ARCHITECTS OF OUR OWN FORTUNE

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How the 'Regional Water Architect' Concept is Creating a New Vision for the US Public Water Sector



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"Every man is the architect of his own fortune."

-Appius Claudius Caecus (340 BC - 273 BC)

oday, clean water utility leaders are scrambling to unlock the door to the next 50 years of prosperity within the everevolving, highly technical, ultra-modern water landscape. We can craft a brighter future by drawing on some inspiration from Roman history. Roughly 2300 years ago, the Roman politicianturned-statesman, Appius Claudius Caecus, quipped a catchy axiom-oft-repeated in Fortune 500 board meetings-that any person, though ultimately beholden to circumstances beyond their control, can design, work for, and ultimately be responsible for, his or her own success. This article is a call for us, as utility leaders, to adopt the Appian attitude for success: We are the architects of our utilities' fortunes. Our future is in our hands.

The hallmarks of the US water sector in the 21st Century will be cooperation, collaboration and integration. After monitoring recent developments in the sector and interviewing sector leaders, we've come to recognize how the sector is evolving and will continue to evolve. This evolution is driven by two related elements: (1) the country's organically grown-and-fragmented water sector can be more efficient, and (2) multi-dimensional pressures confronting individual water agencies will demand it.

To enable this direction, we put forth the Regional

Water Architect (RWA) concept—a visionary approach to voluntary, flexible collaboration by autonomous community water and wastewater systems that can collectively meet the sector's many challenges. This represents both a terrific opportunity for the sector, and a flexible model with which to seize it.

ARCHITECTS OF OPPORTUNITY

In total, more than 51,300 community water systems and 14,700 publicly owned treatment works serve more than 80% of the US population. Each of these systems has the same fundamental responsibility: serving its residents and communities. This fragmented structure can be inefficient, and drives duplications, eventually exacting a cost on ratepayers. The top 10,000 utilities average \$8 million in revenue, yet they perform identical services and make similar investments, often times while sitting immediately adjacent to their neighboring utilities. As increasing water challenges compound the stress on utilities, sustaining service levels and infrastructure upgrades becomes increasingly difficult. In a recent survey of water utilities by the American Water Works Association (AWWA), 31% of respondents stated that in the next five years, they anticipate struggles to cover the full cost of providing services. That's an astonishing one-third of responding utilities. Hence, it is incumbent upon the entire sector to create a bold vision that can enable it to thrive, and not just survive.

THE REGIONAL WATER ARCHITECT

There are some early positive signs. The buzz around the "One Water" concept, integrated planning, hub utilities and regionalization is growing. Early adoption of these initiatives has gone hand in hand with the evolution of a new type of utility leadership model in the US, one that goes above and beyond running a utility, serving rate payers, or meeting permits. In this transformative model, leaders create and implement strategies across the life cycle of water, both within and outside their jurisdictional boundaries. They derive solutions for merging the common interests and responsibilities of various water and wastewater systems within a region. They are implementing operating models to enable regional cooperation in operations, infrastructure, public health, security and resiliency. Utilities that are driving these transformative changes are "Regional Water Architects" (RWAs). While the concept of RWA has been around in various forms, its relevance, need and impact to the sector has never been greater.

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To dig deeper into this subject, discussions were held with CEOs from utilities spanning the country. The objective was to gain a better understanding of the origins of RWA, the leadership traits they possess, constraints under which they have to operate, and the role of local politics. One overwhelming conclusion emerged from this discourse: RWA is a game changer and will create a whole new vision for the sector. This enlightened discussion led to many insights eventually culminating in the creation of a flexible RWA operating model that every utility or leader can apply based on their local or regional opportunities and constraints.

MULTI-FACETED LEADER

RWAs take on the task of solving issues in their regions. Contaminated water, supply shortages, excess capacity, silver tsunami, financial pressures, and local economic loss among others—have all led to the birth of RWA as a transformational regional conductor repairing a broken or inefficient system to better serve ratepayers. RWAs bring a coordinated approach aimed at significantly driving down costs, leveraging regional investments, and carrying the majority of the load for water quality and permits in the region. In essence, RWAs focus on improving the triple bottom line—social, environmental and financial—of the region as a whole.

RWAs carry unique leadership traits. They can visualize the regional platform better than anyone else, and understand the constraints imposed by local politics. RWAs master the art of stakeholder communication. create an environment of shared decision making, keep everyone's interests in mind and take an outcome-oriented approach. RWAs feel a great sense of responsibility and act as stewards of water, public health, and economic vitality. While taking on this visionary role, they must first ensure that their operations are in order and are providing a great service to their rate payers. RWAs will provide a more balanced approach to serving local communities with strategies that are a win-win for the utilities in the region and not a zero-sum game.

MULTI-LEVELED OPERATING MODEL

Given the complexities of

local politics, countless utility governance structures, and different water challenges across the country, what is required is a flexible operating model that can be applied to any configuration. This model should allow utilities to self-determine and select how they operate and cooperate within their region and create a win-win approach.

The model is built on a continuum that has three levels starting with information on the left to integration on the right (see Figure 1). The "Information RWA Model," is primarily a best practice, informal, information exchange without any commitments. Next, the "Collaboration RWA Model" involves joint project-based planning and execution with formal agreements and shared goals. Finally, the "Integration RWA Model" includes digital, functional and physical

connections that are more or less permanent in nature with integrated dependencies and resources.

As you move from left to right on this scale, regional cooperation becomes more formal, and the required level of commitment, the need for integrated financial investments and the potential for economic value creation all become greater. Utility CEOs have quoted a number of examples during the exchange that span the full range of this operating model.

EXAMPLES IN ACTION

Under the "Information RWA model," Houston Public Works shared its infrastructure design manual with regional peers. The manual is now being widely used by many unconnected water systems in the greater Houston





Figure 1 RWA Operating Model

area. The Atlanta Department of Watershed Management's creation of an illustration to quantify the economic value of water for the city of Atlanta is another example of the model. Sharing the illustration with the Metro North District and its peer utilities allowed for far better understanding of how to quantify the value of water, and the related community benefits across the region.

Using the "Collaboration RWA Model," the Great Lakes Water Authority launched its first Sewer Master Plan effort with broad stakeholder representation. Focusing on a "pipes don't know boundaries" approach, the goal was to optimize the use of all public investment in the region, regardless of ownership, to meet water quality and service level outcomes before new public investment is made. Regional operating plan approaches are already being piloted ahead of plan completion this fall. LA Sanitation exemplified this model as well, in that it pooled interested agencies to invest \$300 million in the development of new biosolids digester technology, and has pledged to use its existing facility to test the technology.

Under the "Integration RWA model" the Louisville/Jefferson County Metropolitan Sewer District (MSD), propelled by the changes in Kentucky law, is acquiring and consolidating utilities that are either in duress or desire to be part of MSD operation. They are closing a deal on one system and are in due diligence with three others. The New York City Department of Environmental Protection (NYC DEP) along with the Delaware River Basin Commission provide another example of the integration model as NYC DEP manages and monitors flow, levels, and storage in the Delaware system to help provide adequate water supply to New Jersey and Philadelphia-going beyond its responsibility to New York City ratepayers.

One innovative *digital* Integration model example is from the Great Lakes Water Authority. The Authority has created a system by which its 127 utility members can opt-in for a low-cost shared GIS-based smart water platform. This allows its wholesale memberpartners to better manage their distribution system quality, monitor flows and pressure, detect anomalies, and run their hydraulic models in real-time.

IMPACT, GROWTH, AND BENEFITS

RWA's can make a tremendous difference in ten "impact areas" (See Figure 2). The degree to which these impact areas are leveraged, and the resulting opportunities, are dependent on local challenges and constraints. For instance, in regions where utilities are focused on creating an asset management plan, they can use a shared common approach and technology to not only avoid duplicative, expensive and custom efforts, but also help better understand how the systems, assets, and capacities within the region can be connected in the future.

RWA OPERATING MODELS



Figure 2 RWA Self-Evaluation Tool



Another example could be pooled operations and maintenance (O&M) water quality and permit personnel to drive shared expertise and reduce service costs. RWAs can play a major role in addressing one of the biggest problems that the sector is facing—the "silver tsunami"—by creating regional workforce development institutes that can recruit, train, and prepare skilled personnel for operating a "Utility of the Future."

The RWA model has to grow organically. It cannot be mandated and it's not for everyone. To start this grassroots movement, a flexible self-evaluation tool has been designed that can assist utilities to create their own roadmap that best fits their needs. This flexible tool can help a utility map where it is today, and where it wants to be in the future (Figure 2). Utilities can use this roadmap to communicate to their elected officials, boards, and regional peers as they start on an RWA journey.

RWA implementation can drive tremendous value to a region while improving service and innovation. The CEOs have quoted RWA examples that have demonstrated 10% to 25% reduction in O&M expenses. This figure is significant given that more than 55% of overall budgets are O&M related. A 25% reduction in O&M equates to \$11 billion of annualized recurring savings for the sector as a whole—more than enough to self-fund annual infrastructure upgrades.

Other benefits include the efficient deployment of capital and an improved utilization of capacities available within the region to support future population growth. Since RWAs understand the intricacies of a regional platform better than anyone else, collectively they can be a powerful force as national architects of water policy. They can help create an equal footing for water with other sectors that have historically received more funding and attention.

THE WAY FORWARD

To lead this transformation, the US requires 15 to 20 RWAs around the country, powered by a sustainable strategy, to keep the RWA operating model front and center until it becomes part of the DNA of the water sector. Four proposed strategies to moving forward are:

1. COMMUNICATION

Communicate and share the RWA model to boards, mayors, councils and regulators, utility leadership and media.

2. PLATFORM

Utilize existing platforms of AMWA, Water Agencies Leader Alliance, and NACWA to keep RWA topics on the agenda, and to encourage utilities to leverage the self-evaluation tool and to create roadmaps.

3. RWA METRIC

Set up an annual, simple survey that generates RWA metrics based on a self-evaluation tool to measure progress for a utility, region or the sector as whole.

4. USCOM ALIGNMENT

Establish a champion within US Conference of Mayors (USCOM) that promotes RWA and put in place a prestigious RWA award (based on the above metric) handed to the most progressive RWA.

There is a window of opportunity to take the sector in a whole new direction. RWA is an important part of that direction. If it does not capitalize on this opportunity, the water sector will be wrestling with the same issues and challenges 10 years from now. This is a scenario it can ill afford. The time to start is now and the model to deliver is right in front of us.