Dealing with Disruption: Operationalizing Resilience in the Water Sector

Resilience & Smart Communities

December 5, 2019 | 2:00 PM – 3:30 PM ET
Speakers

Albert Cho
Vice President and General Manager, Advanced Infrastructure Analytics
Xylem, Inc.
Columbia, MD

Paul Fuller
Chief Executive Officer
Allied Public Risk, LLC
Chicago, IL

Angela Licata
Deputy Commissioner of Sustainability
New York City Department of Environmental Protection
Flushing, NY

Lori Medders
Joseph F. Freeman Distinguished Professor of Insurance
Appalachian State University
Boone, NC

Erica Brown
Chief Strategy and Sustainability Officer
Association of Metropolitan Water Agencies (AMWA)
Angela Licata
Deputy Commissioner
NYC Department of
Environmental Protection
Erica Brown
Chief Strategy and Sustainability Officer
Association of Metropolitan Water Agencies
Available now:
amwa.net/
climateprimer
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Credit Agencies and Climate Resilience

- Measured as part of rating agencies’ bond ratings assessment
  - Operational risk management assessment
  - Financial management assessment

- S&P’s 2016 ratings criteria for operational risks assessment for U.S. municipal waterworks, sanitary and drainage utility systems
  - Criteria consider specific climate risk assessment strategies, such as supply planning and flood protection
Environmental, Social, Governance (ESG) factors are...

- Embedded in most credit rating agencies' criteria already
- Part of a credit ratings initiative facilitated by the UN Principles for Responsible Investing (PRI) - aimed at aligning understandings between credit rating agencies and investors
- Of growing importance to private sector investors and governing boards, e.g. Nov. 2019 Ceres report calling on corporate boards to oversee ESG issues

Examples of ESG factors considered in credit ratings

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<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Governance</th>
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<tr>
<td>Environmental compliance</td>
<td>Affordability programs</td>
<td>Sound financial management practices</td>
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<td>Source water/watershed protection</td>
<td>Exposure to unrest (labor, political)</td>
<td>Board structure/ Organizational effectiveness</td>
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<td>Extreme event impacts</td>
<td>Change in demographics affecting need for infrastructure</td>
<td>Transparency of policies and decision making</td>
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What can utility managers do?

1. Manage risk
   - Enterprise risk management
     • Operational management
     • Asset management
   - Environmental stewardship
     • Climate adaptation
     • Energy management
   - Financial management
     • Cash flow
     • Reserves or insurance
     • CIP

2. Tell your story

Portland Water Bureau
STRATEGIC PLAN
A five-year risk management approach

Strategic Plan
Long-term vision and strategic
goals for the City's water systems
Adapted June 8, 2016
CLIMATE CHANGE AND RESILIENCY
Implications for Enterprise Risk Management & Financial Impacts

Paul Fuller, CPCU / CEO, Allied Public Risk
Lorilee Medders, PhD / Appalachian State University

2019 Resilience Webinar Series
December 5, 2019
CLIMATE CHANGE IMPACT ON INSURANCE INDUSTRY
Perspective on Underwriting & Investment Portfolios

- Evolution in our Thinking
- Laggard to Thought Leader
- Elevated Threat
  - Underwriting
  - Investments
  - Regulator & Rating Agency Concurrence
  - Heightened Climate Change Weight on Stress/Solvency Tests
- Climate Change = Grey Rhino
  - Our New Normal
  - Industry Solutions
CLIMATE CHANGE IMPACT ON WATER & WASTEWATER UTILITIES
Perspective on Insurance Policies and Municipal Bonds

- Insurance Carrier-to-Policyholder Relationship
  - Tightening Property Marketplace
  - Transformational Liability Changes
  - Insurance Industry as Institutional Buyer of Municipal & Utility Revenue Bonds
  - $500 Billion Portfolio
- Climate Change vs Conventional Wisdom
  - Heightened Buyer Scrutiny
- Climate Change = Grey Rhino
  - Your New Normal
  - Bond Competition
CLIMATE CHANGE IMPACT ON RATING AGENCIES
Perspective on Municipal Bond Rating Agencies

- Credit Ratings
  - Purpose & Meaning
- Impact of ESG
  - Definition
  - Application
  - New or Existing Concept?
- Weight of Water/Wastewater Utility Actions
  - Operations
  - Risk Management
  - Financial Management
  - Bond Competition
SUGGESTED NEXT STEPS FOR WATER & WASTEWATER UTILITIES

Action Items

- Develop Resiliency
  - Preparations & Adaptations

- Establish Holistic Enterprise Risk Management Program (ERM)
  - Structure & Purpose
  - Integration of Risk & Finance
  - Identification of Blind spots

- Communicate Plan with Stakeholders
  - Ratepayers
  - Insurers
  - Bond Buyers
  - Rating Agencies
QUESTIONS & ANSWERS
Albert Cho
Vice President and General Manager
Advanced Infrastructure Analytics
Xylem, Inc.
Driving Resilience with Decision Intelligence
Xylem – a global water technology company based in New York

WE ARE A WATER INDUSTRY LEADER WITH GLOBAL REACH …

• Leading global water technology provider
• Approximately 16,800 global employees
• Headquarters: Rye Brook, NY; ~350 global locations
• Doing business in 150+ countries on 6 continents
• $5.2 billion in combined sales in 2018

…UNIQUELY POSITIONED TO HELP OUR PARTNERS SOLVE THE WORLD’S WATER CHALLENGES
Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.
Water infrastructure’s policy trilemma

System resilience
- Climate change
- Aging infrastructure
- Demographics

Future

Inevitable

Unaffordable

Unsustainable

Affordability
- Unit costs too high
- Costs rising faster than incomes
- Cost recovery needed

Process Stability
- Compliance
- Risk aversion
- Capabilities

GOVERNING
THE STATES AND LOCALITIES
Cities Should Invest Now to Reduce Climate Change Depreciation
Cities are beginning to worry that a susceptibility to climate change could reduce the chance that partners will invest in them. No financial support means no funds for the infrastructure to protect against the climate.

BY ALEX BROWN, STATELINE.ORG | NOVEMBER 26, 2019 AT 3:01 AM

THE AVENUE
As fire ravages California, our infrastructure is still not equipped to handle climate change

THE WALL STREET JOURNAL.
US
Why Your Water Bill Is Rising Much Faster Than Inflation
Rate increases average 5.5% a year as utilities race to fix corroded pipes and overflowing sewers
Resilience: managing supply portfolios

The water availability cost curve and specified supply-demand deficit

Net marginal cost in 2030

$/m³

Specified deficit between supply and implied demand in 2030

Lever width quantifies net impact on water availability on the existing balance of hydrological flows

Lever height quantifies unit cost ($/m³)
(annualized capital costs plus change in net operating costs)

Incremental water availability
Billion m³/year

Measures with a negative cost, representing a net financial gain

Measures with a positive cost, representing a net financial cost for the decision maker

SOURCE: 2030 Water Resources Group
Resilience: managing risks and expected losses

Source: Swiss RE
Resilience: managing community impacts

Have access to safe, clean, affordable drinking water and wastewater services

Share in the economic, social, and environmental benefits of water systems

Are resilient in the face of floods, drought, and other climate risks

“Lower-income communities are often the most vulnerable in the face of a changing climate. They are more likely to live in low-quality housing, lack insurance, and have fewer resources to rebuild and recover. As government agencies develop climate action plans, incorporating equity concerns into planning, funding, and implementation can create more resilient communities.”

- US Water Alliance
Sources of cost reduction
Decision intelligence

• Visualization and simulation
• Recommendations
• Real-time control

Act

• Advanced data analytics
• Digital twins and models
• Anomaly detection

Predict

• Distributed sensor networks
• Enterprise systems
• Data lakes

Sense

• How can I **optimally**…
  - Reduce system leakage?
  - Reduce likelihood of flooding?
  - Understand distributional impacts?

• And how can I do this fast enough to create real community benefits?
Resilience through decision intelligence

South Bend, Indiana

• Population: 101,000
• Annual Median Household Income: $34,000
• Long Term Control Plan: US$1 Billion
• Sewer flooding: 2 Billion Gallons per Year
Decision support

Tier 3: Operate the network
Implement and run Global RTC
Empower operations with RT-DSS
Maximize Performance and Resiliency

Tier 2: Create Digital Copy
Cognitive Hydraulic Models
Host and run real time models
Compare/contrast sensor and model data

Tier 1: Turn On the Lights™
Data Collection Software
Database & Data Analytics Tools
Full SCADA Integration
Future-casting
Driving impact
Thank you

Questions or comments?

Albert Cho
albert.cho@xyleminc.com
QUESTIONS
&
ANSWERS
Resources

• Insurance, Bond Ratings and Climate Risk: A Primer for Water Utilities: [www.amwa.net](http://www.amwa.net)
Upcoming Webinars

**Part 3:** February 26, 2020  |  2:00 PM - 3:30 PM ET

**Part 4:** June 3, 2020  |  2:00 PM - 3:30 PM ET

Learn more by visiting [nacwa.org/19rw](http://nacwa.org/19rw)