Future of Rural Water:

by Chris Wilson,
NRWA

Water splashes from cracked piles, neglected treatment plants crumble while lawyers and legislators battle for the rights of the few untapped water sources. Is this the future of rural water, or will the political and technological advances allow systems to provide better, higher-quality service? As rural water moves toward the future, there are three areas where development and implementation, or lack thereof, will influence the future of rural water systems.

Rising oil prices and environmental concerns have fueled public concerns of energy efficiency. Energy issues are also a growing concern for water utilities, not just because of the environmental impact, but because of the potential cost savings.

"After personnel, power is one of the largest costs a system will have," said Fred Sheldon, president the National Rural Water Association and Public Works Director of Omak, Washington.

A panel of water technology companies assembled by Greenbiz.com estimated that 70 percent of a water utility's cost was in water distribution. The Environmental Protection Agency estimates that water utilities consume 3 percent of the country's generated electricity every year.

"If you think about it, the utility is basically the opposite of a hydroelectric dam," Sheldon said.

He explained that hydroelectric power used the energy of moving, elevated water to generate huge amounts of electricity. A water system, however, has to expend tremendous energy to pump water from wells or surface water sources into their tanks and water towers. Utilities also operate treatment and monitoring systems that often run around-the-clock, adding to their energy consumption.

The Greenbiz panel estimated that new products could reduce electricity costs by 15 percent, with newer technologies improving the results in coming years. The EPA and ENERGY STAR estimate that a 10 percent reduction in cost would save the water industry $400 million a year. Upgrades to improve efficiency qualify for the EPA's Clean Water and Drinking Water State Revolving Funds.

While technology is changing the way water is delivered, the courts are changing how utilities look for their water. As water resources tighten and water demand increases, battles over water rights are becoming more common.

"Water rights used to be thought of as a western issue, because that was where water was scarce," Sheldon said. "But it's becoming an issue east of the Mississippi too."

The EPA cited an increase in formally announced drought restrictions, including communities in Florida, Vermont and North Carolina. Lawsuits are growing between Georgia, Florida and Alabama over water sharing rights while Georgia officials seek to redraw their border with Tennessee to gain access to water from the Tennessee River.

Robert Hersh and Kris Wernstedt of Resources for the Future conducted a survey of water utilities on subjects such as drought and disaster. Most of the utilities surveyed thought it would be more difficult for them to acquire new water rights to meet increasing demand. The survey also revealed that many of the systems had concerns about their current water rights, because the rights were junior to older agricultural rights. The utilities reported concern that the rights status would limit the water they could draw in a shortage situation.

Uncertainty over water rights has highlighted water conservation as a way for utilities to meet their growing water demand. The EPA reports that utility conservation efforts through their WaterSense program have reduced water uses by roughly 16 percent, with some utilities reducing their demand by as much as 30 percent.

Another possibility is the development of "recycling" wastewater. New technologies and twin distribution systems will keep higher-quality drinking water separate from the water used to flush toilets or water lawns. The Greenbiz panel estimated that this kind of water recycling could reduce water demand 50 to 90 percent and reduce energy costs by as much as 80 percent.

A potential change in the future of rural water utilities comes in both technology and perspective. Equipment vendors suggest that new technologies will allow water utilities to progress beyond the current focus on meeting regulation, into a new focus on providing quality and service.

Computer and telecommunication technology can already be seen changing the way water utilities maintain their supply and equipment.

"Telemetry is another big change we'll see in the future," Sheldon said. "In the past, an operator would have to go out to check the levels of his wells and water towers, but now you can go to a utility office and they have a computer screen filled with all the information."

Radio telemetry is already saving utilities time and money. Technicians with the Butte Meade Sanitary Water District, in Newell, South Dakota, spent two hours every day driving the 90-mile circuit to check the district's wells. "If you figure about $25 an hour and about $30 worth of gas, it costs $80 a day," explained District Manager Rick Richards.

The water district provides water for about 2,000 people including the communities of Vale and Fruit Dale. The district also supplies water to several rural subdivisions and a fish and game recreation center. District technicians check the wells daily to measure the levels of water, chlorine and fluorine. They used to check the levels in person, until the utility used money from the NRWA's revolving loan fund to purchase a radio telemetry system.

"We can check the well on the computer here in the office," the manager explained.

Richards sees the system as providing substantial savings in time, money and equipment wear. The telemetry monitors should also allow the district to provide better response and service.

"We can connect the system to our homes, so if there's a break or leak we'll get an alarm or phone call," he explained. "If there's a break at night, instead of learning about it in the morning, we can isolate and repair it."

As the technology spreads, the utility will be able to supply water with improved quality and efficiency. Vendors in the Greenbiz panel describe new wave water utility equipment that incorporates increased levels of automation and connectivity. This equipment would be able to transmit accurate, real-time information from the distribution system to the utility and make automatic adjustments to overcome common problems.

These new systems would be modular, to improve maintenance and the ease of upgrading. The fusion of modular technology and computing power would also allow the new equipment to use a combination of processes to treat water, providing the highest levels of purity most efficiently.

The issues looming for small utilities have the potential to cause serious headaches, but they also provide an opportunity for advancement. Improving energy efficiency and water conservation can hold off potential crisis while saving costs. How these issues are addressed will determine how the future looks for small water utilities.