STATE STRATEGIES FOR WATER CONSERVATION

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Abstract. Water conservation must become an integral part of water management planning, especially in a state such as Georgia, where rapidly increasing water demands exacerbate the impacts of natural drought. Although Georgia began requiring water conservation plans as a requirement of new or expanded water withdrawal permits in 1994, the state still lacks a comprehensive and aggressive water conservation policy. Many states, such as California, Colorado, Connecticut and others have enacted broad and far-reaching water conservation programs. Recommendations for Georgia's programs, focusing on urban water use, are made based on effective programs from other states.

INTRODUCTION

Water conservation must become an integral part of water management planning, especially in a state such as Georgia, where rapidly increasing and competing water demands (reflected by the contentious tri-state water allocation process) exacerbate the impacts of natural drought. For instance, during the summer of 2000, 23 cities and five counties faced serious drinking water shortages, and for the first time in Georgia the Environmental Protection Division (EPD) mandated outdoor water use restrictions statewide (Georgia Environmental Protection Division 2000). Currently, per capita water consumption in Georgia is 168 gallons per day (gpd) compared to the national average of 153 gpd (Georgia Environmental Protection Division 2000).

Water conservation will be essential not only to provide adequate supply for human consumption, but also as a tool for demand management, which seeks to reduce demand before increasing supply (Hill et al. 1998), and for protection of environmental quality. Increased water demand, for instance, often leads to plans for construction of new reservoirs (e.g. Georgia Environmental Protection Division 2000), which are detrimental to aquatic ecosystems by altering habitat, natural instream flow regimes and water quality (U.S. Environmental Protection Agency website). Excess water use on lawns or urban streetscapes can lead to increased nonpoint source pollution in local waterways (U.S. Environmental Protection Agency website). Both of these environmental impacts can be curbed by efficient water use. Thus, there are multiple benefits from the implementation of a strong statewide water conservation program.

CONSERVATION BACKGROUND

Water conservation can take place at all levels of government (e.g. local, state, federal). To this point the federal government has played a limited role in water conservation. The Federal Energy Policy Act of 1992 mandated plumbing efficiency standards for new fixtures (Hill et al.1998). More recently, the U.S. Environmental Protection Agency (U.S. EPA) has published a series of water conservation plan guidelines for water systems on a basic, intermediate and advanced level (U.S. Environmental Protection Agency 1998). These guidelines were prepared as part of the 1996 amendments to the Safe Drinking Water Act, which placed emphasis on protection of drinking water sources. While the guidelines are not mandatory, states can require local government recipients of Drinking Water State Revolving Fund loans to follow the guidelines (Georgia does not have this requirement). More often, water programming has fallen to a local government or water system level as a way to manage peak demand. State governments generally have been less involved with water conservation programs (Miri 1998).

STATE ROLE IN WATER CONSERVATION - GEORGIA

Georgia has adopted some water conservation provisions. In 1990 the state adopted ultra-low flow plumbing standards (1.6 gallons/flush toilets, 2.5 gallons/minute showerheads, 1.0 gallons/flush urinals) for new construction. These plumbing standards serve as a minimum for local government adoption, with the loss of eligibility for state funded grants or loans for water or wastewater as a penalty for noncompliance (Norris 1997). Another statewide conservation provision requires water suppliers to develop water conservation plans as part of permit applications. The Department of Natural Resources (DNR) adopted specific rules governing the content of these plans in 1994 (Norris 1999). Suppliers requesting a new or expanded withdrawal permit of 100,000 gallons per day or more must comply with the 1994 rules (Georgia DNR Rules 391-3-6.07), which target water loss, water demand management, and long range planning (Norris 1997). Specifically, permittees are required to address:

1. System Management – focusing on identifying and minimizing unaccounted for water.

2. Treatment Plant Management – loss of water within the plant.
3. Rate Making Policies.
4. Plumbing Ordinances and Codes – water systems must document compliance with state mandated ultra-low flow rules.
5. Recycling and Reuse programs.
6. Current and planned education programs.
7. Water Use Data.
8. Long Range Planning – this must include projections incorporating conservation efforts (Georgia Environmental Protection Division 2000).

Despite this lengthy list, however, there are few requirements for implementation as part of the plan. For example, ratemaking policies must be summarized, but do not have to be converted to an inclining rate or seasonal surcharge structure. While many local governments or water suppliers now have EPD approved plans, it is unknown to what extent or how effectively these plans are being implemented. There are no consistent guidelines for reviewing these plans (Norris 1999) nor are there staff specifically dedicated to the review and evaluation of water conservation plans. Permittees are required to begin reporting results of their programs in 2001 (Georgia Environmental Protection Division 2000).

STATE ROLE IN WATER CONSERVATION OUTSIDE OF GEORGIA

In 1998, the American Waterworks Association (AWWA) surveyed the 50 states to document water conservation activity levels and types and to determine the role of the state in these efforts (Miri 1998). States were questioned in four broad areas considered essential for a comprehensive program including: 1) conservation outreach and technical assistance, 2) planning, 3) plumbing codes, and 4) financial assistance to regional or local entities. Of the 42 responding states, 14 were designated conservation "leaders" for having three out of four in-depth and active components (Miri 1998). Highlighted below are some specific examples from leading states in each of the categories.

Conservation Outreach and Technical Assistance

The state of Colorado has established an Office of Water Conservation. Staffed with several employees, this office is dedicated to providing technical assistance to local governments and utilities (Colorado Water Conservation Board website). Oregon provides support through its regional offices and also has a model water conservation plan on their website (Oregon Department of Environmental Quality website). Likewise, Washington has a number of technical assistance documents to assist in the development and implementation of water conservation plans (Washington State Department of Health website). Georgia provides little conservation outreach and technical assistance from a state level. There are a number of EPD staff who review local government conservation plans as part of the water supply planning process (David Vaughn, EPD, personal communication), but state assistance is minimal and there is little information regarding demand management planning available on the Georgia EPD website (Georgia Environmental Protection Division website).

Conservation Planning

Many states require some type of conservation planning, but required contents of plans differ, as does the degree of review by the state (Miri 1998). Recommendations for conservation plans based on system size have been made by U.S. EPA (U.S. Environmental Protection Agency 1998). Most common elements addressed in such plans include public education, water use projections, and an evaluation of conservation rate structures (Miri 1998). Colorado, for instance, requires conservation plans and implementation for all utilities; public participation is also required as plans are developed (Colorado Water Conservation Board website). In Arizona, the state sets a specific conservation plan goal by requiring that the total gallons per capita per day (GPCD) for each supplier must decrease over time (Arizona Department of Water Resources website). The Delaware River Basin Commission, a consortium of four states, requires plans for all suppliers with permits for 1 MGD or greater and leak detection and metering are required for all permitees withdrawing 100,000 gpd or more (Deleware River Basin Commission website). Washington State, perhaps, has the one of the most detailed conservation planning programs. Any system serving 15 or more connections must prepare a plan covering a variety of elements ranging from an evaluation of measures to be used to identification of specific objectives. The plans must also detail an implementation schedule, budget and monitoring plan for each measure. Issuance of new water permits is contingent upon the implementation of these plans (Washington State Department of Health 2000).

A unique approach to urban water conservation planning is demonstrated in California, through the California Urban Water Conservation Council (CUWCC). Established in 1991, CUWCC's purpose is to assist its members with implementation and evaluation of water conservation measures and to facilitate collaborative research focusing on new and improved measures. This mission is accomplished in part through a Memorandum of Understanding (MOU) outlining 14 urban water conservation best management practices (BMPs), implementation, and reporting requirements designed to promote water conservation as part of statewide water planning (CUWCC website). CUWCC has grown to 260 members and a governing board consisting of water suppliers and public interest groups that continuously evaluate and revise the accepted BMPs. BMPs range from large landscape conservation programs and incentives to conservation programs for commercial, industrial, and institutional accounts to water conservation coordinator funding (CUWCC website). The success of CUWCC is

reflected by the fact that CUWCC's BMPs have recently been folded into California state law under the Urban Water Resources Management Act, which requires development and implementation of urban water management plans for all urban water suppliers with the penalty of ineligibility for state drought assistance for noncompliance (California Department of Water Resources website).

Plumbing Codes

Almost all states considered to be conservation leaders have adopted water conservation plumbing rules equal to the federal standards, and some states had adopted such standards prior to the 1992 Federal Energy Policy Act (Miri 1998). Because indoor water use accounts for a large percentage of total residential use, and 41% of that amount is used in the bathroom (U.S. Environmental Protection Agency website), retrofits for existing buildings can reduce water use substantially. In 1991 Connecticut passed a law requiring most utilities to provide free retrofit kits to all of their customers, potentially reaching 90% of the state's population (Ruzicka 1992a). Large suppliers in need of expansion were required to provide the most aggressive efforts to implement the retrofit program including distribution to all customers, assistance with installation, and installation reminders. Meanwhile, small suppliers with a system surplus had lesser requirements, fulfilled by sending out a kit request card to all customers (Ruzicka 1992b). Several of CUWCC's BMPs, such as the residential plumbing retrofit program, high efficiency washing machine rebate program, and replacement of toilets with ultra low flush toilets, all target reduction of water use through plumbing modifications (CUWCC website).

Financial Assistance

Although financial assistance for conservation programs is not common among state governments, Miri (1998) reports that 10 states provide money for conservation research and pilot programs and nine states provide money for water system leak detection. Colorado, for instance, authorized $500,000 in grants to local entities for the design and demonstration of efficiency and conservation programs (Colorado Water Conservation Board website). Generally, however, it appears that suppliers or local governments are responsible for costs of a water conservation program.

RECOMMENDATIONS FOR GEORGIA

It is well recognized that water conservation must play a critical role in the management of Georgia's water resources (e.g. Clean Water Initiative 2000, Georgia Environmental Protection Division 2000). And certainly there is room for improvement given that average per capita water consumption in Georgia at 168 gpd is 15 gallons higher than the national average (Georgia Environmental Protection Division 2000). While there are already many local leaders in the area of water conservation (e.g. Cobb County-Marietta Water Authority, Athens-Clarke County, City of Savannah), the state must also play a leadership role to set a high and consistent standard for water conservation policies across Georgia. This goal should be integrated and clearly articulated as part of development of a statewide water management plan (e.g. Kundell 2000). Specific recommendations for Georgia are listed below.

1. *Revise Georgia's requirement for water conservation plans to a) include any and all water suppliers with withdrawals >100,000 gpd (as opposed to suppliers needing permits), and b) require implementation of these plans prior to receiving new permits and as a condition of receiving state loans or grants.*

2. *Create a new and staffed Water Conservation Program within EPD's Water Resources Branch to be responsible for the following:*

A) Conservation Outreach and Technical Assistance.

- Creation of a "Georgia Urban Water Conservation Council" modeled after CUWCC with a broad range of participation with the purpose of establishing and certifying a suite of urban water conservation measures based on sound and existing research.
- Provide technical assistance (in partnership with Department of Natural Resources Pollution Prevention Assistance Division) to water suppliers with the implementation of water conservation measures.
- Implement education programs.

B) Conservation Planning.

- Review, certify, and enforce water conservation plans statewide.

C) Plumbing Codes.

- Require plumbing retrofits in communities requesting increased water withdrawals prior to consideration of permit applications.

D) Financial Assistance/Rate Making.

- Establish a water conservation fund based on annual fees for water withdrawal to fund water conservation education, pilot programs, and research.
- Require adoption of ratemaking structures for water, such as seasonal or excess use charges, that reduce peak demand (e.g. Jordan and Albani 1999).

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