Upstream with a Paddle
Water System Partnerships

Cooperative Approaches to Drinking Water Challenges

Ellen Tarquinio, U.S. EPA
Tarquinio.Ellen@EPA.GOV
Inventory & Compliance Data on Small Public Water Systems

- 91% of all community water systems serve 10,000 persons or less.
  - 55% of all community water systems serve 500 persons or less.
  - 24% of all community water systems serve 100 persons or less.
- 94% of all non-community water systems are 500 persons or less.
  - 68% of all non-community water systems are 100 persons or less.
Inventory of Drinking Water Systems in FY2016

- # of Drinking Water Systems in Wisconsin:
  - CWSs: 1065
  - NTNCWs: 922
  - TNCWs: 9,781
  - Total: 11,768

- # of Drinking Water Systems in Harris County, TX:
  - CWSs: 667
  - NTNCWs: 320
  - TNCWs: 227
  - Total: 1,214

- # of Drinking Water Systems in Alabama:
  - CWSs: 518
  - NTNCWs: 23
  - TNCWs: 50
  - Total: 591
New DW Systems 2013-2016

Alabama
Florida
Georgia
Kentucky
Mississippi
North Carolina
South Carolina
Tennessee

2013 2014 2015 2016
Average Annual Operating Costs Per Capita

Possible Operating Expenses
- Personnel
- Purchased Water
- Utilities
- Repairs/Maintenance
- Supplies
- Admin/Insurance
- Miscellaneous
- RD Loan Payment
- Depreciation
Percentage of Drinking Water Systems in Violation in FY2016

- 25% of the total drinking water systems were in violation in Wisconsin in FY2016
- 55% of the total drinking water systems were in violation in Texas in FY2016
- 10% of the total drinking water systems were in violation in Alabama in FY2016
Movement Toward Partnerships

• **High expectations** on the part of the public for safe drinking water for everyone.

• **Water systems need** a high level of technical, managerial, and financial capacity to meet all of their obligations.

• **Need for leveraging** limited/diminishing resources.

• **Technology** to allow system to work in more informal partnerships and to partner with geographically remote systems.
### Water System Partnerships: EPA Actions

<table>
<thead>
<tr>
<th><strong>Increasing awareness</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a space where communities can easily find support for partnerships</td>
</tr>
<tr>
<td>Identifying opportunities to address technical, managerial and financial capacity needs</td>
</tr>
<tr>
<td>Developing case studies, incentives and funding and financing tools to support water system partnerships</td>
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</tbody>
</table>
Revised Water System Partnerships Webpage

https://www.epa.gov/dwcapacity/water-system-partnerships

Water System Partnerships: State Programs and Policies

Water System Partnerships Case Studies

Water System Partnerships Resources
Small Drinking Water Systems Contract with a Shared O&M Program for Management Assistance

**Community/Utility Name:** Program of Shared Operation and Management (POSOM) in Florence, MT

**Summary:** In Florence, MT, the Midwest affiliate of the Rural Community Assistance Program (RCAP) set up a POSOM to help meet the needs of very small systems that are staffed by volunteers. The systems contract with the POSOM for operation, maintenance, and compliance needs.

**Key Benefits:** Economies of scale; reduced operating cost; improved expertise

**Funding for Partnership:** Monthly or annual contracting payments to POSOM

**Key Players:** RCAP; POSOM in Florence, MT

**Types of Partnership**
- Informal Cooperation
- Contractual Assistance
- Joint Power Agency
- Ownership Transfer
- Multifaceted Restructuring
Upstream with a Paddle
Policy Solutions to Water Industry Fragmentation in the United States

Deborah Dewey
President
Indiana American Water
Challenges Facing Communities

- Quality
- Resiliency
- Sustainability
- Workforce
- Age
- Affordability

Workforce Trends, 1990 - 2020
The percent over age 55 more than doubles; The percent age 16 – 24 declines
Water is the most capital intensive utility
A Challenging Situation

System Investment Needs

Shrinking Budgets

What Can Help Us Do More….

Support for Consolidation with Regional Approach

Constructive Legislation and Regulation
Legislative/Regulatory Policy Trends

- Affordability Programs
- Consolidation Practices
- Infrastructure Mechanisms
- Fixed Charge Increases
- Revenue Stabilization Mechanisms
# Evolution of System Consolidation Legislation in AW States

<table>
<thead>
<tr>
<th>Year</th>
<th>Legislation</th>
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<tbody>
<tr>
<td>1997</td>
<td>CA: Fair Market Value</td>
</tr>
<tr>
<td>2010</td>
<td>MO: Fair Market Value</td>
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<tr>
<td>2012</td>
<td>PA: Water &amp; Waste Water Revenue Requirement Consolidation</td>
</tr>
<tr>
<td>2013</td>
<td>IL: Fair Market Value &amp; Post Acquisition Deferral</td>
</tr>
<tr>
<td>2015</td>
<td>NJ: Fair Market Value</td>
</tr>
<tr>
<td>2016</td>
<td>PA: Fair Market Value &amp; Post Acquisition Deferral</td>
</tr>
</tbody>
</table>

- **CA**: Fair Market Value
- **MO**: Fair Market Value
- **PA**: Water & Waste Water Revenue Requirement Consolidation
- **IL**: Fair Market Value & Post Acquisition Deferral
- **NJ**: Fair Market Value
- **PA**: Clarifying Combined Stormwater Systems as Wastewater

**97% of AW 2016 Acquisition Activity was in these States**
New Jersey

Water Quality Accountability Act

- To ensure safety and reliability of the state’s drinking water
  - Early detection of water quality issues
  - Transparent reporting
  - Making needed infrastructure investments

Key requirements:
- Field testing of valves and hydrants
- Cybersecurity program
- Action plans for Notices of Violation (NOVs)
- Asset management plan; minimum 150-year replacement cycle
- Written certification from Corporate Officer, Executive Director or Mayor
Indiana

- **Situation**
  - Property tax caps
  - Increased attention for local balanced budgets

- **Justification**
  - Indiana Finance Authority (IFA) Studies

- **Policy**
  - Distressed Utility Legislation

- **Impact**
  - Encourages regionalization
  - Monetizes full asset value
  - Streamlines process for approval
  - Gives clarity and transparency to public review
Indiana Regional Approach
Meeting Needs

• Community #1 – Water and Wastewater Systems (1,250 customers each)
  ▪ Need investment for wastewater of > $5M
  ▪ Forecasting 105% rate increase
  ▪ Consolidation with INAW
    ◆ 30% wastewater rate increase wastewater
    ◆ 5% water rate decrease water
  ▪ $6M fund for other projects/grant matching after debt retired

• Community #2 – Water System (1,300 customers)
  ▪ Consolidation with INAW; > 40% rate decrease
  ▪ Nearly $6M fund for other projects after debt retired

• Community #3 – Water System (3,300 customers)
  ▪ Community operating in the red; no balanced budget
  ▪ Consolidation with INAW; 5% rate decrease
  ▪ Nearly $10M after debt retired to address fiscal problems
Upstream with a Paddle

Consistent Enforcement Standards
Consolidated Tariffs
Combined Water and Sewer
Regional Approach to Service
Revenue Stabilization Mechanisms
Fair Market Valuation
Equal Access to Federal Funding
Legislative / Regulatory Policy Solutions

Sustainability of Safe, Reliable, and Affordable Water and Wastewater Systems
Upstream with a Paddle
Atwater Thornton

The Role of Regulation in Funding Future Investment

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raverdi@atwaterthornton.com

National Association of Regulatory Utility Commissioners
November 14, 2017
Breaking Down the Substantial Amount of Capital Required to Remedy Looming U.S. Water Crisis

Projected CapEx by Need -

- Treatment, 22.4%
- Storage, 11.0%
- Transmission & Distribution, 60.0%
- Other, 0.2%
- Source, 5.9%

Projected CapEx by Need - Wastewater

- Secondary Treatment, 19.2%
- Advanced Treatment, 18.5%
- System Repair, 18.8%
- New Systems, 16.6%
- Sewer Overflow, 17.7%
- Stormwater, 7.0%
- Recycled Distribution, 2.2%

Source: EPA
# The Water Industry

## Consulting/Engineering Services

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Stock Symbol</th>
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<tbody>
<tr>
<td>AECOM</td>
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</tr>
<tr>
<td>Chicago Bridge &amp; Iron Co. NV</td>
<td>CBI</td>
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<tr>
<td>Clean Harbors, Inc.</td>
<td>CHI</td>
</tr>
<tr>
<td>Jacobs Engineering Group Inc.</td>
<td>JEC</td>
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<tr>
<td>Layne Christensen Company</td>
<td>LAYN</td>
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<tr>
<td>Tetra Tech, Inc.</td>
<td>TTEK</td>
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</table>

## Water Rights

<table>
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<th>Company Name</th>
<th>Stock Symbol</th>
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<tbody>
<tr>
<td>Cadiz Inc.</td>
<td>CDZI</td>
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<tr>
<td>Pure Cycle Corporation</td>
<td>PCYO</td>
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<tr>
<td>PICO Holdings, Inc.</td>
<td>PICO</td>
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## Distribution (Utilities)

<table>
<thead>
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<th>Company Name</th>
<th>Stock Symbol</th>
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<tr>
<td>Artesian Resources Corporation Class A</td>
<td>ARTNA</td>
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<tr>
<td>American Water Works Company, Inc.</td>
<td>AWK</td>
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<tr>
<td>American States Water Company</td>
<td>AWR</td>
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<tr>
<td>Connecticut Water Service, Inc.</td>
<td>CTWS</td>
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<tr>
<td>Consolidated Water Co. Ltd.</td>
<td>CWCO</td>
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<tr>
<td>California Water Service Group</td>
<td>CWT</td>
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<tr>
<td>Global Water Resources, Inc.</td>
<td>GWRS</td>
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<tr>
<td>Middlesex Water Company</td>
<td>MSEX</td>
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<tr>
<td>SJW Group</td>
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<tr>
<td>Aqua America, Inc.</td>
<td>WTR</td>
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<tr>
<td>York Water Company</td>
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## Infrastructure (Equipment & Technology)

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<th>Company Name</th>
<th>Stock Symbol</th>
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<td>Aegion Corporation</td>
<td>AEGN</td>
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<tr>
<td>Badger Meter, Inc.</td>
<td>BMI</td>
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<tr>
<td>CECO Environmental Corp.</td>
<td>CECE</td>
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<tr>
<td>CIRCOR International, Inc.</td>
<td>CIR</td>
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<tr>
<td>Crane Co.</td>
<td>CR</td>
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<tr>
<td>Franklin Electric Co., Inc.</td>
<td>FELI</td>
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<tr>
<td>SPX Flow, Inc.</td>
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<td>Flowserve Corporation</td>
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<tr>
<td>Forterra, Inc.</td>
<td>FRTA</td>
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<td>Gorman-Rupp Company</td>
<td>GRC</td>
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<td>HD Supply Holdings, Inc.</td>
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<td>IDEX Corporation</td>
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<td>Itron, Inc.</td>
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<td>ITT, Inc.</td>
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<td>Lindsay Corporation</td>
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<tr>
<td>Mueller Industries, Inc.</td>
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<td>Mueller Water Products, Inc. Class A</td>
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<tr>
<td>National Oilwell Varco, Inc.</td>
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<td>Northwest Pipe Company</td>
<td>NWPX</td>
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<td>Pentair plc</td>
<td>PNR</td>
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<td>Roper Technologies, Inc.</td>
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<td>Rexnord Corporation</td>
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<td>Valmont Industries, Inc.</td>
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<td>Advanced Drainage Systems, Inc.</td>
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<td>Watts Water Technologies, Inc. Class A</td>
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<td>Select Energy Services, Inc. Class A</td>
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<tr>
<td>Xylem Inc.</td>
<td>XYL</td>
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## Treatment

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<th>Company Name</th>
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<tr>
<td>Calgon Carbon Corporation</td>
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<tr>
<td>Cantel Medical Corp.</td>
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<tr>
<td>DowDuPont Inc.</td>
<td>DWDP</td>
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<tr>
<td>Danaher Corporation</td>
<td>DHR</td>
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<tr>
<td>Ecolab Inc.</td>
<td>ECL</td>
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<td>Energy Recovery, Inc.</td>
<td>ERI</td>
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<tr>
<td>Flexible Solutions International Inc.</td>
<td>FSI</td>
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<tr>
<td>General Electric Company</td>
<td>GE</td>
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<tr>
<td>Hawkins, Inc.</td>
<td>HWKN</td>
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<tr>
<td>IDEXX Laboratories, Inc.</td>
<td>IDXX</td>
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<td>Stericycle, Inc.</td>
<td>SRCL</td>
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<tr>
<td>Thermo Fisher Scientific Inc.</td>
<td>TMO</td>
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<tr>
<td>AquaVenture Holdings Limited</td>
<td>WAAAS</td>
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<tr>
<td>Waters Corporation</td>
<td>WAT</td>
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</tbody>
</table>

*Mention of specific companies is not a recommendation to buy, hold or sell any securities mentioned

Source: Atwater Thornton Equity Research

For Informational Purposes Only
Boring Water Utilities Offer Strong Returns

Source: FactSet, Atwater Thornton Equity Research

For Informational Purposes Only
Earnings Yield vs Return Implies Buying Lower P/E

Source: FactSet, Atwater Thornton Equity Research
Buy Higher Dividend Yield

Source: FactSet, Atwater Thornton Equity Research

For Informational Purposes Only
Median Water Utility Industry Historic Premium to S&P 500 P/E Multiple (FY1)

- Average: 5.9x
- Median: 5.9x

Source: FactSet, Atwater Thornton Equity Research
An Abundance of Investment Opportunities Exist

• According to the World Federation of Exchanges, Bloomberg and International Monetary Fund – the global equity market capitalization is over $75.0 trillion
  • The global utility sector stands at nearly $3.0 trillion
• Utility stocks appeal to certain investors – Yield, Yield + Growth
  • These same investors have choices – Master Limited Partnerships, Real Estate Investment Trusts, Telecom
• Approximately 100 domestic utility stocks presently exist
  • Even more debt instruments are in the marketplace
• Utility categories – Electric, Gas, Water
• The investment community neatly fits Public Utility Commissions (PUCs) into three categories – Favorable, Neutral, Unfavorable
A Balanced Approach

Satisfied Regulators

Pleased Customer

Rewarded Shareholders

Source: Atwater Thornton Equity Research
California Regulatory Setting Drives Outperformance in Hike Cycle

California Underperformed on 10-Year…. BUT Outperformed Since 1Q16

Source: FactSet, Atwater Thornton Equity Research

For Informational Purposes Only
14 to 38 Month Outlook

- Most significant macro influence on water investing returns → Fed tightening cycle
- See potential for three scenarios playing out
  - #1: Data vindicates Fed dots and Officials hike
  - #2: Data does not vindicate Fed dots and Officials hike
  - #3: Data does not vindicate Fed dots and Officials pause/periodically hike
- Water industry return outlook economic data dependent from now through 2020
  - Extended DuPont ROE = Peak Earnings
  - Valuation
- Currently meaningful points to track
  - Wage Growth
  - CPI
  - Core PCE
  - Medical Care Pricing
  - Shelter Pricing
  - Water & Sewer CPI
  - 10-Year Bond Yield
  - President Trump ~ Taxes & Infrastructure
  - Three Water Composite Sustainable Downturn Triggers = Inflation Fighting Fed, Rapidly Rising Commodity Prices, Cyclical Overheating

Source: Atwater Thornton Equity Research

For Informational Purposes Only
Water Utility Industry Risks

• In addition to normal economic and market risk factors that impact most all equities, water utilities are uniquely at risk to:

• The outcome of regulatory filings: regulated operations are subject to state and federal regulations. Changes in the regulatory environment can impact a company’s financial performance. In addition, water utilities continuously file requests with state Commissions for rate increases in order to achieve rates of return on water assets. If state Commissions deny these rate requests in whole or in part, it would likely have a negative impact on earnings.

• Product safety: Water is the only utility with a product that is ingested. Though regulated water utilities traditionally have strong track records with respect to water contaminants, a breakdown in safety procedures could have a markedly negative effect.

• Federal and state environmental laws and regulations impose substantial compliance requirements on water utility operations. A water utility’s operating costs could be significantly increased in order to comply with new or stricter regulatory standards imposed by federal and state environmental agencies.

• Water utilities are impacted by weather conditions and are subject to seasonal fluctuations which could adversely affect demand for water service and revenues.

• Drought conditions and government imposed water use restrictions may impact a water utility’s ability to serve current and future customers. This may adversely affect the water utility’s financial condition and results of operations.
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