

Building Capacity Through Water System Partnership

Abstract

Across the country water systems are experiencing the challenges of stricter water quality standards, decaying infrastructure, financial distress, droughts and increasing water demands. In response to these vulnerabilities, water reuse, additional treatment and conservation efforts have been implemented, but have not curtailed new source development. Furthermore, it is uncertain if these measures will meet their long term needs. Water resource literature documents regionalization as an effective alternative to costly water supply development, while providing long term viability. A case study on the regionalization of the Logan-Todd Regional Water Commission in Kentucky evaluates the impacts of interconnecting 12 water systems and managing the supply system from a regional perspective. The results indicate that drought and economic development were the main driving forces behind the addressing their water needs. Local initiative through the Logan County Chamber of Commerce was essential in forming the partnership. Elected officials and funders had significant influence in steering the commission towards addressing the long term water system needs through regionalization. Regionalization was shown to offer systems financial solvency, improved capacity, source reliability, and lower long-term costs. Overall, imposing a model based on economy-of-scale had a generally positive effect on consumers and purveyor alike.

Introduction

Across the country water systems are experiencing the challenges of stricter water quality standards, decaying infrastructure, droughts and increasing water demands. In response to these vulnerabilities, community water systems (CWS) may employ water reuse and conservation efforts, but typically trend to costly new source development to meet their needs.

However, there is still a greater challenge to CWSs, which is, having the financial solvency to address these costly quantity and quality issues.

Of the 52,789 CWSs in the United States, 77 percent of them are considered small or very small systems, which serve fewer than 3,300 people (US EPA, 2012). As such, small CWSs serve a small rate base and are primarily located in rural areas where economic conditions limit customers' ability-to-pay, making it difficult for a CWS to distribute and recover large fixed costs across a small rate base (Hansen, 2011). In addition, the 1996 reauthorization of the Safe Drinking Water Act (SDWA) made two major changes which significantly affected small systems. It ended state financial assistance to water systems that could not prove their technical, managerial or financial solvency, to ensure compliance with the SDWA over the long-term. In addition, if the states did not comply with the new capacity development standards their state loan funds would be penalized by up to 20 percent.

However, the SDWA also encouraged the development of public water system partnerships to enhance the financial, technical and managerial capacity of the systems to meet the state's capacity development strategy. Partnering options can range from informal cooperation without contracts, such as in sharing equipment or mutual aid agreements, to contractual assistance, as in purchasing water from another system, or transferring ownership through consolidation (US EPA, 2009).

Regionalization is an attractive option for many water systems, as it can lower costs, deliver a reliable supply and provide a greater certainty of resource acquisition. By creating an economy-of-scale, the consolidation will increase efficiency which, in the long-run, will decrease per-unit costs of water production; allowing water systems to spread large fixed costs over a larger rate base and eventually further reduce customer rates. In addition, system collaboration provides strength in numbers, which can increase funding opportunities for planning and technical studies (Hansen, 2011). However, regionalization can face many legal and political barriers, as well as opposition from systems fearing the loss of autonomy.

Water systems undertaking regionalization must find a common goal and develop a common solution. Institutions involved will be required to challenge their perceived constraints from previous management regimes and take on a new approach. In the following section a case study on regionalization of the Logan-Todd Regional Water Commission (LTRWC) in Kentucky is presented, which evaluates costs and benefits of regionalization by twelve Kentucky water systems.

Case Study: The Logan-Todd Regional Water Commission

Background

Prior to the formation of the partnership, water systems in Logan, Todd and Christian counties were suffering from a myriad of water quality and quantity issues. In Logan County, the drought of 1988 rendered the City of Russellville's surface water supply, Spa Lake, inadequate to meet the demands of the city and its three other consecutive water systems. At the same time, several other neighboring communities were also realizing that they too were reliant on drought-prone resources. In Logan County, the city of Auburn's intake on Blue Hole was flashy; in Todd County, the city of Guthrie's spring was drought-prone; and in Christian County, Oak Grove was also reliant on a spring vulnerable to drought. These water shortages had forced many communities to implement water use restrictions on homeowners and industries.

Framing

The search for a new supply gained momentum in 1990, when Russellville had to turn away a large poultry processing plant because the municipal water supply could not provide the plant with 1 million gallons per day (MGD) necessary for operations. The limited future of economic development in the area caught the interest of the Logan County Chamber of Commerce and steered them to form a committee determined to find a long-term solution to their water

needs. Simultaneously, Todd County had begun a similar inquiry. Eventually the two counties realized they were facing the same issues and began discussing the option of partnering. In 1995, the LTRWC was formed, representing 11 water systems in Logan and Todd counties.

In 1996, LTRWC had an engineering study conducted to identify long-term and short-term goals for both counties. The short term-plan addressed enhancing water availability to the existing individual water systems, but did not address the source problem, whereas the long-term plan was to develop a new shared source. In 1998, LTRWC addressed several funding agencies with these plans and found that they were unwilling to support the short-term plan, but were willing to fund a plan which addressed the source problem. Ultimately, for the project to move forward, LTRWC would need to take a leap of faith and manage their supply from a regional prospective.

Regionalization began with negotiating water purchasing contracts between individual water systems and LTRWC. During negotiations, it became apparent that individual water systems had very different challenges. Some had quantity problems, while some had quality problems and the neediest of them all had both. Whereas, some other systems were viable for the interim but decided to join to plan for their future. The different challenges and assets systems brought to the partnership at times provoked a sense of unfairness among members. Some members felt that certain systems would benefit more than others. To address this issue, Roger Recktenwald, the director of research and planning for the Kentucky Association of Counties, explained that “not everyone will benefit in the exact same way or in the exact same amount from a merger, but each entity will benefit enough to justify their participation” (US EPA, 2012).

There were also differences in water demand among systems, which lead some larger systems serving cities to argue that they should be able to purchase water at a reduced rate, while others felt that they should not be penalized for being a smaller system. The compromise was that all systems would pay the same wholesale rate regardless of their demand or distance from the source.

For many systems, the fear of losing autonomy was a major concern, as many community water systems have served their communities for a number of years and take pride in the work they do. However, there was also an opportunity for systems to gain more control over the overlooked aspects of their system, such as maintaining their distribution system. Distribution system maintenance and leak detection are typically not priority tasks for small water systems already understaffed and underfunded. Nevertheless, these distribution inefficiencies can have significant financial impacts on water systems. Leaks create a false demand on the system, causing pumps to run more often, which overtaxes the source and results in treated potable water that never reaches a consumer. Fortunately, for one of LTRWC system, regionalization freed up the resources for it to find and address a 40 percent water loss in their system, which prior to regionalization, they never had the time or the funding to investigate before.

Many systems were also concerned about raising rates. By establishing LTRWC as a non-profit, the supplier could not subsidize their rates to collect more revenues, which would have driven up the rates up for their consumers. Also, in the long run, the economy-of-scale model is poised to reduce the per-unit costs by removing redundancy and increasing efficiency. Furthermore, LTRWC found that, given the history of water use restrictions and shortages in this area, customers were willing to pay more for reliability.

Effectiveness

By the end of 1998, system managers, elected officials, and decision-makers had gone out into their communities to discuss the partnership. After numerous public meetings held in churches and local volunteer fire departments, 11 small Kentucky water systems became one regional commission. The consolidated services include: Adairville, Auburn, Lewisburg, Russellville, the East Logan Water District, the North Logan Water District and the South Logan Water Association in Logan County; Elkton, Guthrie, Trenton and the Todd County Water District in Todd County. Then in 1999, the 12th system, Oak Grove in Christian County, joined LTRWC. The

water system includes municipalities, water districts and privately owned water associations ranging in size between 395-3,300 customers, with 7 systems serving less than 1,000 customers.

Organizational and Financial Structure

Organizationally, Kentucky statutes determine the formation and management of the LTRWC as a non-profit, and establish by-laws for the commission and its Board. The 12 Board members each represent their member system and are appointed by the water districts they represent or by city council. Regardless of the number of customers or water demand, each board member has one vote and there are no term limits.

Financially, the commission and the individual water systems do not share any debt or ownership right, they are financially separated from one another. LTRWC is a wholesaler of water to the 12 autonomous water entities, selling water to each system at an equal rate, whereas each water system is allowed to set its own water rates. LTRWC is responsible for the intake, the treatment plant, 85 miles of transmission main, three water storage tanks totaling 3.5 million gallons, and 17 metering stations, while the individual systems retain the ownership and maintenance responsibilities of their own distribution system.

Funding

In 1999 Kentucky Governor Paul Patton provided the project with the largest state grant ever awarded of \$2 million. This was an important source of funding early in the project to get the project moving in earnest (Jespersion, Summer 2003). The project was also awarded the largest USDA Rural Development's Utility Programs loan of \$48.2 million. Other funding sources included SRF, CDBG, private bond issues and line-item appropriations from the federal budget. By 2002, the design work was finished and over \$60 million in construction contracts were

awarded to 17 construction contracts. In the end the total budget for the project was around \$75 million.

Logistics

In the summer of 2003, LRWC began supplying approximately 45,000 customers with surface water from the Cumberland River, located across the border in Clarksville, Tennessee. To access the source, the RJ Corman Railroad provided the utility a right-of-way from the city of Guthrie to the river. The location of the supply in another state did result in some legal roadblocks that were overcome by obtaining a permit to withdraw waters from the state of Tennessee.

Logistically, the location of the treatment plant and access to the main distribution line were areas of concern. The location of the 12 MGD treatment plant in the city of Guthrie was chosen because of its close proximity to the intake, which reduces the cost of moving untreated water long distances. Additionally, the central location of the city within the distribution is optimal, as it allows the distribution main to directly connect to each of the 12 systems without passing through any member's system to get to another, and without backtracking treated water through any part of the system. This is advantageous as it avoids issues of water loss, transmission costs, and capacity utilization between the retail systems (Jespersion, Summer 2003). Future plans to expand water services into both Tennessee and Christian County to provide up to 20 MGD to 100,000 people were incorporated into the design of the facility. (US EPA, 2012).

Conclusions

Meeting future regional water supply challenges under increased environmental pressures will require cooperation among town officials, various government agencies, non-government agencies and the private sector. As resource management challenges become more complex and interdependent, we must view them from a systems approach. Addressing these challenges

from a regionally integrated perspective presents the opportunity for partnering amongst various entities to efficiently address regional resource management issues.

Regionally managed water commissions between southern Maine water systems will be most successful if the foundation of a new partnership is built upon a common goal, with a common solution. Local initiative or economic development incentives may provide this commonality and can be vital to the formation of a partnership. Furthermore, the mission must be supported by the community, local business members, local and state elected officials, and most importantly by the water systems. By beginning a dialogue with funders and elected officials early on, there will be more time for innovative funding strategies to develop.

Regional water needs should be identified by conducting a study to get a perspective on the assets and challenges of the region. This will help identify goals and objectives for the partnership. Once these needs have been identified, members should be solicited by offering equal representation in the negotiations and tangible benefits to partnering, such as; financial solvency, lower long-term costs, more clout in the funding arena and economic development incentives.

As negotiations begin there will be areas of concern from water systems based on fairness, loss of autonomy and down-sizing work force, among others. However, as long as the partnering systems are able to identify potential benefits, they should be able to discern whether it is worthwhile to continue in the negotiations. In addition, many systems and customers may be concerned about raising rates. To alleviate this, systems may consider establishing the partnership as a non-profit so the supplier cannot subsidize their rates. Water systems may also encourage more customer buy-in by allowing customers to be part of the decision making process.

In conclusion, regionalization can be a cost effective approach to provide improvements in regional system reliability, which can satisfy future demands for years to come.

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