



Executing Your Game Plan

Managing Capital Improvement Projects

By **Nancy Zeilig**
NESC Contributing Writer



Behind every successful capital improvement project—like every winning sports team—there's a good coach. Whether the goal is winning a game or completing a capital project on time and within budget, the coach's role is essentially the same: creating a savvy game plan and assembling a team of experts with the skills to do the job.

When a small water system tackles a capital improvement project, the system manager often shoulders the role of project manager or coach. The first step in creating a game plan is to ensure that all stakeholders (regulatory agencies, city council members or other decision makers, system employees, and customers) understand why the project is needed and what it will entail. Capital improvement projects are generally driven by long-term system needs, such as those stemming from projected population growth and timely replacement of depreciating infrastructure, but regulatory compliance is sometimes a factor as well.

Although some municipalities have longstanding relationships with legal, financial, and engineering professionals, small water systems often must sign up "free agents," or outside contractors, to get the skills required for a specific project.

Putting together a project team can involve hiring professionals, such as an attorney, financial advisor, engineer, designer, and construction contractor.

Executing your utility's game plan also involves calling the plays during each phase of the project, assiduously managing its progress from conception through final inspection. In this article, the managers of several small systems that have recently completed or are currently involved in capital improvement projects offer some advice for their fellow coaches.

Communication Is Paramount

Project managers unanimously stress the importance of good communication with all stakeholder groups. Kody Van Dyk, city engineer with the Sandpoint Water Department in northern Idaho, emphasizes the value of involving your regulatory agency early on. Sandpoint completed two capital projects five years ago. First, it constructed a clearwell to increase disinfectant contact time at its direct filtration plant. Then, it reconfigured two large, outdated filters at its conventional plant, increasing efficiency and installing a modern backwash system. Van Dyk reports that the regional state drinking water coordinator voluntarily came to Sandpoint's city council meetings to help convince council members that system improvements were necessary to meet the

requirements of the Enhanced Surface Water Treatment Rule, even though no specific water quality problems had been identified. When it comes to regulators, Van Dyk says, “Involve them early and involve them often.”

Treatment plant operators are another group of stakeholders who should be involved from the project’s outset. “Ask your operators what they need,” advises Lynn Light, water treatment plant supervisor at the Pigeon Forge (Tennessee) Water Department. “Our engineer gathered all the plant operators together to get their opinions.”

Pigeon Forge, a resort town southeast of Knoxville, bills itself as a gateway to Great Smoky Mountains National Park. The water system recently tripled the size of its filtration plant from four million gallons per day (mgd) to 12 mgd and kept the existing plant running while the new one was being constructed. The award-winning expanded facility, which went online in 2002, was finished two months ahead of schedule and 17 percent below budget.

Steve Robinson, director of public works in Folly Beach, South Carolina, echoes this recommendation. “Don’t try to figure everything out by yourself,” he cautions. “Involve your city council or governing board from the beginning, and take them your knowledge of system needs.”

Folly Beach, a barrier island on the Atlantic coast just south of Charleston, recently finished two capital projects. In 2002 the system completed a buried 16-inch-diameter pipeline connecting its distribution system with that of the city of Charleston, its wholesale supplier. The eight-inch main that previously connected the two systems was attached to a bridge over the Folly River, which separates the island from the mainland, making the pipeline vulnerable to damage by bridge traffic. The following year, Folly Beach replaced a 50-year-old, 100,000-gallon elevated storage tank with a new 150,000-gallon pedestal tank, increasing storage capacity for both fire protection and population growth as well as gaining some head pressure (the new storage tower is 70 feet taller than the old tank). Extra capacity from the new main helped the system deal with temporarily having no elevated storage facility.

Cooperate With Neighboring Utilities

In addition to underscoring the role of good communication, Robinson pays tribute to the advantages of working cooperatively with neighboring utilities. The city of Charleston, which also serves several other

nearby beachfront communities, agreed to suspend any capital improvements at that end of its distribution system until Folly Beach finished its new main. “This minimized the chance of breaks or other service interruptions and ensured constant line pressure,” Robinson said.

Cooperation is also alive and well on the opposite side of the country. In south central Arizona, where arsenic concentrations in some groundwater supplies require treatment for compliance with the lower arsenic standard going into effect in January 2006, more than 20 water systems joined forces to form Arizona’s Arsenic Remediation Coalition (ARC). Coalition members—including utilities serving various suburban communities west of Phoenix and the Tohono O’odham and Yavapai Apache nations—share legal services and benefit from economies of scale associated with RFP development and other services. “The vendors benefit, too,” says Bob Prince, president of coalition member Valley Utilities Water Company. “We tell them if they do a good job on one project, they can have the business of all ARC members.”

Valley Utilities, which collaborated with nearby Litchfield Park Service Company on some arsenic pilot studies in 2003, will soon construct arsenic removal stations at two of its six production wells. The arsenic removal systems will consist of above-ground pressure vessels containing ferric hydroxide, an adsorptive filter media. Funding will come from the drinking water state revolving fund. Because of Valley Utilities’ small customer base, the \$2 million project is expected to cause a 68-percent rate increase—an extra \$25 to \$100 per month per customer, depending on consumption.

Deal With Rate Issues First

In Idaho, Van Dyk confesses he learned one lesson the hard way: “Raise rates before you start the project,” he warns. “Otherwise, you’re scrambling to raise them after the fact.” Before Sandpoint’s most recent capital improvements, the system was unmetered. Although installing meters was a requirement attached to the system’s getting funds from Rural Development Utilities Services (RDUS), the city council didn’t know meters were being installed until near the end of the project. “It’s easy enough to justify meters,” Van Dyk says, “but the problem here was timing. I took some heat for that.”

Even though Sandpoint’s improvement projects were completed only five years

ago, its service population has recently grown so rapidly that the city is about to hire a consulting engineer to redesign the entire treatment system (a switch to membranes is being considered). In the meantime, reports Van Dyk, who isn't inclined to repeat past fumbles, another consulting firm has already designed a new rate system for the city.

Consider a Financial Consultant

In addition to relying on contract services for rate design, project managers sometimes hire financial consultants to help secure project funding. When Valley Pioneers Water Company, just west of Kingman, Arizona, applied for RDUS funds to purchase a new well field and construct a 1.5-mile-long main connecting the new wells with the existing distribution system, the utility found a consultant who had previously worked for RDUS to help with the paperwork. John Clayton, the utility's general manager, says hiring the consultant made the loan process far easier.

"We paid him two percent of the total value of the loan, and it was well worth it," Clayton said. "Applying for those loans can be overwhelming. He saved us time

because he knew the proper procedures, and he minimized our attorney costs."

Carefully Pick a Consulting Engineer

Choose a consulting engineer like you'd pick a quarterback—

with utmost care. You and your governing body may be comfortable using a firm you've worked with in the past, or the nature of your project may prompt you to seek a company with different skills. Either way, project managers claim, the effort devoted to selecting this team member is a good investment. Network with other utilities. Check references. Check out other projects completed by the firms

you're considering. Before making a final decision, Prince's utility in southern Arizona visited with its leading candidate's office and field personnel and talked at length with the firm's other clients.

Light has high praise for the consulting firm chosen to oversee his project in Pigeon Forge. The company not only scored points for technical expertise but also earned appreciation for going the extra mile—literally. "The consulting engineer and the designer drove out from Nashville, more than 200 miles away, for weekly meetings with the public works director and city manager," Light reports. "They also attended city council meetings twice a month."

As a result of its performance, the engineering firm continues to be involved in operations and future planning at Pigeon Forge. The filter plant's new SCADA [Supervisory Control and Data Acquisition] system includes dial-up capability to the firm's offices in Nashville, allowing its engineers to go online and make corrections quickly and efficiently. In addition, "whenever a developer wants to tap into our system," Light says, "the development goes through our engineer's modeling program to determine whether we can support the new taps or if a booster station is needed."

Pay for a Resident Engineer

Both Light and Van Dyk attribute a substantial portion of their projects' success to the presence of a resident engineer. "We had a resident engineer on site all the time," says Light. "If the contractor was here 16 hours a day, the resident engineer was here 16 hours a day, too. If the contractor needed to do something that disrupted service, the resident engineer came to us, and we figured out a way to deal with it. When the contractor had to reroute the raw water source coming into the plant to keep the old plant in service during construction, we discussed our options, closed down the system for eight hours, and gave the contractor time to accomplish the rerouting."

Van Dyk concurs: "You pay dearly to have an on site engineer—we paid about five percent of our total project cost—but it's worth the price." He complimented Sandpoint's resident engineer, saying, "He knew when to negotiate nicely and when to throw his hard hat against the wall to make his point with the contractor. His interpersonal skills generated mutual respect."



Demolishing the old water tower and constructing a new one meant inconvenience for residents of Folly Beach, South Carolina. Through a combination of good communication and temporary solutions, complaints were kept to a minimum.





Valley Pioneers Water Company hired a consultant to help them with the loan application for a distribution line extension. Because the consultant had experience working with rural development loans, the process went smoothly.

"It's up to the project manager to ensure that a resident engineer is part of the process," Van Dyk points out. "Some engineering firms might suggest cutting costs by having a part-time person on site, but on a major construction project, it's important to have someone there all the time. Without that, questions don't get asked or answered." (For more information about onsite inspectors, see the *Tech Brief* insert "Quality Control in Construction Projects: Inspect it Now or Fix it Later" in this *On Tap*.)

Involve Your Customers

Another point on which project managers agree is the importance of treating customers well. Customers can be a water system's greatest fans. Inform them early about problems and proposed solutions, use various methods of communicating with them, involve them in decision-making, and consider their needs and interests during construction projects.

One of the methods Van Dyk used to select a consulting engineer was having candidate firms interview with a selection committee composed of city council and community members, including a local engineer and a local activist with a special interest in drinking water quality. He plans to use the same strategy and mix of committee members in selecting an engineer for the upcoming system redesign.

In Folly Beach, the utility warned customers early about the inconveniences expected during construction of the new water storage tower. The community temporarily lost access to city-owned tennis and basketball courts adjacent to the storage tank site because several cellular phone panels that had been attached to a leg of the old storage tank had to be relocated on "COWs" (communications on wheels) and stored on the courts until a new monopole could be constructed specifically for them. In addition,

several families had to be evacuated for about a week while the old tank was demolished. "We relocated them to a beachfront hotel," says Robinson, "so they weren't too unhappy."

Crossing the Goal Line

A savvy game plan executed by a carefully chosen team led by an effective coach—these are the tactics most likely to ensure a successful capital improvement project. A water system that pays attention to these strategies has a good chance of finishing its project on time and within budget, as well as an opportunity to score extra points with its fans.

For More Information

Getting the Most From Your Experts, a guide published by the Kansas Rural Water Association (KRWA), is the fifth volume in the association's seven-volume *Water Board Bible* series. Copies of this and other volumes in the series may be obtained from KRWA by writing to, P.O. Box 226, Seneca, KS 66538; phone 785-336-3760; fax 785-336-2751. To order online, visit www.krwa.net and click on the link "General Store." A copy of *Getting the Most From Your Experts* costs \$12.50.



The articles "Communicating Your Message," "Getting the Most Out of a Project," and "How will the Long Term 1 Enhanced Surface Treatment Water Treatment Rule affect my system?" are available on the National Environmental Services Center Web site at www.nesc.wvu.edu.

Acknowledgement

The author acknowledges Ellen G. Miller and Elmer Ronnebaum, authors of *Getting Results From Your Experts*, for their book's comprehensive discussion of capital improvement projects and their comparisons of capital projects and football.

Nancy Zeilig, an independent writer and editor based in Denver, was editor of the *Journal AWWA* for 19 years.

