Effectively Managing Your Utility Into The Future

What is EUM and how can you implement the process at your utility?
Presenter Introductions

• Craig Calvert
  Senior Business Analyst, RA Consultants
  B.S. Finance, Indiana University Southeast
  Lean Six Sigma Green Belt

• Darren Gore, PE
  City of Murfreesboro, Asst. City Manager – Utility Enterprises
  Bachelors & Masters in Engineering
  Georgia Tech
  Professional Engineer licensed in TN, KY and AL
What is Effective Utility Management (EUM)

- EUM helps you take a 360-degree look at your utility and then set priorities that work for you and your community.

- It helps you protect your current infrastructure investments and ensure that your workforce is motivated and able to address the challenges that they face every day.

- It moves you from reacting only to the “hot priorities” of the day to proactively planning for the future.

- It helps you engage your staff in the process of assessing and charting your own course for the future.

- It is simple, actionable, affordable, and scalable to meet the needs of all utilities.
Organizations Involved
10 Attributes of an Effectively Managed Utility

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

Product Quality

- Meets or exceeds regulatory and reliability requirements.
- Operates consistent with customer, public health, economic, and ecological needs.

Financial Viability

- Understands and plans for full life-cycle cost of utility.
- Effectively balances long-term debt, asset values, operations and maintenance expenditures, and operating revenues.
- Sets predictable and adequate rates to support utility current needs and plans to invest in future needs, taking into account affordability and the needs of disadvantaged households when setting rates.
- Understands opportunities for diversifying revenue and raising capital.
Sample EUM Dashboard
Product Quality

Comply with Regulatory and Reliability Requirements

Address Customer Needs

Address Public Health and Ecological Needs

Degree of Success inAchieving
Target Wastewater Treatment Effectiveness rate (percent)
Degree to Which Near Compliance Misses are Rectified (wastewater)
Meet National and Other Applicable Objectives for Residuals Quantity and Quality
Extent to Which Supplemental Local Goals are Addressed

Extent to Which Sewer Backups are Reduced to Target Levels (percent)
Extent to Which Sanitary Sewer Overflows are Reduced to Target Levels
Extent to Which Combined Sewer Overflows are Reduced to Target Levels

Achievement of Beneficial Biosolids Usage Targets (percent)
Product Quality
Degree of Success in Achieving Target WTER

<table>
<thead>
<tr>
<th>Measure Name:</th>
<th>Degree of Success in Achieving Target Wastewater Treatment Effectiveness Rate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Performance</strong> (July 1st, 2012 or when data first available)</td>
<td><strong>Target Performance</strong> (By June 30th, 2018)</td>
</tr>
<tr>
<td>WTER of 90-95%, and Target WTER achieved consistently for 1-2 consecutive years</td>
<td>WTER of 95-99%, and Target WTER achieved consistently for 3-5 consecutive years</td>
</tr>
</tbody>
</table>

**Current Level of Performance**

<table>
<thead>
<tr>
<th>Current Performance Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the most recent fiscal year, the majority of one day non-compliance exceedances were at Plant 1. This is due to increased plant loadings and the need for the plant expansion. Increased flow due to rain events at the Plant 2 contributed to daily non-compliances.</td>
</tr>
</tbody>
</table>
Product Quality
Degree of Success in Achieving Target WTER
2 of 3

<table>
<thead>
<tr>
<th>Wastewater Treatment Effectiveness Rate By Month</th>
<th>Previous Year Effectiveness</th>
<th>Previous Year Non-Compliance Days</th>
<th>Current Year Effectiveness</th>
<th>Current Year Non-Compliance Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>96.77%</td>
<td>1</td>
<td>83.87%</td>
<td>5</td>
</tr>
<tr>
<td>August</td>
<td>93.55%</td>
<td>2</td>
<td>96.77%</td>
<td>1</td>
</tr>
<tr>
<td>September</td>
<td>90.00%</td>
<td>3</td>
<td>86.67%</td>
<td>4</td>
</tr>
<tr>
<td>October</td>
<td>96.77%</td>
<td>1</td>
<td>96.77%</td>
<td>1</td>
</tr>
<tr>
<td>November</td>
<td>100.00%</td>
<td>0</td>
<td>93.33%</td>
<td>2</td>
</tr>
<tr>
<td>December</td>
<td>90.32%</td>
<td>3</td>
<td>67.74%</td>
<td>10</td>
</tr>
<tr>
<td>January</td>
<td>90.32%</td>
<td>3</td>
<td>77.42%</td>
<td>7</td>
</tr>
<tr>
<td>February</td>
<td>82.14%</td>
<td>5</td>
<td>85.71%</td>
<td>4</td>
</tr>
<tr>
<td>March</td>
<td>87.10%</td>
<td>4</td>
<td>90.32%</td>
<td>3</td>
</tr>
<tr>
<td>April</td>
<td>73.33%</td>
<td>8</td>
<td>96.67%</td>
<td>1</td>
</tr>
<tr>
<td>May</td>
<td>93.55%</td>
<td>2</td>
<td>80.65%</td>
<td>6</td>
</tr>
<tr>
<td>June</td>
<td>93.33%</td>
<td>2</td>
<td>90.00%</td>
<td>3</td>
</tr>
</tbody>
</table>
Product Quality
Degree of Success in Achieving Target WTER
3 of 3

**Wastewater Treatment Effectiveness Rate By Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Non Compliance Days</th>
<th>Days In Year</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>14</td>
<td>366</td>
<td>96.17%</td>
</tr>
<tr>
<td>2013</td>
<td>19</td>
<td>365</td>
<td>94.79%</td>
</tr>
<tr>
<td>2014</td>
<td>21</td>
<td>365</td>
<td>94.25%</td>
</tr>
<tr>
<td>2015</td>
<td>21</td>
<td>365</td>
<td>94.25%</td>
</tr>
<tr>
<td>2016</td>
<td>34</td>
<td>366</td>
<td>90.71%</td>
</tr>
<tr>
<td>2017</td>
<td>34</td>
<td>365</td>
<td>90.68%</td>
</tr>
<tr>
<td>2018</td>
<td>47</td>
<td>365</td>
<td>87.12%</td>
</tr>
</tbody>
</table>
Financial Viability

- Degree to Which Financial Planning Efforts Support Strong Bond Ratings
- Degree to Which Rate Increase Level is Supported by Planning Studies
- Appropriateness of Rate Planning Horizon
- Percentage of Revenue Available for Capital Spending

- Percentage of On Time Invoice Payments
- Purchase Card Violations
- Timely Service Request Completions

- Policy Review & Implementation
- PAC Policy Adherence

- Appropriateness of Annual Revenue to Expenditure Ratio (operating)
- Total Debt Service Ratio
- Adequacy of Operating Reserves
## Financial Viability
### Percentage of Revenue Available for Capital Spending

<table>
<thead>
<tr>
<th>Measure Name: Percentage of Revenue Available for Capital Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Performance</strong> (July 1st, 2012 or when data first available)</td>
</tr>
<tr>
<td>Use 100% debt financing for capital program expenditures, and Agency has not developed a specific percentage of revenue target for its capital spending.</td>
</tr>
<tr>
<td><strong>Target Performance</strong> (By June 30th, 2018)</td>
</tr>
<tr>
<td>Use revenue sources for 6-10% of capital program expenditures, and Percentage of revenue target ratio has been established and achieved for less than 3 years.</td>
</tr>
<tr>
<td><strong>Data or Evidence Used to Validate Performance</strong></td>
</tr>
<tr>
<td>(Total Revenue - Operating Expense before Cap - Debt Service Payment) / Total Revenue</td>
</tr>
</tbody>
</table>
Financial Viability
Percentage of Revenue Available for Capital Spending

![Diagram showing the percentage of revenue available for capital spending over years 2012 to 2018. The percentage increases from approximately 0% in 2012 to 15.00% in 2018.](image)
EUM Results

Benefits Noticed

• Improvement in 7 of 9 attribute areas
• Broke down silos of communication
• Better understanding of correlation between business areas
• Company Goals became clear
• Asset Management Planning nearly completed through EUM Efforts
• EUM became basis of Sustainability Planning

Chain reactions

• Deep dive analysis of electric bills
• Further review of contractor invoices
• New method of tracking company goals
• Alignment with strategic planning
How can you get started?

The EUM Primer is a “How-To” document for everything EUM

Great resources including the primer can be located on the EPA website

ACWA Excellence in Management

Recognition will be provided based on the following criteria:

**Platinum Recognition**
- Utility has fully implemented, or has taken substantive steps to implement a total of nine of the Ten Attributes of Effectively Managed Water Sector Utilities.

**Gold Recognition**
- Utility has fully implemented, or has taken substantive steps to implement, a total of seven of the Ten Attributes of Effectively Managed Water Sector Utilities.

**Silver Recognition**
- Utility has fully implemented, or has taken substantive steps to implement, a total of five of the Ten Attributes of Effectively Managed Water Sector Utilities.
SYSTEM PROFILE

Water Supply: East Fork Stones River and Percy Priest Reservoir
Receiving Stream: W. Fork Stones River

Last WTP Expansion 2010
Last WWTP Expansion Fall 2017

Residents Served: Water 78,000 Wastewater 130,000
Lines: Water 442 mi. Wastewater 646 mi.
Plant Capacity: Water 20 mgd Wastewater 24 mgd

Population Projections

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murfreesboro:</td>
<td>124,745</td>
<td>228,090</td>
</tr>
<tr>
<td>Planning Area (UGB + City):</td>
<td>202,140</td>
<td>362,388</td>
</tr>
<tr>
<td>Rutherford County:</td>
<td>309,088</td>
<td>509,910</td>
</tr>
</tbody>
</table>

2016
Receives “Utility of the Future: Today” Recognition

2017
Receives NACWA's Gold Peak Performance Award
Utility of the Future Today
EUM Self-Assessment, 2012

Note: BLACK is STAFF Assessment and RED is Board/Admin Assessment
IT Master Plan
Resulted by Focusing on Customer Satisfaction in EUM Self-Assessment
AWWA BENCHMARKING SURVEY PARTICIPATION
Resulted from EUM-Self Assessment

Average Calls per Rep MWRD

Average Calls per Rep (Benchmark)

Abandoned Call Ratio MWRD

Abandoned Call Ratio (Benchmark)
Walk in and drive through transactions are down 27.7% (~2100 per month)
Night deposits (drop box) are down 46.7% (~900 per month)
Receipts by mail are down 32.4% (~2500 per month)
Electronic bill payments are up 56.6% (~1000 per month), currently serving ~10% of our customer base and growing

Online and IVR transactions are trending strongly upward and currently stand at ~4800 per month, serving ~18% of our customer base
New Customer Satisfaction Tools
Infinity.Link On-line CIS Portal

### Billing History

<table>
<thead>
<tr>
<th>Bill Date</th>
<th>Balance Forward</th>
<th>Current Bill</th>
<th>Bill Total</th>
<th>Web Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/20/2018</td>
<td>$5.00</td>
<td>$61.32</td>
<td>$61.32</td>
<td>View</td>
</tr>
<tr>
<td>05/21/2018</td>
<td>$5.00</td>
<td>$65.57</td>
<td>$63.57</td>
<td>View</td>
</tr>
<tr>
<td>04/19/2018</td>
<td>$5.00</td>
<td>$60.24</td>
<td>$60.24</td>
<td>View</td>
</tr>
<tr>
<td>03/22/2018</td>
<td>$5.00</td>
<td>$66.29</td>
<td>$66.29</td>
<td>View</td>
</tr>
<tr>
<td>02/21/2018</td>
<td>$5.00</td>
<td>$64.30</td>
<td>$64.30</td>
<td>View</td>
</tr>
<tr>
<td>01/23/2018</td>
<td>$5.00</td>
<td>$77.26</td>
<td>$77.26</td>
<td>View</td>
</tr>
</tbody>
</table>

### Bill History

![Bill History chart](chart.png)
New Customer Satisfaction Tools
AMI Portal – Early Leak Notification & Water Budgeting

This is your dashboard where you can view daily and monthly consumption. You can also set goal usage for the month, set alerts and compare yearly usage.
EUM & Strategic Planning
Current & Target Performance

Performance Benchmarking for Effectively Managed Water Utilities
Where is MWRD Focused Next? 
EMPLOYEE LEADERSHIP & DEVELOPMENT
Gaps in Years of Service (5-10yrs) – Why?
New Pay Plan Strategy

6 Pay Grades
5 Steps @ 2.5% &
1.5% Adjustment each Year
21.9% Min to Mkt

Open framework
Mkt to Max
45.0% Min to Max

M’boro Job Class
Entry
Novice
Intermediate
Apprentice
Advanced
Expert
Min. Yr1 Yr2 Yr3 Yr4 Mkt Yr6 On Max
Competency-based Grade Increases

MAINTENANCE TECH “Job Family”
Water Plant & WRRF

- Maintenance Tech (Basic Skills)
- Maintenance Tech I (1+ yrs w/ Class I Certification)
- Maintenance Tech II (3+ yrs w/ Class II Certification)
- Lead Maintenance Tech (5+ yrs w/ Class III Certification)
- Maintenance Supervisor (1st Tier Supervisor; 5+ yrs w/ Class III & Electrician License)
- Asst. Plant Manager (2nd Tier Supervisor)
### Competency-based Grade Increases

Murfreesboro Water and Sewer Department  
Maintenance Levels

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Basic Skills</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MECH 1100 Electronic Components</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>MECH 1200 Mechanical Components and Motors</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>MECH 1300 Pneumatic and Hydraulic Control Circuits</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>MECH 1500 Digital Fundamentals and PLCs</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>Mechatronics Technology Certificate of Credit</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>Level 1 Certification Exam - Siemens Mechatronics System</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>Assistant</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>MECH 2400 Motor Control</td>
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<td>X X</td>
</tr>
<tr>
<td>ABC Plant Maintenance Technologist Class I Certification</td>
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<tr>
<td>ABC Plant Maintenance Technologist Class II Certification</td>
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<tr>
<td>ABC Plant Maintenance Technologist Class III Certification</td>
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<td>X</td>
<td>X X</td>
</tr>
<tr>
<td>Electrician License (LLE)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X X</td>
</tr>
</tbody>
</table>
EUM & MWRD’s Vision of the Future

10-20 Year Service Area Planning
- Murfreesboro 2035
- Water Resource Integration Plan
- Biosolids Master Plan

Continuous Strategic Planning
- Information Technology Master Plan
- Trends and Strategic Planning Issues
- Effective Utility Management

Continuous Financial Planning
- Pro Forma
- Rate Design
- Cost of Service Study
- Capital Improvements Plan

Annual Budget
- Revenue Sales
- O&M Expenses
- Debt Funded Capital Outlay
- Rate Funded CapEx
- Reserve Funded Working Capital

Sustainability

Affordability
Water Resource Integration Plan, 2018
The Iceberg Concept
Change is the Only Constant

• I used to say Learning Organizations are “change-ready” and embrace change

• But I recently read “reinvention is taking control of change”

• So I think MWRD is going to change this mantra to state Learning Organizations are reinventors, or Learning Organizations take control of change.

• MWRD’s WRIP is that attempt – to reinvent conventional water resources services and take control of the change that water resource providers must make to serve our growing communities.

• EUM focused MWRD on this new paradigm
Questions?