



RURAL INFRASTRUCTURE BRIEFINGS

Rural Water Systems – Insiders’ Perspectives on the Industry’s Major Challenges

These Briefings showcase different facets of the rural infrastructure industries: power, energy, and utilities; water utilities; and communications.

Inside this Issue...

Bottled water – really? 1

No shortage of concerns 1

Fixing an aging infrastructure 2

Finding funds 3

Technology’s double-edged sword 4

“Big Brother control” 5

A workforce in need of new people ... 5

Concluding comments on the industry’s outlook..... 6

Bottled water – really?

In his job as manager of Illinois-based Washington County Water Company, Steve Fletcher reports that his greatest frustration isn’t his system’s aging infrastructure. Nor is it the industry’s increasingly complex regulations or even the difficulty of finding additional water sources as the company’s customer base grows. No, what most bothers him is the sight of a 16 oz. bottle of water selling for \$1 or more at the local convenience store.

Fletcher is well aware that the water inside that clear plastic container is not only a thousand times more expensive than his own system’s tap water but meets far less rigorous quality standards. “Our water will be as good as or better than what’s in that bottle,” Fletcher says.

To utility managers like Fletcher, the bottled-water boom is a vexing reminder that the “bottled is better” marketing hype has prevailed over facts. It’s daily proof that America’s water utilities have neglected to educate the public about the safety, quality and affordability of their tap water. “We don’t promote to the world what we do well,” notes Fletcher. “People take our water systems for granted.”

But this indifference may change soon. The nation’s rural water systems are striving to improve their public image and address their pressing business challenges as they work to survive and thrive over the next few decades.

No shortage of concerns

The challenges facing the estimated 52,000 U.S. rural water systems are daunting and extend well beyond the popularity of bottled water.

Across the nation, rural water utilities are wrestling with how to pay to replace their aging infrastructure while still keeping operational expenses low. They have to spend more time and resources to comply with the government’s demanding, tightening regulations. They’re looking for ways to attract qualified employees to replace their industry’s aging workforce.

Even as they’re expanding their use of technology, many rural water utilities are weighing the cost and implementation of high-tech tools against the prospect that a

newer advancement could quickly make their investment obsolete. Growing populations and customer bases are spurring some rural water businesses to expand, while shrinking customer bases are forcing others to seek survival options as demand lessens. In addition, many managers are deeply concerned that the lead-tainted water crisis in Flint, Michigan, not only will bring heavier regulatory scrutiny of water systems already committed to delivering a safe and sound water supply, but could also trigger a backlash of public distrust of water quality and compliance efforts, particularly in rural communities.

“People taking water for granted is a national problem,” says Dave McMurry, General Manager of Aqua Water Supply Corporation (WSC) in Bastrop, Texas. “They don’t realize that water systems are the most expensive infrastructure to put into place. Most legislators are not familiar with the intricacies of water planning and servicing.”

That’s why some industry leaders believe that efforts to address rural water system challenges must begin in the nation’s capital.

Charles Hilton, formerly the General Manager of Breezy Hill Water and Sewer Company in Graniteville, S.C., believes that rural water systems must do a better job of telling their story. “Too many managers are not engaged enough with legislators or the political process,” he says. “Most have good relationships with regional and state agency administrators, but Washington, D.C., is a faraway place.”

During his 2014-16 term as president of the National Rural Water Association (NRWA), Hilton saw firsthand the benefits of face-to-face engagement with top-level regulators in Washington, D.C. Like other water system managers, he has long viewed the Environmental Protection Agency (EPA) as a heavy-handed, unresponsive regulator, especially as regulations evolve to reflect technology’s increasing ability to detect minute levels of contaminants in water. But mistrust on both sides has begun to moderate in recent years with changes in key administration positions, Hilton says. This improvement has been evident in a series of meetings between industry water leaders and top EPA officials in the wake of the Flint, Michigan, revelation that the city’s public health had been jeopardized after cost-cutting efforts resulted in a lead-tainted water supply.

“*Mile by mile, pipeline by pipeline, and meter by meter, rural water companies are upgrading, modernizing, and replacing their infrastructure.*”

“I saw the lines of communication begin to open,” Hilton says. “Administrators were sensitive to what we had to say. They have begun to realize there are ramifications to their stringent regulations. It was a huge breakthrough.”

Now, he says, career employees at government agencies are reaching out to rural water [industry] leaders and working with them. “I can email them and get a personal reply,” adds Hilton.

Fixing an aging infrastructure

Flint’s high-profile failure to protect its water supply continues to trouble Hilton and his colleagues. In part, the scandal has intensified the political pressure to upgrade the nation’s aging water infrastructure. Many rural water systems were built 50 or 60 years ago, or even earlier. The cost of repairing and replacing those original pipelines, pumps, meters, and treatment and storage facilities is prohibitively expensive – in fact, typically beyond the means of most rural water systems to afford to do so on their own. For instance, Mississippi’s North Lauderdale Water Association estimates that it will cost roughly \$30 million over the next 20 years to replace its 800 miles of water mains buried below ground—and those are only 25 years old.

Yet the nation’s rural water providers have little choice. “You’ve got to spend on maintenance and replacement to prevent major failures,” says Todd “Ike” Kiefer, board president of North Lauderdale Water in Bailey, Mississippi.

Consequently, mile by mile, pipeline by pipeline, and meter by meter, rural water companies are upgrading, modernizing, and replacing their infrastructure. In the process, they’re also often adding greater capacity to

meet increasing demands to deliver larger amounts of water. That's not cheap. The cost to replace a 4-inch rural water main often reaches \$25,000 to \$30,000 per mile. In 2016 alone, EJ Water Cooperative in Dieterich, Illinois, will put in 60 miles of new water mains to serve new customers. Similarly, Texas-based Aqua Water Supply Corporation (WSC) is constructing a new transmission main and completing a new wellhead, at a cost of nearly \$1.5 million. Drilling a new 16-inch, 700-foot-deep well recently cost Consolidated Water Supply Corporation in Crockett, Texas, a hefty \$500,000.

"Replacing our infrastructure will be at the forefront for the next few years," acknowledges Tim Waddle, Director of Water Services for Talquin Electric Cooperative in Quincy, Florida. "The cost can be astronomical, so we've got to strategically plan because there's no new service or [additional] revenue with replacements."

Finding funds

Finding the funds to replace and modernize infrastructure is a common challenge among rural water systems. According to Charlie Gray, CEO of South Carolina's Chesterfield County Rural Water, rural water systems have fewer financial options available today than they used to, with which to fund their water and wastewater infrastructure construction and improvements.

"Grant and loan programs that were prevalent 10 years ago have all but disappeared," Gray says. "This leaves fewer options for not-for-profit utilities. In addition, the paperwork for government loans and grants is so lengthy and time-intensive that many small utilities are shying away from this once common source of funding. Furthermore, using federal funds for future growth is nearly impossible, sometimes resulting in new infrastructure that is already undersized by the time it's actually put into service."

Raising water rates is another option to help build the cash reserves to pay for capital outlays, but most water system managers regard this step with trepidation and caution. "It's not easy to get a rate increase," says Bill Teichmiller, CEO of EJ Water Cooperative in Dieterich, Illinois. Besides, he says, "it's an emotional issue.



Water towers remain a key feature of the rural countryside. Every rural town has one or more. Water towers continue to play a vital role in rural water systems by providing the extra water needed during periods of "peak demand" when a town's water demand exceeds the capacity and available supply of its pumps.

People don't like them, but they're needed to keep financial stability."

EJ Water is fortunate because it has been able to generate new revenues from a growing population. EJ Water serves 13 counties, 10,000 retail members, 15 wholesale customers and a population base of 40,000 people, and is one of the fastest-growing water systems in Illinois. New jobs and housing have added meters to EJ Water's system, which help to pay for needed improvements.

Another rural water system facing the "good" challenge of revenue-enhancing growth is Aqua WSC. As the second largest WSC in the Lone Star State, Aqua maintains 1,800 miles of pipeline and serves 55,000 people. Urban sprawl out of Austin, 30 miles to the west, has created new water demand and a need for more wells and pipelines. At the same time, Dave McMurry, Aqua's general manager, worries about the long-term water availability in the Carrizo-Wilcox Aquifer, the area's major water source. "A lot of people and groups are trying to tap into this underground water resource, and this aquifer doesn't recharge quickly," he says. "So our groundwater conservation districts, which manage the aquifer, have to be careful to ensure that there's an

adequate water supply to meet the growing demand now and in the future.”

Other rural communities and water systems, however, lack expansion opportunities. Growth isn't an option at Gasparilla Island Water Association (GIWA) in Boca Grande, Florida. There, utility director Bonnie Pringle has to find a way to pay for a new \$15 million sewer treatment plant that will replace an aging facility. GIWA is located on a barrier island seven miles west of the mainland, where water is treated and then pumped to Pringle's customers. The association's 1,795 meters mostly serve vacation homes that are only inhabited for part of the year. When these homes are unoccupied, water usage drops, along with system revenues. What's more, Florida has implemented mandates to cut water use, creating an additional hit to GIWA's income.

“How to pay for that plant keeps me up at night,” Pringle says. “We're focused on maintaining good relationships with our members because [eventually] we will have to ask them for a rate increase.”

Other rural areas have seen their customer bases erode as businesses, including manufacturing facilities, disappear. In many places, rural populations are dwindling due to lack of jobs and opportunity for young people. For the water systems in those areas, the low population densities don't bring in enough revenues to finance repairs and modernization.

To keep water rates affordable while providing needed improvements and minimizing service losses, most rural water systems have to seek outside funding. For example, EJ Water normally finances its capital outlays with 40 percent loans and 60 percent grant funds. Like Gray, Teichmiller has found the grant process “extremely difficult and exhausting.” Illinois offers only \$12 million in grants for public facilities, whether they're rural or municipal systems.

“We're all chasing that small amount of money, and only one in four gets funded,” notes Teichmiller. “If customers paid the real amount for water, we wouldn't have to chase those grants.”

To generate the revenues needed to support capital outlays, rural water systems know that their customer

bases must prosper. As a result, several rural water utilities have begun to participate in business development efforts in their communities to help bolster economic viability. EJ Water, for example, hosts a quarterly mayoral summit that draws 26 mayors from 12 nearby counties.

“We teach strategic planning and leadership that helps elected officials [to] be good leaders,” says Teichmiller. “That enables our towns to be economically relevant.”

Technology's double-edged sword

Rural water systems are also adopting new technology to help address and solve some of their challenges. For instance, they're using broadband communications, smartphones and remote monitoring to increase efficiencies and reduce costs. The computer-based control system known as Supervisory Control and Data Acquisition (SCADA) – considered a technological breakthrough for water utilities 15 years ago – is now commonplace.

“With SCADA, we're capable of controlling our entire system on an iPad,” says Aqua's McMurry.

Many rural water systems have adopted automated meter reading equipment, geographic information system (GIS) mapping and variable frequency drives, leading to greater efficiencies and cost-savings for labor, fuel and taxes. Many systems also use smartphone texting, Facebook and Twitter to alert customers about water shutdowns, repairs, power outages or other service interruptions.

In Mississippi, North Lauderdale Water recently installed ultrasonic meters to accurately measure the volume of water used in treatment plants and by certain large customers. “The new meters can read very high and very low flows with equal accuracy,” Kiefer says. The association had learned that the old conventional impeller meter had been significantly undercounting its largest customer's usage. Now that the ultrasonic meter is correctly gauging water flow, North Lauderdale has seen revenues increase sharply. “The meter paid for itself in one month,” says Kiefer.

At Northern Ohio Rural Water, General Manager Tom Reese and his team foresee a day arriving soon when

they'll rely on "the cloud" for the company's billing system. The cloud's digital technology, they estimate, will not only save money but allow customers to easily see and pay their bills plus keep an eye on their water usage.

"Many rural systems have migrated to automatic bank draft, online bill pay [systems] using credit cards and e-check payments, and money orders as well as smart phone apps to accept digital payment," says Brian Macmanus, general manager of East Rio Hondo WSC in Rio Hondo, Texas.

But even as technology boosts operations, reduces time and expenses for routine tasks, and improves customer service, it also introduces a new challenge.

"You can go broke trying to stay current or you can make a particular technology last for two or three product generations," says Stan DeRoo, who manages lowa-based Cherokee County Rural Water. "There's a fine line on where you spend on technology."

"Big Brother control"

While they work to improve efficiencies and sustain their communities, rural water systems must also cope with intensifying regulations. For Dean Lorenzen, manager of West Central Iowa Rural Water Association, increased mandates and regulatory overview have become akin to "Big Brother control."

"New regulations come almost daily," Lorenzen says. "Our industry is committed to doing the right thing, but regulators are trying to tell us how to do our job. Common sense is speedily leaving the regulatory process."

EJ Water's Teichmiller remembers when his system only monitored five to 10 contaminants. Today, the list includes as many as 150 contaminants. At the same time, submitting monthly reports to regulatory agencies has become an arduous task. At Talquin, Waddle reports that some of the mandatory reports that must be filed monthly now stretch to 100 pages long.

As a result, required testing for quality assurance is driving up water system costs, and there's no funding available to help with compliance expenditures. When Sherry Reed, general manager at Consolidated WSC

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in Crockett, Texas, started at the utility 32 years ago, no bacterial sample reports were required. Today, the company must submit as many as 22 such reports each month to regulators. Reed says the company spends \$22,000 a year on water sampling. Those are hefty fees, even for a large rural water utility like Consolidated WSC, with its nearly 5,400 connections, 7,000 miles of water line and 26 water plants.

Testing can now reveal minute parts per billion (ppb) in water samples, but whether such readings and their associated costs reflect the true health and safety of water is debatable. "People have to understand that finding a carcinogen in water doesn't mean it's not safe to drink," Reed says. How harmful any given carcinogen is to human health depends critically on its level of toxicity and also on its concentration in the water.

"The chemicals have always been there," adds Breezy Hill's Charles Hilton, whose background includes organic chemistry. "We just couldn't detect them. We have quadruped our bills to test whether water carries something that can be measured at 3 ppb. We have to look at the total effect and consider whether increased testing costs justify any health benefits."

But rural water utilities lack the financial resources and technical expertise to conduct such cost-benefit analyses. Such critical public health studies should be undertaken by government regulators or other public agencies, but none does.

A workforce in need of new people

Another looming challenge for the rural water industry is the graying of its workforce and lack of interest by members of the Gen X and Millennial generations to join it. "The work of putting in water lines isn't very glamorous," notes Fletcher. "We have to make an effort to attract and promote this industry."

Cherokee County Rural Water has struggled to fill its seven-member staff with qualified employees. “It’s tough to find people committed to the job,” DeRoo says. At the same time, a recent Iowa survey revealed that more than 50 percent of the state’s certified water operators will retire in the next five years. “I’d like to retire in the next two years,” he adds. “Who’s going to step in?”

Many rural water utilities are recognizing they must boost wages to attract qualified employees. At Consolidated WSC, wages now start at \$15 per hour. Reed hopes that this starting wage will entice people under 30 years old to work for the water company. “It’s a big challenge for us to find good people who want to work – and who’ll come to work every day on time,” she says.

Companies like Mississippi’s North Lauderdale Water are addressing the shortage of qualified employees by increasing pay to more competitive levels, offering incentives and bolstering training to increase the number of licensed water system operators. Some utilities even help pay college tuition for employees. Illinois’ EJ Water helps sponsor a high school careers class that visits businesses in its service area to promote the benefits of working there.

Concluding comments on the industry’s outlook

Rural water managers generally are optimistic that the challenges facing their systems can be resolved. They recognize the essential role of rural water systems in supporting rural America. But they are also unanimous in maintaining that the nation’s water users must better understand what’s required to deliver water safely,

“*Our country does not value water appropriately. People think it should be free.*”

reliably and affordably. They want consumers who unhesitatingly accept a monthly cell phone or cable bill of \$150 to grasp the importance and necessity of modest increases in their monthly \$50 dollar water bills.

“Our country does not value water appropriately,” Teichmiller says. “People think it should be free.”

Rural water utilities are attempting to change that misperception. They’re adopting modern business approaches along with upgrading their infrastructure. They’re working to boost the image of tap water and their role in delivering safe, dependable, and affordable water. They’re becoming more proactive in reaching out to those who can influence their industry’s customers.

“Our future looks bright, although the general public needs to come to the realization that the days of cheap water are over,” says Chesterfield’s Gray. “We must do a better job of making everyone realize the value of water. Water is life. Cellphones and satellite television are not life.”

West Central Iowa’s Lorenzen agrees. “People think nothing of spending \$2 for bottled water,” he says. “They don’t understand what it’s like to not have water. Without water, you have nothing.” ■

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