



# Daily Environment Report

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## WATER RESOURCES

### SUSTAINABILITY

Water utilities in America are facing the sobering truth that there is nowhere else to turn other than to a model of business self-sufficiency for the financial and technical resources necessary to carry out their mission, according to G. Tracy Mehan III, the author of this article. He says that in a strange twist of fate, water utilities must become more business-like in how they value their water, wastewater, and more critically, their very sophisticated and capital-intensive services. They will have to manage water demand as much as water supply, and price the resources effectively while accounting for the poor and needy within their service areas.

This article is written in conjunction with the Second Annual Water Resources Summit, “Sustaining Our Nation’s Water Resources Summit—Answering the Call for Stewardship,” sponsored by The Horinko Group. This event will be held Oct. 25 in College Park, Md., and will focus on governance, advocacy, and the business of water, the latter panel to be moderated by the author.

## The Business of Water: It Is Time to Embrace a New Model for Water Services

By G. TRACY MEHAN III

**A**lmost 40 years after enactment of the Clean Water Act, there is a pressing need to expand the focus of water policy beyond the narrow regulatory issues associated with that law. The same applies to matters traditionally associated with the Safe Drinking Wa-

ter Act. The era of exclusive preoccupation with compliance issues must make way for a more efficient and proactive culture of stewardship.

Water risk and supply issues, aging infrastructure, finance, a changing and variable climate, emerging contaminants, and threats to the chemical, physical, and

biological integrity of the nation's waters and watersheds require new thinking and new ways of conducting the sometimes discordant symphony of public, private, and not-for-profit interests that must work together to address these new challenges.<sup>1</sup>

## Magical Thinking and Infrastructure Finance

In the area of water quality for human health and the environment, most of the attention has been on the utility sector, which in the United States is predominantly an affair of municipal government, notwithstanding the robust investor-owned systems that are active in many areas of the country. This municipal utility sector has been the locus of concerns over inadequate financing of infrastructure, given the deteriorating condition of an aging capital stock.<sup>2</sup> Additional costs for stormwater control and nutrient reductions, which are both growing and pressing problems, will further stress the financial sustainability of these utilities.

The financial condition of the government utility sector has generated a lot of magical thinking, a nostalgic longing to re-live the good ol' days of the Clean Water Act grants program before it was converted to state revolving loan programs. Proposals for trust funds, free-floating grant programs, infrastructure banks, and other imaginative means of shifting the burden of infrastructure finance from local ratepayers and local governments to the federal government abound in the nation's capital. While rates have been going up for some water and wastewater utilities, Americans still pay the lowest water rates of almost any developed country, with very few exceptions such as Canada.<sup>3</sup>

**Little Progress on Financing, Investment.** To date there has been little progress on water infrastructure financing and investment. In fact, recent cuts to the state revolving loan funds seem to herald further retrenchment.<sup>4</sup> There is nothing in the federal fiscal situation that justifies this triumph of hope over experience, especially since the Great Recession took hold and the baby boomers started retiring and driving the cost of entitlement programs into the stratosphere.

There are real challenges given the resistance of water and wastewater customers and political leaders to increasing rates to support a capital-intensive service, a much more sophisticated proposition than just selling a commodity.

"People pay more for their cellphones and cable television than for water," says George S. Hawkins, the new head of the water and sewer authority for Washington, D.C.<sup>5</sup> "You can go a day without a phone or TV," he adds. "You can't go a day without water."

<sup>1</sup> G. Tracy Mehan III, *A Symphonic Approach To Watershed Management: The Quest for New Models Of Governance*, Journal of Land Use and Environmental Law (Florida State University), Vol. 26:1, Fall 2010.

<sup>2</sup> See U.S. Environmental Protection Agency, *The Clean Water and Drinking Water Infrastructure Gap Analysis*, EPA-816-R-02-020, September 2002.

<sup>3</sup> G. Tracy Mehan III, "A Fork in the Road: Whether to Pursue Federal Subsidies for Water Infrastructure," (225 DEN B-1, 11/25/09).

<sup>4</sup> See 42 DEN A-18, 3/3/11.

<sup>5</sup> Quoted at Charles Duhigg, "Saving U.S. Water and Sewer Systems Would Be Costly," *The New York Times*, March 14, 2010, available at <http://www.nytimes.com/2010/03/15/us/15water.html?pagewanted=1&hp>.

Hawkins is pushing rate increases so he can replace all of Washington's pipes in 100 years rather than "in three centuries" under the city's original budget. A local resident retorts: "I don't care why these pipes aren't working! I pay \$60 a month for water! I just want my toilet to flush! Why do I need to know how it works?" Hawkins has his work cut out for him.

Beyond the governmental realm, there is of course, the business of water, sometimes referred to as the "water industry." This is the multifaceted sector that includes architectural and engineering services; pump, pipe, and motor manufacturers; membrane technology companies; software and computer services; and numerous other providers of the myriad equipment and tools necessary to the capture, treatment, and provision of water and wastewater services.

The respected financial analyst Steve Maxwell describes this industry as "a balkanized and teeming 'bazaar' of fundamentally quite different businesses—all of which have something to do with the delivery of clean water but which can't all be quite accurately classified under any single heading."<sup>6</sup>

Despite the lack of reliable market research, Maxwell estimates the size of the U.S. water and wastewater sector at about \$120 billion per year, with the world market roughly four times larger, or about \$500 billion per year.

## Ferment in the Water Business

There is much ferment or innovation in the water business, particularly in the areas of treatment technologies like membranes and infrastructure innovations such as pipe linings. Moreover, private firms are entering into partnerships with municipal water systems to provide expert management services at competitive prices, a very positive trend in the U.S. water sector.

Yet, the real action is overseas in emerging markets. Given the universal, worldwide need for water and wastewater services, the animal spirits in this competitive private sector are generating many new ways of approaching enhanced stewardship of water resources for human health and consumption as well as commercial needs.

**Fascinating Trends.** Mamta Badkar of *Business Insider* recently reported on a number of "fascinating" trends in the water industry based on a report by Citi Investment Research & Analysis.<sup>7</sup> Noting that global water consumption is doubling every 20 years, the \$450 billion water market (a bit smaller than Maxwell's estimate) is innovating rapidly. Companies are turning to water reuse, desalination, and other economical technologies. They also are merging manufacturers with service providers. Among the 10 trends identified by Citi, several stand out.

Water reuse will become a new source of water supply. This is consistent with the general shift in attitude

<sup>6</sup> Steve Maxwell, "A Look at the Challenges—and Opportunities—in the World Water Market," *Journal AWWA* (American Water Works Association), May 2010, p. 107.

<sup>7</sup> Mamta Badkar, "10 Fascinating Trends In The Water Industry And The Companies Poised To Gain From Them," May 25, 2011, available at <http://www.businessinsider.com/10-fascinating-trends-in-water-companies-poised-to-gain2011-5>.

that no longer speaks of “wastewater” but rather “water that is wasted.” Innovations in the area of membrane technologies is driving this change, as is water scarcity. Citi also sees these technologies displacing chemicals in water treatment as another trend to watch. The membrane water treatment market will grow from \$1.5 billion in 2009 to \$2.8 billion in 2020.

Highly contaminated water, such as water from hydraulic fracturing to obtain natural gas, is driving point-of-use technologies to deal with the issues of disposal of “produced water” from this water-intensive practice.

Other developments highlighted by Citi are the replacement of chlorine, over time, by ultraviolet light disinfection and growth opportunities in water efficiency products. This latter trend encompasses water-efficient products such as bio-gas recovery systems, “water meters that could help companies gain from water footprint initiatives,” pipe rehabilitation and relining systems, and water derivative products like water-free toilets.

The water industry is moving toward a sustainable business model that, in effect, offers an alternative to the water government model—stewardship that is also profitable. It is likely to approximate something akin to sustainability’s triple bottom line (environmental, economic, and social). The movement of private business capital into the water sphere is a welcome development that can benefit billions of people throughout the United States and world.

Steve Maxwell observes, “As the global water crisis intensifies, we face numerous and daunting political and economic challenges.”

“The flip side of this coin represents virtually limitless opportunities for creative and innovative firms to help provide needed solutions,” says Maxwell.

No wonder some of the biggest American companies have moved decisively into these emerging water markets, among them such prominent names as Dow Chemical, General Electric Co., IBM, and ITT. Of course, there are other start-ups proliferating throughout Australia, Europe, North America, and Singapore.

## The Municipal Water Sector and the ‘New Normal’

The surge of investment and capital into the private water business is in stark contrast to the municipal government utility sector. As mentioned above, the investor-owned sector is of modest size in this country, in contrast to the United Kingdom and European Union.

Roughly 12 percent of the U.S. population is provided water by private or investor-owned water utilities. Just 2 percent of the population is served by private wastewater companies, says Maxwell.

Thus, most Americans are served by government in the form of municipal services. The viability and financial health of these water and wastewater utilities primarily are a function of political choices and regulatory pressure, not necessarily business or market imperatives.

Nevertheless, the municipal water sector is experiencing rising, if inconsistent, water rates driven in part by growing population, new regulations, and in the case of wastewater systems, expensive consent decrees for mitigation of combined sewer overflows (CSOs) in

older communities where the sewage and stormwater flow through the same pipes.

These CSOs occur when rain events cause the system to overflow, as they were designed to do, to avoid blowing out the wastewater plant’s biological treatment operation. Settlements of CSO enforcement cases can cost hundreds of millions, if not billions, of dollars. They usually involve heavy capital investments in sewer separations or gigantic tunnels. Milwaukee will have spent \$4 billion to meet its obligations in this area.

**Wastewater Surveys.** Two recent surveys of water and wastewater rates are worth considering. They provide a snapshot of current efforts in the municipal sector to attain financial health with a view toward providing necessary services.

The *2010 Water and Wastewater Rate Survey*,<sup>8</sup> published by the American Water Works Association (AWWA) and Raftelis Financial Consultants Inc., relies on data from 308 water utilities and 228 wastewater utilities from 49 states and the District of Columbia.

In general, the survey shows water rate increases exceeding the consumer price index. Water and wastewater charges increased 13 percent and 14.16 percent, respectively, for residential customers using 1,000 cubic feet (cf) of water a month between July 1, 2008 and July 1, 2010. The CPI decreased by 0.91 percent, reflecting the economic downturn, for all urban customers.<sup>9</sup>

Between 1996 and 2010, charges for water and wastewater customers increased 4.66 percent and 4.9 percent annually, greater than the annual CPI increase of 2.49 percent. Advocates opposing rate increases like to quote only percentages rather than absolute amounts. For instance, this survey demonstrates that the 2008-2010 average monthly water rate went from \$24.37 to \$27.53, yielding the 13 percent increase.<sup>10</sup> Average monthly wastewater bills increased from \$29.94 to \$34.18 between 2008 and 2010. These are averages with some bills rising at a much higher rate.

The median affordability percentage for a water and wastewater customer with 1,000 cf of usage is 0.622 percent and 0.77 percent, respectively—well below the EPA’s affordability guidelines of 2.5 percent for water services and 2 percent for wastewater services<sup>11</sup> [emphasis added].

Notwithstanding these relatively positive findings, only 48 of the surveyed utilities had a low-income program. Twenty-nine had a low-volume discount program. Because social equity is often cited as a reason to oppose rate increases, it is puzzling that more water and wastewater utilities do not address these matters, as is common in the energy utility sector.

AWWA and Raftelis describe a “new normal” with which utilities must contend.<sup>12</sup> Once upon a time, many wastewater utility assets were funded, at least partially, through generous grant programs. More importantly, they said “[t]he industry convinced the public that clean water is relatively inexpensive.”

<sup>8</sup> American Water Works Association and Raftelis Financial Consultants, *2010 Water and Wastewater Rate Survey*, January 2011.

<sup>9</sup> *Id.* at p. 5.

<sup>10</sup> *Id.* at p. 6.

<sup>11</sup> *Id.* at p. 12.

<sup>12</sup> *Id.* at p. 3.



AWWA and Raftelis do not explain this latter claim, but it is plausible that managers and engineers were in a hopelessly subservient position relative to their political leadership, which did not want to raise rates. They often deferred maintenance, resulting in what is now referred to as the infrastructure investment gap. In truth, they did provide safe, clean water and wastewater treatment. However, the bill finally has come due during the current age of replacement of capital assets.

The survey authors state clearly, “We do not anticipate returning to business-as-usual conditions of years past.” They describe the new normal as consisting of the following elements:

- Per capita demand is decreasing and the rate of growth in new housing has slowed significantly. It will take years to reduce the housing inventory.

- Gaining public support for rate increases is becoming more difficult.

- Utilities are responsible for all capital costs. *The amount of grant funding is currently very limited, and additional funding does not appear likely* [emphasis added].

- Repair and replacement of assets, particularly underground assets, is a critical need, but utilities still need to determine an efficient and effective process for achieving this objective.

- People have a better understanding of the value of water. The growth in the bottled water market has provided the industry with great comparable data (the cost of bottled water is significantly higher than water at the tap) which may provide leverage for utilities.

- Climate change now is being incorporated into utility planning.

Lastly, regulatory costs are as much a part of the new, as well as the old, normal.

A fair reading of the 2010 survey is that water and wastewater utilities will have to become self-sufficient and smarter in communicating to ratepayers and political leaders while optimizing cost-effective ways of managing their systems.

## Raising Rates: The Last Alternative

A second data set for assessing the status of utility financial health and viability is contained in the 2011 American Water Intelligence (AWI) Tariff Survey.<sup>13</sup> AWI sees rate hikes driven by capital investments stemming from environmental compliance requirements.

Rates for water and wastewater increased an average of 8.1 percent between July 2010 and July 2011. Rates rose in 29 of the 33 American cities for which AWI could compile comparative historical data. The survey covers 51 cities.

Some cities, such as Seattle, are staying ahead of the curve. Seattle has raised rates yearly since 2007. In Indianapolis, water and wastewater rates have increased

by a combined 14.8 percent since a five-year rate freeze expired in 2007.

AWI notes that several cities have enacted “social tariffs” to reduce the cost of water to low-income households and senior citizens. For example, Baltimore offers a 30 percent discount to people over 65 with household incomes of less than \$25,000, and one-time grants to low-income households. Boston has a 25 percent discount for seniors and the disabled, and Seattle reduces bills for eligible customers by as much as 50 percent.

AWI sees this movement on rates as positive but just a beginning. “Americans continue to buy water at half the cost that they would pay if they lived in Northern Europe. It is an amazing price discrepancy for a product that is pretty similar on both sides of the Atlantic.”<sup>14</sup> Because Americans use twice as much water per capita as Europeans, actual household water bills are not much different.

“But American utilities have to work harder to produce the same amount of money,” observes AWI. “The result is that the operating surpluses that can go toward supporting capital projects are typically smaller in the U.S. than in Europe (the average surplus in the United States is in the range of 28 percent compared to 35 percent in Northern Europe).”

Thus, given historically greater levels of federal subsidies in the past, “the main implication of the low level of operating surplus is that the U.S. water and sewer utilities spend less on capital projects than their Northern European counterparts,” opines AWI. “This is evident in the number of main breaks, boil orders and discharge permit violations in the U.S. compared to cities in Northern Europe (Southern Europe is a different story).”

The 8.1 percent increase in rates may be a sign that American utilities are moving to address this shortfall in capital investment. However, the data indicate the average increase is driven by a small number of cities pursuing very large increases.

“11 cities have above average increases, but 22 have below average increases,” says AWI. “Furthermore, falling volume demand as a result of the economic downturn (and in some cases demand management programs) may mean that increases in tariffs lead to smaller increases in revenue.”

AWI basically sees further and greater rate increases as the only alternative for the long run if utilities are to increase their operating surpluses to fund capital programs despite the fact that a pattern is not yet widespread or anything like a trend.

“In the longer term, it is inevitable that all U.S. water and sewer utilities will have to increase their operating surpluses to European levels because there are no longer any alternative sources of funding in the U.S. In the meantime, we will see a period of growing diversity and creativity.”

## A New Model for Municipal Utilities

The world water challenge differs from continent to continent, culture to culture. However, there is a common need to manage ourselves, water resources, and

<sup>13</sup> “Cities Hike Water Charges as Financing Operations Evaporate,” American Water Intelligence, Vol. 2, Issue 9, September 2011, pp. 8-11, available at <http://www.americanwaterintel.com/archive/2/9/>. This article summarizes the results of the Tariff Survey.

<sup>14</sup> “What Does an 8.1 Percent Water Tariff Increase Mean?” American Water Intelligence, Vol. 2, Issue 9, September 2011 at p. 4, available at <http://www.americanwaterintel.com/archive/2/9/>.

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capital assets in a way that is adaptable, cost-effective, and attentive to human needs.

The water business is moving forcefully to develop technologies and services to be deployed globally. Hopefully, this growing industrial sector will provide useful and accessible products to people and water systems as diverse as Phoenix and Cairo.

Water utilities in America—or “water government”—are facing up to the sobering truth that there is nowhere else to turn other than to a model of business self-sufficiency for the financial and technical resources necessary to carry out their mission. Thus, in a strange twist of fate, they must become more business-like in how they value their water, wastewater, and more critically, their very sophisticated and capital-intensive services. They will have to educate their customers and political leaders and market their services in an honest, straightforward, and imaginative way. They will have to manage the water demand side as much as the water supply side, and price the resources effectively while making provision for the poor and needy within their service areas.

Advocacy for an effective business model of municipal utility management is a paramount need. Advocates

should be working to persuade their fellow citizens and political leaders of the value of the assets necessary to providing safe water and the sheer necessity of making the necessary investments over time—up to and including rate increases—which are robust but socially equitable in design and implementation. It is time to go beyond simple homilies about the value of water and make the necessary financial commitments.

It is time to make stewardship democratic and engage utility customers—ratepayers—in this crucial dialogue regarding our water resources and the capital assets that protect them.

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**About the author:**

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