



Pooling Resources: A Workshop for the Innovative Utility Leader

Working paper on Urban Water Systems

The Mayors Innovation Project, in collaboration with Howard Neukrug, P.E. at the University of Pennsylvania, is working with the Mott Foundation to identify challenges, barriers, successes and opportunities for mid-sized, post-industrial Great Lakes cities and their water utilities to enhance collaborations and achieve co-benefits.

Setting the context for this workshop: Urban Water Systems in Severe Infrastructure Disinvestment

After decades of disinvestment, public works infrastructure in the United States is in a high state of disrepair. Cities are on the front lines of dealing with the impacts of all types of capital disinvestment and their related issues, yet they often lack expertise, funding, and time to develop creative solutions; in part because of the lingering impacts of the recession on municipal budgets. It seems that even today, the most sincere and most capable municipal employees are overworked, underpaid, and unable to get beyond the most urgent parts of their jobs.

This disinvestment, while experienced to some degree by all cities, is perhaps most severe in mid-sized, post-industrial cities many of which are located in the Great Lakes region of the US, which is the setting for our work.

And, as we learned (and continue to learn) from cities like Flint, Michigan— the public water system does not operate independently of its “host” city. In fact, the health of the public water system is fundamentally linked to the host city’s mayor, its politics and its governance structures; the financial capacity and level of infrastructure investment and repair manageable by the city and the utility; its water rates and city taxes; and perhaps most importantly, the strength of its communities and its ability to respond to issues of social equity, environmental justice and economic development.

Perhaps equally important, Flint reminds us all that water utilities need to be following a path towards continuous improvement. As we learned in Flint, Michigan, there can be a very thin line that separates a water utility from being “functional, but vulnerable” and “failed, but functioning.” Many of our cities’ drinking, waste and storm water systems are operating with 19th century infrastructure and 20th century technology. Some of our water systems are showing significant signs of weakening, and have become vulnerable to failure. While local governments and utilities struggle to maintain these legacy assets, they have, by and large, been unable to upgrade systems to include new technologies, or even make improvements much beyond regular maintenance and crisis management.

Creative solutions should be encouraged and supported wherever and whenever possible

Water utilities across the U.S. are looking to improve efficiencies, reduce costs, preserve public health and protect the environment, and to strengthen their long-term resilience and sustainability. The four most current and influential approaches in use today in the water industry is the outward-looking **One Water Approach** which focuses on the view that all water has a value and should be managed in a sustainable, inclusive, integrated way, linking water systems to thriving local economies, community vitality, and healthy ecosystems. The second approach in wide use today is the **Effective Utility Management (EUM)** tool, which supports efforts by the water utility manager to assess his/her system’s performance and

supports continuous improvement of the utility functions. The third approach is called **The Utility of the Future (UoTF)** which focuses on innovative approaches and technologies related to energy production, water reuse, green infrastructure, non-traditional partnerships, smart utility / big data analytics – all designed to improve environmental performance while lowering costs, increasing revenue and improving service. Finally, the **Value of Water (VoW)** coalition has been developing a set of tools for making the need for water rate increases more transparent to our public and politicians.

What we have learned so far

What has been most striking to date is also probably the most obvious – that post-industrial Great Lakes water systems and their host cities share many of the same challenges – poverty, budget tightening, declining revenues, federal and state mandated programs and decrees, changing leadership, public health issues (e.g. lead in drinking water), decaying infrastructure and climate change (i.e. flooding).

Equally striking but perhaps far less obvious, is that the Capital Improvement Program (CIP) funding crisis that actually began over 50+ years ago, or more, has resulted in a situation where many water utilities are, or are quickly becoming, highly vulnerable to full or partial system upset or failure. Significant emphasis and resources are being diverted to emergency repair rather than routine maintenance. Likewise, capital funding is being prioritized by issues beyond the control of the water utility manager through CSO Consent Decrees, emergency facility or pipe repairs, and/or lead service line replacements rather than a CIP based on condition assessments and long-term planning.

Either of these two findings alone presents a monumental lift for cities and their water utilities; together the task is quite daunting. The fundamental system components in many cases require such basics as a condition assessment program, a capital improvement program and a strategic and financial strategy for ensuring long-term functionality of the water systems (**think EUM**). Thinking a little larger, streamlining water system operations and metering/billing, customer relations, energy and resource recovery provide significant savings to the utility which can be passed on to the customer (**think UoTF**).

On the broadest scale, urban water systems must learn to better collaborate, integrate, leverage and coordinate their capital and operating activities with other local and regional systems, agencies, NGOs, community groups, regulators (**think One Water**). Only by doing so, will the myriad of opportunities for environmental, social and economic “co-benefits” to be realized by all parties.

And, fundamentally at the heart of all of this, is the express need for water utilities to be able to demonstrate and bring together the necessary partners to achieve revenues equal to the true and full cost of water service (**think VoW**). No other activity is more critical than this.

In summary, many of our water utility managers are tackling the sometimes-daily crises (e.g. water main breaks, sewage overflows, staffing shortfalls, water quality concerns, customer affordability and shut-offs, street collapses, extreme weather events) with little time, money or human resources available for planning, collaborations or systems integration.

What we have found is that planning and funding the renewal of our water infrastructure systems needs to be done on a more direct and massive scale. This will require a whole new approach in how utility managers talk to, interact and convince their stakeholders of the mutual benefits of full cost of service funding.

Next Steps

The next step in our work— and the purpose of this workshop— is to identify the ways and means to support our local water utilities, their cities and communities to find co-benefits in working together to overcome today’s water system challenges and barriers to improvement.

The workshop will focus on a general discussion of the challenges, barriers, successes and opportunities for mid-sized, post-industrial Great Lakes cities and their water utilities to enhance collaborations through a better understanding and realization of the co-benefits of working in partnership. This may sound simple, but much of the water industry has been working under very siloed conditions since its earliest days.

Today, in order to achieve positive, significant collaboration, we often must deal with thorny issues of trust, politics, race and money. The benefits of these partnerships must be readily apparent to all of the stakeholders: utility managers and staff, bondholders, mayors and city councils, state and federal regulators, public health officials, business and industry, clergy, media, consumer and environmental advocacy and outreach organizations, and, most importantly, the community and water rate payers.

In our efforts to identify / establish / enhance collaborations, it is critical to involve all of the stakeholders with decision making opportunities and to be able to expressly describe the benefits and costs for all of the stakeholders involved. We are finding that there is much to be gained (co-benefits) when city / utility / community partnerships can leverage their resources. Clearly, while all cities already do this to some extent, approaches and levels of effort differ among cities and projects. Perhaps most important is the need for a full understanding of each stakeholder's respective responsibilities, needs and available resources to put towards a coordinated mission, schedule and budget.

A simple example of the above is the co-benefit to the water system, the city, and the community to waterways that are fishable / swimmable / drinkable / safe / attractive / accessible. There are many examples throughout the country of how various groups and agencies work in concert with their water systems to create new waterfront development, provide access for recreation, and minimize the legacy of waterfront industrial buildings and pollutants. An indirect co-benefit to the water utility from this partnership is an increased public and political understanding of the value of their water, and the cost of improving the water systems to enhance and protect this resource.

As water utilities move from water-based solutions (treatment plants, sewers) by beginning to integrate land-based solutions (green infrastructure, floodways), there is an opportunity and an absolute need to work with local communities in decision-making, jobs and hiring, environmental justice and social equity issues. There are great examples of success in this area of one water management, but unfortunately, there are still many more communities where this type of collaboration is sorely needed.

1. Seeking long-term rate relief while maintaining affordable rates for all
 - a. Chicago approach: significant "catch-up" rate increases followed by rates tied to an inflation index
 - b. Philadelphia approach: Water rates at cost of service plus parcel based stormwater fees with a significant low-income rate structure
 - c. Detroit approach: Full water rate recovery with assistance programs for those unable to pay.
2. Joint local planning initiatives to maximize opportunities for co-benefits
 - a. Coordinated utility / city / community / business planning and economic development
 - b. GIS mapping for utilities, streets, tax/parcel info, flooding, development, zoning
 - c. Complete, smart and green streets
 - d. Coordinated capital work with public and private investments
3. Partnering across city departments/agencies
 - a. Joint metering / billing / home inspections
 - b. Lead pipe replacement with lead paint/soil/blood/public health programs

4. Partnering with regulators and environmental advocates
 - a. Re-opening consent decrees to reduce costs through improved technologies
 - b. Developing trusting relationships with full support from stakeholders on utility operations and plans
 - c. Regular meetings and updates

5. Partnering with community groups
 - a. Creating jobs and other opportunities in the community
 - i. Workforce apprenticeship programs
 - ii. University research collaborations / co-ops / interns
 - iii. Local hiring and training
 - b. Public input and engagement on land and water concerns
 - i. The Junction Function community group in Toledo, OH
 - ii. Tree for All tree plantings
 - c. Improve access to recreational surface waters
 - i. Increase residents' sense of livability, boost economic development along the waterway, and engage residents in both paid and volunteer work.

6. Adjusting governance structures to change political dynamics and recognize new realities
 - a. Regional collaboration
 - i. Utility partnerships
 - ii. Regionalization
 - iii. Public private partnerships
 - iv. Authority structure
 - b. Forming joint water /wastewater / stormwater utilities

7. Green infrastructure, flooding and land management strategies
 - a. Waterfront economic development initiatives
 - b. Land acquisitions for water quality, flooding and recreational benefits
 - c. Implementing green infrastructure to enhance public and private properties and uses
 - d. Jobs training

This is but a short list of opportunities open to utilities. Please come to the workshop with other examples of how utilities can support their cities and those cities can support the utility; and promising strategies and tools of how water funding is bringing co-benefits to cities.

Please also ponder these bigger questions:

1. How do we ensure that our water utility colleagues develop short and long-term strategies that are based on full funding for an “all-in” capital improvement program while ensuring continued compliance with regulations and public health in the short-term?
2. Do the existing models of EUM, UoTF, One Water, VoW offer sufficient guidance for utility managers to create and fund rapid, innovative, transparent, sustainable and resilient improvements to our water systems?
3. How do we provide support to overcome barriers in communications between utility managers / mayors and other political stakeholders/ and the public?