



Georgia's Water Conservation Implementation Plan

March 2010

Synopsis

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Includes: Executive Summary and Summary Chart of Goals, Benchmarks, Best Practices and Implementation Actions

The 2008 Georgia State-wide Water Management Plan calls on the Georgia Department of Natural Resources (DNR) to develop a water conservation implementation plan (WCIP), with assistance from stakeholders from multiple water use sector.

This document contains the WCIP Executive Summary and a summary chart of the critical elements of the WCIP, including goals, benchmarks, best practices, and implementation actions applicable statewide and particular to the following water use sectors:

- Agriculture Irrigation,
- Electric Generation,
- Golf Courses,
- Industrial and Commercial Facilities,
- Landscape Irrigation,
- Domestic and Non-Industrial Public Uses, and
- State Agencies.

The WCIP has been subject to public review and comment. All comments submitted during the public review period, along with DNR's responses are available as a "companion document." Additional comments and/or suggestions regarding the WCIP or supplemental material for DNR to consider in future updates may be addressed to WCIP@dnr.state.ga.us.

A complete copy of the WCIP and all supporting material are available through www.ConserveWaterGeorgia.net

Executive Summary

As Georgia's population and economy grow, there will be increasing demands on our state's water resources. A commitment to more efficient and sustainable water use will help us meet the challenges this growth will bring. Water conservation, defined as the beneficial reduction of water use, water waste and water loss, can help ensure that we are able to continue to meet growing water demands. The ultimate goal of water conservation is not to discourage water use, but to maximize the benefit from each gallon used. Georgia's Water Conservation Implementation Plan (WCIP) is designed to create a culture of conservation and guide Georgians toward more efficient use of our state's finite water resources.

In 2005, Georgians withdrew approximately 5.5 billion gallons of water a day from surface and ground water sources - enough to fill about 15 Georgia Domes with fresh water daily. These withdrawals supported 9.5 million citizens and a \$397 billion gross domestic product. Water is critical to sustaining a healthy economy and maintaining a high quality of life for Georgia citizens.

Georgia's water resources face many challenges. Our state's population is projected to substantially increase over the next 20 years. With such growth, we can expect greater demands and withdrawals from our water resources. While abundant, Georgia's water resources are finite. Improperly managed withdrawals and excessive consumptive use can negatively impact Georgia's water bodies, our water uses and the environmental services our waters provide. By prioritizing efforts to conserve water and maximize water efficiency, we can protect our finite resources without causing harm to the economy or the quality of life that current and future Georgians enjoy.

Georgia's State-wide Water Management Plan (SWP) enacted on February 6, 2008, www.GeorgiaWaterPlanning.org, recognizes water conservation as a priority water quantity management practice that can help manage the consumptive use of our state's rivers, streams and aquifers. Compared to other types of tools for managing water resources (such as those that increase water supplies or return water to the source), conservation is one of the most cost-effective. Water conservation can extend the life of existing water supplies and preserve water for recreation and environmental needs. The SWP calls on the Georgia Department of Natural Resources to create the WCIP to guide Georgia's diverse water use sectors toward greater water use efficiency.

The WCIP provides specific goals and benchmarks for Georgia's seven major water use sectors. The major water use sectors include: agricultural irrigation (Chapter 2); electric generation (Chapter 3); golf courses (Chapter 4); industrial and commercial (Chapter 5); landscapes (Chapter 6); domestic and non-industrial public uses (Chapter 7); and state agencies (Chapter 8).

Each sector-specific chapter details water conservation goals, benchmarks, best practices and implementation actions designed to reduce water waste, water loss, and, where necessary, water use. The goals are sector-specific aspirations for

water use and efficiency, designed to be flexible, so that they are applicable for users with differing circumstances and recognize prior investments in conservation. The benchmarks present quantifiable metrics of efficiency or time-oriented activities that can be used to determine progress toward a particular water conservation goal. Each chapter also contains a menu of water conservation practices specific to the water use sector. The practices are generally cost-effective and applicable in Georgia and should be evaluated by water users determine those that are appropriate and beneficial to them. Finally, the chapters outline implementation actions that, when resources are available, can be undertaken by a host of state-wide organizations and state agencies to provide technical, financial, and administrative assistance to help achieve common water management goals.

The WCIP can be used to guide decisions related to water use and water management by:

- Educating water users about water conservation practices and the goals they can accomplish,
- Informing regional water plan preparation that will be overseen by regional water planning councils,
- Helping water use sectors collectively improve water use efficiency, and
- Informing DNR rule-making regarding water conservation requirements in permitting.

The WCIP will be reviewed and revisited to incorporate breakthroughs in knowledge and technology. EPD will publish an annual report indicating the status of progress on implementing the elements of the WCIP, and the WCIP will be reviewed and revised every five years as part of the cycle to update the SWP.

The WCIP describes seven foundational water conservation goals: educating and empowering Georgia's water users; creating incentives to encourage efficiency; enhancing data collection, monitoring, research and evaluation; measuring water use and water efficiency; planning for the future; funding water conservation efforts, and integrating water and energy conservation efforts.

The WCIP draws on two principle sources of data: the USGS and the Georgia EPD Watershed Protection Branch. For some sectors, data on consumptive use is incomplete. Future versions of the WCIP will likely include additional data gathered as part of the regional water planning process.

Although each individual, business-owner, farmer, and government official faces unique situations and challenges, the WCIP presents a variety of ways that each can contribute to the conservation of our state's finite water resources. This plan can guide Georgians toward more efficient and sustainable water use to help ensure that our water resources continue to support growth and prosperity while maintaining healthy natural systems.

Georgia Water Conservation Implementation Plan
Summary Chart of Goals, Benchmarks, Best Practices and Implementation Actions

Foundational Water Conservation Goals	
	1. Educate and empower Georgia's water users
	2. Create incentives to encourage water use efficiency.
	3. Enhance data collection, monitoring, research, and evaluation.
	4. Measure water use efficiency
	5. Plan for the Future
	6. Integrate water conservation and energy conservation
	7. Secure funding to implement water conservation

Conserving Water Used for Agricultural Irrigation		
Goal #1 : Research institutions and state agencies, in cooperation with farmers, should enhance their understanding of water use and levels of efficiency of existing agricultural irrigation.		
<p><u>Benchmark 1A</u> By June 2010, state agencies and research institutions should determine the extent of water conservation implementation currently in place on Georgia farms.</p>	Best Practices	Impl. Actions
	BP 3 – Data collection on cropping and water conservation practices	2.3, 2.4, 2.5, 2.6
<p><u>Benchmark 1B</u> By December 2010, GSWCC, EPD and other agencies should establish a state-wide baseline for agricultural water use, incorporating water use information collected from meters on agricultural irrigation systems.</p>	BP 1 – Irrigation water metering	2.1, 2.2
	BP 2 – Real-time metering	
<p><u>Benchmark 1C</u> By January 2011, research institutions should initiate studies to determine variability in water needs by crop variety.</p>	BP 4 – Determination of variability in water needs by crop variety	2.7
<p><u>Benchmark 1D</u> By January 2020, GSWCC and UGAExt should establish water and energy auditing teams to conduct voluntary irrigation audits every 10 years for all Georgia farmers with agricultural water use permits.</p>	BP 5 – Irrigation audits	2.8, 2.9, 2.10, 2.11, 2.12
GOAL #2 : Farmers should improve the efficiency of their irrigation systems.		
<p><u>Benchmark 2A</u> By July 2010, UGAExt, GSWCC, local Soil and Water Conservation Districts, and other agricultural research entities should provide irrigation education to farmers with agricultural water use permits.</p>	Best Practices	Impl. Actions
	BP 1 – Irrigation water metering	2.1, 2.2
	BP 2 – Real-time metering	
	BP 4 – Determination of variability in water needs by crop variety	2.7
	BP 5 – Irrigation audits	2.8, 2.9, 2.10, 2.11, 2.12

		BP 6 – Irrigation workshops	2.13, 2.14
<p>Benchmark 2B</p> <p>By January 2012, all new, and by January 2020, all existing agricultural irrigation systems should have application efficiencies of 80% or greater.</p>		BP 7 – Inspecting pipes and plumbing	
		BP 8 – End-gun shutoffs with pivots	
		BP 9 – Subsurface drip irrigation on micro-sprinkler systems	
		BP10 – Variable Rate Irrigation (VRI) controls on center pivots	
		BP 11 – Enhanced center pivot control panels	
		BP 12 – Efficient field arrangement	
		BP 13 – Low pressure irrigation systems	
		BP 14 – Minimize or eliminate the use of high-pressure spray guns on fixed and traveler systems	
		BP 15 – Night-time irrigation	
		BP 16 – Eliminating timer-only irrigation controls	
		BP 17 – Rainfall shut-off devices	
		BP 18 – Soil moisture sensor, evapotranspiration (ET) sensor or crop water use model to timer cycles	2.15, 2.16
		BP 19 – Real-time weather and soil data and models to aid scheduling decisions	
<p>Benchmark 2C</p> <p>By January 2015, 25% of farmers using irrigation on their fields should adopt irrigation scheduling based on crop needs and available water supplies. By January 2020, 50% of farmers using irrigation on their fields should adopt irrigation scheduling based on crop needs and available water supplies.</p>		BP 15 – Night-time irrigation	
		BP 16 – Eliminating timer-only irrigation controls	
		BP 17 – Rainfall shut-off devices	
		BP 18 – Soil moisture sensor, evapotranspiration (ET) sensor or crop water use model to timer cycles	2.15, 2.16
		BP 19 – Real-time weather and soil data and models to aid scheduling decisions	

GOAL #3 : Farmers should consider crop varieties, cropping systems and irrigation systems to maximize the efficient use of water on farms.		
	Best Practices	Impl. Actions
<p><u>Benchmark 3A</u> By December 2012, farmers should use information developed pursuant to Goal #1 and incorporate water conservation into cropping and management choices.</p>	BP 3 – Data collection on cropping and water conservation practices	2.3, 2.4, 2.5, 2.6
	BP 4 – Determination of variability in water needs by crop variety	2.7
	BP 5 – Irrigation audits	2.8, 2.9, 2.10, 2.11, 2.12
	BP 20 – Water demands to inform cropping and management practices	2.17
	BP 21 – Conservation tillage	2.18, 2.19
<p><u>Benchmark 3B</u> By January 2020, the farming community should increase the number acres managed under conservation tillage systems to 50% of all row-crop land, where such management practices are suitable.</p>		
GOAL #4 : Farmers should minimize water loss from farm ponds, reservoirs and other rainfall collection systems.		
	Best Practices	Impl. Actions
<p><u>Benchmark 4A</u> By December 2010, UGAExt, GSWCC, the UGA Agricultural Experiment Stations and other agricultural research entities should develop a best management practice (BMP) guide that lists a variety of practices for reducing water loss from ponds.</p>	BP 22 – Water loss control	2.20
<p><u>Benchmark 4B</u> By January 2015, farmers should implement one or more practices to reduce water loss from 50% of all farm ponds used for agricultural irrigation.</p>		

Conserving Water Used for Electric Generation and Use

Goal #1 : Electric utilities should assess the feasibility and benefit of integrating water conservation efforts into utilities' long-term plans for meeting energy demands.

	<u>Benchmark 1A</u>	Best Practices	Impl. Actions
	By June 2010, state agencies, with assistance from research institutions, electric utilities, water providers and others, should identify areas of critical information gaps regarding the relationship between water conservation and energy conservation.	BP 1 - Tools that estimate the impact of water conservation on energy demands.	3.1, 3.2
	<u>Benchmark 1B</u> By August 2010, state agencies, research institutions, electric utilities and water providers and others should begin implementing a process for bridging the information gaps identified in Benchmark 1A and, where appropriate, testing them at the local level and incorporating them into long-term plans for meeting energy demands.	BP 2 - Integrate water supply and water conservation impacts into long-term energy plans	

GOAL #2 : Electric utilities should work with their customers to better understand the impact water conservation activities may have on their energy demands and, where practicable, the water savings from energy conservation.

	<u>Benchmark 2A</u>	Best Practices	Impl. Actions
	By December 2010, electric utilities should partner with their large customers, like water utilities, industrial facilities and commercial customers, in determining the energy savings resulting from water conservation measures that the customers are implementing at their facility.	BP 3 – Technical assistance to customers	3.3
		BP 4 – Integrate water conservation into educational programs	3.4, 3.5, 3.6, 3.7
		BP 5 – Incentives for water conservation	

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	<p>Benchmark 2B</p> <p>By July 2011, electric utilities, in coordination with water providers, should use the results from their efforts in Benchmark 2A to develop a model outreach program and case studies to educate all customers about the energy savings accrued from various water conservation practices.</p>	BP 3 – Technical assistance to customers	3.3
		BP 4 – Integrate water conservation into educational programs	3.4, 3.5, 3.6, 3.7
		BP 5 – Incentives for water conservation	
<p>GOAL #3 : Electric utilities should implement practices to improve water efficiency at existing facilities and identify, to the extent practicable, ways to minimize the amount of water necessary to generate electricity.</p>			
	<p>Benchmark 3A</p> <p>By 2012, electric utilities and research institutions should evaluate existing technologies and practices for reducing water loss due to evaporation from cooling, and the amount of water needed for flue gas scrubbing.</p>	Best Practices	
		BP 8 – Alternative water sources	
		BP 9 – Pilot projects for new technologies and practices	3.8, 3.9
	<p>Benchmark 3B</p> <p>In a cooperative and ongoing effort, electric utilities and state agencies should work with research institutions, such as EPRI, to develop and test new technologies for reducing water loss and water use for generating electricity.</p>	BP 6 – Maximize efficiency of flue gas scrubbing	
		BP 7 – Minimize evaporative losses	
	<p>Benchmark 3C</p> <p>By 2015, all new electric generation facilities should be designed and built so as to minimize, to the extent practicable, the amount of water used for electricity generation in Georgia.</p>	BP 6 – Maximize efficiency of flue gas scrubbing	
		BP 7 – Minimize evaporative losses	
		BP 8 – Alternative water sources	
		BP 9 – Pilot projects for new technologies and practices	3.8, 3.9

Conserving Water Used for Golf Courses

Goal #1: Golf course superintendents or managers should develop and implement a site-specific Best Management Practices (BMPs) plan for turfgrass water conservation.

	Best Practices	Impl. Actions
<p><u>Benchmark 1A</u> By December 2010, GCSs should be participating in educational activities regarding BMPs, planning and agronomic practices that affect water use.</p>	BP1 – Education for GCSs	4.1
	BP 5 - Best Management Practices (BMPs) Plan	4.6, 4.7, 4.8, 4.9
<p><u>Benchmark 1B</u> By December 2010, GCSs should implement conservation practices that are cost-effective and develop an information base that can inform BMPs planning and decisions related to water management.</p>	BP 7 – Water conservation logs	4.11
	BP 8 – Leak detection and repair	
	BP 9 – Preconditioning turfgrass	
	BP 10 – Routine site surveys	
	BP 11 – Irrigation system audits	4.12
<p><u>Benchmark 1C</u> By December 2010, 97.5% of GGCSA members should have developed site-specific BMPs plans.</p>	BP1 – Education for GCSs	4.1
	BP 5 - Best Management Practices (BMPs) Plan	4.6, 4.7, 4.8, 4.9
<p><u>Benchmark 1D</u> By December 2012, 75% of GCSs and golf courses that are not members of GGCSA or other professional trade association should be developing site-specific BMPs plans.</p>	BP1 – Education for GCSs	4.1
	BP 5 - Best Management Practices (BMPs) Plan	4.6, 4.7, 4.8, 4.9
<p><u>Benchmark 1E</u> By December 2012, GCS, managers and owners should consider BMPs during the construction of new or the renovation of existing golf courses.</p>	BP 5 - Best Management Practices (BMPs) Plan	4.6, 4.7, 4.8, 4.9
	BP 12 – Alternative water sources	4.13

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	<u>Benchmark 1F</u> By the end of December 2012, GCSs should review and revise BMPs at least every five years, and resubmit these plans to the GGCSA.	BP 5 - Best Management Practices (BMPs) Plan	4.6, 4.7, 4.8, 4.9
		BP 7 – Water conservation logs	4.11
GOAL #2 : Through a cooperative effort, research institutions and golf-related associations should determine a typical water use range for golf courses in Georgia that accounts for variations in rainfall and other climatic conditions.			
	<u>Benchmark 2A</u> By July 2010, practitioners, research institutions, EPD, GGCSA, and other golf-related groups should standardize techniques and reporting information for monitoring golf course water usage and begin building a database which can be used to record reliable water use data specific to turfgrass maintenance practices for golf courses in Georgia.	Best Practices	Impl. Actions
		BP 6 – Water use database	4.10
	<u>Benchmark 2B</u> By December 2013, and continuing through 2020, 90% of GCSs who are members of GGCSA should report water use information for their golf course facility to the database.	BP 6 – Water use database	4.10
	<u>Benchmark 2C</u> By 2015, an independent research collaborator should perform a cursory evaluation of collected data.	BP 6 – Water use database	4.10
	<u>Benchmark 2D</u> By December 2018, GGCSA and other golf industry groups should establish a typical water use range for golf courses in Georgia that accounts for variations in rainfall and other climatic conditions.	BP 6 – Water use database	4.10
	<u>Benchmark 2E</u> Beyond 2020, GGCSA and other golf industry groups should demonstrate and document progress toward improved water use efficiency.	BP 6 – Water use database	4.10
		BP 7 – Water conservation logs	4.11

GOAL #3 : GCSs, GGCSA, and other golf industry groups should help foster a culture of water conservation inside and outside of Georgia's golf industry.			
	<u>Benchmark 3A</u>	Best Practices	Impl. Actions
	By May 2010, GGCSA and other golf industry groups should encourage golf course staff and members to improve water use efficiency inside golf course facilities and at their own homes.	BP 2 - Education for staff, members, and the community about conservation	4.2
		BP 13 - Improve efficiency inside golf course facilities	4.14, 4.15
	<u>Benchmark 3B</u> By July 2010, GGCSA and other golf industry groups should assist with development of site-specific water conservation BMPs for other water users with similar water use patterns, such as sports and athletic field maintenance and professional lawn care.	BP 3 – Develop BMPs for others	4.3
	<u>Benchmark 3C</u> By 2012, GGCSA and GCSs should participate in educational programs, such as those developed by water providers and landscape and irrigation professionals pursuant to Goal #1 in Chapter 6, that aim to educate homeowners about the importance of water conservation in landscape irrigation.	BP 2 - Education for staff, members, and the community about conservation	4.2
	<u>Benchmark 3D</u> By 2020, GGCSA, GCSs and other golf industry groups should educate the non-golfing public regarding water use on golf courses across Georgia.	BP 4 - Educate the public about golf course water use and conservation efforts	4.4, 4.5

Conserving Water Used in Industrial and Commercial Facilities

GOAL #1 : Industrial and commercial facilities should determine baseline water use, in terms of water use intensity or another efficiency metric.

	Benchmark 1A	Best Practices	Impl. Actions
	<p>IC facilities should collect data regarding water use and current water-using practices and technologies. Initial data gathering efforts should be completed within 9 months of inception. (This preliminary data collection effort should use existing data and best estimates. More detailed data should be collected once major use areas within the facility are identified as described in Goal #2.)</p>	BP 1 – Water audits	5.1, 5.2
		BP 2 - Measuring water use	5.3, 5.4
		BP 3 – Water use efficiency metrics	5.5, 5.6
	<p>Benchmark 1B</p> <p>IC facilities should adopt appropriate water use intensity metric(s) for their facility and begin to use them. This effort should be completed within 12 months of inception.</p>	BP 3 – Water use efficiency metrics	5.5, 5.6

GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.

	Benchmark 2A	Best Practices	Impl. Actions
	<p>IC facilities should conduct cost-benefit analyses to identify which water conservation practices are effective and could reduce the water use intensity of their facility. This effort should be completed within 18 months of inception.</p>	BP 1 – Water audits	5.1, 5.2
		BP 2 - Measuring water use	5.3, 5.4
		BP 3 – Water use efficiency metrics	5.5, 5.6
		BP 4 - Cost-benefit analysis of water conservation practices	5.7
	<p>Benchmark 2B</p> <p>IC facilities should identify the water reuse and water recycling practices that can help achieve reduction targets. This effort should be completed within 18 months of inception.</p>	BP 5 – Recycle and reuse water	5.8, 5.9, 5.10, 5.11

<p><u>Benchmark 2C</u></p> <p>IC facilities should implement the practices, identified pursuant to Benchmarks 2A and 2B, that can help achieve reduction targets. This effort should be completed within 18 months of inception.</p>	BP 5 – Recycle and reuse water	5.8, 5.9, 5.10, 5.11
	BP 6 – Piloting innovative technologies	5.12, 5.13, 5.14
	BP 7 – Dry methods for cleaning and dust control	
	BP 8 – Leak detection and repair	
	BP 9 – Discontinuing discretionary use of water	
<p><u>Benchmark 2D</u></p> <p>IC facilities should develop or update water management plan(s) that incorporate reduction targets and the water conservation practices appropriate for each facility. This effort should be completed within 5 years of inception.</p>	BP 11 – Water management plans	5.17
<p>GOAL #3 : Industrial and commercial facilities should develop a program to educate employees and those contracted by the facility about water use and water conservation efforts.</p>		
	Best Practices	Impl. Actions
	BP 12 – Educational programs	5.18, 5.19
<p>GOAL #4 : Industrial and commercial facilities should integrate water and energy conservation practices, where practicable.</p>		
<p><u>Benchmark 4A</u></p> <p>IC facilities should consider piloting new state-of-the art technologies that are considered to be feasible and have the potential to offer significant water and/or energy savings.</p>	BP 6 – Piloting innovative technologies	5.12, 5.13, 5.14
<p><u>Benchmark 4B</u></p> <p>IC facilities should update energy management plans, if applicable, to incorporate appropriate water conservation practices. This effort should be completed within 60 months of inception.</p>	BP 10 - Increasing the efficiency of cooling towers and boilers using performance-based contracting.	5.15, 5.16
	BP 13 – Energy management plans	5.20

Conserving Water used for Landscape Irrigation		
GOAL #1 : Landscape and irrigation professionals and water providers should educate their customers on proper and efficient landscape water use practices.		
	Best Practices	Impl. Actions
<p><u>Benchmark 1A</u> By July 2010, landscape and irrigation professionals and water providers should implement a comprehensive educational program to inform their customers of the importance of proper and efficient water use practices.</p>	BP 1 – Adapt existing educational programs	6.1, 6.2 , 6.3
	BP 2 – Conservation educators	
	BP 3 – Distribute information to high-use customers	6.4
	BP 4 – Checklists and certification for sustainable landscapes	6.5, 6.6, 6.7, 6.8, 6.9
	BP 5 – Assess outdoor water use	6.10
	BP 3 – Distribute information to high-use customers	6.4
<p><u>Benchmark 1B</u> By June 2011, water providers should target education programs and distribute materials to high water use customers. <i>This benchmark is related to Benchmark 4A and Appendix G, which details the calculation of indoor water use.</i></p>	BP 5 – Assess outdoor water use	6.10
<p><u>Benchmark 1C</u> By 2011, landscape and irrigation professionals should promote a sustainable approach to landscaping by offering citizens a checklist of practices, instruction on how to implement the practices and a process for certifying a water efficient landscape.</p>	BP 4 – Checklists and certification for sustainable landscapes	6.5, 6.6, 6.7, 6.8, 6.9

GOAL #2 : Landscape and irrigation professionals and professional associations should establish state-wide standards for design, installation and maintenance of Georgia landscapes, landscape irrigation systems, and other systems dealing with landscape water conservation, such as rainwater catchments systems.			
	Benchmark 2A	Best Practices	Impl. Actions
	By July 2010, landscape and irrigation professionals, water providers, researchers and others should convene as a state-wide advisory committee to develop state-wide and/or regional standards for design, installation and maintenance of landscapes and landscape irrigation systems in Georgia.	BP 7 – State-wide standards for landscape and irrigation systems	6.13, 6.14, 6.15, 5.16, 6.17, 6.18
	Benchmark 2B By July 2011, the state-wide advisory committee should develop state-wide and/or regional standards for design, installation and maintenance of landscapes and irrigation systems in Georgia, as well as professional certification standards for the industry.	BP 7 – State-wide standards for landscape and irrigation systems	6.13, 6.14, 6.15, 5.16, 6.17, 6.18
		BP 8 – Certification of landscape and irrigation professionals	6.19, 6.20, 6.21, 6.22
	Benchmark 2C By 2012, the state-wide advisory committee and the Georgia EPD should recommend that the state-wide standards for design, installation and maintenance of landscapes and irrigation systems in Georgia and professional certification be incorporated into rules and regulations.		
	Benchmark 2D By 2020, all landscape and irrigation businesses operating in Georgia should employ appropriately certified professionals who can ensure compliance with state-wide or regional standards.	BP 7 – State-wide standards for landscape and irrigation systems	6.13, 6.14, 6.15, 5.16, 6.17, 6.18
		BP 8 – Certification of landscape and irrigation professionals	6.19, 6.20, 6.21, 6.22
		BP 9 – Irrigation system certified auditors	6.23
		BP 10 – Continuing education for landscape and irrigation professionals	6.24

GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.			
	<p><u>Benchmark 3A</u> By 2011, water providers should improve their understanding of outdoor water use for landscape irrigation by calculating their baseline peak use and peaking factor and, where appropriate, establish a peak reduction target.</p>	BP 5 – Assess outdoor water use	6.10
		BP 6 – Calculate peaking factor	6.11, 6.12
	<p><u>Benchmark 3B</u> By 2012, water providers with high peaking factor and peak reduction targets (as identified in benchmark 3A) should, with assistance from local governments, offer incentives to customers implementing practices to reduce system’s peaking factor.</p>	BP 11 – Innovative technologies	6.25
		BP 12 – Monitoring and offering technical assistance to high water users	
		BP 13 – Guidelines for pre-construction practices	
		BP 14 - Water budget-based rates	6.26
		BP 15 – Conservation-oriented rates	
	<p><u>Benchmark 3C</u> By 2015, and every five years thereafter, water providers should evaluate the success of their outdoor water conservation efforts and revise incentives and programs, as needed. <i>This benchmark should be coordinated with Benchmark 1C in Chapter 7 – Domestic and Non-Industrial Uses, which calls for an assessment of the overall water conservation program.</i></p>	BP 6 – Calculate peaking factor	6.11, 6.12

Conserving Water for Domestic and Non-Industrial Public Uses

GOAL #1 : Water providers and local governments should implement a comprehensive water conservation education and outreach program.

	Benchmark 1A	Best Practices	Impl. Actions
	<p>By July 2010, water providers and local governments should assess their water customers' demands to help develop an education and outreach program. <i>This benchmark should be coordinated with Benchmark 1B in Chapter 6 – the Landscape Irrigation chapter, which calls for an outdoor water conservation education program for customers.</i></p>	BP 1 – Analyzing water use data	
		BP 2 – Listening to customers	
	<p>By December 2010, water providers and local governments should initiate a water conservation education and outreach program that reflects local values and characteristics and communicates the long-term benefits of conservation.</p>	BP 9 – Targeted education and outreach programs	7,12, 7.13, 7.14
		BP 10 – Integrating water conservation into existing education curriculum	
		BP 11 – Water conservation coordinators or educators	
		BP 12 – Informative water bills	7.15
	<p>By 2015, and every five years thereafter, water providers and local governments should assess and adjust their program(s) as needed. <i>This benchmark should be coordinated with Benchmark 3C in Chapter 6 – the Landscape Irrigation chapter, which calls for an evaluation of the outdoor water conservation efforts.</i></p>	BP 13 – Distributing information about efficient outdoor water use	
		BP 1 – Analyzing water use data	
		BP 2 – Listening to customers	
		BP 9 – Targeted education and outreach programs	7,12, 7.13, 7.14
		BP 10 – Integrating water conservation into existing education curriculum	
		BP 11 – Water conservation coordinators or educators	
	BP 12 – Informative water bills	7.15	
		BP 13 – Distributing information about efficient outdoor water use	

GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.		
	Best Practices	Impl. Actions
<p><u>Benchmark 2A</u> By December 2010, water providers should adopt the IWA/AWWA water audit method and conduct the audit annually thereafter. Water providers should try and gather the most accurate data possible for these audits.</p>	BP 3 – IWA/AWWA water audit method	7.1, 7.2, 7.3
	BP 4 – Improving customer metering	7.4, 7.5
	BP 5 – Accurately measuring source withdrawals	
<p><u>Benchmark 2B</u> By 2012, water providers should set system-specific reduction targets for non-revenue water. Reduction targets should focus on minimizing both real and apparent losses within the water system.</p>	BP 3 – IWA/AWWA water audit method	7.1, 7.2, 7.3
	BP 4 – Improving customer metering	7.4, 7.5
	BP 5 – Accurately measuring source withdrawals	
<p><u>Benchmark 2C</u> By 2013, water providers should implement practices to meet their non-revenue water reduction targets and verify their reductions.</p>	BP 14 – Leak detection repair and prevention	7.16
	BP 15 – Reducing water waste within the water system	7.17
	BP 16 – Installing efficient fixtures	
	BP 17 – Considering new practices from AWWA	
GOAL #3 : Water providers and local governments should implement conservation-oriented rates to encourage citizens to conserve, and to help maintain the water system’s financial stability.		
	Best Practices	Impl. Actions
<p><u>Benchmark 3A</u> By July 2010, water providers should categorize customers by class. At a minimum, residential and non-residential customer classes should be defined.</p>	BP 6 – Categorizing customers by class	
<p><u>Benchmark 3B</u> By 2012 water providers should eliminate decreasing block rate structures.</p>		
<p><u>Benchmark 3C</u> By 2015, water providers should evaluate different conservation-oriented rate structures and adopt the most appropriate one for their customers.</p>	BP 18 – Conservation-oriented rates	7.18, 7.19, 7.20, 7.21

GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.			
	Benchmark 4A	Best Practices	Impl. Actions
	By July 2010, water providers should calculate or estimate average per capita residential indoor water use within the community.	BP 6 – Categorizing customers by class	
		BP 7 – Calculating average utility-specific per capita residential indoor water use	7.6, 7.7, 7.8
	Benchmark 4B By 2011, water providers and local governments should compare their average per capita residential indoor water use to an achievable level of efficiency and, where necessary, set water use reduction targets.	BP 7 – Calculating average utility-specific per capita residential indoor water use	7.6, 7.7, 7.8
		BP 25 – Incorporating water conservation into plans	7.27, 7.28
	Benchmark 4C By 2015, water providers and local governments should evaluate potential water-saving practices and incentives with a cost-effectiveness analysis, then implement those practices and offer incentives that help customers maximize indoor water use efficiency.	BP 8 – Cost-effectiveness analysis	7.9, 7.10, 7.11,
		BP 12 – Informative water bills	7.15
		BP 18 – Conservation-oriented rates	7.18, 7.19, 7.20, 7.21
		BP 19 – Retrofit and rebate programs	
		BP 20 – Incentive programs	
		BP 21 – Sub-metering	
		BP 22 - Building codes and local ordinances	7.22, 7.23
GOAL #5 : Water providers and local governments should help customers and citizens maximize efficiency of outdoor water uses, such as pools, spas, pressure washing, and non-commercial car washing.			
	Benchmark 5A	Best Practices	Impl. Actions
	By July 2010, water providers, local governments and the appropriate trade/professional associations should develop educational materials related to efficient water use for pools, spas, pressure washing and non-commercial car washing.	BP 23 – Guidance documents for outdoor water uses	7.24, 7.25
		BP 24 – Water waste ordinances	7.26
	Benchmark 5B By December 2010, local governments and water providers should distribute information to homeowners and professionals through service providers and local business bureaus.	BP 13 – Distributing information about efficient outdoor water use	

Conserving Water used by State Agencies		
GOAL #1 : State agencies will reduce water use intensity, relative to a 2007 baseline, by five percent by July 2011, and two percent annually through the year 2020.		
	Best Practices	Impl. Actions
<p><u>Benchmark 1A</u> By October 2009, state agencies should develop an inventory of facilities.</p>	BP 1 – Facility inventory	8.1, 8.2
<p><u>Benchmark 1B</u> By July 2010, state agencies will develop 2007 water use baselines for their facilities.</p>	BP 2 – EnergyCAP	8.3, 8.4,
	BP 3 – Water audits	8.5
	BP 4 – Metering and measurement	8.6, 8.7
<p><u>Benchmark 1C</u> By December 2011, state agencies accounting for the top 80% of water use in state government should conduct water audits of their own facilities to identify the areas of highest water use.</p>	BP 3 – Water audits	8.5
<p><u>Benchmark 1D</u> By July 2010, and in accordance with the Executive Orders issued in 2007 and 2008, state agencies will develop long-term water conservation plans.</p>	BP 5 – Practice analysis	
	BP 6 – Long-term water conservation plans	8.8, 8.9
	BP 7 – Training	8.10
	BP 8 – Efficiency standards	
<p><u>Benchmark 1E</u> After baselines are established and audits conducted, state agencies should annually verify water use reductions where appropriate.</p>	BP 9 – Leak detection and repair	8.11
	BP 4 – Metering and measurement	8.6, 8.7

GOAL #2 : State agencies should ensure that new or renovated major facility projects are water efficient.		
Benchmark 2A	Best Practice	Impl. Actions
By July 2010, state agencies should ensure that major facility projects are 15% more water efficient than required in the Energy Policy Act of 1992.	BP 8 – Efficiency standards	
GOAL #3 : State agencies should reduce water loss as much as practical.		
Benchmark 3A	Best Practice	Impl. Actions
By December 2011, state agencies will adopt leak detection and repair programs as outlined in the long-term water conservation plans.	BP 9 – Leak detection and repair	8.11

A complete copy of the WCIP and all supporting material are available through www.ConserveWaterGeorgia.net

