

Water Challenges for Utilities and Customers

by Don Cope

Dalton Utilities is a municipal utility in northwest Georgia, representing a small community of roughly 39,000 in the city and about 100,000 in the county. The Utility conducts business in Dalton, Whitfield County and four surrounding counties. We have five business sectors – electric, natural gas, water, wastewater and telecommunications.

In our electrical sector, we own generation – a small percentage of two nuclear and two coal-fired power plants located in Georgia. We own transmission – most of the high-voltage transmission north of Cartersville to the Tennessee line (not owned by TVA) and over toward Gainesville, Georgia. Dalton Utilities is one of the four owner-participants in the Georgia Integrated Transmission System.

In natural gas, we're the second largest local distribution company in Georgia. We own a transmission line off of the Chattanooga lateral that starts in Floyd County and runs almost to Tennessee. Most of our gas is transportation gas purchased by local industry at the well head. We then transport, balance and manage the supply for them.

We're in telecommunications. In fact, our telecommunications sector, which we've branded as OptiLink™, is one of the few operations in this tight economy that is continuing to grow in size and sales volume. Our system is unique in that it is the only 100% fiber optic system in the state and one of only a few in the Southeast. This 100% fiber connection goes from our facility to our customers' homes and businesses which allows us to provide telephone, high-speed internet and broadband connectivity and a broad range of cable TV packages and products. We began selling point-to-point connectivity in 2000 and launched OptiLink™ for residential and small business customers in 2003, and it has been very successful. Our success is built upon the reliability and speed of our system - if you buy a speed from us, you get it 100% of the time – and our strong customer service ethic. When you buy service from us, it is provided by people who live and work in the Dalton community.

Water and wastewater. The following information may give you an idea, from a small utility's perspective, what it takes to manage a water/wastewater system and what it takes to keep your operation functioning properly. In case you didn't know, Dalton, Georgia is the tufted textile (or carpet) capital of the world. Most of the carpet produced in North America is produced in the Dalton area. In fact, 90% of the world's tufted textile production occurs within a 65-mile radius of Dalton and Whitfield County.

For a community our size, we are a large water producer. In fact, out of the top 15 water permits in the state, twelve are for power plants. Dalton Utilities ranks fifteenth. In that top 15 are the City of Atlanta and Gwinnett County. Dalton, a little place like Dalton, has the third largest non-power plant water permit in the state after Atlanta and Gwinnett County. We are currently permitted to withdraw 64.2 million gallons a day (MGD). We have three treatment plants and almost 3 billion gallons of off-stream drought contingency storage in four reservoirs. Our current average daily usage is around 30 MGD.

In our wastewater sector, we have the ability to treat 66 million gallons a day. We have three wastewater treatment plants and an additional 10 million gallon equalization basin. We operate a vast forested Land Application System – 9,877 acres to be exact. I'm fairly confident that our Land Application System is the largest in the world. Some people think the land application process is consumptive use. That is certainly open for debate. Our opinion (which is backed by scientists who specialize in land application processes) is that it is not consumptive use. All of the treated wastewater is applied to the soil, and, although there is certainly a time lag involved for the water to work its way through the soil, all the water (except what might be lost through evapotranspiration) recharges the aquifer underneath the land application system and makes it way back into the river basin from whence it originated.

Dalton Utilities is actively involved in wastewater reuse in many different ways. We lease 50 acres to a 1240 megawatt (MW) combined cycle electric generating plant that burns natural gas and has a second phase that uses the waste heat from that gas combustion to produce more electrical energy...using steam. The plant was built to California air standards and uses as a cooling medium up to 13 MGD of treated wastewater. No water withdrawal permit was required for this plant. They take no fresh water from the river. They use sewage, and we sell it to them.

Finding the best way to deal with solids produced from our wastewater treatment processes has been an evolution. We've evolved from land applying solids to hauling them away to a landfill to our current process. We compost 100% of the solids from our wastewater by combining them with wood waste. If you observe the development taking place in Atlanta, notice the erosion control materials used in compost. There are so many positives associated with compost as beneficial reuse – not only can it be used for erosion control and landscape material but it also keeps these waste products out of our landfills. Definitely a win-win proposition.

Currently, our industrial customers account for 45% of the overall consumption of our utility services. We've been very proactive with our local industry – the carpet industry and other supporting industries. A group of the largest carpet manufacturers partnered with Dalton Utilities and the Pollution Prevention Assistance Division (P2AD) – specifically Bob Kerr – in the late 1990s to actively pursue water reuse, and that partnership continues today. For those of you in Georgia who haven't worked with P2AD, they are an excellent organization. They find economically-viable ways to conserve and be efficient, and I can't think of an industry/company that wouldn't benefit from a partnership with them. During our work with industry and P2AD, we've shown significant reduction in industrial water use volume. In 1997, local industry was using roughly 17 MGD, and in 2007, industrial usage was down to 13.8 MGD. Of course, the carpet industry has been very aggressive in finding ways to increase efficiency and reduce their water usage. In 1983, it took 21¼ gallons of water to produce one square yard of carpet. Today, it only takes 8¼ gallons per square yard...a savings of over 150%.

During the current drought, industry really stepped up to the plate with voluntary reductions and by assisting our conservation education efforts by communicating directly to their workforce. The carpet industry has a great number of employees in our region, and they've done an admirable job of communicating not only how to conserve water in their processes

but also how to conserve water in their employees' daily lives. Dalton Utilities' staff has worked closely with industry to find ways to save water that wouldn't hinder production. As a result, industry has moved shifts around, stopped unnecessary cleaning, and began using as much gray water as possible. Industry also moved orders to locations where water supplies were not so stressed which didn't make the Utility happy from a business perspective, but it was a beneficial thing for industry to do. Additionally, more stringent measures are in place should further curtailment of water use be required. We want to sell water, but it is also good business for us to help ensure that our customers have a "Plan B."

Although we're a small entity, we still answer to the same regulatory agencies and are subject to the same requirements as much larger utilities. Over the last 10 years, we made major improvements and expansions to both bring our systems up to date and plan for the future. Mayor Franklin of Atlanta addressed how much infrastructure improvements/ expansions cost in Atlanta. Now, scale Atlanta down to a town the size of Dalton – a small manufacturing center – and think about what these same types of costs mean. In the last 11 years alone, Dalton Utilities has invested \$153 million in water infrastructure alone. That total includes some system expansion and delivery of service to areas outside of our original footprint, but a large percentage of that cost covers improving the efficiency of the system – fixing and/or replacing old infrastructure. That investment also provided us with additional water supply which I'll address later. In a little over 10 years, we've expanded water service throughout our entire county and provided firefighting protection to areas that were previously unprotected. This expansion also made public water available to areas that previously had been totally dependent on wells, allowing us to build homes to house workers for local industry. The county-wide water expansion has improved the quality of life for many people, particularly in this time of drought, when many in rural areas are struggling with wells.

Our primary source for water is the Conasauga River, which is one of the most (if not the most), biologically-diverse rivers in the country. There are many unique species in the Conasauga, and we have to be very conscious of helping to maintain their habitat. In fact, we perform a fish and mussel survey each year of the Conasauga to determine the health of the river. We know better than most that the Conasauga River is small. Going forward, we also recognize that we may not be able to continue to utilize the river the same way we've done in the past, so several years ago, we began looking for ways to augment our water supply. As a result, we have an ongoing contract with Eastside Utilities in Tennessee that allows Dalton Utilities to take water from the Tennessee River – largely due to portions of Whitfield County being in the Tennessee River Basin. I don't advocate moving the border of Georgia, but I do believe that regional water assets should be shared regionally if there is enough volume to do so.

Dalton Utilities also purchased the assets of the Whitfield County utility so that we could unify services and have one utility in our community to provide efficiency of service. We have also just completed a major refurbishment and re-permitting of our oldest water plant, where we installed membrane filtration. Additionally, we installed calcium hypochlorate generation, so that we no longer have gaseous chlorine on site. We will eliminate all of the disinfection byproducts from this 13.2 MGD plant, so that any waste may be safely discharged into our sewer system rather than put in a landfill.

On the wastewater side (keep in mind that we're a small rural community), during this same timeframe, we've invested an additional \$132 million. That is a total investment of over \$285 million over the past 10 years for an area with a population of less than 100,000 people. Although we had a significant amount of wastewater infrastructure in place, it was aged and in much need of repair.

We've built new plants, remediated sprayfields where we used to land apply solids, remediated some groundwater, rehabilitated all of our collection system and now have it on a regular replacement/repair schedule; and we completely redesigned and refurbished our Land Application System and extended its lifespan easily another 20 years.

We have four drought contingency reservoirs that cost roughly \$30 million to construct. Even in the midst of this historic drought – both this summer and last, we've maintained those reservoirs at a 100% full capacity. How? A unified effort between Dalton Utilities and our customer base. They rely on us to manage those reservoirs, and they did their part – industrial and residential customers alike – by reducing their usage. We have connected to the Tennessee River through Eastside Utilities. And we've also increased the number of water customers by almost 48% with our system expansions while only increasing our total water usage by an unbelievably low 1.7%!

We continue upgrades to our water distribution system. As we have compared our production numbers to the number of gallons delivered to customers, we discovered that our system improvements over the past 10 years resulted in an annual savings of 700 million gallons of previously unaccounted for water in 2007.

And we continue to expand our beneficial reuse of wastewater. We have found that our industrial wastewater will produce algae if it is properly managed. As a result, we are now working with The University of Georgia's School of Agricultural Engineering to produce biodiesel fuel from our algae. We have about 23 megawatts of electrical generation in our system that we use for emergency power or to shave usage peaks during the summer when we're at a high consumption rate. Our goal is to be able to fuel those local generator operations year round and all of our truck fleet from the biodiesel fuel produced from these algae – a byproduct of our wastewater system.

Dalton Utilities has always been proactive in water conservation. We created our own drought management plan in 1998 and have been a leader in conservation education for the past 10 years. As a result, we were one of the six pilot communities chosen to participate in the state's WaterWise Program.

Of course, the drought and conservation has had a negative impact on Dalton Utilities' finances. Over the last year, our revenues have dropped significantly from the downturn in the economy – particularly the housing market which heavily influences carpet sales. We're now forced to operate even more leanly than before...and we've always been a lean organization. We've cut all overtime work, stopped purchases of any new equipment or vehicles and ceased all capital projects that weren't already in progress. For the first quarter of 2008, our revenues were \$11 million under budget projections and added to that is the financial impact of a reduction in water usage. Regardless of usage, we have a fixed cost to

treat and distribute water that doesn't vary greatly whether we sell 10 or 60 million gallons. The financial impact of reduced water usage for 2008 alone will be \$14 million.

We believe that the State's Comprehensive Water Management Plan is a great tool. We have participated actively in this process and intend to remain active moving forward. We fully support conservation and strive to emphasize it in our operations and customer education, but we believe that conservation alone is not the answer. We believe that reasonable conservation efforts are both important and effective (and we've shown this in our own operations), but we also believe that when a full and realistic assessment is done, we will find that large portions of our state, particularly those in the North, are going to have less water resources available to them than they need currently...and it certainly doesn't make sense to take us backwards. We're going to have to find a way to augment water supplies in those areas to keep the local economies viable and the quality of life high.

What are these additional water resources? We need to seriously look at the Tennessee River and how to obtain more supply from it. Desalinization should be seriously considered. I don't mean desalinization by itself. I mean desalinization in concert with large baseload electrical generating plants, in which you can employ the heating and cooling cycle in the desalinization process. We would have to manage it in a way that respects the ocean and aquatic life, but the ocean provides a huge volume of water for our responsible utilization.

Additional drought protection storage and reservoirs have been discussed. We don't believe they are the only answer. I'm convinced that we will find that within our state there are numerous areas where we could be recharging the aquifer with treated water for times of drought which would eliminate the need for so much new infrastructure. In the area where I live, we could put billions and billions of gallons of water back in the ground and hold it in the ground to pull out when needed. Perhaps we could even combine those efforts with some shale drilling for natural gas. Those are the types of things we really need to start thinking about.

We owe it to future generations to address both immediate and long-term needs. My parents' generation paid a tremendous price for all of us. They grew up during the Depression. They fought in two major wars and overcame every obstacle to progress they encountered. They also initiated and financed the large-scale infrastructure projects we utilize today – electric, water, wastewater, interstate highways, airports, etc. We haven't taken on many significant infrastructure projects in my adult life, so when people say it will cost a lot of money to desalinate water, I can only think that it cost a great deal of money to build an interstate highway system...but they did it. Our interstate highway system has been a tremendous asset to our nation, and it was paid for by people who largely never had the opportunity to use it. It's time for us to step up to the plate and put our resources and talents to work to build a bright future for the next generation. I have five grandchildren myself, and I'd like them to grow up with the same opportunities and quality of life that I've enjoyed.