



November 6, 2009

Georgia Water Contingency Planning Task Force  
The Office of the Governor  
State of Georgia  
203 State Capitol  
Atlanta, Georgia 30334

Dear Members of the Georgia Water Contingency Planning Task Force:

The Georgia Water Coalition appreciates the opportunity to participate in the important task of finding a sustainable and cost-effective water supply for metro Atlanta. The Water Coalition is comprised of 168 business, recreational, civic, conservation, and faith-based organizations representing hundreds of thousands of Georgians throughout the state, including numerous individuals and businesses who are reliant on a dependable water supply for Atlanta. We have attached our 2008 report in addition to a list of Water Coalition members. In our 2008 report, you will find a comprehensive set of recommendations that go beyond water conservation and that provide a fuller definition of the Water Coalition's work.

We have compiled for your information and review a list of recommendations for the least-cost alternatives to securing Atlanta's water supply. Each recommendation contains a brief background synopsis for context and includes explicit steps to be taken to realize the goal. Where possible, each recommendation also includes the projected water savings for metro Atlanta in both dollars and gallons of water consumed. As you will see, the prompt and aggressive implementation of water conservation and efficiency measures will more than offset the need for most if not all future water supply reservoirs currently being contemplated for metro Atlanta. This translates into millions of dollars in savings for a state that is already facing a looming budget crisis.

Please contact our members if you would like more information or have any questions. The Georgia Water Coalition stands ready to assist the state in implementing the recommendations that follow and looks forward to moving sustainable water management forward in Georgia.

Sincerely yours,

Georgia Water Coalition

817 West Peachtree Street  
Suite 200  
Atlanta GA 30308  
1.866.88WATER  
[www.georgiawater.org](http://www.georgiawater.org)



## Georgia Water Coalition Partners

1.866.88WATER • [www.georgiawater.org](http://www.georgiawater.org)

Altamaha Riverkeeper  
American Fisheries Society - Georgia Chapter  
American Rivers  
American Whitewater  
Anthony W. Park & Associates, LLC  
Apalachicola Riverkeeper  
Appalachian Education and Rec Services – Len Foole Hike Inn  
Athens Grow Green Coalition  
Athens Land Trust  
Atlanta Audubon Society  
Atlanta WAND (Women's Action for New Directions)  
Atlanta Water Conservation  
Atlanta Whitewater Club  
Azalea Park Neighborhood  
Bear Creek Bass Club  
Benjamin E. Mays Center, Inc  
Berkeley Lake Homeowners Association  
Bike Athens  
Blue Heron Nature Preserve  
Broad River Outpost  
Broad River Watershed Association  
Burnt Fork Watershed Alliance  
Camden County Land Trust  
CCR Environmental  
Center for a Sustainable Coast  
Central Savannah River Land Trust  
Chattahoochee Hill Country Alliance  
Chattahoochee Nature Center  
Chattahoochee River Watch  
Chattooga Conservancy  
Cherokee Homeowners  
Citizens for Clean Air and Water  
Citizens for Environmental Justice  
Clean Coast  
Clear Rivers Chorus  
Coastal Environmental Organization of Georgia  
Coosa River Basin Initiative  
Coosawattee Watershed Alliance  
Creative Earth  
DeKalb County Soil & Water Conservation District  
Earthkeepers & Company  
East Atlanta Community Association  
Eco-Scrub Carpet & Floor Care  
Ens & Outs, Unitarian Universalist Congregation of Atlanta  
Environment Georgia  
Environmental Community Action Inc (ECO-Action)  
Environmental Defense Fund, Southeast Regional Office  
Flint Riverkeeper  
Foundation for Global Community, Atlanta Chapter  
Friends of Barber Creek  
Friends of Georgia, Inc  
Friends of McIntosh Reserve  
Friends of the Apalachee  
Friends of the Chattahoochee  
Friends of the Savannah River Basin  
Garden Club of Georgia, Inc  
Georgia Bass Chapter Federation  
Georgia Canoeing Association, Inc  
Georgia Coalition for the People's Agenda  
Georgia Coalition of Black Women  
Georgia Conservancy  
Georgia Conservation Voters  
Georgia Erosion Control Center (GECC)  
Georgia Forest Watch  
Georgia Interfaith Power and Light  
Georgia Green Industry Association  
Georgia Kayak Fishing  
Georgia Kids Against Pollution  
Georgia Lakes Society  
Georgia Land Trust  
Georgia Onsite Wastewater Association  
Georgia Organics  
Georgia Poultry Justice Alliance  
Georgia River Fishing  
Georgia River Network  
Georgia River Survey  
Georgia Rural Urban Summit  
Georgia Wildlife Federation  
Glynn Environmental Coalition  
GreenLaw  
Hiwassee River Watershed Coalition  
Hotanta Adventures  
Hydro Management Systems  
IMPACT  
Interface, Inc  
Intrachment Creek Coalition  
Jackson Lake Homeowners Association  
Jett Ferry Manor Homeowners Association  
Junior Bass Busters  
Keller Williams Realty, Lanier Partners  
Knottalotta Entertainment  
Krull and Company  
LaGrange Boaters, Anglers, Campers Association  
Lake Allatoona Preservation Authority  
Lake Blackshear Watershed Association  
Lake Hartwell Association  
Lake Homeowners Alliance  
Lake Lanier Association  
Lake Oconee Property Owners' Association  
Lake Oconee Water Watch  
Lake Yonah Association  
League of Women Voters of Georgia  
Little Tennessee Watershed Association  
Long Island Creek Watershed Preservation Assn  
Lula Lake Land Trust  
Lumpkin Coalition  
MBD Water Solutions  
Melaver, Inc  
Middle Chattahoochee River Stewards  
Middle Georgia Advisory Group  
Minds Eye Scenic Arts  
Mountain Park Watershed Preservation Society, Inc.  
National Wildlife Federation  
The Nature Conservancy  
Neighborhood Planning Unit - W, Atlanta  
Netlink IP Communications  
New Echota Rivers Alliance  
Nickajack Watershed Alliance  
Norris Lake Community Benefits Corporation  
North Georgia Trout Online  
Nuclear Watch South  
Oceana  
Oconee River Land Trust  
Ogeechee Audubon Society  
Ogeechee - Canoochee Riverkeeper  
Peavine Watershed Alliance  
Presbytery of Greater Atlanta  
Pulaski County Ocmulgee Watershed Stewardship Partnership  
Rain Harvest Company, Inc.  
REP America- Georgia Group  
Richmond Hill Garden Club  
Ridgeview Neighborhood Civic Association  
Salilla Riverwatch Alliance, Inc. & Salilla Riverkeeper  
Santee-Nacoochee Community Association  
Savannah-Ogeechee Canal Society, Inc.  
Savannah Riverkeeper  
Savannah Tree Foundation  
Save Lake Oconee's Waters (SLOW)  
Save Our Rivers, Inc.  
Scenic Georgia, Inc  
Sierra Club- Georgia Chapter  
Small Carpenters at Large  
Solomon's Minds  
Soque River Watershed Association  
South Atlantans for Neighborhood Development  
Southeastern Natural Sciences Academy  
Southern Alliance for Clean Energy  
Southern Environmental Law Center  
Southface  
SouthWings Conservation through Aviation  
Spring Creek Watershed Partnership  
Sustainable Business Partners  
Tallulah River Watershed Protection Committee  
The Wilderness Society  
Trout Unlimited - Georgia Council  
Turner Environmental Law Clinic  
Unicol Outfitters  
United Nations Association - Atlanta Chapter  
Upper Chattahoochee Riverkeeper  
Upper Oconee Watershed Network  
Upper Tallapoosa Watershed Group  
US Green Building Council - Atlanta Chapter  
US Green Building Council - Savannah Chapter  
Vegetarian Solutions  
West Atlanta Watershed Alliance  
West Point Lake Advisory Council  
West Point Lake Coalition  
World Wildlife Fund



## GWC Recommendations to the Governor's Water Contingency Planning Task Force for Aggressive Water Conservation & Efficiency

November 6, 2009

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- Introduction.
- Proven water efficiency measures could yield up to 214 millions of gallons a day (mgd), a 33% savings.
- Reducing the water loss through leaks in water distribution pipes can save from 29 to 59 mgd in Metro Atlanta.
- Pricing water right can save anywhere from 54 to 79 mgd in Metro Atlanta.
- Metering all water users can save from 6 to 9 mgd in metro Atlanta.
- Retrofitting all buildings with water efficient fixtures can save 36 to 55 mgd in metro Atlanta.
- Landscaping to minimize water waste can save from 8 to 13 mgd.
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### INTRODUCTION:

Below we have compiled a list of recommendations for the least-cost alternatives to securing Atlanta's water supply for the Governor's Water Contingency Planning Task Force. Each recommendation contains a brief background synopsis for context and includes explicit steps to be taken to realize the goal. Where possible, each recommendation also includes the projected water savings for metro Atlanta in both dollars and gallons of water consumed.

<u>Proven Water Efficiency Measures</u>	<u>Potential Water Savings</u> <u>(mgd)</u>
Reduced leakage	59
Water Pricing	79
Metering	9
Retrofit with efficient fixtures	54
Landscaping	13
Other (e.g. energy efficiency, green infrastructure)	?
<b>Total</b>	<b>214</b>

As you will see, the prompt and aggressive implementation of water conservation and efficiency measures will more than offset the need for most if not all future water supply reservoirs currently being contemplated for metro Atlanta. This translates into millions of dollars in savings for a state that is already facing a looming budget crisis.

**PROVEN WATER EFFICIENCY MEASURES COULD YIELD UP TO 214 MILLIONS OF GALLONS A DAY (MGD), A 33% SAVINGS.**

**Background:**

- As outlined in this document, the total water saved through water conservation and efficiency could make up for all the permitted water withdrawals from Lake Lanier which currently provides 178 million gallons per day (mgd) to metro Atlanta.<sup>1</sup>
- Metro Atlanta could save up to \$700 million by pursuing water efficiency to secure water supply as compared to building new dams.
- In addition, the Alliance for Water Efficiency (AWE) recently published a position paper with three major economic findings that are striking, including:
  - (1) economic output ranges between \$2.5 and \$2.8 million per million dollars directly invested in water efficiency;
  - (2) gross domestic product (GDP) benefits range between \$1.3 and \$1.5 million per million dollars directly invested in water efficiency; and
  - (3) employment potential ranges between 15 and 22 jobs per million dollars directly invested in water efficiency.
- Metro Atlanta's Metropolitan North Georgia Water Planning District could eliminate the need for all six of its planned reservoirs (totaling 108.4 mgd) nearly two times over through aggressive water efficiency and conservation.
- This water savings could ensure enough clean water for ecological protection instream and for our neighbors downstream.

**Resources:**

- American Rivers: Hidden Reservoir: Why Water Efficiency is the Best Solution for the Southeast. October 2008.
- Alliance for Water Efficiency "Transforming Water: Water Efficiency as Stimulus and Long-Term Investment" Position Paper, December 4, 2008.
- Metropolitan North Georgia Water Planning District's 2003 and 2009 Water Supply and Water Conservation Plans, [www.northgeorgiawater.org](http://www.northgeorgiawater.org).

**REDUCING THE WATER LOSS THROUGH LEAKS IN WATER DISTRIBUTION PIPES CAN SAVE FROM 29 TO 59 MILLION GALLONS PER DAY (MGD) IN METRO ATLANTA.**

**Background:**

- Water loss and leak detection and abatement programs should be adopted by all utilities to reduce leaks to as close to zero percent as possible because 117 million gallons is currently lost daily from the system.
- Fixing leaks saves water and helps a utility's bottom line by eliminating the need to treat and pump wasted water that they are not paid for producing.

**Recommendations:**

- The Georgia Environmental Facilities Authority (GEFA) should continue to prioritize projects that fix leaks and secure cost-effective water efficiency savings in the Clean Water State Revolving Fund (SRF) and Drinking Water SRF programs.
- All utilities should use the American Water Works Association (AWWA)/ International Water Authority (IWA) water balance approach to track water consumption. This is the first step for a utility to understand where its water goes and how to address unaccounted for water, including leaks.

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<sup>1</sup> See the Metropolitan North Georgia Water Planning District's 2003 Water Supply and Water Conservation Plan at [www.northgeorgiawater.org](http://www.northgeorgiawater.org).

- All utilities should undergo a system-wide water audit every five years to assess progress with respect to progress on the AWWA/IWA water balance approach. More complex system audits may involve a more detailed investigation into actual policies and practices of the utility. Several areas should be reviewed including:
  - 1) proper metering of all authorized water uses;
  - 2) development of better estimates of water use by the fire department; for line flushing; for street cleaning; and during water main breaks;
  - 3) appropriate meter testing and main line maintenance, repair and replacement procedures; and
  - 4) leak detection programs. Leak detection programs can range from simply detecting in-home leaks, such as toilet or sprinkler system leaks, to the use of more sophisticated leak detection equipment, such as mechanical or electronic sound intensifying instruments that "hear" water escaping from the water system.

**Resources:**

- American Water Works Association's, M36 Manual: Water Audits and Leak Detection.

**PRICING WATER RIGHT CAN SAVE ANYWHERE FROM 54 TO 79 MGD IN METRO ATLANTA.**

**Background:**

- Water is not priced at its true value; in fact, some utilities even incentivize water waste. However, we could actually see up to a 22% decrease in consumption through meaningful conservation pricing.
- Conservation pricing 1) provides water at low prices for basic and essential needs, so all customers can afford it; 2) rewards conserving customers with lower rates for water; 3) encourages efficient use by sending a strong price signal; 4) assigns water supply and development costs proportionately to those customers placing the highest burden on the supply system and the natural supply sources; 5) provides a revenue source that can be used for other water conservation programs; 6) stretches existing water supplies farther to avoid much of the cost, delay, and controversy resulting from large new water development projects; and 7) can do all of the above, while still maintaining a stable flow of revenue to the utility.
- Although conservation pricing is required and exists in some form throughout most of the 15- county Metropolitan North Georgia Water Planning District, the Metro District still needs to ensure conservation pricing actually sends a price signal and applies to all uses. There is a lack of consistency in prices across the Metro District, and we see a large range of costs for the same volume of water. For example, some utilities charge as little as \$4.00 for 3,000 gallons of water for residential customers while other utilities charge as high as \$18.00 for the same volume. For 6,000 gallons, the minimum charge is \$5.00 and the maximum is \$35.00, and for 12,000 gallons the minimum is \$10.00 and the maximum is \$110.00.<sup>2</sup> Given the wide variation of costs for each additional tier and that decreasing pricing still exists in the Metro District, it is questionable as to whether the conservation pricing program in the Metro District is sending a price signal and therefore will result in the projected 19.8 mgd water savings by 2035.<sup>3</sup>

**Recommendations:**

- The state should fund technical positions at GEFA that can provide assistance on conservation pricing programs, specifically on rate making and billing programs, to give utilities the protection they need so that their revenue is less vulnerable to decreasing demand.
- The state should fund rate studies and rate making programs (through GEFA's SRF program and other state revenue streams) to implement effective conservation rate structures that require utilities to take the following actions:
  - a. Use forward-looking data when establishing revenue requirements (a "future test year"), taking planned usage changes and all program implementation expenses into account (including ratemaking expenses).

<sup>2</sup> See the Metropolitan North Georgia Water Planning District's 2008 Water Rate Survey at [www.northgeorgiawater.org](http://www.northgeorgiawater.org).

<sup>3</sup> See the Metropolitan North Georgia Water Planning District's 2009 Water Supply and Conservation Management Plan at p. 4-5.

- b. Conduct a demand analysis based on alternative plausible scenarios to more accurately predict usage after the introduction of water conservation programs.
- c. Integrate findings from this demand analysis in a cost-of-service study to establish cost-based rates.
- d. Implement a demand response/revenue-adjustment surcharge in order to make periodic (quarterly or otherwise) adjustments to base rates between major rate adjustments.
- e. Consider the joint effects of both program-induced and price-induced conservation on usage and revenues.
- f. Conduct regular audit and reconciliation procedures to ensure against over-collection of revenues from customers, particularly when adjustment surcharges are used.
- g. Communicate the long-term benefits of conservation to water system customers and clearly explain the role of cost-based rates in achieving efficiency goals.
- h. Avoid postponing necessary rate increases and practice gradualism in ratemaking to reduce “rate shock.”
- i. Evaluate revenue requirements on an annual basis to ensure that costs and rates are properly aligned.
- j. Explicitly incorporate a degree of revenue uncertainty into the integrated planning and ratemaking processes, and the overall operation of the utility to better understand and manage its effects.
- k. Fund long-term conservation programs through long-term financing. Financing water conservation programs must be incorporated through current operating expenses, similar to funding for dam construction.
- l. The state should give preference to SRF applicants who have implemented conservation pricing successfully.
- m. The state should outlaw decreasing pricing.

**Resources:**

- Agthe, D.E. and R.B. Billings. 1987. Equity, Price Elasticity, and Household Income under Increasing Block Rates for Water. *American Journal of Economics and Sociology*, vol. 46, No. 3.
- Alliance for Water Efficiency “Fundamentals of Water Rate Making 2008”, AWE Clearinghouse Web Site, Water Rates and Charges, RATE MAKING 101, available at [www.allianceforwaterefficiency.org/1Column.aspx?id=710](http://www.allianceforwaterefficiency.org/1Column.aspx?id=710).
- Alliance for Water Efficiency (AWE) Clearinghouse Web Site: Water Rates and Charges; Implementing a Conservation Oriented Rate Structure.
- American Water Works Association (AWWA) industry standards for rate structure designs available at [www.awwa.org](http://www.awwa.org).
- Chesnutt, W. T. and J.A. Beecheer. 2004. Revenue Effects of Conservation Programs: The Case of Lost Revenue. A & N Technical Services, Inc.
- Environmental Protection Agency (EPA) Region 4, Environmental Finance Center Memo: “Water Price Signals in Georgia”, November 28th, 2007 and <http://www.efc.unc.edu/RatesDashboards/ga.htm>
- Environmental Protection Agency’s (EPA) guide “Setting Small Drinking Water System Rates for a Sustainable Future: One of the Simple Tools for Effective Performance (STEP) Guide Series”, Office of Water, January 2006.
- Environmental Protection Division’s (EPD) guidance document “Conservation-Oriented Rate Structures”, developed by the GA EPD to support the “Coastal Georgia Water and Wastewater Permitting Plan for the Managing Salt Water Intrusion” dated August 2007.
- Olmstead, S.M. and R.N. Stavins. 2007. Managing Water Demand: Price v. Non-price Conservation Programs, Pioneer Institute White Paper, No. 39.

**METERING ALL WATER USERS CAN SAVE FROM 6 TO 9 MGD IN METRO ATLANTA.**

**Background:**

- Metering all water uses is critical to measuring water consumption. Accurate consumption measurement is influenced by the type and size of the meter as well as an appropriate testing and maintenance schedule.

- Individual metering of multiple dwelling unit buildings and businesses (also known as submetering) encourages accountability and allows individual customers to assess and modify their water usage. Submetering reduces risk and costs for the building or business owner by making the individual water consumers accountable for their use. Submetering new properties (through legislation or building code) can yield a 15% water savings.
- Water meters can also provide useful information for the management of irrigated landscapes, which constitute approximately 50% of municipal water use. When both landscape and domestic use are measured through the same meter, it is difficult to determine the consumption attributable to each category. Separate metering of landscape and domestic use provides new opportunities to identify and implement targeted practices to encourage more efficient water use in both categories.
- Submetering is cost-effective. For example, submetering new multi-unit properties (assuming 100 individual units) may have a capital cost of roughly \$675.00 per unit but yield \$3,428.00 per unit in annual savings, for a benefit/cost ratio of 5.1. In fact, once battery replacement and other maintenance costs are factored in over a twenty year period, the benefit/cost ratio may range from 3.1 to 5.1. Retrofitting existing multi-unit properties (again, assuming 100 units) will cost more, depending on the efficiency of the existing plumbing and fixtures, but the benefit/cost ratio is still in the range of 3.1-4.0 and any recurring costs can be covered thru an administration fee.<sup>4</sup>

**Recommendations:**

- Require new multi-family or multi-unit properties to submeter either through legislation or building codes.
- Require utilities to bill customers on a monthly basis to provide customers with timely consumption information.
- Provide financial incentives for meter technology that uses remote displays so that customers can calculate their consumption instantaneously.
- Provide financial incentives, such as rebates, to submeter existing residential and commercial buildings.

**Resources:**

- American Water Works Association (AWWA) Manual M22, "Sizing Water Service Lines and Meters." Produced by the Customer Metering Practices Committee of the AWWA.
- American Water Works Association (AWWA) "Water Distribution Operator Training Handbook" (2nd Ed.).
- Koplrow, D. and Lownie, A. 1999. Submetering, RUBS, and Water Conservation. Prepared for the National Apartment Association (Alexandria, VA) and National Multi Housing Council (Washington, DC).
- Mayer, P. et al. 2004. National Multiple Family Submetering and Allocation Billing Program Study.

**RETROFITTING ALL BUILDINGS WITH WATER EFFICIENT FIXTURES CAN SAVE 36 TO 55 MGD IN METRO ATLANTA.**

**Background:**

- Up to 35% decrease in water use is possible through retrofits alone.<sup>5</sup>
- Metro Atlanta communities consume, on average, 69 gallons per capita per day (gpcd) for indoor water use. A conserving household consumes 45.2 gpcd for indoor water use.<sup>6</sup> Compare Brisbane, Australia which consumes 36 gpcd for indoor water use with the same high quality of life as metro Atlanta.

<sup>4</sup> See Table 6.2 Cost and benefit per unit analysis for owners who chose to submeter at p. 189. P.W. Mayer et al. 2004. National Multiple Family Submetering and Allocation Billing Program Study. Study sponsored by Environmental Protection Agency, National Apartment Association, National Multi Housing Council, City of Austin, City of Phoenix, City of Portland, City of Tucson, Denver Water Department, East Bay Municipal Utility District, San Antonio Water System, San Diego County Water Authority, Seattle Public Utilities, and Southern Nevada Water Authority.

<sup>5</sup> See American Rivers: Hidden Reservoir: Why Water Efficiency is the Best Solution for the Southeast.

- New York City completed the world's largest toilet replacement program during 1994-1997 resulting in 70-90 mgd of savings through the replacement of 1.3 million toilets. The program saved NYC over \$200 million by deferring expansion of supply and wastewater infrastructure. By analogy, Metro Atlanta has more than 800,000 outdated toilets,<sup>7</sup> which if replaced would yield 43-55 mgd of savings.
- Retrofitting building infrastructure through incentives such as rebates/tax holidays and through ordinances such as retrofit on resale/reconnect generates proven, reliable and significant water savings.

#### **Recommendations:**

- The Georgia Environmental Facilities Authority (GEFA) should continue to prioritize projects that support the retrofitting of inefficient plumbing fixtures through the Clean Water State Revolving Fund (SRF) and Drinking Water SRF programs.
- Provide incentives for water- and energy-efficient appliances (e.g., ENERGY STAR and WaterSense) including clothes washers, dishwashers, refrigerators, air conditioners, ceiling fans, dehumidifiers, programmable thermostats, windows, doors, fluorescent light bulbs, bathroom faucets, and high-efficiency toilets. Extend the current ENERGY STAR/WaterSense sales tax holiday for the entire month of October or add a weekend during the spring months. Costs for toilet rebate programs in Georgia per 1,000 gallons saved range from \$0.42 to \$1.74.<sup>8</sup>
- Require retrofit on resale/reconnect. DeKalb County has ordinances in place for both residential and commercial buildings.<sup>9</sup>
- Require utilities to offer a pre-rinse spray valve rebate program for restaurants (currently only an education program is required in the Metro District).<sup>10</sup> Costs for pre-rinse spray valve rebate programs in Georgia per 1,000 gallons saved range from \$0.14 to \$29.07.<sup>11</sup>
- Require utilities to establish both residential and coin-operated clothes washer and dishwasher rebate programs for the purchase of water- and energy-efficient clothes and dish washers.

#### **Resources:**

- Food Services Technology Center: [www.fishnick.com](http://www.fishnick.com).
- SBW Consulting, Inc. May 3, 2004. Report No. 040 "Evaluation, Measurement, and Verification Report for the CUWCC Pre-Rinse Spray Head Distribution Program. Submitted to the California Urban Water Conservation Council by SBW CONSULTING, INC. Bellevue, WA in conjunction with ASW Engineering Management Consultants.
- Environmental Protection Division's (EPD) Conserve Water Georgia Website: [www.conservewatergeorgia.net](http://www.conservewatergeorgia.net)

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<sup>6</sup> See the Metropolitan North Georgia Water Planning District's May 2009 Water Supply and Water Conservation Plan at [www.northgeorgiawater.org](http://www.northgeorgiawater.org). See also Vickers, A. 2001. Handbook of water use and conservation: homes, landscapes, businesses, industries, farms. Waterplow Press.

<sup>7</sup> This figure is based on the Metro District's assumption that more than 1.15 million homes were built before 1993, and since then, residents have replaced toilets at a "natural" replacement rate of 2% each year. Doing the calculation, you get more than 818,000 homes remaining to date. See the Metro District's 2007 Data Assessment of Pre-1993 Plumbing Fixtures.

<sup>8</sup> See Skeens, Brian. October 2007. Georgia Water Use and Conservation Profiles TM 3 – Water Conservation. CH2MHill Project No. 336822.WU.WC.

<sup>9</sup> See [www.dekalbwatershed.com](http://www.dekalbwatershed.com) for more information.

<sup>10</sup> In Arizona, Project WET and the Abbott Fund partnered together to offer a water and money saving opportunity through the installation of high efficiency pre-rinse spray valves at Casa Grande commercial kitchens at no cost to the businesses. Businesses can expect to save up to 65 percent on their water bills alone. The Metro District estimated that a restaurant could save 30,492 gallons annually and \$500-\$600 of savings annually due to reduced water and wastewater, gas water heating, and electric water heating costs.

<sup>11</sup> See Skeens, Brian. October 2007. Georgia Water Use and Conservation Profiles TM 3 – Water Conservation. CH2MHill Project No. 336822.WU.WC.

## LANDSCAPING TO MINIMIZE WATER WASTE CAN SAVE FROM 8 TO 13 MGD.

### **Background:**

- On average, 30% of household drinking water is used to water lawns, tree, and shrubs. Of this water, 50% on average is wasted.<sup>12</sup>
- At least 25% savings is possible through proven outdoor water use programs.<sup>13</sup>
- The peaks in demand generated by outdoor water use drive the need to develop new water sources and expand water infrastructure. By reducing the peak, we extend the life of existing water infrastructure and can eliminate the need for new sources.
- Los Angeles plans to meet all new demand for water, equaling 32.6 billion gallons of water, via a combination of water conservation and water recycling. By 2019, half of all new demand will be filled by a six-fold increase in recycled water supplies, and by 2030, the other half will be met through ramped-up conservation efforts. Under the City's existing water conservation ordinance, it is illegal to:
  - Water using sprinklers on any day other than Monday and Thursday.
  - Water landscaping – including lawns - between the hours of 9 a.m. and 4 p.m.
  - Use water on any hard surfaces such as sidewalks, walkways, driveways or parking areas.
  - Allow runoff onto streets and gutters from excessive watering.
  - Allow leaks from any pipe or fixture to go unrepaired.
  - Wash vehicles without using a hose with a shut-off nozzle.
  - Serve water to customers in restaurants unless requested.

### **Recommendations:**

- Institute a permanent, year-round ban on outdoor watering during the daytime (10:00 am – 4:00 pm). This is a common-sense way to manage water use, since most of the water applied to landscapes during these hours is lost to evaporation. Provide incentives that promote decentralized infrastructure such as cisterns and rain barrels to harvest rainfall and ensure outdoor spaces rely primarily on precipitation for irrigation.
- Require rain sensor shut-off devices throughout state (now required solely in the Metro District). Costs for rain sensor shut-off device programs in Georgia per 1,000 gallons saved range from \$0.00 to \$1.70.<sup>14</sup>
- Require that existing inefficient landscape irrigation systems be retrofitted in the Metro District.
- Incentivize drought-tolerant landscaping through regulatory and financial incentives. Texas passed House Bill 643 in 2003, which prohibits the creation or enforcement of certain restrictive covenants that undermine water conservation by promoting water-wasting landscapes. Florida has allowed residents in areas governed by homeowners associations to install drought-tolerant landscaping by statute since 2002. Los Angeles has a residential drought-resistant landscape incentive program which rebates a residential owner \$1.00 per square foot of landscape.
- Establish a rebate program for Evapotranspiration (ET) Irrigation Controller Rebate/Direct Install Programs targeted at large landscapes and high water use customers.
- Incentivize programs that encourage all seven principles of Xeriscape.
  - a. Planning and design for water conservation and beauty from the start
  - b. Create practical turf areas of manageable sizes, shapes and appropriate grasses.
  - c. Select low water requiring plants and group plants of similar water needs together and experiment to determine how much and how often to water the plants.
  - d. Use soil amendments like compost or manure as needed by the site and the type of plants used.
  - e. Use mulches such as woodchips, to reduce evaporation and to keep the soil cool.
  - f. Irrigate efficiently - with properly designed systems (including hose-end equipment) and by applying the right amount of water at the right time.
  - g. Maintain the landscape properly – by mowing, weeding, pruning and fertilizing properly.
  - h. Irrigation schedule design and education.

<sup>12</sup> See American Rivers: Hidden Reservoir: Why Water Efficiency is the Best Solution for the Southeast.

<sup>13</sup> *Ibid.*

<sup>14</sup> See Skeens, Brian. October 2007. Georgia Water Use and Conservation Profiles TM 3 – Water Conservation. CH2MHill Project No. 336822.WU.WC.

**Resources:**

- Vickers, 2001, Handbook of Water Use and Conservation. WaterFlow Press, Amherst, MA.
- Wade, Gary, L., Midcap, T., Coder, K., Landry, G., Tyson, A., Weatherly, N. Jr. May 2007. A guide to developing a water-wise landscape. Cooperative Extension, The University of Georgia's College of Agricultural and Environmental Sciences.  
[www.marex.uga.edu/advisory/Library/CSCPpdfs/Xeriscape.pdf](http://www.marex.uga.edu/advisory/Library/CSCPpdfs/Xeriscape.pdf)

**INCREASE PUBLIC UNDERSTANDING****Background:**

- Consumers who overwater lawns or do not recognize a leaking fixture as water waste usually need outreach and education. When a water use violation is reported, public outreach and education materials should be provided to the consumer. Explaining the importance of water conservation may be all that is necessary to change behavior. However, fines, reductions in service, or cessation of service may be necessary to deter repeat violators. One example of a reduction in service is to install a flow restrictor on the pipeline from the meter to the house or irrigation system.

**Recommendations:**

- Require utilities to provide timely reporting of water consumption that is available to the public on the internet.<sup>15</sup>
- Require utility bills to be issued on a monthly basis, provide water consumption data in gallons, include historical water consumption data (year to year, month to month), and provide comparisons to a benchmark for conserving household consumption. Georgia Power (<http://www.opower.com/>) has developed similar billing for home energy use and is currently working with the Georgia Water Wise Council on a water application.<sup>16</sup>
- Require that all governments pass a model "water waste" ordinance. Enforcement of water waste prohibitions is one of the most direct means a utility can use to change wasteful behavior. The City of Roswell has such an ordinance in place.<sup>17</sup>

**Resources:**

- Gaudin, S. 2006. Effect of price information on residential water demand, Applied Economics, 38, 383-393.

**ENSURE POLICIES ARE IN PLACE TO FACILITATE IMPLEMENTATION OF WATER CONSERVATION PRACTICES.****Background:**

- Although there are many local jurisdictions that are working hard to save water, there are often hurdles to ensuring that the most aggressive water conservation policies can move forward. There must be a comprehensive look at how to ensure that regulatory and financial support is in place so that the significant opportunity for water savings in metro Atlanta can be met.
- One of the primary causes of water loss in an area is the presence of impervious surfaces that prevent water from soaking into the ground and remaining available for maintaining healthy landscapes.

<sup>15</sup> See NC example of weekly reporting: [http://www.ncwater.org/Drought\\_Monitoring/reduction/weeklyreport.php](http://www.ncwater.org/Drought_Monitoring/reduction/weeklyreport.php).

<sup>16</sup> See <http://latimesblogs.latimes.com/greenspace/2009/10/california-embraces-psychology-of-influence-to-reduce-energy-use.html>. Contact Alex Laskey at OPower for more information (859-319-0604).

<sup>17</sup> See [www.roswellgov.com/index.aspx?NID=658](http://www.roswellgov.com/index.aspx?NID=658).

American Rivers found the groundwater annual infiltration “losses” in Atlanta to be 56.9 billion to 132.8 billion gallons due to impervious surfaces added from 1982-1997.

- From 1992-2001, Metro Atlanta lost as much as 54 acres of tree canopy to hard surfaces per day.<sup>18</sup>
- The current state water withdrawal permitting program only authorizes regulation of withdrawals of 100,000 gallons per day or more. This means that a substantial volume of water is unregulated and therefore more difficult to monitor with respect to the effects of conservation and efficiency measures.

#### **Recommendations:**

- Change the water withdrawal permitting threshold to less than 100,000 gallons per day.
- Implement the state’s Water Conservation Implementation Plan with particular focus on the sixth foundational water goal to “integrate water and energy conservation” and the seventh goal to “secure funding to implement water conservation.”
- Allow House Bill 1281 to sunset to restore local governments’ ability to set locally-based water conservation policies if needed.
- Provide tax incentives and funding mechanisms for increasing and enhancing green infrastructure including the protection and restoration of wetlands, riparian buffers, flood plains, green space and the replacement of impervious surfaces with pervious surfaces.
- Provide technical assistance to utilities to identify the most relevant and cost effective water efficiency measures and programs to implement. This could be done through a state initiative by EPD or GEFA who could then license AWE’s Water Conservation Tracking Tool for example.<sup>19</sup>
- Change state plumbing code or pass legislation to require true High Efficiency Toilets (HET-1.28 gpf) for new construction. Currently, the Metro District classifies 1.6 gpf as efficient, which is weaker than the national EPA WaterSense standard.<sup>20</sup> California and Texas both have examples of legislation that require HET phase-in to be completed by 2014.
- Prohibit the use of multiple showerheads and shower tower systems that are wasteful and designed to evade current regulations and efficiency codes. Multiple showerheads and shower towers can waste up to 21 gallons per minute; the national standard for a single showerhead is 2.5 gallons per minute. Instead, provide tax incentives for the installation of efficient (i.e., WaterSense) shower models.<sup>21</sup>
- Require industrial and commercial facilities to use performance-based contracts for the operation of cooling tower and boiler acquisitions within 24 months. Cooling towers and boilers are two of the largest energy and water using-processes.<sup>22</sup>
- Encourage energy efficiency in addition to water efficiency. In Georgia, half of all surface water goes to generate thermoelectric power, and it takes roughly one gallon of water to generate one kilowatt hour, so saving energy saves water.<sup>23</sup>
- Provide financial incentives for commercial and industrial users. For example, Los Angeles provides rebates for the following:
  - Cooling Tower pH/Conductivity Controller for \$3,000.00.
  - Cooling Tower Conductivity Controller for \$625.00.
  - High Efficiency Commercial Clothes Washer (coin and card operated) for \$430.00.
  - Air-Cooled Ice Machine for \$300.00.
  - Steam Sterilizer Retrofit for \$2,300.00 per device.
  - Connectionless Food Steamer for \$600.00 per compartment
  - Dry Vacuum Pump - (max 2.0 HP) for \$125.00.

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<sup>18</sup> See <http://www.ucriverkeeper.org/greenscapes-to-hardscapes.php>.

<sup>19</sup> See Alliance for Water Efficiency. <http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx>.

<sup>20</sup> See [www.epa.gov/WaterSense/specs/het\\_spec.htm](http://www.epa.gov/WaterSense/specs/het_spec.htm).

<sup>21</sup> For more information go to [www.Allianceforwaterefficiency.org](http://www.Allianceforwaterefficiency.org) and [www.epa.gov/WaterSense/pp/showerheads.htm](http://www.epa.gov/WaterSense/pp/showerheads.htm).

<sup>22</sup> See Georgia’s Environmental Protection Division’s (EPD) Water Conservation and Implementation Plan (WCIP). May 2009. <http://www.conservewatergeorgia.net/documents/wcip.html>.

<sup>23</sup> See World Resources Institute. 2009. Southeast Energy Opportunities: Water and Watts, available at [http://pdf.wri.org/southeast\\_water\\_and\\_watts\\_ga.pdf](http://pdf.wri.org/southeast_water_and_watts_ga.pdf).

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