

## The Emergent Water Sector Utility: Leading Organizations Share Perspectives & Priorities January 2014

### Background

The National Association of Clean Water Agencies (NACWA), as part of its *Fall Strategic Leadership Retreat*, convened eleven organizations with leadership roles in the water sector to explore key aspects of the future for water sector utilities. On November 18, 2013 representatives from the eleven organizations (American Public Works Association, American Water Works Association, Association of Clean Water Administrators, Association of Metropolitan Water Agencies, National Association of Clean Water Agencies, U.S. Department of Energy, U.S. Environmental Protection Agency, U.S. Water Alliance, Water Environment Federation, Water Environment Research Foundation, and Water Reuse Association) met to explore and discuss four questions:

1. What are the drivers (key developments) that you believe will most influence the future of water services specifically and sustainable water management (at the watershed scale) more generally (e.g., the decline in demand for water treated to drinking water standards as conservation measures and reclaimed water use intensify)?
2. What do you see as the critical ingredients for the successful and sustainable water, wastewater, and/or stormwater services provider of the future (e.g., an expansion in service-based revenue to offset losses from commodity-based revenue)?
3. What are the current and anticipated priorities of the organization you are representing relative to supporting the emergence of more sustainable and change ready water sector services and overall sustainable watershed management?
4. Are there obvious gaps in our collective priorities, where do we have shared priorities, and where do we see collaborative synergies for our future?

On November 19, NACWA leadership (including Board members and volunteer committee leaders) reviewed and discussed a synthesis of the November 18 discussions and reflected on the results relative to NACWA's current *Strategic Plan* and the development of NACWA's *Annual Association Business Plan*. The synthesis that follows reflects a merging of the discussions conducted on November 18 and 19.

## The Emergent Water Sector Utility: Discussion Highlights

The following provides a synthesis of the discussions held on November 18 and 19 organized into three topic areas: Drivers that Will Influence Water Sector Utilities; Ingredients of Emergent Utility Success; and Priority Areas for Attention. The “Ingredients” follow as fairly direct responses to the drivers (particularly those that represent challenges to the water sector), and the “priority areas” reflect gaps that participants saw in current priorities and actions relative to supporting the emergence of a successful utility of the future. Attachment A contains the “unofficial” priorities listed by organizations participating in the November 18 discussions.

### Drivers that Will Influence Water Sector Utilities

- *Population Growth and Economic Development:* Participants indicated an expectation for continued population growth, while economic opportunities and development would drive both redistribution of population and an expansion of the built environment. These underlying factors were seen to in turn create ecological stresses in the form of increased stormwater from impervious surfaces, more competitive use pressures, and infrastructure and operating challenges for areas that depopulate (resulting in stranded assets) and those that grow (driving the need to fund new infrastructure).
- *Regulatory Stringency:* Participants expressed the expectation that discharge requirements (e.g., nutrient limits) and other regulatory pressures would continue to become more stringent raising several challenges for utilities. These challenges are exacerbated by increased climate uncertainty which adds complexity to planning for and investing in conventional assets with long-term economic life and makes uncertain the baseline ecological conditions against which regulations will be formulated and implemented. The challenges identified included:
  - Concern for the public credibility of utilities that face substantial financial investments that produce only marginal environmental improvement;
  - Concern that there is no “end game” on the regulatory front, leaving utilities facing continued, incremental, and unpredictable investment needs with no way to create an overall long-term strategy and optimize public investments.
- *Complex Operating and Financial Conditions:* Discussions touched on a wide array of developments and factors that add up to an increase in the complexity of the operating and financial conditions utilities will need to manage in the future. These conditions included:
  - The “new economy” which reflects rapid turnover in technologies (e.g., information management technology), workforce mobility and expectations, and substantial competition for customers and resources;
  - Limited federal capital finance resources, leaving utilities to seek alternative financing means;
  - A concern that the “just raise rates consistent with operating and capital needs” fix to infrastructure gap concerns will encounter affordability, willingness to pay, and elasticity of demand pressures for water and sewer services, potentially well before utilities can bring cost (short and long-term) into alignment with revenues;

- Local political risk (and elected official push back) as rates approach those of other services;
  - The impact to water demand, effluent concentrations, and flows that decentralized eco-efficiency investments and operations (e.g., zero discharge buildings, high efficiency appliances, conservation culture) will have;
  - The role that private equity capital and public-private operating partnerships will play in bringing new technologies to market and increasing the options available to utilities for operations and financing of infrastructure; and,
  - The segmentation of the water use market, including drawing on alternative sources (sea water, untreated water), and the direct use of reclaimed water.
- *A Highly-Engaged Served Community:* Participants consistently identified various aspects of community resident and customer behavior as more engaged and requiring greater attentiveness on the part of utilities. Discussions indicated an expectation that utilities will:
    - be more operationally dependent on customer behavior (e.g., for implementation of de-centralized technologies such as rain barrels);
    - have large water customers that are more attuned and interested in managing their water-related risks (e.g., large industrial users seeking to reduce water access vulnerabilities);
    - be exposed to better informed (and at times misinformed) customers with high expectations for transparency and performance;
    - need to manage, communicate, and be responsive to the very complex and immediate modern communications pathways and technologies in a context where there is an increase in data accessibility; and,
    - find themselves more exposed to active environmental organizations and the threat of third party lawsuits.

One participant summed up these, and other, factors as creating an operating environment where “the consequences of getting it wrong appear much bigger.”

- *Scientifically Complex and Data Intensive Decisions:* reflecting on the past 30 or 40 years of utility and regulatory operating contexts, one participant characterized decisions and actions as “engineering driven,” while suggesting that in the future the sector will be much more “science and data driven.” Other observations reinforced this premise, with discussions describing the high science and data demands of setting Waste Load Allocations, protecting downstream uses, managing the nexus between water quality and quantity, and the need to address new “is it safe” questions, such as those associated with the direct use of reclaimed water.

#### Ingredients of Emergent Utility Success

- *High Organizational Performance:* Discussions indicated high organizational performance, including reliability, is critical to both the financial health and the community credibility of utilities. As a corollary, participants indicated that high organizational performance is

dependent on high employee engagement, including a well-established workforce recruitment and retention program.

- *Planning and Partnerships:* Participants provided several different, yet highly overlapping, examples of planning and partnerships important to the future success of utilities. Generally characterized as community-based, sustainability and resiliency planning, investment, and operating partnerships, these examples reflected principles such as avoiding making separate decisions (e.g., looking to integrate planning and investment decisions with other community departments) and unified, holistic watershed strategy and management. Examples cited included:
  - Energy and water joint optimization partnerships;
  - Managing interdependent infrastructure risks (e.g., electricity and water treatment joint vulnerability assessments);
  - Watershed partnerships to address ecological needs (e.g., trading to address stringent nutrient limits);
  - Up and downstream use and discharge partnerships (e.g., to manage changes in consumptive use from conservation or reclaimed water use);
  - Production and management of watershed scale data on quality, quantity, and use (to support water partnerships); and,
  - The use of adaptive planning tools (e.g., to better manage the greater uncertainty associated with climate variability).
- *Investment Strategy (with Adaptive Management):* Discussion suggested that successful utilities will incorporate several new ways of thinking as they create their strategic plans for long-term investments. Two important cross currents running through the examples cited are 1) the need for using adaptive management techniques to build flexibility into the utility's strategy and 2) the incorporation of security considerations into cyber and hard infrastructure investments, with both of these currents helping the utility to manage for risks and uncertainty. The approaches identified included:
  - Looking at the entire watershed as an "asset" and using a full life-cycle, Triple Bottom Line (TBL), integrated view and decision-making process to allocate and sequence investments;
  - Ensuring any given investment produces multiple, broader community benefits (e.g., integrating parks into green infrastructure projects) (in part derived from and identified through TBL assessment processes);
  - Achieving seamless integration of green and distributed infrastructure into conventional infrastructure (requiring revised technical, administrative, and governance models);
  - Deploying technological innovations rapidly (this included both increasing the water sector's ability to develop and deploy new technologies through R&D and individual utilities through their management approaches); and,

- Effectively managing risk through the use of technology on and off ramps, sequential investments, green and decentralized infrastructure (which can be more scalable and adaptive than conventional infrastructure), and risk sharing mechanisms, such as public-private partnerships and flexible regulatory arrangements with regulators.
- *Operating Strategy (with Adaptive Management):* Consistent with the conversation addressing investment strategy, the discussions relating to operating strategy stressed flexibility and adaptability as core principals. Participants envisioned a utility that is eager to innovate, while possessing the ability to effectively manage for the risks that come with deploying new practices and technologies. They further envisioned a utility that has diversified (potentially substantially) its lines of business (and therefore its revenue base), in response to declining commodity demand, the need for additional revenues, and the opportunity to provide broader value and services in its community. The new lines of business included: sharing services with other utilities (e.g., billing systems); producing a variety of products (different water, energy, nutrients, metals); managing additional wastes (e.g., high-strength commercial wastes); and water efficiency consulting services. Discussions further indicated that a commitment to operational optimization and adaptive management will drive the need for sophisticated data management and analysis capabilities that will involve deploying new “smart” technologies and training staff. For the water sector as a whole, these new data management and analysis needs will drive the need for improved data consistency, such as the development of common data definitions.
- *Enhanced Communications:* As recognized by the participants, the previous four ingredients imply a utility that is substantially more engaged in its community and with a wider range of stakeholders as compared to a utility engaged in more conventional operations. This requirement for greater engagement, along with financial needs and community expectations for transparency, creates a need for enhanced, sustained, and sophisticated communications efforts. Discussions stressed the need for utilities to develop and communicate a clear value proposition and “brand” related to their products and services, tie their services to local economic development and quality of life opportunities, and expand communications avenues using social media and educational systems (e.g., K-12 schools).
- *Responsive Regulatory Framework:* Discussions signaled that the current regulatory framework is substantially out of step with the requirements and aspirations that underlie the operating ingredients of the emergent utility of the future. Participants indicated the need for a regulatory framework that will support the ability to prioritize investments and assets based on city-wide (or watershed-wide) sustainability planning, that will effectively share risk in the context of new technology deployment (e.g., extended permit terms), adapt itself to alterations in baseline climactic conditions, support optimizing energy-environmental tradeoffs, and encourage viewing and managing water resources holistically on a watershed basis. Participants also identified various restrictions (mostly local or state) that currently constrain the revenue and financing options available to utilities.

### Priority Areas for Attention

- *Data and Research:* Discussion identified three areas in need of an enhanced data and research focus: 1) developing the science to answer the “is it safe?” questions emerging around the new products and services offered by utilities (e.g., reclaimed water); 2) watershed data related to water quality, quantity, and use to support better watershed planning and user partnerships; and, 3) data and effects associated with emerging contaminants. The bottom line conclusion – more funding for the science behind these areas is needed.
- *Performance Models:* The emergent utility has a variety of dimensions (e.g., infrastructure sequencing strategy, new products and services) but little “blueprinting” of how to undertake these approaches has taken place. Discussions did indicate the importance of recognizing that there are many, diverse operating contexts – this led to an appeal to avoid a “one size fits all” approach and the need to build in flexibility. An additional note of caution related to the problem of “constantly changing messages,” citing the progression from promotion of asset management, to effective utility management, to utility of the future. Participants did, however, highlight several areas that could benefit from the development of model approaches.
  - Workable models and alternatives for financing new technology deployment and infrastructure replacement and expansion (this discussion included an observation that the current “conservatism” in utility investment approaches makes for too cumbersome of a process and will limit the ability to attract private investment to the sector).
  - Collaborative frameworks for local water agencies to work together (e.g., models for integrated rate structures).
  - More practically (operationally) defining the “new business model,” including how to deploy Triple Bottom Line decision making, how to define and measure high performance (identified as important in the context of demonstrating high performance in areas that are currently non-regulatory as a means to avoid future regulatory intervention), and what are the specific tools/methods for managing the risk of innovation.
- *Partnership Approaches:* An increased focus on watershed management and partnerships, a “one water” integrated approach, and new products and services leads directly to the need to engage a larger and more complex set of stakeholders. These include energy interests, agricultural interests, and other water service providers. Models, approaches, and tips for engaging with these stakeholders were seen as needed to support these new partnership initiatives.
- *Regulatory Responsiveness:* There was a clear message for the strong need to maintain regulatory advocacy on behalf of the water sector, with an increased emphasis on the need for a more adaptable, streamlined, and responsive regulatory framework in support of the utility of the future. Discussions reflected the recognition that the sector itself has created some unhelpful mixed messages (such as challenging the high expense of regulations at the federal level, while using it as a lever in local efforts to obtain rate increases), and has simultaneously sought increased flexibility while requesting high certainty to minimize risks. Key areas for further development identified in discussions included practically and operationally articulating how

the regulatory system will respond to failure in the context of efforts to innovate, how the regulatory system can “share risk” in the context of efforts to innovate, and streamlining permitting and other processes (and example was cited where a city remained out of compliance for an extended period of time due to the cumbersome nature of the permitting process).

- *Common Language:* Discussion placed substantial emphasis on creating the building blocks of more effective communications to utility customers and the range of new stakeholders anticipated for engagement under utility of the future operating contexts. Overall, discussions indicated a general “under commitment” to communications. Participants suggested that “we have not created a language this is understood by our customers,” and the sector needs the ability to speak “new languages” to interact effectively with, for example, agricultural and energy interests. Specific suggestions included: creating a “common language” reservoir (for use by utilities in communications activities); enhanced messaging on the criticality of water to economic development and community health and the quality of service provided by water sector utilities; and taking on a leadership role in promoting the “one water” message.

## Attachment A: Priorities

### American Public Works Association

- Priority: - Addressing the concerns of escalating costs resulting from regulatory and legislative actions
- Priority: - The use of better science to guide decision making
- Priority: - Develop/Support funding mechanisms from the Federal level (i.e. WRDA)
- Priority: - Prioritization of compliance issues related to water/wastewater/stormwater
- Priority: - Education of members on water issues and their potential impacts
- Priority: - To be better coordinated with other water entities to be more effective in our messaging (APWA, AWWA, WEF, etc.)

### American Water Works Association

- Priority: - A better world through better water.
- Priority: - Providing solutions to effectively manage water, the world's most important resource
- Priority: - Protect public health
- Priority: - Safeguard the environment
- Priority: - Pursue excellence
- Priority: - Improve member engagement and development.
- Priority: - Effectively and efficiently use resources to serve the water community.
- Priority: - Enhance and improve knowledge creation and exchange.
- Priority: - Serve as a valued and credible voice for water.

### Association of Clean Water Administrators

- Priority: - Protect the quality of surface and ground water for their beneficial uses
- Priority: - Implement strategies that restore impaired waters
- Priority: - Establish water quality standards that protect our waters.
- Priority: - Collect data that establishes the status of our water quality.
- Priority: - Issue permits to discharges of pollutants
- Priority: - Fund water quality improvement projects both point source and non-point source
- Priority: - Take enforcement action, where necessary against polluters
- Priority: - Administer federal water quality programs under the Clean Water Act
- Priority: - Educate and partner with other stakeholders
- Priority: - Perform good science on water quality



#### Association of Metropolitan Water Agencies

- Priority: - Helping utilities build a resilient model for financing
- Priority: - Using smart technologies to build efficiencies
- Priority: - Diversify water sources
- Priority: - Integrated Water Management
- Priority: - Building provisions for extreme events/infrastructure resilience
- Priority: - Effective workforce strategies such as Succession planning, engaging the workforce,
- Priority: - Sustainability and effective practices
- Priority: - Communicating the value of water
- Priority: - Adaptive management strategies

#### National Association of Clean Water Agencies

- Priority: - Regulatory flexibility and prioritization
- Priority: - Energy and resource recovery
- Priority: - Financial sustainability and affordability
- Priority: - Resiliency
- Priority: - Workforce sustainability and changing demographics
- Priority: - Community value proposition
- Priority: - Technology advancement
- Priority: - Advancing sound science
- Priority: - Integrated planning

#### U.S. Water Alliance

- Priority: - Serve as catalyst to bring all water areas together (utilities, regulatory, environmentalist...)  
- one water

#### Water Environment Federation

- Priority: - Identifying and sharing best practices in resource recovery (energy/water/nutrients) and in stormwater management
- Priority: - Enabling the adoption of innovative practices for resource recovery and smarter/more holistic water management
- Priority: - Raising awareness of the value of water
- Priority: - Supporting the development of the water workforce of the future

Water Environment Research Foundation

- Priority: - Integrated Water Management
- Priority: - Advancing Innovation (LIFT)
- Priority: - Nutrients
- Priority: - Research to inform policy
- Priority: - Resource Recovery
- Priority: - Trace Organics
- Priority: - Asset Management
- Priority: - Antibiotic resistance
- Priority: - Biosolids management

WaterReuse Association – WaterReuse Research Foundation

- Priority: - Sustainable funding for research related to science, technology, and water quality analysis and protection
- Priority: - Public outreach and education related to water source safety and integration
- Priority: - Development of regulatory frameworks that are based on science and industry standards
- Priority: - Ability to maintain and identify new funding sources for water source development
- Priority: - Involvement and partnership with all areas including municipal, industrial, regulatory, and other sectors
- Priority: - Collaboration among water industry organizations worldwide