want your assets to provide)

At the lowest **life cycle cost**
(best appropriate cost – not “no cost”)

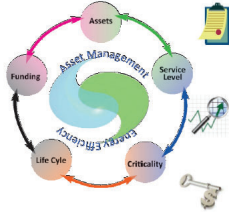
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Infrastructure Stability



Five Core Components of Asset Management



- Current State of the Assets
- Level of Service
- Criticality
- Life Cycle Costing
- Long-Term Funding

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Infrastructure Stability



Tips for Capital Improvement Planning

- Set arbitrary minimum price for asset
- Stay realistic
- Five year minimum
- Justify need
- Coordinate with other projects
- Look at broad options
- Detail funding options
- Discuss openly



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Infrastructure Stability




Examples of High Performance:

- Having an inventory of system components, location, installation date, and condition.
- Understanding of system operating parameters (e.g., pressure).
- Having a capital improvement plan.

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Challenges/Changes





- Planning for repair and maintenance of infrastructure is hampered by a limited knowledge of the condition of existing infrastructure components.
- Many systems are trapped in a reactive repair and maintenance mode leaving little or no time for undertaking the proactive work needed to establish an asset management program.

Try this:
Create an inventory of your assets over time by setting up a template for logging assets. Log assets at the time that regular maintenance or emergency repairs are performed.

More suggestions in Tab 6: Page 15

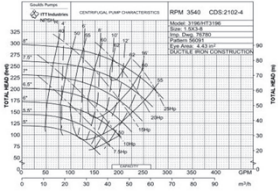
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79

Operational Optimization


Water/Energy Efficiency



79

80

Operational Optimization
Water/Energy Efficiency



- **Examples of High Performance:**
 - Having an optimal energy rate schedule.
 - Using energy efficient pumps.
 - Minimizing water loss (i.e. < 15%).
 - Maintaining a comprehensive maintenance program.
 - Proper pressure management.

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81

Challenges/Changes

OPERATIONAL OPTIMIZATION
 Challenges related to **Operational Optimization** include:

- High energy bills
- Improper maintenance of equipment
- Excessive water loss

Try this:

- Conduct an energy audit
- Identify locations of water loss
- Insure status of isolation valves
- Monitor pressure regulating values
- Implement pressure management program
- Replace energy inefficient system components
- Sequence pump schedules with electric rate schedules

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Operational Resiliency

Operation & Maintenance Plans

Maintain Assets

Operations

- Activities to keep water flowing

Maintenance

- Routine
- Preventative
- Predictive
- Not emergency


Consequence of Failure ↑	Maintenance Important 30% of budget	Maintenance Extremely Important 45% of budget
	Maintenance Less Important 5% of budget	Maintenance Important 20% of budget
	Probability of Failure →	

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Operational Resiliency 

- **Examples of High Performance:**
 - Having emergency response plans, operations plans, shut-off checklists for equipment.
 - Regular drills of the emergency response plan.
 - Certified staff and board members.

85

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Challenges/Changes 

- A lack of system documentation.
- Insufficient time to conduct training and exercises on the emergency response plan.
- Employee and board member turnover makes it difficult to maintain familiarity with emergency response procedures and materials.

Try this:
Use an annual board meeting as an opportunity to distribute and review key emergency documents.

More suggestions in Tab 6: Page 16

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86



Stakeholder Understanding & Support

87

Stakeholder Understanding and Support 

Communicating with Customers

- Bill stuffers
- Billboards
- Classes
- Consumer Confidence Reports
- Mailers
- Newspapers
- Phone calls
- Posters
- Radio/TV
- Social media
- Special meetings
- Surveys



Don't let the water utility be your community's best kept secret

Think of customers as partners

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Stakeholder Understanding and Support 




- Customers
- Elected Officials
- Board Members
- Manager
- Operators

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Stakeholder Understanding and Support 




Explaining the value of water

90


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Stakeholder Understanding and Support 




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Stakeholder Understanding and Support 

.....the message will frame you



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Stakeholder Understanding and Support 


.....the message will frame you




93

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Stakeholder Understanding and Support 




94

Stakeholder Understanding and Support 

- **Examples of High Performance:**
 - Having a **Capital improvement plan** or other document that summarizes utility priorities and can be shared with utility board.
 - Having standard **operating procedures** for utility staff that address communication.

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Challenges/Changes 

Customers and stakeholders display a lack of interest in gaining a better understanding of utility needs.

Customer resistance to paying water bills or supporting rate increases.

Try this:

Host an annual open house or barbeque at your facility for stakeholders and community members. Offer tours of the facility to citizens and local media as a part of this event.


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Employee and Leadership Development

97

Employee and Leadership Development




- **Examples of High Performance:**
 - Having written job descriptions.
 - Providing clear performance expectations.
 - Making sure staff are cross-trained.

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Challenges/Changes



- Employee motivation and opportunities for development can be hampered by lack of resources.
- Limited access to training opportunities can prevent personal and professional development.
- Lack of written job responsibilities can lead to uncertainty about management expectations and a lack of recognition for the work that is done.
- Time constraints on employees.

Try this:
Develop relationships with neighboring systems to share training resources.

More suggestions in Tab 6: Page 13

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Session 6B: Review Improving Outcomes Online Survey



100

Session 6C: Group Discussion Improving Outcomes Homework



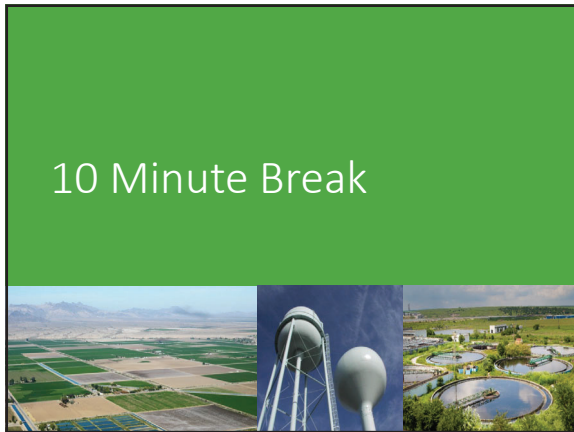
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Improving Outcomes Questions

1. What will constitute 'good performance' in this management area?
2. What are the causes of your performance gaps?
3. What will be the biggest challenges to improving performance in this area?
4. What changes will the utility need to make to improve performance?
5. Who will need to be involved for these changes to take place?

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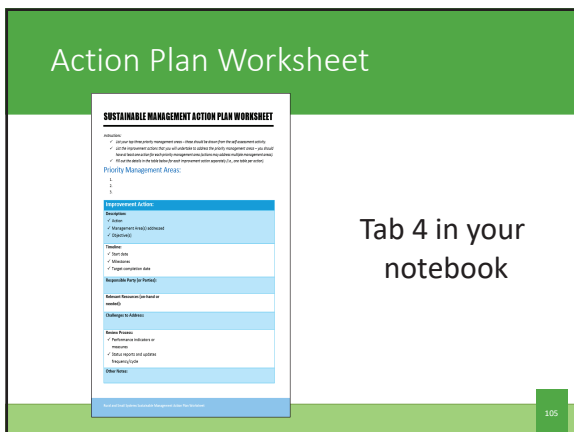
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Action Plan Worksheet

Priority Management Areas:

- 1.
- 2.
- 3.

Step 1: Each **person** fill out their top three priority management areas from the Self Assessment exercise and then pick **one** to work on.

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For Example...

Priority Management Areas:

1. Water Resource Adequacy
2. Product Quality
3. Financial Viability ← Select One

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Action Plan Worksheet

Improvement Action:

Description:

- ✓ Action
- ✓ Management Area(s) addressed
- ✓ Objective(s)

Step 2: Choose an action that you could take to make improvements in your selected Priority Management Area.

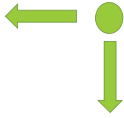
108

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For Example...

Priority Management Areas:

1. Water Resource Adequacy
2. Product Quality
3. Financial Viability



Improvement Action: improve practices for reducing the number of outstanding bills

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Action Plan Worksheet

- Timeline:
 - ✓ Start date
 - ✓ Milestones
 - ✓ Target completion date
- Responsible Party (or Parties):
- Relevant Resources (on-hand or needed):
- Challenges to Address:
- Review Process:
 - ✓ Performance indicators or measures
 - ✓ Status reports and updates frequency/cycle
- Other Notes:

Step 3: Complete the fields below to describe what is needed to complete your "Improvement Action"

110

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For Example...

Description: <ul style="list-style-type: none">✓ Action✓ Management Area(s) addressed✓ Objective(s)	<ul style="list-style-type: none">✓ Limit the carry-forward balance to a fixed amount and increase service deposits to discourage customers who move frequently or avoid paying their bills.✓ Financial Viability✓ Reduce the amount of money lost to unpaid bills
Timeline: <ul style="list-style-type: none">✓ Start date✓ Milestones✓ Target completion date	<ul style="list-style-type: none">✓ June 2013: Start -draft new carry-forward balance allowance and new service deposit requirements for new customers✓ July 2013: Propose and approve new balance and deposit requirements at board meeting✓ August 2013: Notify customers of new requirements✓ September 2013: Completion - Implement new balance and deposit requirements

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For Example...

Responsible Party (or Parties):	<ul style="list-style-type: none"> ✓ Bill Smith ✓ Jane Anderson
Relevant Resources (on-hand or needed):	<ul style="list-style-type: none"> ✓ Example ordinance text created by other utilities to support the desired policy change
Challenges to Address:	<ul style="list-style-type: none"> ✓ Public pressure on board members to reject rate increases
Review Process:	<ul style="list-style-type: none"> ✓ Milestone dates met
<ul style="list-style-type: none"> ✓ Performance indicators or measures ✓ Status reports and updates frequency/cycle 	<ul style="list-style-type: none"> ✓ Weekly progress checks with utility director relative to identified milestones
Other Notes:	<ul style="list-style-type: none"> ✓ Conduct calls with each board member to explain the need for the policy change and answer their questions

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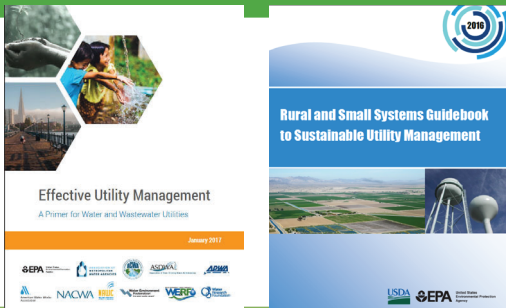
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Session 8A: Tools, Guides, and Other Available Resources



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Effective Utility Management <http://www.watereum.org/>



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Financial Viability

NRWA: Revolving Loan Fund

- Established Under Grant from USDA/RUS.
 - Rural Utility Service.
- Financing for pre-development costs.
- Also available for equipment replacement and service extension.

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Financial Viability

EPA: Setting Small Drinking Water System Rates for a Sustainable Future:

- Determining revenue needs.
- Setting rate design.
- Approaching rate implementation.

119

Financial Viability

RCAP: The Basics of Financial Management for Small-community Utilities:

- Understanding financial statements.
- Using financial ratios.

120

Financial Viability: Environmental Finance Center Network

Website: <http://efcnetwork.org/>



Free Webinars:

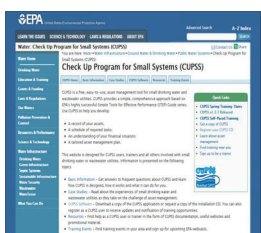
- Webinar of a Glance**
- Ask the Expert: Workforce Development**
Thursday, June 13, 2019
2:00 p.m. EDT
- Ask the Expert: Advice on Capital Planning for Your Water System**
Wednesday, June 19, 2019
2:00 p.m. EDT

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Infrastructure Stability

EPA: Check Up Program for Small System (CUPSS)

- Free Asset Management Tool for Small Drinking Water and Wastewater Utilities!
- Tips on How to Develop a Record of Your Assets, an Understanding of Your Financial Situation, and a Tailored Asset Management Plan.




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Operational Optimization

Water/Energy Efficiency


EPA: Energy Use Tool for Water and Wastewater Systems

- Interactive, Excel-based tool.
- Detailed analysis of all energy types.
- Provides summary report: statement of energy performance.




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Operational Optimization
Water/Energy Efficiency



RCAP: Sustainable Infrastructure for Small System Public Services: A Planning and Resource Guide:


- Water conservation.
- Energy efficiency.
- Renewable energy.



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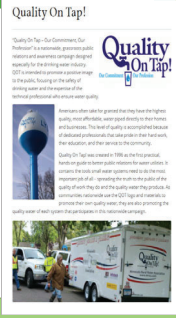
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Stakeholder Understanding and Support



NRWA: Quality on Tap!


- Nationwide, grassroots campaign for public awareness.
- Hands on guide to engagement and communication for better community support.



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Stakeholder Understanding and Support



RCAP: The Big Guide for Small Systems: A Resource for Board Members:

- Water and wastewater treatment basics.
- Regulatory responsibilities.
- Board business.
- Financial duties and responsibilities.



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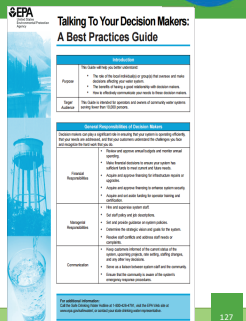
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Stakeholder Understanding and Support



EPA: Talking to Your Decision Makers – A Best Practices Guide:

- Role of community decision makers in small systems.
- Tips on how to communicate needs to decision makers.



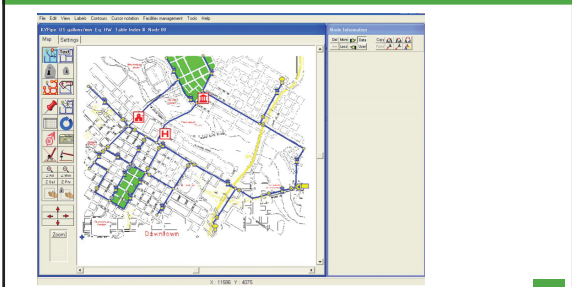
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Session 8B: Technical Support



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Free KYPIPE Software



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Session 9: Homework Assignment and Group Discussion



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Improving Outcomes Homework

- Complete an online survey from the session *Creating an Action Plan*.
- The survey follows your worksheet.
- Please complete by 3:00 tomorrow.
- KWRRRI staff will mail you a copy of your homework.

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Next Steps for Utility Manager

- Begin to implement your own workplan.

UTILITY HELPS

NEXT STEPS FOR YOUR UTILITY

Now that you have completed the Sustainable Management of Rural and Unincorporated Municipality, there are a number of important follow-up tasks that you should consider in order to ensure success. The following information will help you to get started on your own workplan based on the self-assessment you did in the workshop.

Approximate Timeframe	Recommended Activities
30 minutes after the workshop	<ul style="list-style-type: none"> Finalize the meeting notes and update the action plan. If the manager is unable to do this, assign a staff member to do so. Review the self-assessment results and identify the key areas for improvement. Review the self-assessment results with staff to get input on the next steps to be taken. Identify the key areas for improvement and assign staff to work on them.
1-2 weeks after the workshop	<ul style="list-style-type: none"> Develop a workplan for the next 1-2 weeks that includes the key areas for improvement. Assign staff to work on the key areas for improvement. Review the workplan with staff to get input on the next steps to be taken. Identify the key areas for improvement and assign staff to work on them.
3-6 months after the workshop	<ul style="list-style-type: none"> Review the workplan and progress on the key areas for improvement. Identify the key areas for improvement and assign staff to work on them. Review the workplan with staff to get input on the next steps to be taken. Identify the key areas for improvement and assign staff to work on them.

Tab 5 in your notebook

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Next Steps for Utility Operator


- Next Steps for Operator
 - Share what you have learned with your utility's other operators.
 - Apply the assessment process you just went through to address your own operational issues.
 - Identify your operational issues
 - Assess the issues (priority and performance)
 - Identify key area(s) to focus on
 - Develop and implement an action plan

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Session 10: Course Evaluation and Follow- Up

Please complete your online evaluation survey.

Thank you!



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Course Evaluation

- Complete an online course evaluation.
- Please complete by 3:00 tomorrow.
- KWRRRI staff will mail you:
 - Cover Letter
 - Three management reports:
 1. Utility Self-Assessment.
 2. Improving Outcomes.
 3. Creating an Action Plan.
 - Continuing Education Credit Hours Certificate.

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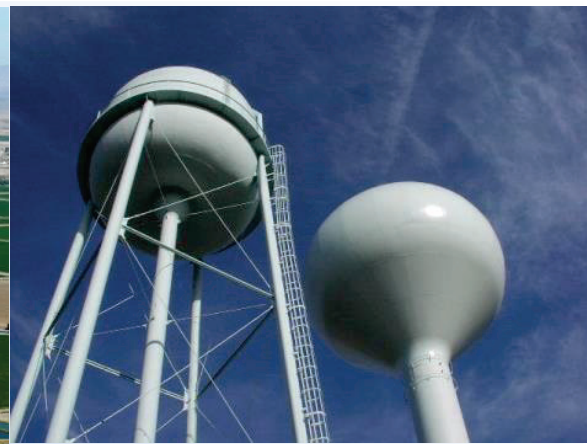
Scott Yost, UK Dept. of Civil Engineering
Scott.Yost@uky.edu
Phone: 859-533-1969

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Rural and Small Systems Guidebook to Sustainable Utility Management



United States
Environmental Protection
Agency

TABLE OF CONTENTS

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Improving Outcomes	12
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INTRODUCTION

Background & Purpose

Many rural and small systems throughout the country face significant management and operational issues. These may include aging or inadequate infrastructure, recruiting and retaining qualified staff, growing or establishing financial reserves, and setting rates that are reflective of their operational costs and capital needs. This *Rural and Small Systems Guidebook to Sustainable Utility Management (Guidebook)* speaks to these challenges. It is an important part of a Memorandum of Agreement (MOA) signed by the United States Department of Agriculture (USDA) and the United States Environmental Protection Agency (EPA). Instituted in 2011, the MOA supports a series of activities to help rural and small water and wastewater systems more effectively provide sustainable services to the communities they serve.

The *Guidebook* helps rural and small water and wastewater systems in their common mission to become more successful and efficient service providers. Because of its dynamic nature, this resource can be used effectively in many different ways:

- By system managers, water systems operations specialists, and staff as a guide for taking actions leading to short- and long-term improvement to system management and performance;
- By technical assistance service providers as they work with individual systems or groups of systems through workshops or other assistance efforts;
- As a resource for system improvement workshops;
- As a resource for guiding conversations about sustainability with utility board members; or
- As a resource for communicating and educating utility board members on the importance of effective management.

The *Guidebook* is designed to introduce rural and small water and wastewater systems to the key areas of effectively managed systems.

It provides background information on ten key management areas, as well as instruction and assistance on how to

What's in it For Me: Why should my system use this *Guidebook*?

The information in this Guidebook can help rural and small systems in several important ways by:

- ◆ Giving you a simple and objective way to evaluate your system's strengths and areas for improvement.
- ◆ Helping you develop an easy to follow plan for improving your operations based on your assessment.
- ◆ Helping you better communicate internally and with others like board members and customers about your system and challenges.
- ◆ Help build the necessary support for improving your system over time.

conduct a system assessment process based on the key management areas. It also includes information on how to prioritize areas for improvement, while developing measures of progress that can help small systems with performance enhancement.

The *Guidebook* is accompanied by a companion resource, the *Workshop in a Box: Sustainable Management of Rural and Small Systems Workshops*. The *Workshop in a Box* is a toolkit for utilities, technical assistance (TA) providers, water sector associations, and trainers who conduct workshops based on the principles presented in this *Guidebook*. The *Workshop in a Box* provides guidance for workshop preparations, execution, and copies of all materials to run a successful workshop on utility management improvement.

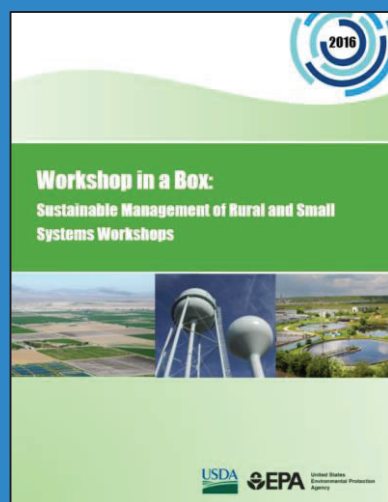
At each workshop, participants are given an introduction to the ten key management areas, and then asked to conduct a short self-assessment of their operations based on the management areas. Participants also identify management improvement opportunities at their systems based on the assessment. The workshop further provides an opportunity for participants to share experiences from their systems to better understand how to implement improvements and establish a basis for working with staff and community members to operate more effectively. Participants are also introduced to a compendium of resources that can help them implement the improvements identified during the assessment.

The information presented in these two resources draws on the results of four pilot workshops conducted by EPA and USDA, and 140+ workshops conducted by USDA, EPA, trainers and TA providers from 2013-2016 across all 50 states. It also draws on feedback from managers of rural and small systems who attended those workshops, and feedback from the trainers and TA providers who have conducted the workshops. Additionally, several small systems and water systems operations specialists provided input as the resources were developed.

The *Guidebook* begins by introducing the ten key management areas of effectively managed systems. A self-assessment follows to help users identify their strengths and challenges and to prioritize where to focus improvement efforts. It ends by discussing improving outcomes in the ten management areas. The *Guidebook* conveys what constitutes high achievement in each area and identifies resources for small systems. The overall approach and steps described in this *Guidebook* are similar to the approach in another initiative, called Effective Utility Management (EUM). EUM has been supported by EPA and several major water sector associations since 2008 and has been used successfully by medium and larger utilities. This *Guidebook* takes the approach embodied in EUM and adapts it for the needs of rural and small water and wastewater systems.

Workshop in a Box

The companion to this *Guidebook* is the *Workshop in a Box: Sustainable Management of Rural and Small Systems Workshops*. The *Workshop in a Box* is used by utilities, TA providers, water sector associations, and trainers around the United States to conduct workshops based on the Ten Key Management Areas described in this document. The workshops are designed to help small and rural utilities assess their strengths and challenges, and create an action plan for addressing these areas over time.



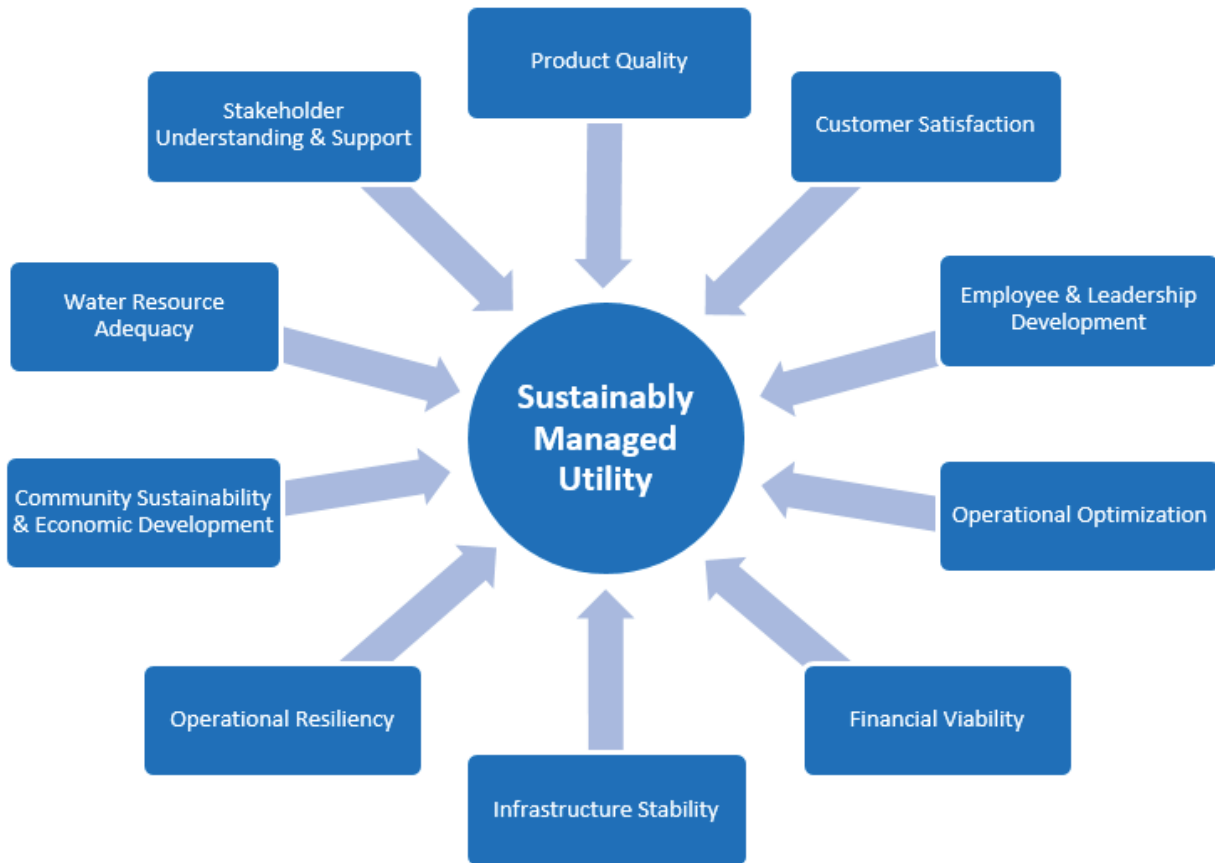
THE SUSTAINABLY MANAGED UTILITY: TEN KEY MANAGEMENT AREAS

The ten key management areas of sustainably managed utilities described here can help rural and small water and wastewater system managers address many ongoing challenges and move toward sustainable management of both operations and infrastructure. In aiming to increase their long-term sustainability and effectiveness, the eventual goal for systems is high achievement, consistent with the needs and expectations of their communities, in each of the management areas.

The management areas were developed by drawing on information and experience from a wide range of rural and small water system operations specialists and managers from across the United States. The management areas were further validated through the workshops held with rural and small systems, sponsored by EPA and USDA. Each management area is described as a desirable outcome for a system to achieve. Each can be considered a building block for improving system performance. Through working to improve performance in each of the ten areas, managers can help their systems to become more successful, resilient, and sustainable for the long term.

The management areas are not presented in a specific order. Together they make up the framework for a complete and well-rounded management approach. By making improvements in any of the areas, at a pace consistent with its most pressing challenges, a system will be able to deliver increasingly efficient, higher quality services. The graphic on the next page depicts the interconnectedness of the management areas. It also shows that no one area is weighted more heavily than another. All areas are equal in the context of the *Guidebook*. Descriptions of the management areas are found in the following pages, including the characteristics of successful outcomes for each.

- Product Quality
- Customer Satisfaction
- Employee & Leadership Development
- Operational Optimization
- Financial Viability
- Infrastructure Stability
- Operational Resiliency
- Community Sustainability & Economic Development
- Water Resource Adequacy
- Stakeholder Understanding & Support



PRODUCT QUALITY: The system is in compliance with permit requirements and other regulatory or reliability requirements. It meets its community’s expectations for the potable water or treated effluent and process residuals that it produces. The system reliably meets customer, public health, and ecological needs.

CUSTOMER SATISFACTION: The system is informed about what its customers expect in terms of service, water quality, and rates. It provides reliable, responsive, and affordable services, and requests and receives timely customer feedback to maintain responsiveness to customer needs and emergencies. Customers are satisfied with the services that the system provides.

EMPLOYEE & LEADERSHIP DEVELOPMENT: The system recruits and retains a workforce that is competent, motivated, and safe-working. Opportunities exist for employee skill development and career enhancement, and training programs are in place, or are available, to retain and improve their technical and other knowledge. Job descriptions and performance expectations are clearly established (in writing), and a code of conduct is in place and accepted by all employees.

OPERATIONAL OPTIMIZATION: The system ensures ongoing, timely, cost-effective, reliable, and sustainable performance in all aspects of its operations. The key operational aspects of the system (e.g., pressure, flow, quality) are documented and monitored. It minimizes resource use, loss, and impacts from day-to-day operations. It has assessed its current energy use and water loss and performed related audits.

FINANCIAL VIABILITY: The system establishes and maintains an effective balance between long-term debt, asset values, operations and maintenance expenditures, and operating revenues. Rates are adequate to pay its bills, put some funds away for both future capital expenditures and unanticipated issues, and maintain, repair, and replace its equipment and infrastructure as needed. The system discusses rate requirements with its customers, decision making authorities, and other key stakeholders.

INFRASTRUCTURE STABILITY: The system understands the condition and costs associated with its critical infrastructure assets. It has inventoried its system components, conditions, and costs, and has a plan in place to repair and replace these components. It maintains and enhances the condition of all assets over the long-term at the lowest possible life-cycle cost and acceptable level of risk.

OPERATIONAL RESILIENCY: The system ensures that its leadership and staff members work together to anticipate and avoid problems. It proactively identifies legal, financial, non-compliance, environmental, safety, security, and natural threats to the system. It has conducted a vulnerability assessment for safety, natural disasters, and other environmental threats, and has prepared an emergency response plan for these hazards.

COMMUNITY SUSTAINABILITY & ECONOMIC DEVELOPMENT: The system is active in its community and is aware of the impacts that its decisions have on current and long-term future community health and welfare. It seeks to support overall watershed, source water protection, and community economic goals, where feasible. It is aware of, and participates in, local community and economic development plans.

WATER RESOURCE ADEQUACY: The system ensures that water availability is consistent with current and future customer needs. It understands its role in water availability, and manages its operations to provide for long-term aquifer and surface water sustainability and replenishment. It has performed a long-term water supply and demand analysis, and is able to meet the water and sanitation needs of its customers now and for the reasonable future.

STAKEHOLDER UNDERSTANDING & SUPPORT: The system actively seeks understanding and support from decision making bodies, community members, and regulatory bodies related to service levels, operating budgets, capital improvement programs, and risk management decisions. It takes appropriate steps with these stakeholders to build support for its performance goals, resources, and the value of the services that it provides. The system performs active outreach and education to understand concerns and promote the value of clean, safe water and the services the utility provides, consistent with available resources.

SYSTEM IMPROVEMENT PRIORITIES: SELF ASSESSMENT

A candid and comprehensive self-assessment is the first step in identifying where a system can begin to make improvements in the ten management areas. The self-assessment helps rural and small systems identify their strengths and challenges to prioritize where efforts and resources should be focused. It can be completed by a number of different individuals within a utility (e.g., managers, staff), or as a team exercise amongst management, staff, and external stakeholders such as board members or customers (if appropriate). As an internal team exercise, it is recommended that each participant complete the assessment on his/her own, followed by a group discussion about the similarities and differences in results. Although the utility may use the assessment in a number of ways, the goal for all systems should be high achievement, consistent with the needs and expectations of their communities, in each of the management areas.

The self-assessment has three steps:

- 1) Rate achievement for each management area;
- 2) Rank the importance of each management area; and
- 3) Plot results to identify critical areas for improvement.

Once completed, the self-assessment exercise can help the system develop a plan for improving management area performance.



The Self-Assessment Worksheet

STEP 1 – RATING ACHIEVEMENT AREAS

Assess your system by rating your current level of achievement for each management area. Consider how effectively your current management efforts support each of the areas. Note that each management area has several dimensions (represented by the bullet points listed for each). Your rating should reflect the dimension with the lowest level of achievement. For example, if you believe that your achievement in one dimension of a management area was low, but your achievement in another dimension of that area was high, your overall rating for the area would be low. An example of the rating exercise can be found on the following page.

Scale from low achievement to high achievement:

- Select **Low** if your system has no workable practices in place for addressing this area – very low capacity and performance.
- Select **Medium** if your system has some workable practices in place with moderate achievement, but could improve – some capacity in place.
- Select **High** if your system has effective, standardized, and accepted practices in place. It either usually or consistently achieves goals – capacity is high and in need of very little or no further development.

YOUR TURN: Proceed to Table A in Appendix I and fill out the column labeled “Step 1” for each management area before moving to Step 2.

STEP 2 - RANKING PRIORITY AREAS

Rank the importance of each management area to your system. Base this ranking on your goals and the specific needs of your community. Your ranking may be influenced by current or expected challenges (e.g., if your community is experiencing elevated population growth rates, Water Resource Adequacy may be ranked as a high priority area to address). Again, note that each management area has multiple dimensions (represented by the bullet points listed). Your ranking should represent the highest priority of all of the points listed. Your ranking should also be independent of the achievement level. For example, an area can remain, and therefore be ranked, as a high priority even if the utility has high capacity and performance). An example of the rating exercise can be found on the following page.

Scale from low priority to high priority, keeping in mind the following:

- Current or expected challenges
- Customer or stakeholder impact (reliability, quality, timeliness)
- Consequences of not improving (non-compliance, increased cost, lost credibility, impacts to health and safety)
- Urgency (near or long term needs)
- Community priorities

YOUR TURN: Proceed to Table A in Appendix I and fill out the column labeled “Step 2” for each management area before moving to Step 3.

Key Management Area	Management Area Description	Step 1: Rate Achievement (Low High)	Step 2: Rank Priority (Low High)
1. Water Resource Adequacy (e.g., water quantity)	<ul style="list-style-type: none"> My system is able to meet the water or sanitation needs of its customers now and for the reasonable future. My system or community has performed a long-term water supply and demand analysis. (Applies to drinking water systems only.) My system understands its relationship to local water availability. (Drinking water utilities should focus on utilization rates relative to any local water stress conditions, wastewater utilities should focus on return flows.) 	Low	High
2. Product Quality (e.g., clean & safe water)	<ul style="list-style-type: none"> My system is in compliance with permit requirements and other regulatory or reliability requirements. My system meets local community expectations for the potable water and/or treated effluent and process residuals that it produces. 	Medium	High
3. Customer Satisfaction	<ul style="list-style-type: none"> Customers are satisfied with the services the system provides. My system has procedures in place to receive and respond to customer feedback in a timely fashion. 	High	Medium
4. Community Sustainability & Economic Development	<ul style="list-style-type: none"> My system is aware of and participating in local and regional community and economic development planning activities. My system's goals also help to support overall watershed and source water protection, and community economic goals. 	High	Low
5. Employee & Leadership Development	<ul style="list-style-type: none"> Training programs are in place to retain and improve institutional knowledge. Opportunities exist for employee skills development and career enhancement. Job descriptions, performance expectations, and codes of conduct are established. 	Low	Medium
6. Financial Viability	<ul style="list-style-type: none"> The rates that my system charges are adequate to pay our bills, put some funds away for the future, and maintain, repair, and replace our equipment and infrastructure as needed. (O&M, debt servicing, and other costs are covered). My system discusses rate requirements with our customers, board members, and other key stakeholders. 	Medium	High
7. Operational Optimization (e.g., energy/water efficiency)	<ul style="list-style-type: none"> My system has assessed its current energy usage and performed an energy audit. My system has maximized resource use and resource loss (e.g., water loss, treatment chemical use). My system understands, has documented, and monitors key operational aspects of the system (e.g., pressure, flow, quality). 	Medium	Medium
8. Infrastructure Stability (e.g., asset management practice)	<ul style="list-style-type: none"> My system has inventoried its current system components, condition, and cost. My system has a plan in place for repair and replacement of system components. 	Low	Medium
9. Operational Resiliency	<ul style="list-style-type: none"> My system has conducted an all hazards vulnerability assessment (safety, natural disasters, environmental risks, etc.). My utility has prepared an all hazards emergency response plan. 	Medium	Low
10. Stakeholder Understanding & Support	<ul style="list-style-type: none"> My system actively engages with local decision makers, community, watershed (where relevant), and regulatory representatives to build support for its goals, resources, and the value of the services it provides. My system performs active customer and stakeholder outreach and education to understand concerns and promote the value of clean and safe water. 	Low	Low

STEP 3 - PLOT RESULTS

To compare your results for each management area, you will plot each pair (rating, ranking) in Table B of Appendix I. For each management area, identify your high/medium/low rating in the green Step 1 box, and find the corresponding row in the table. Then, for the same management area, identify your high/medium/low ranking in the blue Step 2 box, and find the corresponding column in the table. The box where the row and column intersect is where you should place that management area (note abbreviations below for use in the plotting exercise). The example below shows how you should complete the Step 3 plotting exercise. The ranking and rating for each management area should be paired and placed into the corresponding box in the grid, based on the low/medium/high determinations given in Steps 1 and 2.

Table B: Example

Key Management Area	Management Area Description	Step 1: Rate Achievement (Low – High)	Step 2: Rank Priority (Low – High)
1. Water Resource Adequacy (e.g., water quantity)	<ul style="list-style-type: none"> My system is able to meet the water or sanitation needs of its customers now and for the reasonable future. My utility or community has performed a long-term water supply and demand analysis. (Applies to drinking water systems only) My system understands its relationship to local water availability. (Drinking water utilities should focus on utilization rates relative to any local water stress conditions, wastewater utilities should focus on return flows) 	Low	High
2. Product Quality (e.g., clean & safe water)	<ul style="list-style-type: none"> My system is in compliance with permit requirements and other regulatory or reliability requirements. My utility meets local community expectations for the potable water and/or treated effluent and process residual that it produces. 	Medium	High
3. Customer Satisfaction	<ul style="list-style-type: none"> Customers are satisfied with the services my system provides. My system has procedures in place to receive and respond to customer feedback in a timely fashion. 	High	Medium

Rating (Achievement)	High		CS	
	Medium			PQ
	Low			WA
		Low	Medium	High
		Ranking (Priority)		

YOUR TURN: Complete the plotting exercise in Step 3 in Table B of Appendix I before moving to Step 4.

STEP 4 - ANALYZE RESULTS

The results of the Step 3 plotting exercise identify management areas that will benefit from improvement. Generally speaking, management areas that fall into the **red box** are both **very important and need improvement**. They should be seen as a top priority for improvement. Management areas that land in the **yellow boxes** are next on the list for improvement, and those in the **white boxes** may be considered for long-term improvement efforts, but likely do not need immediate action. The eventual goal for all utilities should be high achievement in all management areas, but at a pace consistent with the system's priorities and resources.

A sustainable management improvement plan is a good way to identify and prioritize the actions. This plan should be incorporated, as appropriate, into the utility's annual budget, and coordinated with its capital improvement plans and long-range plan. The sustainable management improvement plan should derive directly from the analysis of the self-assessment results.

Both the self-assessment results and the sustainable management improvement plan can act as building blocks for long-range planning. A sustainable management improvement plan takes a long-term view of the system's goals and establishes a clear vision and mission. The plan should incorporate goals and actions for each priority management area in a logical sequence. The plan should also incorporate actions needed to maintain high achievement in the areas of current strong performance. Utilities are encouraged to repeat the self-assessment and update their sustainable management improvement plans as changes to system operations or infrastructure take place.

QUESTIONS TO CONSIDER:

Where is my system strong?

Where is there the most room for improvement?

What should my areas of focus be?

Why are these areas priorities?

Types of Plans

Sustainable Management Improvement Plan: A plan that addresses specific areas of utility management that need improvement. This type of plan should be designed around the assessment of the management areas presented in this *Guidebook*.

Capital Improvement Plan: A mid term plan (typically over a period of four to ten years) that identifies capital projects and equipment purchases. It provides a planning schedule and identifies options for financing each item.

Long Range Plan: A plan that addresses future outcomes to help meet goals over a long period of time (typically over a period of twenty years or more) by evaluating an organization and the environment in which it operates.

IMPROVING OUTCOMES

To create a successful sustainable management improvement plan, it is important to have at least a basic understanding of the following items:

- What it means to accomplish “high achievement” in each area;
- The changes a system will need to make to reach this level;
- The challenges that may arise for each management area; and
- How to track performance and progress.

This section of the *Guidebook* is designed to help systems develop a strategy for addressing each of these components of becoming a more sustainable and resilient system.

How to Succeed in Each Management Area: High Achievement and Common Challenges

Once a system has decided to improve its performance in one or more of the key management areas, the next step is to develop and implement a plan. To create a plan, it is important to have an idea of what challenges may arise, and what practices can be adopted to address each area.

Found on the following pages are overviews of challenges and effective practices for five management areas. These areas were discussed in-depth at the small system workshops that served as background for the *Guidebook*. Also included are examples of performance measures for each management area.

QUESTIONS TO CONSIDER FOR EACH MANAGEMENT AREA:

What will constitute ‘high achievement’ in this area?

What factors have led to performance gaps in this area?

What changes will my utility need to make to improve performance?

Who will need to be involved for changes to take place?

How will my utility track performance progress?

What will be the biggest challenges to performance improvement?

Are there external resources that can support the improvement of performance in this management area?

EMPLOYEE & LEADERSHIP DEVELOPMENT

Challenges specific to **Employee & Leadership Development** include:

- Employee motivation and opportunities for development can be hampered by a lack of resources.
- Limited access to training opportunities can prevent personal and professional development.
- Lack of written job responsibilities can lead to uncertainty about management expectations and a lack of recognition for the work that is done.
- Time constraints on employees.

Try this:

Develop relationships with neighboring systems to share training resources.

Examples of actions taken by high performing utilities in **Employee & Leadership Development** include:

- Have programs in place to retain and improve institutional knowledge, such as a “living document” with best practices for different areas of utility operations that is updated regularly (e.g., have a “best practices” document that includes sections for each area of operation, and every six months ask an operator from each area to review the content and make updates as necessary).
- Ensure that staff members are cross-trained (i.e., more than one staff member can do a specific job).
- Allow employees to work non-traditional schedules (e.g., a modified overtime schedule) to allow for on-the-job-training (e.g., job shadowing of other employees as a part of cross-training).
- Identify and schedule key training events that staff members are required to attend. Whenever possible, make training events short and focused, and build them into the regular work day.
- Establish and clearly communicate staff performance requirements (e.g., create a table of capabilities for successful performance in the different positions and review with staff annually).
- Create an outreach plan to attract qualified staff (e.g., with local schools or veteran’s associations).
- Create incentive programs to retain staff, encourage training, or encourage staff to take on additional duties (e.g., monthly or quarterly recognition/awards for staff that have gone above and beyond their regular duties or competition between staff members for accruing the most training hours in a set period of time).
- Develop training module templates for how to conduct trainings on different topics. Include presenter notes and materials for participants.
- Check in with staff regularly to identify new training needs.
- Create partnerships with the system’s insurance agency or state water organization to benefit from free or reduced rate training programs that they may offer.
- Help train, or otherwise assist, staff from neighboring utilities.

Measures that you might consider for tracking accomplishments in Employee & Leadership Development:

- ◆ **Employee turnover rate:** $\frac{\text{Number of employee departures per year}}{\text{Number of total positions per year}}$
- ◆ **Employee job satisfaction rate:** $\frac{\text{Number of employees satisfied with their jobs per year}}{\text{Total number of employees per year}}$
- ◆ **Annual training hours per employee**

FINANCIAL VIABILITY

Challenges specific to **Financial Viability** include:

- It is uncomfortable and politically challenging to discontinue service to neighbors, acquaintances, elderly customers, or fixed income customers who have not paid their bills.
- It is difficult to communicate to elected officials and consumers about how much it costs to produce drinking water and process wastewater, making it a challenge to get rate increases approved.
- Customers feel that flat rate billing practices are unfair (low volume users paying the same as high volume users).
- Elected officials may make campaign commitments to no rate increases.

Try this:

Undertake a rate study to determine if current rates are adequate to meet both current and future needs.

Examples of actions taken by high performing utilities in **Financial Viability** include:

- Discuss rate requirements and related system repair requirements with customers, board members, and other key stakeholders so that there is a better understanding within the community of why rate decisions and changes are made. (Consider using a respected member of the community to facilitate this discussion).
- Have a study on rate requirements conducted by an independent consultant (e.g., National Rural Water Association, Rural Community Assistance Partnership) to back up discussions about rate requirements.
- Establish predictable rates, consistent with community expectations and acceptability.
- Have financial accounting policies and procedures in place.
- Have ordinances in place for automatic rate increases tied to cost of living increases.
- Set aside funds for reserves (i.e., have a “rainy day” fund).
- Increase equity in billing practices by using meters whenever possible.
- Conduct quarterly budget reviews.
- Identify priorities for system improvements to aid in allocation of available funds.
- Improve practices for reducing the number of outstanding bills (e.g., limit the carry-forward balance to a fixed amount or increase service connection fees or service deposits to discourage customers who move frequently or avoid paying their bills).
- Create incentives for early bill payment (e.g., a 5% discount for bills paid early, or a good customer discount such as a discount on the seventh month’s bill after six months of paying on time).
- Communicate financial viability information to stakeholders to keep them informed about rates.

Measures that you might consider for tracking accomplishments in **Financial Viability**:

- 💧 **Revenue to expenditures ratio:** $\frac{\text{Total annual revenue}}{\text{Total annual expenditures}}$
- 💧 **Debt ratio:** $\frac{\text{Total liabilities}}{\text{Total assets}}$
- 💧 **Number of late or unpaid bills per billing period**
- 💧 **Number of annual shutoffs**

INFRASTRUCTURE STABILITY

Challenges related to **Infrastructure Stability** include:

- Planning for repair and maintenance of infrastructure is hampered by a limited knowledge of the condition of existing infrastructure components.
- Many systems are trapped in a reactive repair and maintenance mode leaving little or no time for undertaking the proactive work needed to establish an asset management program.

Examples of actions taken by high performing utilities in **Infrastructure Stability** include:

- Create a complete and organized inventory of its current system components, condition, location, age, life expectancy, and cost.
- Conduct inflow and infiltration (I&I) and water loss analyses to determine the revenue and cost implications of deteriorating pipe conditions.
- As major collection system replacements are needed, consider sewer (sanitary and stormwater) separation to improve treatment performance and preserve treatment capacity.
- Track the status of all system components to be better aware of where weaknesses exist and when maintenance may be required (e.g., plotting valves, hydrants, and main breaks on a map).
- Coordinate asset repair, rehabilitation, and replacement with other community projects and repairs (e.g., road maintenance) to minimize disruptions and other negative consequences. Communicate these repairs in advance with customers in case of service disruptions.
- Track the frequency and cause of repeat collection, distribution, and maintenance problems.
- Establish a capital improvement plan that identifies capital projects and equipment purchases, as well as the resources needed to fund them.
- Have an understanding of system operating parameters (e.g., pressure).
- Organize all system documentation in a manner that it can be easily accessed by multiple staff members in the case of a break-down or other event.
- Focus on small annual projects and system upgrades rather than major undertakings.

Try this:

Create an inventory of your assets over time by setting up a template for logging assets. Log assets at the time that regular maintenance or emergency repairs are performed.

Measures that you might consider for tracking accomplishments in Infrastructure Stability:

- 💧 **Inventory completeness rate:** $\frac{\text{Total number of critical assets inventoried}}{\text{Total number of critical assets owned and operated}}$
- 💧 **Condition assessment rate:** $\frac{\text{Number of assets with condition assessed and put into condition categories}}{\text{Total number of assets}}$

OPERATIONAL RESILIENCY

Challenges related to **Operational Resiliency** include:

- A lack of system documentation.
- Insufficient time to conduct training and exercises on the emergency response plan.
- Employee and board member turnover makes it difficult to maintain familiarity with emergency response procedures and materials.

Examples of actions taken by high performing utilities in **Operational Resiliency** include:

- Conduct an all hazards vulnerability assessment.
- Prepare an all hazards emergency response plan, including all associated documents (e.g., shut off checklists, notices, and contact information), and conduct training and exercises on the plan. In this plan, make sure to indicate who is responsible for each activity.
- Distribute all emergency documents to board members and other essential personnel, including local emergency responders.
- Participate in your state's Wastewater Agency Response Network (WARN) program to share resources with neighboring utilities during an emergency through mutual aid and assistance.
- Develop relationships with contractors to ensure the types of equipment and services needed during emergencies are available in a timely fashion.
- Have safety policies in place to protect employees against work-related injuries.
- Identify and establish risk communication roles and responsibilities.
- Coordinate emergency response plans with local response partners, including emergency management agencies, police, fire, and critical independent sectors (e.g., hospitals and power companies).
- Identify a state certified laboratory that can help with emergency water testing during an incident.
- Plan for recovery by identifying funding resources that may be available to restore and strengthen the resiliency of your system. Identify opportunities to mitigate and adapt to climate change.

Try this:

Use an annual board meeting as an opportunity to distribute and review key emergency documents.

Measures that you might consider for tracking accomplishments in Operational Resiliency:

- 💧 Annual number of work related injuries
- 💧 Annual number of emergency response trainings or exercises held
- 💧 Period of time (hours or days) that minimum daily demand can be met with the primary water source unavailable

STAKEHOLDER UNDERSTANDING & SUPPORT

Challenges related to **Stakeholder Understanding & Support** include:

- Customers and stakeholders display a lack of interest in gaining a better understanding of utility needs.
- Customer resistance to paying water bills or supporting rate increases.

Examples of actions taken by high performing utilities in **Stakeholder Understanding and Support** include:

- Perform active customer and stakeholder outreach and education (e.g., hold meetings with stakeholders at the facility to convey a basic understanding and knowledge of utility operations).
- Utilize engagement and outreach activities as opportunities to also better understand community and customer needs and interests related to utility operations.
- Promote the value of clean and safe water (e.g., utilize pre-prepared National Rural Water Association education materials associated with its Quality on Tap program).
- Actively engage with local decision makers, watershed, and regulatory representatives through newsletters, regular meetings, and surveys.
- Have a capital improvement plan or other document to share with stakeholders that summarizes utility priorities. Make this information easily available.
- Establish active level of service goals to set performance measures for the utility and share with customers.
- Use free space in bills to provide important information to customers.
- Share positive information on your utility with local media sources as a way of establishing a positive working relationship.

Try this:

Host an annual open house or barbeque at your facility for stakeholders and community members. Offer tours of the facility to citizens and local media as a part of this event.

Measures that you might consider for tracking accomplishments in Stakeholder Understanding & Support:

- ◆ Annual number of stakeholder outreach activities conducted
- ◆ Amount of annual positive media coverage (number of media stories per year)
- ◆ Rate of responsiveness to stakeholder suggestions/complaints:

$$\frac{\text{Number of stakeholder suggestions or complaints responded to}}{\text{Total number of stakeholder suggestions or complaints}}$$

WHAT'S NEXT: CREATING YOUR PLAN FOR ACTION

Creating a Plan

Having gained a more complete understanding of strengths and challenges based on the self-assessment and an idea of what actions can strengthen performance in the management areas, a system will be better equipped to develop an effective sustainable management improvement plan. Where feasible it is useful for a single staff member (or, “champion”) to have responsibility of overseeing improvement plan development. Various staff members and managers, however, should be involved in its creation, if possible. In drafting a plan, the utility should create specific tasks for addressing its targeted improvement areas, and identify adjustments necessary to make the desired changes.

After completing the self-assessment exercise, the system will select priority improvement areas from the red and yellow boxes of the plotting exercise. The sustainable management improvement plan should be **simple, specific, realistic, and complete**. Appendix III contains references for a wide range of resources covering all of the management areas. These resources will be useful for identifying the options you have for undertaking management area improvements. For each improvement action that you identify, the plan should include the following components:

- An easy-to-understand, but still thorough, **description** of what actions will be taken;
- Identification of **who will be responsible** for taking the action;
- Known **resources** already on-hand or needed to complete the actions (financial, informational, or other);
- Identification of key **challenges** that will need to be addressed;
- A **timeline** with key milestones for the actions in the plan, and a date by when the plan will be completed (or acknowledgement if it is ongoing); and
- A **review loop** to periodically assess progress in implementing the plan and adapting the plan to changing conditions (e.g., implementing a new billing system, measuring the efficiency of the system as implemented, and refining the system based on the information from the performance measures).

The utility can create its own action plan format based on its needs and circumstances, or use the blank Sustainable Management Action Plan Worksheet in Appendix II. A sustainable management improvement plan does not have to be long or even perfect. What's most important is that the system has a plan in place and that it sticks with it!

How You Can Take Action

Results of the Self-Assessment exercise can be implemented in many different ways to accommodate an individual utility's regular near-term and long-term planning processes. For utilities that are just getting started with planning or those that would like to take immediate action outside of their normal planning cycle, an example timeline with suggested activities is outlined on the following page.

First Step: Complete Your Self Assessment

- Following the steps in the worksheet, complete a self-assessment for your system.
- **Try this:** *It is often helpful for utility staff to complete the worksheet as a team, and to involve decision makers (e.g., board members, city council members, mayors) in the self-assessment process (if possible).*

1-4 Weeks After the Self Assessment is Completed

- If they have not already been involved in the process up to this point, consider reaching out to decision makers (e.g., board members, community leaders) whose roles relate to or influence utility operations. Explain your self-assessment results to them and tell them why it is important to take action in your priority management areas.
- Complete a preliminary Sustainable Management Improvement Plan Worksheet (found in Appendix II).
- **Try this:** *Make sure that all utility members who may be assigned action items as a part of the worksheet are present when the worksheet is completed to help create accountability.*

4-8 Weeks After the Self Assessment is Completed

- Share your preliminary action plan with decision makers and modify the plan based on their feedback.
- Gain necessary approvals to move forward with implementing the action plan.
- **Try this:** *Schedule a site visit with a local TA provider to gain additional tips and input for implementing your plan.*

8-15 Weeks After the Self Assessment is Completed

- Begin to implement the action plan based on the timelines that you identified in the Sustainable Management Improvement Plan Worksheet.

12-15 Weeks After the Self Assessment is Completed

- Hold an internal follow-up meeting to assess progress on action plan activities and adjust the plan as needed.

Ongoing

- Hold regular meetings to assess your action plan activities.
- Periodically revisit the Self-Assessment Worksheet to identify emerging priority management areas.
- Complete new Sustainable Management Improvement Plan Worksheets as additional priority management areas are identified.
- Share success stories and challenges with TA providers and neighboring utilities to continually improve performance.

The Sustainable Management Improvement Plan Worksheet

Instructions:

1. List your top three priority management areas – these should be drawn from the self-assessment activity.
2. List the improvement actions that you will undertake to address the priority management areas – you should have at least one action for each priority management area (actions may address multiple management areas).
3. Fill out the details in the table below for each improvement action separately (i.e., one table per action).

EXAMPLE SUSTAINABLE MANAGEMENT IMPROVEMENT PLAN WORKSHEET

Priority Management Areas:

1. Water Resource Adequacy
2. Product Quality
3. Financial Viability

Improvement Action: Improve practices for reducing the number of outstanding bills	
Description: ✓ Action ✓ Management Area(s) addressed ✓ Objective(s)	✓ Limit the carry-forward balance to a fixed amount and increase service deposits to discourage customers who move frequently or avoid paying their bills. ✓ Financial Viability ✓ Reduce the amount of money lost to unpaid bills
Timeline: ✓ Start date ✓ Milestones ✓ Target completion date	✓ June 1: Start -Draft new carry-forward balance allowance and new service deposit requirements for new customers ✓ July: Propose and approve new balance and deposit requirements at board meeting August: Notify customers of new requirements ✓ September 30: Completion - Implement new balance and deposit requirements
Responsible Party (or Parties):	✓ Bill Smith ✓ Jane Anderson
Relevant Resources (on-hand or needed):	✓ Example ordinance text created by other utilities to support the desired policy change
Challenges to Address:	✓ Public pressure on board members to reject rate increases
Review Process: ✓ Performance indicators or measures ✓ Status reports and updates frequency/cycle	✓ Milestone dates met ✓ Weekly progress checks with utility director relative to identified milestones
Other Notes:	✓ Conduct calls with each board member to explain the need for the policy change and answer their questions

YOUR TURN: Complete the Improvement Plan Worksheet in Appendix II.

Measuring Progress

As a part of the review loop built into an action plan, the system must determine how to track progress toward achievement of performance goals. For rural and small systems, it is most feasible to measure internal performance, rather than trying to gather external data needed for more complex evaluations. Some measurements to consider are included in the “How to Succeed in Each Area” section of the *Guidebook*, beginning on page 12, but it is important to remember that performance measures should be tailored to the specific needs and goals of each system.

Some points to keep in mind when selecting performance measures are included below:

- Select the **right number, level, and type of measures** for the utility’s capabilities and capacity. (As a general rule, having a short list of measures is probably best.)
- Measuring performance will require some level of **resource commitment**. (Resources can include money, time, and personnel.)
- Develop **clear and consistent definitions** for each measure. (How will it be tracked and reported?)
- Set **reasonable targets** based on criteria such as performance and improvement in previous years, or customer expectations. (How quickly does the community expect projects to be completed?)
- Develop a process for **evaluating and responding to the results** of measuring progress. (Now that the utility knows how it is doing, how will it use this information to continue to improve its performance?)
- Select measures that support the system’s **short-term and long-term goals**. (How do these measurements fit into the “big picture” of the utility?)
- **Periodically report on progress** to the board and other key stakeholders in the community.
- **Recognize and celebrate** progress along the way! (Every little bit counts.)

Assessing Accomplishments and Making Improvements

Having created a structure for measuring progress toward meeting improvement goals, a system will need to complete the third step in the review loop: assessing accomplishments (or pitfalls) and making adjustments as needed. Setting aside time on a quarterly, biannual, or annual basis to discuss the progress that has been made towards key management goals is one of the simplest, but most important, actions that a system can take. By addressing the key questions and modifying the improvement plan on a regular basis, a system will keep the goals, and itself, up-to-date on current issues and on the path to being a more resilient, sustainable system.

QUESTIONS TO CONSIDER:

What is working? Why?

What is not working? Why?

Have internal or external conditions for my utility changed?

How can my plan be adjusted accordingly?

APPENDICES

Appendix I: Self-Assessment Worksheet

Appendix II: Sustainable Management Action Plan Worksheet

Appendix III: Resources for Rural and Small Systems

APPENDIX I: SELF-ASSESSMENT

WORKSHEET

STEP 1 – RATING ACHIEVEMENT AREAS

Assess your system by rating your current level of achievement for each management area. Consider how effectively your current management efforts support each of the areas. Note that each management area has several dimensions (represented by the bullet points listed for each). Your rating should reflect the dimension with the lowest level of achievement. For example, if you believe that your achievement in one dimension of a management area was low, but your achievement in another dimension of that area was high, your overall rating for the area would be low. An example of the rating exercise can be found on the following page.

Scale from low achievement to high achievement:

- Select **Low** if your system has no workable practices in place for addressing this area – very low capacity and performance.
- Select **Medium** if your system has some workable practices in place with moderate achievement, but could improve – some capacity in place.
- Select **High** if your system has effective, standardized, and accepted practices in place. It either usually or consistently achieves goals – capacity is high and in need of very little or no further development.

STEP 2 - RANKING PRIORITY AREAS

Rank the importance of each management area to your system. Base this ranking on your goals and the specific needs of your community. Your ranking may be influenced by current or expected challenges (e.g., if your community is experiencing elevated population growth rates, Water Resource Adequacy may be ranked as a high priority area to address). Again, note that each management area has multiple dimensions (represented by the bullet points listed). Your ranking should represent the highest priority of all of the points listed. Your ranking should also be independent of the achievement level. For example, an area can remain, and therefore be ranked, as a high priority even if the utility has high capacity and performance). An example of the rating exercise can be found on the following page.

Scale from low priority to high priority, keeping in mind the following:

- Current or expected challenges
- Customer or stakeholder impact (reliability, quality, timeliness)
- Consequences of not improving (non-compliance, increased cost, lost credibility, impacts to health and safety)
- Urgency (near or long term needs)
- Community priorities

Table A

Key Management Area	Management Area Description	Step 1: Rate Achievement (Low – High)	Step 2: Rank Priority (Low – High)
1. Water Resource Adequacy (e.g., water quantity)	<ul style="list-style-type: none"> My system is able to meet the water or sanitation needs of its customers now and for the reasonable future. My utility or community has performed a long-term water supply and demand analysis. (Applies to drinking water systems only.) My system understands its relationship to local water availability. (Drinking water utilities should focus on utilization rates relative to any local water stress conditions, wastewater utilities should focus on return flows.) 		
2. Product Quality (e.g., clean & safe water)	<ul style="list-style-type: none"> My system is in compliance with permit requirements and other regulatory or reliability requirements. My utility meets local community expectations for the potable water and/or treated effluent and process residuals that it produces. 		
3. Customer Satisfaction	<ul style="list-style-type: none"> Customers are satisfied with the services the system provides. My system has procedures in place to receive and respond to customer feedback in a timely fashion. 		
4. Community Sustainability & Economic Development	<ul style="list-style-type: none"> My utility is aware of and participating in local and regional community and economic development planning activities. My utility's goals also help to support overall watershed and source water protection, and community economic goals. 		
5. Employee & Leadership Development	<ul style="list-style-type: none"> Training programs are in place to retain and improve institutional knowledge. Opportunities exist for employee skills development and career enhancement. Job descriptions, performance expectations, and codes of conduct are established. 		
6. Financial Viability	<ul style="list-style-type: none"> The rates that my utility charges are adequate to pay our bills, put some funds away for the future, and maintain, repair, and replace our equipment and infrastructure as needed. (O&M, debt servicing, and other costs are covered.) My utility discusses rate requirements with our customers, board members, and other key stakeholders. 		
7. Operational Optimization (e.g., energy/water efficiency)	<ul style="list-style-type: none"> My utility has assessed its current energy usage and performed an energy audit. My utility has maximized resource use and resource loss (e.g., water loss, treatment chemical use). My utility understands, has documented, and monitors key operational aspects of the system (e.g., pressure, flow, quality). 		
8. Infrastructure Stability (e.g., asset management)	<ul style="list-style-type: none"> My utility has inventoried its current system components, condition, and cost. My system has a plan in place for repair and replacement of system components. 		
9. Operational Resiliency	<ul style="list-style-type: none"> My utility has conducted an all hazards vulnerability assessment (safety, natural disasters, environmental risks, etc.). My utility has prepared an all hazards emergency response plan. 		
10. Stakeholder Understanding & Support	<ul style="list-style-type: none"> My system actively engages with local decision makers, community, watershed (where relevant), and regulatory representatives to build support for its goals, resources, and the value of the services it provides. My utility performs active customer and stakeholder outreach and education to understand concerns and promote the value of clean and safe water. 		

STEP 3 - PLOT RESULTS

To compare your results for each management area, you will plot each pair (rating, ranking) in Table B of Appendix I. For each management area, identify your high/medium/low rating in the green Step 1 box, and find the corresponding row in the table. Then, for the same management area, identify your high/medium/low ranking in the blue Step 2 box, and find the corresponding column in the table. The box where the row and column intersect is where you should place that management area (note abbreviations below for use in the plotting exercise). The example below shows how you should complete the Step 3 plotting exercise. The ranking and rating for each management area should be paired and placed into the corresponding box in the grid, based on the low/medium/high determinations given in Steps 1 and 2.

WA	Water Resource Adequacy	FV	Financial Viability
PQ	Product Quality	OO	Operational Optimization
CS	Customer Satisfaction	IS	Infrastructure Stability
CE	Community Sustainability & Economic Development	OR	Operational Resiliency
ED	Employee & Leadership Development	SS	Stakeholder Understanding & Support

Table B

Rating (Achievement)	High			
	Medium		Yellow	Yellow
	Low		Yellow	Red
		Low	Medium	High
	Ranking (Priority)			

STEP 4 - ANALYZE RESULTS

The results of the Step 3 plotting exercise identify management areas that will benefit from improvement. Generally speaking, management areas that fall into the **red box** are both **very important and need improvement**. They should be seen as a top priority for improvement. Management areas that land in the **yellow boxes** are next on the list for improvement, and those in the **white boxes** may be considered for long-term improvement efforts, but likely do not need immediate action. The eventual goal for all utilities should be high achievement in all management areas, but at a pace consistent with the system's priorities and resources.

QUESTIONS TO CONSIDER:

Where is my utility strong?

Where is there the most room for improvement?

What should my areas of focus be?

Why are these areas priorities?

APPENDIX II: SUSTAINABLE MANAGEMENT ACTION PLAN WORKSHEET

Instructions:

- ✓ List your top three priority management areas – these should be drawn from the self-assessment activity.
- ✓ List the improvement actions that you will undertake to address the priority management areas – you should have at least one action for each priority management area (actions may address multiple management areas).
- ✓ Fill out the details in the table below for each improvement action separately (i.e., one table per action).

Priority Management Areas:

- 1.
- 2.
- 3.

Improvement Action:
Description: <ul style="list-style-type: none">✓ Action✓ Management Area(s) addressed✓ Objective(s)
Timeline: <ul style="list-style-type: none">✓ Start date✓ Milestones✓ Target completion date
Responsible Party (or Parties):
Relevant Resources (on-hand or needed):
Challenges to Address:
Review Process: <ul style="list-style-type: none">✓ Performance indicators or measures✓ Status reports and updates frequency/cycle
Other Notes:

APPENDIX III: RESOURCES FOR RURAL AND SMALL SYSTEMS

As a companion resource to this *Guidebook*, this list of resources offers additional information and guidance specific to small systems on the ten key management areas. Resources are identified in the table by the key management areas that they address (abbreviations in the table are identified in the key below). The majority of the resources listed are available free of charge.

WA	Water Resource Adequacy	FV	Financial Viability
PQ	Product Quality	OO	Operational Optimization
CS	Customer Satisfaction	IS	Infrastructure Stability
CE	Community Sustainability & Economic Development	OR	Operational Resiliency
ED	Employee & Leadership Development	SS	Stakeholder Understanding & Support

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
ArcGIS for Water Utilities http://solutions.arcgis.com/utilities/ <i>An industry specific configuration of ArcGIS designed to meet common needs of water, wastewater and stormwater utilities and is delivered as module of ArcGIS for Local Government. ArcGIS for Water Utilities is a free download that you can deploy on top of either the entire ArcGIS System or the individual components of the ArcGIS System that your organization licenses.</i>								✓		
ArcGIS for Water Utilities – Water Conservation Dashboard http://solutions.arcgis.com/utilities/water/help/water-conservation-dashboard/ <i>Allows operations managers to view the progress and results of green infrastructure verifications, watering violations, and service shutdown information. Helps managers to understand and ensure the completion of water conservation field operations.</i>	✓						✓			
Asset Management: A Handbook for Small Water Systems http://nepis.epa.gov/Exe/ZyPDF.cgi/2000261D.PDF?Dockkey=2000261D.PDF <i>Presents basic concepts of asset management and provides the tools to develop an asset management plan. It is designed for owners and operators of small community water systems (CWSs). CWSs include all systems (both publicly and privately owned) with at least 25 year-round residential customers or 15 year-round service connections.</i>						✓	✓	✓		
AWWA Water Audit Software http://www.awwa.org/resources-tools/water-knowledge/water-loss-control.aspx <i>Free software to compile a preliminary audit.</i>										

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>“Basic Training” for Drinking Water Board Members – Online Course Reference Guide http://www.newwa.org/Portals/0/Utility%20Resources/FINAL%202013-09-25_Wtr_Comm_Book-Low%20Res.pdf <i>A guide for new board members, developed by the New England Water Works Association with funding from EPA Region 1. Covers items such as roles and responsibilities, communications, board operations, working with operators, budgets and rate setting, planning for the future, and treatment and distribution basics.</i></p>	✓	✓			✓	✓		✓		
<p>The Basics of Financial Management for Small-community Utilities http://www.rcapsolutions.org/wp-content/uploads/2013/06/RCAP-Financial-Management-Guide.pdf <i>A basic guide that is ideal for a board member of a drinking water or wastewater utility who needs to understand the financial aspects of a utility's operations.</i></p>					✓	✓				
<p>The Big Guide for Small Systems: A Resource for Board Members http://rcap.org/wp-content/uploads/2016/03/Big-Guide-for-Small-Systems.pdf <i>A comprehensive desk reference that is ideal as an orientation and background for new members on a utility's board of directors. Designed for members of the board of a drinking water and/or wastewater system in a small community. In various parts of the guide, sample documents are provided that utilities can take and adapt for use in their own situations.</i></p>			✓		✓					✓
<p>Board Member Training http://msucare.com/water/waterboard/waterindex.html <i>Trains board members in the areas of laws and regulations, duties and responsibilities, ethics, operation and maintenance, management and finance, rate setting, and public relations and customer service.</i></p>										✓
<p>Building Water System Capacity: A Guide for Tribal Administrators http://www.epa.gov/sites/production/files/2015-04/documents/epa816k01006.pdf <i>Resource describes the process through which drinking water systems acquire and maintain the technical, financial, and managerial capabilities to consistently provide safe drinking water.</i></p>		✓	✓							
<p>Capital Improvement Plan (CIP) Tool for Water and Wastewater Utilities http://www.efc.sog.unc.edu/project/capital-planning-resources-water-and-wastewater-utilities <i>CIP tool with example data and tools to create easy-to-understand predictions on: financial reserves, rate increases, and capital investment.</i></p>								✓		
<p>Care and Conserve Sewer Line Repairs http://www.cleanwateratlanta.org/environmentaleducation/CareConserve.htm <i>Sample program for low income assistance.</i></p>						✓				

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>Check Up Program for Small Systems http://www.epa.gov/dwcapacity/information-check-program-small-systems-cupss-asset-management-tool <i>Provides a simple, comprehensive approach based on EPA's highly successful Simple Tools for Effective Performance (STEP) Guide series. Use CUPSS to help you develop: a record of your assets, a schedule of required tasks, an understanding of your financial situation, and a tailored asset management plan.</i></p>						✓	✓	✓		
<p>Circuit Rider Program http://nrwa.org/initiatives/training-and-technical-assistance/ <i>Provides technical assistance for the operations of rural water systems. Rural Utilities Service through contracting, has assisted rural water systems with day-to-day operational, financial, and management problems. The assistance may be requested by officials of rural water systems or RUS. The program compliments the loan supervision responsibilities for RUS. The National Rural Water Association has entered into a contract with RUS to provide this service. National Rural Water Association - State Affiliates do the work in their states.</i></p>					✓	✓		✓	✓	
<p>Cross-Connection Control: A Best Practices Guide http://nepis.epa.gov/Exe/ZyPDF.cgi/2000ZZB8.PDF?Dockey=2000ZZB8.PDF <i>This guide discusses the importance of controlling cross-connections and preventing backflow occurrences from unprotected cross-connections in the water system.</i></p>		✓								
<p>Drinking Water Security for Small Systems Serving 3,300 or Fewer Persons http://nepis.epa.gov/Exe/ZyPDF.cgi/20017JWD.PDF?Dockey=20017JWD.PDF <i>Presents basic information and steps you can take to improve security and emergency preparedness at your water system.</i></p>									✓	
<p>A Drop of Knowledge http://rcap.org/resource/a-drop-of-knowledge/ <i>A Drop of Knowledge (formerly the eBulletin) is one of RCAP's main communications resources. It is an electronic newsletter delivered via email that provides tools focusing on issues facing water and wastewater systems and small, rural communities. A Drop of Knowledge is designed for staff of water systems/utilities, board members and elected officials. It provides helpful tips, guides and resources on practical subjects and is written in plain English. The information it contains will help you make informed decisions to benefit your community, keep your system in compliance, and maintain water quality in the most proactive way.</i></p>						✓	✓	✓	✓	
<p>EFC Financial Dashboard http://www.efc.sog.unc.edu/project/utility-financial-sustainability-and-rates-dashboards <i>Free, interactive rates dashboards that are designed to assist utility managers and local officials analyze water and wastewater rates against multiple characteristics.</i></p>						✓	✓	✓		
<p>eLearning – Leadership & Management Courses http://www.awwa.org/conferences-education/distance-learning/elearning.aspx <i>AWWA's online courses on leadership and management.</i></p>					✓					

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>eLearning – “Water Basics for Decision Makers” http://www.awwa.org/store/productdetail.aspx?productid=6655 Document for decision makers in water or wastewater utilities, or for those who regularly interact with professionals but don't clearly understand how water is distributed and treated.</p>										✓
<p>Energy Efficiency in Water and Wastewater Facilities http://www3.epa.gov/statelocalclimate/documents/pdf/wastewater-guide.pdf A guide to developing and implementing greenhouse gas reduction programs.</p>							✓			
<p>Financial Management Courses http://www.newwa.org/NetCode/courseDesclList.aspx Search under course category "Management."</p>						✓				
<p>Financial Planning: A Guide for Water and Wastewater Systems http://www.nmenv.state.nm.us/dwb/Documents/Public%20Info/RCAC%20Financial%20guide%20final%206.pdf Guidebook that walks a utility through the annual budgeting process, the rate setting process, and creating a 6-year financial plan.</p>						✓				
<p>Formulate Great Rates: The Guide to Conducting a Rate Study for a Water System http://rcap.org/wp-content/uploads/2012/03/Formulate-Great-Rates.pdf A guide to developing a fair and equitable rate structure in a small drinking water or wastewater system.</p>		✓	✓			✓				
<p>Getting in Step: A Guide for Conducting Watershed Outreach Campaigns http://cfpub.epa.gov/npstbx/files/getnstepguide.pdf Provides some of the tools needed to develop and implement an effective watershed outreach plan. For a watershed practitioner trained in the sciences, this manual will help you address public perceptions, promote management activities, and inform or motivate stakeholders.</p>										✓
<p>Getting in Step: Engaging Stakeholders in Your Watershed (2nd Edition) http://cfpub.epa.gov/npstbx/files/stakeholderguide.pdf This guide is intended for federal, state, tribal, and local agency personnel, as well as nongovernmental organizations, that are involved in watershed management activities and are building a stakeholder group. Stakeholder groups are formal or informal assemblies that represent a variety of interest and points of view within a watershed.</p>										✓
<p>Getting Your Project to Flow Smoothly: A Guide to Developing Water and Wastewater Infrastructure http://rcap.org/wp-content/uploads/2016/01/RCAP-Getting-Your-Project-to-Flow-Smoothly.pdf A comprehensive guide on all the steps a project owner (governing body of a utility) should go through in planning, designing and constructing infrastructure.</p>	✓			✓		✓	✓	✓		✓

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>Local Safe Disposal Programs: Ex. Safe Medicine Disposal for Maine http://www.safemeddisposal.com/ <i>The Safe Medicine Disposal for ME program provides Maine's residents with a safe disposal option for unused and unwanted medicine. Free medicine mail-back envelopes are available at participating sites.</i></p>										✓
<p>Moving Toward Sustainability: Sustainable and Effective Practices for Creating Your Water Utility Roadmap http://www.epa.gov/sites/production/files/2015-04/documents/sustainable_practices_utilities_roadmap_crwu.pdf <i>The purpose of this document is to assist utility leaders with implementing proven and effective practices over time to improve their operations and move toward sustainability, at a pace consistent with their needs and the needs of their communities.</i></p>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<p>Mutual Aid Networks http://www.epa.gov/waterutilityresponse/mutual-aid-and-assistance-drinking-water-and-wastewater-utilities or www.nationalwarn.org <i>Describes how small systems can participate in WARN to share resources with neighboring utilities during an emergency.</i></p>									✓	
<p>National Rural Water Association Job Network http://nrwa-jobs.careerwebsite.com/home/index.cfm?site_id=678 <i>Helps to connect the most skilled professionals in the fields of drinking water, wastewater, source water protection, utility management & engineering to potential employers.</i></p>										
<p>National Rural Water Association Technical Training and Assistance Program http://nrwa.org/initiatives/training-and-technical-assistance/ <i>Click on your state for contact information to obtain services under the Technical Assistance and Training Program. National Rural Water Association provides training and on-site technical assistance to waste water systems in the contiguous 48 states, Alaska, Puerto Rico, and Hawaii. The training is provided to help reduce exposure to waste related health and safety hazards and enhance the sustainability of wastewater systems in rural and small communities.</i></p>		✓					✓			
<p>National Rural Water Association www.nrwa.org <i>Website of the National Rural Water Association, the largest water and waste water utility membership association.</i></p>										
<p>Natural Disaster Preparedness Guidelines for Water and Wastewater Utilities http://rcap.org/resource/natural-disaster-preparedness-guidelines-for-water-and-wastewater-utilities/ <i>This checklist was developed to assist water and wastewater utilities in natural disaster readiness.</i></p>									✓	

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>The Non-operator's Guide to Drinking Water Systems http://rcap.org/wp-content/uploads/2011/12/Non-operators-Guide-to-DRINKING-WATER-Systems_Small.pdf <i>Explains in simple, everyday language the technical aspects of drinking water utilities from source to tap. Helpful as an orientation and background guide for new small utility board members and small community decision makers.</i></p>										✓
<p>The Non-operator's Guide to Wastewater Systems http://rcap.org/wp-content/uploads/2016/01/RCAP-Non-operators-Guide-to-WASTEWATER-Systems.pdf <i>Explains in simple, everyday language the various components/operations of a small wastewater system from when the customer flushes his/her toilet through collection, treatment, and return to source. This guide and its companion on drinking water treatment systems are the perfect orientation and background guides for new small utility board members and small community decision makers.</i></p>										✓
<p>Only Tap Water Delivers Campaign http://www.awwa.org/resources-tools/public-affairs/communications-tools/only-tap-water-delivers.aspx <i>A public outreach campaign that is available to AWWA utility members free of charge. The materials are available in a CD toolkit, and can be adapted to meet local needs.</i></p>										✓
<p>Pipe Repair Checklist http://www.awwa.org/Portals/0/files/resources/water%20knowledge/rc%20small%20systems/piperepairchecklist.pdf <i>AWWA small systems pipe repair checklist.</i></p>							✓			
<p>Preventive Maintenance Card File for Small Public Water Systems Using Ground Water http://www.epa.gov/sites/production/files/2015-04/documents/booket_smallsystems_preventmaint.pdf <i>Schedules for maintenance tasks and checklists and logs for easily recording your findings.</i></p>							✓			
<p>Protecting Water Quality by Optimizing the Operations and Maintenance of Distribution Systems http://rcap.org/wp-content/uploads/2015/03/Distribution-Systems-guide.pdf <i>This guide provides background information on how to maintain water quality in drinking water distribution systems and treated-water storage facilities by concentrating on common problems and challenges and identifying potential improvements and solutions. This guide uses regulatory requirements and best practices of the drinking water community as the basis of its discussion of water distribution systems.</i></p>							✓	✓		
<p>Protecting Your Community's Assets: A Guide for Small Wastewater Systems http://www.nesc.wvu.edu/subpages/WW_manage_plan.cfm <i>Helps utility managers, operators, and local officials improve security and plan for emergency situations affecting wastewater treatment systems.</i></p>		✓						✓	✓	

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
Public Communications Toolkit http://www.awwa.org/resources-tools/public-affairs/communications-tools/public-communications-toolkit.aspx <i>Website with and online toolkit of various resources for water professionals related to public communication.</i>										✓
Quality On Tap! Public Relations Campaign http://nrwa.org/initiatives/quality-on-tap/ <i>A nationwide, grassroots public relations and awareness campaign designed especially for the drinking water industry. Quality On Tap is the first practical "hands-on" guide to better public relations for small water utilities. It contains the tools small water systems need to do the most important job of all - spreading the truth to the public of the quality of work they do and the quality water they produce.</i>										✓
Quick Reference Guides – Drinking Water Rule (EPA) http://www.epa.gov/dwreginfo/drinking-water-rule-quick-reference-guides#ssrg <i>These documents provide a simple and straightforward description of the rule and requirements. They include critical deadlines for drinking water systems and states, in addition to monitoring requirements.</i>		✓						✓		
Record Keeping Rules: A Quick Reference Guide http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=2000ZZB2.txt <i>A rule-by-rule summary of requirements for keeping monitoring, public notice, and other records, as well as helpful tips on record maintenance and security.</i>		✓					✓			
Recruiting and Training Veterans Brochure: For Careers in the Water Sector http://www.workforwater.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=2147483686 <i>The Department of Veterans Affairs and Department of Labor administer programs to assist Veterans in their transition to civilian careers and oversee funding to pay for education and job training. The Environmental Protection Agency, American Water Works Association and Water Environment Federation are working with these agencies to promote water sector careers nationally.</i>					✓					
Revolving Loan Fund Program http://nrwa.org/initiatives/revolving-loan-fund/ <i>The NRWA Revolving Loan Fund was established under a grant from USDA/RUS to provide financing to eligible utilities for pre-development costs associated with proposed water and wastewater projects. RLF funds can also be used with existing water/wastewater systems and the short term costs incurred for replacement equipment, small scale extension of services or other small capital projects that are not a part of your regular operations and maintenance.</i>						✓				
Rural Community Assistance Partnership www.rcap.org <i>Aims to provide technical assistance and training services to rural communities develop and sustain critical infrastructure and promote economic opportunity.</i>										

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
Rural Utilities Service http://www.rd.usda.gov/about-rd/agencies/rural-utilities-service <i>USDA's Rural Utilities Service (RUS) administers programs that provide much-needed infrastructure or infrastructure improvements to rural communities. These include water and wastewater treatment, electric power and telecommunications services.</i>				✓		✓				
Rural Water Supply and Sewer Systems: Background Information http://nationalaglawcenter.org/wp-content/uploads/assets/crs/98-64.pdf <i>CRS report for congress.</i>										
Security and Emergency Management System (SEMS) http://semstechnologies.com/RAMCAP.asp <i>Software to assist small water systems in completing a vulnerability self-assessment.</i>								✓	✓	
Setting Small Drinking Water Rates for a Sustainable Future http://nepis.epa.gov/Exe/ZyPDF.cgi/2000D2NM.PDF?Dockey=2000D2NM.PDF <i>A step-by-step rate setting guide for small utilities for assessing annual costs, revenue needs, and reserve requirements and setting appropriate rates.</i>						✓				✓
Small System Guide to Safe Drinking Water Act Regulations http://nepis.epa.gov/Exe/ZyPDF.cgi/1000478A.PDF?Dockey=1000478A.PDF <i>A resource for understanding current and anticipated drinking water regulations with which utilities need to comply.</i>		✓								
Source Water Collaborative http://www.sourcewatercollaborative.org/ <i>A web forum about where America's safe drinking water begins – the lakes, streams, rivers, and aquifers we tap for public water systems. The Collaborative is a web portal of 25 national organizations that have united to protect America's sources of drinking water.</i>	✓	✓								
Survival Guide: Public Communications for Water Professionals www.wef.org/WorkArea/DownloadAsset.aspx?id=7120 <i>A guidebook to help utilities learn how to communicate effectively with their community and customers. It provides an overview focused on the learning the basics of public communication and different public communication scenarios.</i>										✓
Sustainable Infrastructure for Small System Public Services: A Planning and Resource Guide http://rcap.org/wp-content/uploads/2016/01/RCAP-Sustainable-Infrastructure-Guide.pdf <i>Provides worksheets, examples, case studies and resources on water conservation, energy efficiency and renewable energy resources for small utilities.</i>				✓		✓	✓	✓	✓	

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
Sustainable Sanitation and Water Management http://www.sswm.info/ <i>"Linking up sustainable sanitation, water management, and agriculture." The SSWM Toolbox includes: background on environmental, economic, and socio-cultural issues; planning, processing, and implementation tools; "mini toolboxes" on specific topics; trainings on sustainable sanitation and water management; and many other resources geared toward small systems.</i>	✓		✓				✓	✓		
Tabletop Exercise Tool for Water Systems http://yosemite.epa.gov/ow/SReg.nsf/description/TTX_Tool <i>A PC-based tool that contains materials to assist those interested in planning and facilitating tabletop exercises that focus on Water Sector-related issues. The updated TTX Tool contains fifteen scenarios that address an all-hazards approach to emergency preparedness and response, including natural hazards and manmade incidents, as well as introduces users to the potential impacts of climate change.</i>									✓	
Taking Stock of Your Water System: A Simple Asset Inventory for Very Small Drinking Water Systems http://www.epa.gov/sites/production/files/2015-04/documents/epa816k03002.pdf <i>Helps very small water systems, such as manufactured home communities and homeowners' associations, assess their condition by preparing a simple asset inventory.</i>						✓		✓		
Talking to Your Decision Makers: A Best Practices Guide http://nepis.epa.gov/Exe/ZyPDF.cgi/2000ZZB6.PDF?Dockey=2000ZZB6.PDF <i>Tips for working successfully with decision makers in your community to meet your water system's needs.</i>										✓
Talking to Your Customers About Chronic Contaminants in Drinking Water: A Best Practices Guide http://nepis.epa.gov/Exe/ZyPDF.cgi/60000LWL.PDF?Dockey=60000LWL.PDF <i>Guidelines for effectively communicating with customers about the dangers of chronic contaminants and how water systems protect against contamination.</i>			✓	✓						✓
Technitrain Program http://rcap.org/service/technitrain/ <i>Helps to protect public health and foster economic development in targeted rural communities throughout the United States and its territories by providing onsite, community-specific technical assistance and training that: identifies and evaluates solutions to water and waste disposal problems, assists communities in preparing funding applications for their water and waste projects, and improves operation and maintenance of existing water and waste-disposal facilities. It is part of RCAP's overall mission of working with small, rural communities to increase local capacity.</i>				✓	✓	✓				

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>USDA Rural Utilities Service Borrower's Guide: A How-to for Water and Wastewater Loans from USDA Rural Development http://rcap.org/wp-content/uploads/2011/12/RCAPs-USDA-RUS-Borrowers-Guide.pdf Summarizes the managerial and financial requirements for communities that are receiving U.S. Department of Agriculture Rural Utilities Services (RUS) loan funds for their water or wastewater utility.</p>						✓				
<p>Vulnerability Self-Assessment Tool (VSAT) http://water.epa.gov/infrastructure/watersecurity/techttools/vsat.cfm A risk assessment software tool that assists drinking water and wastewater utilities in assessing security threats and natural hazards and updating utility Emergency Response Plans; appropriate for any water system size or type.</p>								✓	✓	
<p>WaterPro Conference Website http://www.waterproconference.org/ WaterPro is the annual conference of the National Rural Water Association. It takes place in even numbered calendar years. WaterPro is designed to bring together water and wastewater utility systems - large and small, municipal and rural - for sessions in operations, management, boardmanship and governance.</p>					✓	✓	✓	✓	✓	
<p>WaterSense http://www.epa.gov/WaterSense/ EPA's program to promote water efficiency and conservation. Provides information for consumers to identify products and practices that save water. Utilities and local governments can partner with EPA to receive access to a network of partners working on water conservation and promoting the value of water and using it wisely.</p>			✓							✓
<p>Water System Operator Roles and Responsibilities: A Best Practices Guide http://nepis.epa.gov/Exe/ZyPDF.cgi/2000ZZBE.PDF?Dockey=2000ZZBE.PDF Helps to understand: (1) Roles and responsibilities in delivering safe drinking water to system's customers; (2) Additional responsibilities, which can vary depending on size, characteristics, managerial structure, and regulatory requirements.</p>		✓			✓				✓	
<p>Water System Owner Roles and Responsibilities: A Best Practices Guide http://nepis.epa.gov/Exe/ZyPDF.cgi/2000ZZBC.PDF?Dockey=2000ZZBC.PDF A summary of system owners' key duties in protecting public health, overseeing system operation, and working with local officials.</p>					✓					✓
<p>Water Quality in Small Community Distribution Systems http://nepis.epa.gov/Exe/ZyPDF.cgi/P1000OY3.PDF?Dockey=P1000OY3.PDF Assists the operators and managers of small- and medium-sized public water systems. Provides a comprehensive picture of the impact of the water distribution system network on distributed water quality.</p>		✓						✓	✓	

	WA	PQ	CS	CE	ED	FV	OO	IS	OR	SS
<p>Water University http://www.wateruniversity.org/ <i>The intent of Water University and the National Rural Water Association is to provide the highest level of instruction, education, training and discussion to the largest audience possible. To meet that goal, most of the webinar/lecture portions of these courses are presented at low or no cost. In addition to providing information to the entire water industry, Water University provides a method for licensed water professionals to earn their necessary Continuing Education Units through our advanced on-line educated modules. Access to these modules requires enrollment fees, but these fees are still very affordable compared to in-person training.</i></p>										
<p>Water & Wastewater Pricing http://nepis.epa.gov/Exe/ZyPDF.cgi/901U1200.PDF?Dockey=901U1200.PDF <i>EPA Website on water and wastewater pricing, explaining the concept of pricing and water conservation, as well as supplying tools, guides, and reports on pricing.</i></p>						✓				
<p>Work for Water Website http://www.workforwater.org/ <i>Materials to encourage careers in the water sector, where opportunities to protect and preserve water resources are virtually unlimited and the chance to make a difference is unmatched.</i></p>					✓					

ACKNOWLEDGEMENTS

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This product was developed with assistance from Rob Greenwood and Morgan Torres with [Ross Strategic](#) under Contract EP-C-11-009 with the Office of Wastewater Management at the U.S. Environmental Protection Agency.



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