

<b>Water Conservation Goals</b>	Goals initially identified in the WCIP
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Foundational Water Conservation Goals	WCIP pgs 26 & 155
Educate and empower Georgia's water users	WCIP pg 26
Create incentives to encourage water use efficiency	WCIP pg 26
Enhance data collection, monitoring, research, and evaluation	WCIP pg 27
Measure water use efficiency	WCIP pg 27
Plan for the future	WCIP pg 28
Integrate water conservation and energy conservation	WCIP pg 28
Secure funding to implement water conservation	WCIP pg 29

Agricultural Irrigation	WCIP pg 37
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.	WCIP pg 41
GOAL #2 : Farmers should improve the efficiency of their irrigation systems.	WCIP pg 42
GOAL #3 : Farmers should consider crop varieties, cropping systems and irrigation systems to maximize the efficient use of water on farms.	WCIP pg 44
GOAL #4 : Farmers should minimize water loss from farm ponds, reservoirs and other rainfall collection systems.	WCIP pg 45

Electric Generation and Use	WCIP pg 55
Goal #1 : Electric utilities should assess the feasibility and benefit of integrating water conservation efforts into utilities' long-term plans for meeting energy demands.	WCIP pg 59
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.	WCIP pg 60

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<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>WCIP pg 61</p>
<p>Golf Courses</p>	
<p>Goal #1: Golf course superintendents or managers should develop and implement a site-specific Best Management Practices (BMPs) plan for turfgrass water conservation.</p>	<p>WCIP pg 69</p>
<p>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.</p>	<p>WCIP pg 70</p>
<p>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.</p>	<p>WCIP pg 71</p>

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Industrial and Commercial Facilities	WCIP pg 79
GOAL #1 : Industrial and commercial facilities should determine baseline water use, in terms of water use intensity or another efficiency metric.	WCIP pg 83
GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	WCIP pg 84
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.	WCIP pg 86
GOAL #4 : Industrial and commercial facilities should integrate water and energy conservation practices, where practicable.	WCIP pg 86

Landscape Irrigation	WCIP pg 97
GOAL #1 : Landscape and irrigation professionals and water providers should educate their customers on proper and efficient landscape water use practices.	WCIP pg 100
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.	WCIP pg 101
GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.	WCIP pg 103

Domestic and Non-Industrial Public Uses	WCIP pg 115
GOAL #1 : Water providers and local governments should implement a comprehensive water conservation education and outreach program.	WCIP pg 119
GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.	WCIP pg 120
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.	WCIP pg 122
GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.	WCIP pg 123

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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.	WCIP pg 125
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<b>State Agencies</b>		WCIP pg 143
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.	WCIP pg 146	
GOAL #2 : State agencies should ensure that new or renovated major facility projects are water efficient.	WCIP pg 148	
GOAL #3 : State agencies should reduce water loss as much as practical.	WCIP pg 149	

<b>Tier ONE (T1) Water Conservation Practices</b>	Addressed in statute and current or upcoming amended rules for non-farm water withdrawal permittees and drinking water providers
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T1 Practice	Associated WCIP Goals	Status	Reference	Adjust demand	Reference for more information
<p><u>Applicants for non-farm water withdrawal permits or permit modifications</u> must demonstrate progress toward water conservation goals or water efficiency standards</p>	Domestic GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.	Upcoming amended rule	SWP, Imp Action 2	No	SWP, Sec. 8 Policy 1; WCIP pg 82 & 118
	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.				
	Electric 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><u>Water withdrawal permittees and drinking water providers</u> must submit annual reports on non-farm water use that shall include data and information regarding implementation of water conservation plans and progress toward water conservation goals.</p>	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	Upcoming amended rule	SWP, Imp Action 3	No	SWP, Sec. 8 Policy 1; WCIP pg. 89
	Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.				

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<p><u>Drinking water providers</u> must meet minimum standards and best practices for monitoring and improving the efficiency of public water systems, using a method developed by the International Water Association and implement in a phased approach a water loss detection program. Providers serving over 10,000 individuals shall conduct water loss audits by March 2012, and those serving greater than 3,300 individuals by March 2013.</p>	<p>Domestic GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.</p>	<p>Current statute and upcoming amended rule</p>	<p>WSA, Section 3</p>	<p>Yes, consider current water loss levels and efficiency goals.</p>	<p>WCIP - pg 118 &amp; 121</p>
<p>All multi-tenant buildings (residential, commercial and industrial) constructed after July 1, 2012, to enable sub-metering by each tenant. This new requirement does not apply to renovations or rebuilding. The owners of the buildings shall charge for water and waste-water use by tenants and may charge for common area water and waste-water use</p>	<p>Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.</p>	<p>Current statute and upcoming amended building code or rule</p>	<p>WSA, Section 7</p>	<p>Yes</p>	<p>WCIP - pg 139 &amp; 182</p>
<p>All new construction permitted on or after July 1, 2012, must meet the minimum water flow and performance standards including:</p>	<p>Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.</p>	<p>Current statute and upcoming amended building code or rule</p>	<p>WSA, Section 8; WCIP</p>	<p>Yes</p>	<p>WCIP - pg 140</p>
<p>Water closets or toilets may not exceed 1.28 gallon per flush;</p>					
<p>Urinals (and associated flush valves) must use no more than .5 gallons per flush;</p>					
<p>Lavatory faucets (and aerators) may not exceed 1.5 gallons per minute; and</p>					

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Kitchen faucets (and aerators) may not exceed 2.0 gallons per minute					
Non-farm water withdrawal permittees must submit water conservation plans	GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.	Current statute and current rule	R&Regs 391-3-6 & 391-3-2	No	WCIP pg 118
Water users in Flint River Basin, Coastal Georgia and North GA Metropolitan Water Planning District, must comply with water conservation elements in regional water plans.	Landscape GOAL #2 : Farmers should improve the efficiency of their irrigation systems.	Current statute and current rules	O.C.G.A. 12-5-572, R&Regs 391-3-2, R&Regs 391-3-28	Yes	Flint River Basin Regional Water Plan, Coastal Permitting Plan, and Metro North GA Water Planning District
	Domestic GOAL #3 : Water providers and local governments should implement conservation-				
	Domestic GOAL #1 : Water providers and local governments should implement a comprehensive water conservation education and outreach program.				
	Domestic GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.				
Water use for landscape related purposes is restricted between 10am and 4pm.	Landscape GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.	Current statute	O.C.G.A. 12-5-7	No	WSA, Section 4
Water use for non-landscape outdoor purposes is limited to three days a week (determined by customer address)	Domestic 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.	Current rules	R&Regs 391-3-30	No	
Public car wash facilities can be certified water efficient if employing water conservation practices	Domestic 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.	Current statute and current rule	R&Regs 391-3-31	No	

<b>Tier TWO (T2) Water Conservation Practices</b>	Practices outlined in the SWP, to be addressed in rules and regulations as options for non-farm water withdrawal permit applicants seeking permit expansion or modification.
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T2 Practice	Associated WCIP Goals	Status	Reference	Adjust demand	Reference for more information
<b>T2 Practices for Municipal Water Providers (as outlined in SWP)</b>					
Implement conservation-oriented rate structures and distribute informative bills	Domestic 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.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(b)	Yes	WCIP pgs 135, 137 & 201; Chesnutt & CUWCC; and TX Water Devel Board (2004) pg. 19
Meter all water uses	Domestic GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(d)	No	WCIP pg 129 and TX Water Devel Board (2004) pg. 75
Adopt a meter calibration, repair and replacement program	Domestic GOAL #2 : Water providers should maximize the efficiency of the systems that treat and deliver water to customers.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(e)	No	WCIP pg 129 and TX Water Devel Board (2004) pg. 75
Adopt a program to collect information on water use by the largest customers	Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(f)	No	WCIP pgs 106 & 139 and TX Water Devel Board (2004) pg. 112
	Landscape GOAL #1 : Landscape and irrigation professionals and water providers should educate their customers on proper and efficient landscape water use practices.				

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Enforce current outdoor water use schedule	Domestic 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.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(g)	No	WCIP pgs 98 & 103
	Landscape GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.				
Meter water reuse and report reuse on a regular basis	Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(h)	Yes	TX Water Devel Board (2004) pg. 85
	Landscape GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.				
Conduct reuse feasibility studies	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(i)	No	WCIP pg 90
Consider the use of grey water	Landscape GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(j)	No	TX Water Devel Board (2004) pg. 96 and 102

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Consider programs to replace or retrofit inefficient plumbing fixtures	Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(k)	Yes	WCIP pg 123 & 138 and TX Water Devel Board (2004) pgs 28 and 34, Dekalb County Water Fixture Replacement Program ( <a href="http://dekalbwatershed.com/PDF/plumbingFixturesReplacement.pdf">http://dekalbwatershed.com/PDF/plumbingFixturesReplacement.pdf</a> )
Update water conservation plans on a regular basis	Domestic GOAL #4 : Water providers and local governments should help customers maximize the water efficiency of indoor residential and domestic uses.	upcoming amended rules	SWP Sec. 8(2)a.iii.1(l)	No	WCIP pg 141

<b>T2 Practices for industrial water users with water withdrawal permits (as outlines in SWP)</b>					
Conduct facility-specific audits every three years or when processes change	I/C GOAL #1 : Industrial and commercial facilities should determine baseline water use, in terms of water use intensity or another efficiency metric.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(a)	No	WCIP pg 88 and TX Water Devel Board (2004) pgs. 133 and 195
	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.				
Measure all water withdrawals	I/C GOAL #1 : Industrial and commercial facilities should determine baseline water use, in terms of water use intensity or another efficiency metric.				
	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(b)	No	WCIP pg 88
Measure or estimate water reuse and report reuse	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(c)	Yes	WCIP pg 90 and TX Water Devel Board (2004) pg. 154

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Adopt maintenance and repair programs for pipelines, intakes and discharge structures	I/C GOAL #1 : Industrial and commercial facilities should determine baseline water use, in terms of water use intensity or another efficiency metric.				
	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(d)	Yes (consider existing efficiency and	WCIP pgs 88 & 93 and TX Water Devel Board (2004) pg. 138
Install rain or moisture sensor shut-off devices for irrigation systems	Landscape GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(e)	Yes	WCIP pg 111
Irrigate landscapes in compliance with outdoor water use schedule	Landscape GOAL #3: Landscape and irrigation professionals, water providers and local governments should help water customers reduce summer peak use.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(f)	No	WCIP pgs 97 & 103 and TX Water Devel Board pg. 184
Conduct reuse feasibility studies	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(g)	No	WCIP pg 90 and TX Water Devel Board pg. 154
Consider the use of grey water	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(h)	Yes	WCIP pg 91
Update water conservation plans on a regular basis	I/C GOAL #2 : Industrial and commercial facilities should establish reduction targets for existing water uses and implement practices to achieve those targets.	upcoming amended rules	SWP Sec. 8(2)a.iii.2(i)	No	WCIP pg 94 and TX Water Devel Board (2004) pg. 190

### Tier THREE (T<sub>3</sub>) Water Conservation Practices

Basic practices that will not be addressed in rules and regulations

Many of these practices are discussed in the "Handbook on Water Use and Conservation" by Amy Vickers (2001) and are described in the Resource Library for the Alliance for Water Efficiency - [www.a4we.org](http://www.a4we.org).

T <sub>3</sub> Practices for Regions with Agricultural Water Use	WCIP	Other Resources
Conduct irrigation audits	WCIP pg 47	<a href="http://pubs.caes.uga.edu/caespubs/pubcd/B1253/B1253.htm">http://pubs.caes.uga.edu/caespubs/pubcd/B1253/B1253.htm</a> and TX Water Devel Board (2004) pg. 210
Meter irrigation systems	WCIP pg 46	<a href="http://www.gaswcc.georgia.gov">www.gaswcc.georgia.gov</a>
Irrigate at night-time	WCIP pg 50	TX Water Devel Board (2004) pg. 201
Arrange fields for water efficiency	WCIP pg 49	TX Water Devel Board (2004) pg. 210 and <a href="http://www.nespal.org/SIRP/IWC/default.asp">http://www.nespal.org/SIRP/IWC/default.asp</a>
Inspect pipes and plumbing	WCIP pg 49	Thomas, D.L. ed., (1998) and TX Water Devel Board (2004) pg 226
Compile data on cropping and water conservation practices	WCIP pgs 41 & 46	TX Water Devel Board (2004) pg 204
Attend Irrigation workshops	WCIP pg 48	
Eliminate timer-only irrigation controls	WCIP pg 50	<a href="http://www.nespal.org/SIRP/IWC/default.asp">http://www.nespal.org/SIRP/IWC/default.asp</a>
Inform cropping and management practices using water demands	WCIP pgs 44 & 52	<a href="http://www.nespal.org/SIRP/IWC/default.asp">http://www.nespal.org/SIRP/IWC/default.asp</a>
Minimize or eliminate the use of high-pressure spray guns on fixed and traveler systems	WCIP pgs 38 & 50	Thomas, D.L. ed. (1998) and TX Water Devel Board (2004) pgs 231 and 241

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T3 Practices for Regions with Electric Generation	WCIP	Other Resources
Integrate water conservation into educational programs	WCIP pg 64	
Integrate water supply and water conservation impacts into long-term energy plans	WCIP pg 63	

T3 Practices for Regions with Golf Courses	WCIP	Other Resources
Conduct routine site surveys and system audits	WCIP pg	TX Water Devel Board (2004) pg 71
Develop and Implement a Best Management Practices (BMPs) Plan	WCIP pgs 69 & 74	<a href="http://www.commodities.caes.uga.edu/turfgrass/georgiaturf/water/articles/bmps_water_cons_07.pdf">www.commodities.caes.uga.edu/turfgrass/georgiaturf/water/articles/bmps_water_cons_07.pdf</a>
Maintain a water use database	WCIP pg 75	
Maintain water conservation logs	WCIP pg 76	
Educate staff, members, and the community about conservation	WCIP pg 73	
Educate the public about golf course water use and conservation efforts	WCIP pg 74	
Offer training for Course Superintendent	WCIP pg 73	

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T3 Practices for Regions with water-using Industries and Commercial businesses	WCIP	Other Resources
Conduct regular water audits	WCIP pg 88	<a href="http://www.p2ad.org">www.p2ad.org</a> and CUWCC
Practice dry methods for cleaning and dust control	WCIP pg 92	
Discontinue discretionary use of water	WCIP pg 93	TX Water Devel Board (2004) pg 138
Offer conservation educational programs	WCIP pg 95	TX Water Devel Board (2004) pg 179
Determine water use efficiency metrics	WCIP pgs 83 & 89	<a href="http://www.ofee.gov/eo/eo13423_main.asp">www.ofee.gov/eo/eo13423_main.asp</a>
Conduct cost-benefit analyses of water conservation practices	WCIP pgs 80 & 90	<a href="http://www.a4we.org/benit_Cost_Introduction.aspx?terms=direct+install">http://www.a4we.org/benit_Cost_Introduction.aspx?terms=direct+install</a> and TX Water Devel Board (2004) pg 195
Calculate water use intensity and establish efficiency targets	WCIP pgs 82 & 84	<a href="http://www.ofee.gov/eo/eo13423_main.asp">www.ofee.gov/eo/eo13423_main.asp</a>

T3 Practices for Regions with Heavy Landscape water use	WCIP	Other Resources
Adapt existing educational programs to include outdoor focus	WCIP pgs 100 & 105	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>
Offer continuing education for landscape and irrigation professionals	WCIP pg 102	<a href="http://apps.caes.uga.edu/urbanag/GCLP/index.cfm">http://apps.caes.uga.edu/urbanag/GCLP/index.cfm</a>
Distribute information to high-use customers	WCIP pg 106	
Offer homeowners checklists and certification for sustainable landscapes	WCIP pgs 106 & 195	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>
Assess outdoor water use	WCIP pg 108 & 199	
Calculate peaking factor	WCIP pgs 98 & 108	
Distribute information about efficient outdoor water use	WCIP pg 135	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>
Offer guidance documents for outdoor water uses	WCIP pg 140	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>

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T <sub>3</sub> Practices for Regions with Urban and Suburban areas	WCIP	Other Resources
Adopt a comprehensive education and outreach program for community residents.	WCIP pg. 119	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>
Analyze customers water use data	WCIP pg 127	
Categorize water customers by class	WCIP pg 130	
Calculate average utility-specific per capita residential indoor water use	WCIP pg 130	See Regional Planning Water Conservation Guidance Appendix B
Integrate water conservation into existing education curriculum	WCIP pg 134	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>
Target education and outreach programs to high water users	WCIP pg 133	<a href="http://www.ConserveWaterGeorgia.net">www.ConserveWaterGeorgia.net</a> and <a href="http://www.ugaextension.com/">http://www.ugaextension.com/</a>
Adopt water waste ordinances	WCIP pg 141	See Athens Clarke County Code Sec, 5-3-120 to 125 on <a href="http://www.municode.com/Library/clientCodePage.aspx?clientID=5225">http://www.municode.com/Library/clientCodePage.aspx?clientID=5225</a> and TX Water Devel Board (2004) pg.25

T <sub>3</sub> Practices for Regions with State Agency Facilities	WCIP	Other Resources
Conduct regular water audits	WCIP pg 151	Hawaii (2007) and <a href="http://www.ofee.gov/eo/eo13423_main.asp">www.ofee.gov/eo/eo13423_main.asp</a>
Meter and measure all water users	WCIP pg 151	Hawaii (2007)
Conduct regular cost-effectiveness or cost-benefit analysis	WCIP pg 151	Hawaii (2007) and <a href="http://www.ofee.gov/eo/eo13423_main.asp">www.ofee.gov/eo/eo13423_main.asp</a>
Develop long-term water conservation plans	WCIP pg 152	Hawaii (2007)
Adopt efficiency standards adopted by the GA General Assembly	WCIP pg 153	O.C.G.A. 50-8-18 - <a href="http://www.legis.state.ga.us/legis/2007_08/sum/sb130.htm">www.legis.state.ga.us/legis/2007_08/sum/sb130.htm</a>

**Tier FOUR (T<sub>4</sub>) Water Conservation Practices**

Beyond basic practices that can be used to help fill demand/supply gaps

Many of these practices are discussed in the "Handbook on Water Use and Conservation" by Amy Vickers (2001) and are described in the Resource Library for the Alliance for Water Efficiency - [www.a4we.org](http://www.a4we.org).

T <sub>4</sub> Practices for Agricultural areas	WCIP	Additional resources for assessing impact of implementation
Install Variable Rate Irrigation (VRI) controls on center pivots	WCIP pg 49	Thomas, D.L. ed. (1998) and TX Water Devel Board (2004)
Install enhanced center pivot control panels	WCIP pg 49	Thomas, D.L. ed. (1998) and TX Water Devel Board (2004) pg 231
Install end-gun shutoffs with pivots	WCIP pg 49	Thomas, D.L. ed. (1998)
Install low pressure irrigation systems	WCIP pg 50	Thomas, D.L. ed. (1998) and TX Water Devel Board (2004) pg 208
Install soil moisture sensor, evapotranspiration (ET) sensor or crop water use model to timer cycles	WCIP pg 51	
Install real-time weather and soil data and models to aid scheduling decisions	WCIP pg 52	
install real-meters on irrigation systems	WCIP pg 46	
Practice conservation tillage	WCIP pg 52	<a href="http://pubs.caes.uga.edu/caespubs/pubcd/C916/C916.htm">http://pubs.caes.uga.edu/caespubs/pubcd/C916/C916.htm</a> and TX Water Devel Board (2004) pg 208
Control water loss	WCIP pg 53	TX Water Devel Board (2004) pg 210
Install subsurface drip irrigation on micro-sprinkler systems	WCIP pg 49	Thomas, D.L. ed. (1998) and TX Water Devel Board (2004) pg 234
Install rainfall shut-off devices	WCIP pg 51	

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<b>T4 Practices for Regions with Electric Generation</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Develop and implement tools that estimate the impact of water conservation on energy demands.	WCIP pg 63	<a href="http://www.valleywater.org">www.valleywater.org</a> and <a href="http://www.pacinst.org/resources/water_to_air_models/index.htm">www.pacinst.org/resources/water_to_air_models/index.htm</a>
Offer energy and water conservation technical assistance to customers	WCIP pg 60 & 64	
Offer incentives for water conservation	WCIP pg 65	
Maximize efficiency of flue gas scrubbing	WCIP pgs 61 & 65	<a href="http://my.epri.com">http://my.epri.com</a>
Minimize evaporative losses	WCIP pg 65	<a href="http://my.epri.com">http://my.epri.com</a>
Adopt alternative water sources, such as reclaimed water for cooling	WCIP pg 66	<a href="http://www.a4we.org/Alternative_Water_Sources_Intro.aspx">http://www.a4we.org/Alternative_Water_Sources_Intro.aspx</a>
Pilot projects for new technologies and practices	WCIP pg 66	

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<b>T<sub>4</sub> Practices for Regions with Golf Courses</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Conduct leak detection and repair process	WCIP pg 76	TX Water Devel Board (2004) pg 71
Pre-condition turfgrass	WCIP pg 76	
Utilize alternative water sources	WCIP pg 77	TX Water Devel Board (2004) pg 61
Improve efficiency inside golf course facilities	WCIP pg 77	

<b>T<sub>4</sub> Practices for Regions with Industries and Commercial water uses</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Recycle and reuse water	WCIP pg 90	DNR Guidelines, revised 2002 and TX Water Devel Board (2004) pg 154
Pilot innovative technologies	WCIP pg 92	CUWCC WaterSmart Guidebook; TX Water Devel Board (2004) pgs 145 - 175; <a href="http://www.a4we.org/Commercial_Institutional_and_Industrial_Library_Content_Listing.aspx">http://www.a4we.org/Commercial_Institutional_and_Industrial_Library_Content_Listing.aspx</a>
Increase the efficiency of cooling towers and boilers using performance-based contracting.	WCIP pg 93	<a href="http://www.a4we.org/cooling_tower_intro.aspx">http://www.a4we.org/cooling_tower_intro.aspx</a>
Develop water management plans and energy management plans	WCIP pgs 94 & 95	TX Water Devel Board (2004) pg 190

<b>T<sub>4</sub> Practices for Regions with Heavy outdoor water use</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Establish standards for landscape and irrigation systems	WCIP pg 109	<a href="http://www.epa.gov/watersense/services/cert_programs.html">http://www.epa.gov/watersense/services/cert_programs.html</a> and <a href="http://apps.caes.uga.edu/urbanag/GCLP/index.cfm">http://apps.caes.uga.edu/urbanag/GCLP/index.cfm</a>
Establish and require certification of landscape and irrigation professionals	WCIP pg 110	<a href="http://www.epa.gov/watersense/services/cert_programs.html">http://www.epa.gov/watersense/services/cert_programs.html</a> and <a href="http://apps.caes.uga.edu/urbanag/GCLP/index.cfm">http://apps.caes.uga.edu/urbanag/GCLP/index.cfm</a>
Employ irrigation system certified auditors	WCIP pg 111	<a href="http://www.epa.gov/watersense/services/cert_programs.html">http://www.epa.gov/watersense/services/cert_programs.html</a>

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Implement innovative technologies	WCIP pg 111	<a href="http://www.a4we.org/Evapotranspiration_and_Net_Irrigation_Needs_Introduction.aspx">http://www.a4we.org/Evapotranspiration and Net Irrigation Needs Introduction.aspx</a>
Establish water budget-based rates, an aggressive form of conservation-oriented rates	WCIP pgs 112 & 137	<a href="http://www.a4we.org/1Column.aspx?id=710&amp;terms=budget-based+rates">http://www.a4we.org/1Column.aspx?id=710&amp;terms=budget-based+rates</a>
Guidelines for pre-construction practices	WCIP pg 112	
Monitor and offer technical assistance to high water users	WCIP pg 112	<a href="http://pubs.caes.uga.edu/caespubs/pubcd/B1253/B1253.htm">http://pubs.caes.uga.edu/caespubs/pubcd/B1253/B1253.htm</a> and CUWCC A Guide to Implementing Large Landscape Conservation Programs
Establish a conservation coordinator position for the region	WCIP pg 106	TX Water Devel Board (2004) pg 82

<b>T3 Practices for Regions with older Urbanized areas</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Install sub-metering in existing multi-unit buildings and homes	WCIP pg 21	<a href="http://www.a4we.org/submetering.aspx?terms=submeter">http://www.a4we.org/submetering.aspx?terms=submeter</a>
Offer retrofits and rebate programs to replace older fixtures	WCIP pg 138	<a href="http://www.a4we.org/Residential_Library_Content_Listing.aspx">http://www.a4we.org/Residential_Library_Content_Listing.aspx</a>
Directly install high efficiency fixtures to replace older fixtures		

<b>T3 Practices for Regions with new or growing Suburban areas</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Establish water efficiency building standards		<a href="http://www.epa.gov/WaterSense/pubs/ws_homes.html">http://www.epa.gov/WaterSense/pubs/ws_homes.html</a>
Establish standards for landscape and irrigation systems	WCIP pg 109	
Adopt ordinances requiring new landscape and irrigation installation be conducted by certified professionals	WCIP pg 109	<a href="http://www.epa.gov/watersense/services/cert_programs.html">http://www.epa.gov/watersense/services/cert_programs.html</a>
Require rain sensor shut-off devices in new irrigation systems		<a href="http://www.northgeorgiawater.com/html/284.htm">http://www.northgeorgiawater.com/html/284.htm</a>

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<b>T4 Practices for Regions with Urban and Suburban areas</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Conduct regular cost-effectiveness analysis on water conservation practices for service area	WCIP pg 132	<a href="http://www.a4we.org/benit_Cost_Introduction.aspx?terms=direct+install">http://www.a4we.org/benit_Cost_Introduction.aspx?terms=direct+install</a> and TX Water Devel Board (2004) pg 118
Offer customers informative water bills	WCIP pg 135	
Offer financial or tax incentives for customers to conserve	WCIP pg 139	Hoffman (2009) and TX Water Devel Board (2004) pg 39 & 54
Incorporate water conservation into development plans	WCIP pg 141	
Establish a program to listen to customers	WCIP pg 127	TX Water Devel Board (2004) pg 90

<b>T4 Practices for Regions with State Agency Facilities</b>	<b>WCIP</b>	<b>Additional resources for assessing impact of implementation</b>
Conduct regular leak detection and repair	WCIP pg 154	Hawaii (2007)
Establish water use baseline and water use intensity targets	WCIP pg 146	<a href="http://www.ofee.gov/eo/eo13423_main.asp">www.ofee.gov/eo/eo13423_main.asp</a>
Train state agency staff members	WCIP pg 153	
Adopt additional water efficiency standards as suggested in the Green Supplement of the IAPMO plumbing standards		<a href="http://www.iapmo.org/Pages/IAPMO_Green.aspx">http://www.iapmo.org/Pages/IAPMO_Green.aspx</a>

## Additional Resources

Chesnutt, Thomas W. and CUWCC. Designing, Evaluating, and Implementing Conservation Rate Structures - <a href="http://www.cuwcc.org/docDetail.aspx?id=720">http://www.cuwcc.org/docDetail.aspx?id=720</a>
CUWCC A guide to Implementing a Large Landscape Conservation Program - <a href="http://www.cuwcc.org/docDetail.aspx?id=1804">http://www.cuwcc.org/docDetail.aspx?id=1804</a>
CUWCC A Handbook for Implementing Commercial Industrial and Institutional Conservation Programs - <a href="http://www.cuwcc.org/docDetail.aspx?id=1808">http://www.cuwcc.org/docDetail.aspx?id=1808</a>
CUWCC WaterSmart Guidebook: Water Use Efficiency Plan and Review Guide - <a href="http://www.cuwcc.org/resource-center/technical-resources/bmp-tools.aspx">http://www.cuwcc.org/resource-center/technical-resources/bmp-tools.aspx</a>
DNR Guidelines, revised 2002. "Guidelines for Water Reclamation and Urban Water Reuse," State of Georgia, Department of Natural Resources, Environmental Protection Division, Watershed Protection Branch. Revised February 20, 2002.
Hawaii (2007) "Water Conservation Manual for State of Hawaii Facilities. Prepared for Dept. of Land and Natural Resources Commission on Water Resources Management by The Limtiaco Consulting Group. Honolulu, HI
Hawkins, G.L. et al. 2007. Water Savings through Conservation Tillage. University of Georgia Extension Circular 916. <a href="http://pubs.caes.uga.edu/caespubs/pubcd/C916/C916.htm">Http://pubs.caes.uga.edu/caespubs/pubcd/C916/C916.htm</a>
Hoffman, H.W.(Bill) and Associates. December 2009. "Analysis of the Potential for Water Savings Tax Incentives for Selected Commercial Water Using Equipment in Georgia." A Report to the Metropolitan North Georgia Water Planning District.
NESPAL - Irrigation Water Conservation "BMPs Homepage" - <a href="http://www.nespal.org/SIRP/IWC/default.asp">http://www.nespal.org/SIRP/IWC/default.asp</a>
Texas Water Development Board Report 362 (November 2004)- Water Conservation Implementation Task Force, Water Conservation Best Management Practices Guide.
Thomas, D.L. ed., 1998 "Irrigation Conservation Practices Appropriate for the Southeastern United States. Project Report 32 by R.O. Evans, K.A. Harrison, J.E. Hook, C.E. Privette, W.I. Segars, W.B. Smith, D.L. Thomas, and A.W. Tyson.
Vickers, Amy. 2001. "Handbook on Water Use and Conservation." WaterPlow Press. 446 pgs.