

MEETING WATER SUPPLY NEEDS WHILE PROTECTING THE ECONOMIC AND ECOLOGICAL INTEGRITY OF GEORGIA'S WATER RESOURCES

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Abstract. Water supply and its distribution are of increasing concern in Georgia. Aggressive water conservation programs offer an alternative source of water and a means to protect environmental needs. Georgia must take action to improve water use efficiency in all sectors of society. This requires efficient and effective policy development and administration. Comprehensive statewide water conservation planning and implementation has the potential to improve water quality and instream flow levels, decrease the need for new capital investments, reduce vulnerability to drought, and provide other benefits to the people and ecosystems of Georgia.

Several states have effectively implemented statewide water conservation planning. Thus, we have analyzed the elements of several state programs to determine what characteristics are instrumental in getting results from conservation. As Georgia rises to meet the challenges of water supply planning, we must create a comprehensive water supply and conservation plan that provides for (1) acceptance of the need for aggressive water conservation by political leaders, (2) a detailed water conservation policy, (3) comprehensive monitoring of water use and instream water levels, (4) stable funding sources for water conservation initiatives, (5) technical assistance, (6) strong educational and media outreach, (7) sufficient staff to implement the statewide plan, and (8) stakeholder involvement in the planning and implementation process. Georgia has the opportunity to become the leader of comprehensive water supply planning in the Southeast by making water conservation an alternative water supply source. To be successful, however, we must embrace all eight conditions discussed herein.

INTRODUCTION

Background

Historically, arid regions around the world have faced water shortage problems while more wet regions, like the Southeastern United States, have been fortunate to have clean and abundant water supplies. However,

with surging populations and increasing pollution in waterways, the Southeast is realizing that water is a precious and scarce resource. Georgia must address water supply concerns creatively to guarantee that the people of Georgia and surrounding states have an adequate fresh water supply and that the Southeast's valuable ecosystems are not further impaired. Meeting water needs for Georgia's population, commerce and environment will require using water supplies more efficiently and managing future demands through aggressive water conservation (UGA River Basin Science and Policy Center, 2002).

Problem identification

Water supply planning has historically focused around structural solutions, involving reservoirs and treatment stations. Recent studies indicate, however, that more comprehensive water supply planning, that includes non-structural supplies and water conservation/efficiency programs, can provide reliable, long-term sources for water suppliers and long-term protection of the environment.

Conservation is defined as any beneficial reduction in water loss, waste, or use (Vickers, 2001). Any state or local water supply plan must consider water conservation on an equal basis with other water management options. Only if water conservation is recognized as a water supply can a state and/or municipality reap the long-term economic and ecological benefits water supply planning can provide. By definition, conservation does not dictate where saved water will be used. Research shows that conservation programs that use saved water to protect the natural function and services provided by the streams, wetlands, and estuaries, often reduce or avoid costly structural developments that attempt to recreate services lost when the natural systems are damaged.

Aggressive water conservation and efficiency programs have provided reliable water supplies at state, regional, and local levels throughout the United States. Unfortunately, many of these efforts are now substandard because their framework lacked necessary

elements to realize the full economic and ecological benefits of conservation. Georgia is in the initial stages of creating both a statewide water plan and an associated water conservation plan. This paper analyzes crucial structural and political program elements of an effective statewide water conservation program. It also provides innovative ideas that could advance Georgia as a national leader in responsible water supply planning.

METHODS OF ANALYSIS

The primary goal of this research was to determine the social, scientific, political, and economic framework needed to create an effective state level water conservation plan. To accomplish this goal, we used a four-step qualitative research approach. First, we identified successful programs that have received recognition from water conservation experts and federal agencies by meeting water supply and/or conservation goals. Second, we researched background literature on each recommended conservation program. Third, we conducted telephone surveys of agency or local officials responsible for the implementation of the program. Prior to the telephone interview, the officials received a copy of the questionnaire (available upon request), consisting of questions addressing the social, scientific, political, and economic aspects of effective water conservation programs. In the fourth step, we spoke with a scientist or non-governmental organization with expertise on the effectiveness of the water conservation program in question. The goal of this last step was to ensure that our research provided a balanced and constructive view of the government program being investigated.

DISCUSSION AND RECOMMENDATIONS

The initial step of the analysis acknowledged twelve programs leaders in water conservation planning and program implementation. The states were: Arizona, California, Florida, Maryland, Massachusetts, New Hampshire, New Mexico, North Carolina, and Oregon. Local and regional programs were: Albuquerque, NM; Cary, NC; and Phoenix, AZ.

Qualitative analysis of the 12 state, regional, and local programs determined eight fundamental elements of a successful water conservation program. These conditions are identified below (in no particular order) and followed with a brief description of a program or case study that highlights its importance.

Political acceptance of the need for water conservation and efficiency as supply

Conservation and water supply officials stated that acceptance and aggressive support by political leaders was essential. For example, Maryland's Governor spearheaded efforts that have laid the groundwork for the implementation of aggressive statewide water conservation measures. He issued an executive order mandating water conservation within government facilities and then formed two stakeholder taskforces addressing water conservation (Maryland Department of the Environment, 2002). Similarly, New Hampshire's Governor brought water conservation to the forefront of the political discussion in 2001. With the goal to protect water as a public resource and establish a management strategy to protect citizen interests, she championed legislation to regulate use and encourage water conservation (State of New Hampshire, 2001). Alternatively, New Mexico's Water Conservation Bureau has developed a good water conservation policy program on paper. However, it has only been minimally implemented because, according to state officials, the initiative lacks political support from the state's executive and legislative branches (Darilek, 2002).

Detailed water conservation policy

Any successful program must have a detailed water supply and conservation policy to guides local and regional entities to adopt conservation practices. Georgia's policy must embrace the structure that exists through the water withdrawal permitting (Georgia EPD, 1999) However, the associated planning guidelines, adopted in 1994, must be thoroughly updated. The guidelines should contain a menu of flexible and cost effective water conservation options applicable to regional and local government bodies. California's policy is embodied in a statewide Memorandum of Understanding and consists of 14 primary conservation practices, each thoroughly researched and detailed. The state's municipalities volunteer to participate in the conservation program in exchange for state funds and technical assistance (California Urban Water Conservation Council, 2001).

A water savings should be part of Georgia's policy. The state government can lead by example by mandating water conservation in government facilities and encourage regional and local governments to establish total savings goals. For example, a state plan could inspire a goal like the 20% per capita consumption reduction goal that Cary, North Carolina set for itself. Cary's water conservation program was

developed around that use reduction goal and has enabled the town to meet its reduction goals ahead of schedule (Platt, 2002).

Comprehensive monitoring of water use and water levels

“The more individuals and groups know about water, including the nature of supplies and demands, water quality, water laws and prices, the better are their choices and decisions”(Wong et al., 1999). Currently, Georgia has neither standardized nor consistent water use data from water suppliers. This information gap causes management burdens and often leads to decisions that are economically and environmentally unsound.

Georgia’s water conservation plan should provide a clear and detailed water accountability program for public water suppliers in order to establish a source of reliable baseline water use data. Massachusetts provides a needs forecasting process and a water use questionnaire for public water suppliers interested in obtaining a new or expanded water withdrawal permit (MA Department of Environmental Protection, 2001). To be considered for a new or expanded withdrawal permit, the applicant must provide information in the format consistent with state data and broken down by user and sector needs (MA Department of the Environmental Protection, 2000).

A stable and non-politicized funding source for local water supply and conservation programs

The long-term success of any statewide conservation program will depend on a stable and non-politicized funding source. Appropriate short- and long-term program planning cannot be accomplished without reliable funding. A variety of innovative, yet effective funding options exist. The North Carolina Clean Water Management Trust Fund serves to protect water quality, but the structure and function of the fund can apply to water supply needs. The trust fund is administered by North Carolina’s Department of Environmental and Natural Resources but independently governed by an 18-member board of trustees. It receives 6.5 % of what remains in the state’s budget at the end of the fiscal year or a minimum of \$30 million (North Carolina Department of Environment and Natural Resources, 2003).

Many conservation programs are initially funded through federal and/or state grants and then maintained by funds generated by rate structures that encourage both the water supplier and the water users to reduce the amount of water consumed (Massachusetts DEP,

2000). The Irvine Ranch Water District of California uses an aggressive conservation rate structure that, simply stated, charges users incrementally more money the more water they use and returns revenues beyond operation and maintenance to the supplier to improve infrastructure and efficiency (Wong et al., 1999).

Other areas have solved the problem of stable funding by collecting taxes and fees to benefit water conservation programs. Arizona funds its water conservation program from a flat water withdrawal fee paid by all users (Wahl, 2002). Albuquerque, NM uses a \$0.09 per unit flat tax on municipal water to fund conservation measures (Witherspoon, 2002).

Sufficient staff to implement the statewide plan

A water conservation program with insufficient staff is sure to be unsuccessful and waste valuable financial resources. This research ascertained that a minimum of three people is needed for the general engineering, policy and outreach aspects of any program. Maryland, a state significantly smaller than Georgia, has three water conservation experts and still feels understaffed (Poorman, 2002). On the local level both Cary, NC and Albuquerque, NM have three staff members to implement their conservation programs (Platt, 2002; Witherspoon, 2002).

Technical assistance

Georgia’s statewide water conservation program must provide technical assistance to regional and local governments. Localities are often understaffed or lack sufficient expertise to develop and implement water conservation initiatives. California staffs several technical experts for localities who need assistance maintaining and evaluating their efforts (CUWCC, 2000). Arizona conducts water audits of each municipality and recommends ways to use water more efficiently. The municipality may choose to adopt the recommendations in whole, part, or none (Wahl, 2002).

Strong educational and media outreach

To avoid images of water starved cactus lawns and unwashed cars, Georgia must aggressively invest in citizen education and media outreach on water conservation. Citizen understanding is crucial to achieve political support and to maximize participation in water conservation efforts. Arizona produces educational materials that tend to have a “very hands-on approach” and reach the spectrum of users (Wahl, 2002). Examples of these include documentaries to educate citizens and programs to educate and assist farmers (Wahl, 2002). Massachusetts directed its

efforts toward the youth through multiple school based education programs (Massachusetts Water Resources Authority, 2002).

Stakeholder involvement in the planning and implementation processes

Georgia should create a forum through which a balanced water conservation program can be created and reviewed. A report published by the Pacific Institute (Wong et al., 1999) states “[a]lmost all successful water projects brought competing and conflicting stakeholders together in cooperative arrangements. Cooperation, rather than confrontation, led to an understanding of different points of view and a willingness to explore compromises and creative solutions that benefited all parties.” This philosophy should guide Georgia’s efforts before misunderstanding and the resultant misdirection lead us to a failed attempt.

The Massachusetts Water Supply Citizens Advisory Committee (WSCAC) is a very successful water supply advisory group made up of watershed communities, water utilities, businesses, agricultural interest groups, environmentalists, water users, and others. WSCAC is formally recognized as an official advisory group to the state agencies. It provides balanced and professional technical advice and citizen input into all proposed water supply activities in the state (Simonson, 2002; WSCAC, 2002).

CONCLUSION

As the demands on Georgia’s fresh water continue to grow, we must embrace water conservation as an alternative water supply source. Water conservation offers the state the potential to preserve our environment and to meet the water needs of its citizens. While Georgia is in the midst of statewide water planning, there is no better time to embrace all eight fundamental elements identified through this research. Georgia can develop and implement an aggressive and thorough statewide water conservation program and become a leader in comprehensive water supply and conservation planning in the Southeast and the nation.

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