



**DCWater.org**

*Serious Conservation. Serious Results.*

## 2009 Regional Water Conservation Survey

Douglas County Water Resource Authority (DCWRA) is a collection of nineteen member entities, comprised of municipalities, water providers, and Douglas County government, who come together to work collaboratively on water resource conservation, education, and public policy surrounding water issues. These member entities represent about 325,000 citizens in Douglas County and portions of southern Arapahoe County. DCWRA operates the [www.DCWater.org](http://www.DCWater.org) website, and is funded through member dues, grants, and financial contributions from the community.

This survey was conducted in the spring and summer of 2009, and models the five levels of water conservation detailed in the Colorado Water Conservation Board's Statewide Water Supply Initiative process. The five levels are by no means absolute, and include:

**Level 1 Conservation** includes:

- Adhering to modern plumbing codes and fixture standards from the National Energy Policy Act. 14% savings can be expected over structures installed prior to the Act.

**Level 2 Conservation** includes the above and:

- Metering and
- Detecting leaks

**Level 3 Conservation** includes the above and:

- Education,
- Rebates for toilets & washers,
- Providing water & landscape audits, and
- Increasing water rates

**Level 4 Conservation** includes the above and:

- Steep pricing rates & surcharges
- Rebates for landscape changes,
- Turf replacement & restriction
- Rebates for irrigation sensors & controllers,
- Fixture retrofits upon sale of property, and
- Elimination of single-pass cooling

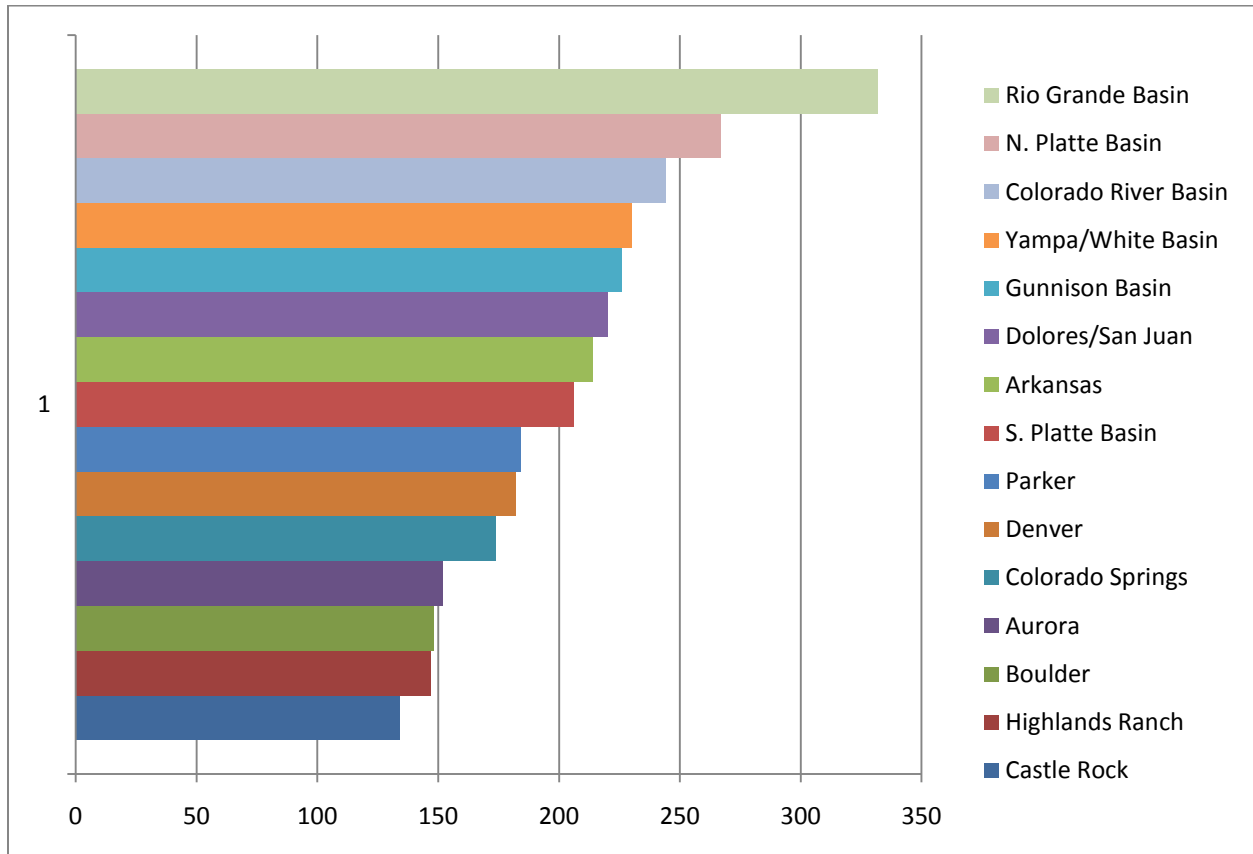


**Level 5 Conservation** includes the above and:

- Replacement of all inefficient water fixtures & appliances,
- Elimination of leaks by all customers,
- Elimination of high-water using landscapes, and
- Installation of non-water using urinals

The nineteen members of DCWRA are managed separately, and so policies vary. For example, Douglas County government does not provide water, but can offer rebates. Franktown Business Area and Dominion are in planning stages. Lone Tree receives its water supply from Denver Water, and makes use of Denver Water's conservation efforts. Roxborough is served by Aurora, but conducts its own conservation efforts. Meridian, Inverness, and Castleton primarily serve commercial customers. Some water providers are organized as Special Districts, while others are municipalities. Regardless of these differences, 80% of the residents of the region believe water is the largest issue facing the region. Water conservation is of primary concern for all of DCWRA's member organizations. DCWRA members typically embrace Level 3 Conservation, have adopted several Level 4 items, and even some components of Level 5 Conservation in the region. The chart below shows how the results of these efforts compare with water use levels in other parts of Colorado.

**How DCWRA Water Usage Compares with Other Water Providers (gpcd, SWSI/CWCB):**



## Findings of the 2009 Survey:

### Level 2

- |   |      |
|---|------|
| 1) Water providers who meter the amount of water sold | 100% |
| 2) Leak Detection                                     | 82%  |

### Level 3

- |  |      |
|--|------|
| 3) Education                                 | 100% |
| 4) Rebates for Toilets and Washers           | 41%  |
| 5) Water And Landscape Audits                | 53%  |
| 6) Increasing Water Rates as Usage Increases | 100% |

### Level 4

- |   |     |
|---|-----|
| 7) Steep Pricing Rates and Surcharges             | 81% |
| 8) Turf Replacement and Restriction               | 31% |
| 9) Rebates for Irrigation Sensors and Controllers | 29% |
| 10) Fixture Retrofits Upon Sales of Property      | 0%  |
| 11) Elimination of single-pass cooling            | 0%  |

### Level 5

- |  |     |
|--|-----|
| 12) Replacement of all inefficient Water Fixtures & Appliances | 0%  |
| 13) Elimination of Leaks By All Customers                      | 24% |

14) Elimination of High-Water Using Landscapes 24%

15) Installation of Non-water Using Urinals 6%

### Rebates

**Rebates** are used to promote water conservation:



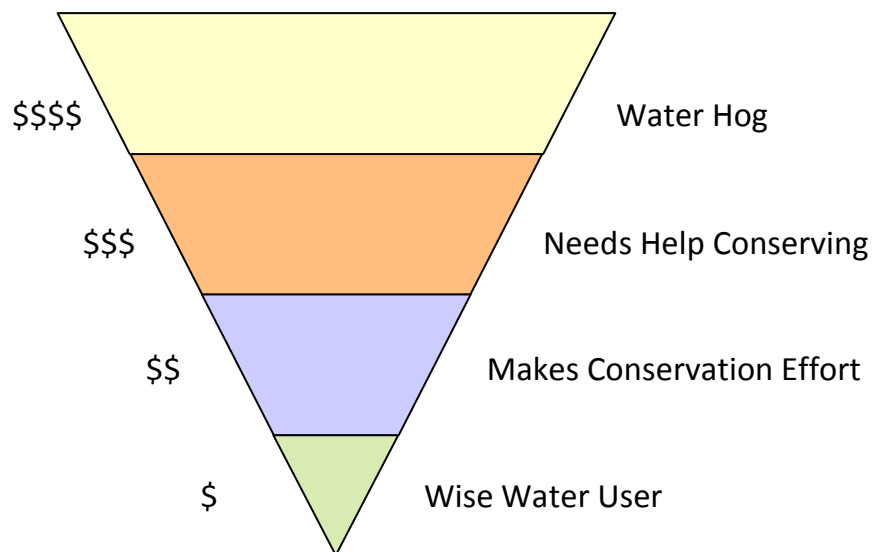
An example of items for which rebates are currently made available include rotary sprinkler nozzles (\$5 each), rain sensors (\$100), sod replacement (\$1 per square foot to 1500 maximum), high-efficiency washing machines (\$125), low flow and high-efficiency toilets (\$100), programmable irrigation clocks (\$75), ET controllers (\$200 for every six zones), and water efficient shower heads (\$10). Actual rebates vary among member entities.

Some members have commented that in the absence of hard data confirming claimed or perceived benefits, it is difficult to justify the financial commitment to certain types of rebates. To that end, in August 2009 an Excel based tracking tool will be showcased to members that can track implementation, costs, and benefits of up to fifty conservation measures. We can look to see if this tool will not only be useful in tracking costs, but also in verifying water savings.

## Water Rates

**Water Rates** are used to promote water conservation: At Castleton you'll pay \$5 for 1,000 gallons of water. If you use twice your water allocation at Meridian, you'll pay \$17.50 per 1,000 gallons. This is a significant change from the 2005 prevailing water rate in the region of around \$2.65 per 1,000 gallons. Members embrace differing types of increasing block rate structures for water rates. Customers who meet usage targets pay lower rates per 1,000 gallons. Customers who exceed targets pay ever higher rates per 1,000 gallons. While there is criticism that customers who conserve water have been rewarded with higher water bills, what you need to know is that water rates in the American West, and Colorado, and the Front Range, and the Metro area are all going to go ever higher as impacts of population pressure and increased competition for a limited supply of water sources complicate water resource management. A customer's best strategy for a moderate water bill is to use water resources wisely.

### *Increasing Block Rate Structures*



While each water provider operates its water utility business a bit differently, it is now common practice for a fixed charge to be included in customer's monthly water bills to meet fixed costs such as debt service. Water providers require revenue to retire the debt associated with installed infrastructure, regardless of how much water is consumed or conserved. Fixed costs to deliver the first drop of water to a residence or business are very high, while variable costs to deliver incremental amounts of water are comparatively low. In this way fixed monthly charges, coupled with variable rate structures that feature very high block rates for water wasters, are likely the best

business model to both cover costs of water systems and create incentives for customers to conserve water resources. Monthly capital charges of from \$12 to \$22 per month are not uncommon.



## Reuse

**Reuse** is a largely unsung story of regional water conservation efforts. While The Pinery and Inverness currently approach 50% reuse, other entities plan to increase their reuse efforts as additional infrastructure is built. For example, if current efforts with Chatfield Reservoir are successful, Castle Rock, Castle Pines Metro, and Castle Pines North significantly increase their reuse capability. Reuse is primarily directed at the irrigation of parks and recreation facilities, though some indirect reuse is now under construction. Many members take advantage of the reusable legal property of their water rights by incorporating them into augmentation plans. That process allows a very high percent of the legally reusable water to be applied to a subsequent beneficial use. Thousands of acre-feet per year are currently reused in this way. Examples of the amount of reuse currently in place include:

The Pinery - 50%

Inverness - 49%

Meridian - 40%

Stonegate - 43%

Castle Pines Metro - 38%

Centennial W&S - 22%

Parker - 20%

Castle Pines North - 12%

ACWWA - 7%

ECCV - 3%

Roxborough's effluent is reused by the City of Aurora for augmentation or exchange.

## Audits

Over half of DCWRA members offer audits. Audits may be first aimed at large water users, then spread to all indoor and outdoor uses. Douglas County government's "lead by example program" is currently auditing ALL indoor and outdoor uses of water in County government facilities.



## Land Use

**Land use** efforts constitute a significant part of regional water conservation efforts. Just over forty percent of the land in Douglas County, that's three hundred thirty-nine square miles, is already set aside by conservation easements, open space purchases, national forests, and State and local parks. That land will never be developed. This is the highest percentage of conserved lands in any County in the area served by the Denver Regional Council of Governments.

Led by Douglas County Commissioner Jill Repella, DCWRA membership is discussing creation of template guidance documents that land use authorities can model to make

sure that from the very first discussion water conservation measures are included in all land use applications. In addition to Douglas and Arapahoe County governments, these templates would be shared with Town of Parker, Town of Castle Rock, City of Lone Tree, City of Centennial, City of Castle Pines North, and other land use authorities in the region. This is in addition to efforts by Douglas County government to create a regional conservation plan to cover smaller outlying areas not already covered by water conservation plans.

### **Conservation Education and Communication - [www.DCWater.org](http://www.DCWater.org)**

Because citizens will not place a high value on, nor conserve things they do not understand, all members have robust water conservation education and communication programs in place. Efforts include websites, bill stuffers, newsletters, demonstration projects, WaterWiser classes, Xeriscape seminars at local garden centers and libraries, and "Lunch and Learn" sessions on water conservation topics.

In addition, 2009 DCWRA efforts include:

a) Three regional HOA seminars to teach board members, association managers, and landscape contractors about best management practices in outdoor common area irrigation.



b) One hundred sixty high school Water Ambassadors were trained about water issues in the region, and how to teach fourth graders about water issues in the region. As a result, two thousand fourth graders learned about water and conservation. Homework assignments engaged parents in the effort. As a result of the homework efforts, four hundred eight leaky toilets were discovered. Over eighty percent of the fourth graders were able to pass a test on water and conservation with the help of their parents. Forty-six of the high school Water Ambassadors were introduced on the floor of the House of Representatives in the Colorado General Assembly.

c) Teacher training for up to one hundred forty-four Middle School teachers. Participants receive continuing education credits through the Colorado School of Mines. The Ambassador Document is also the heart of this training. Presenters hail from Tri County Health, South Metro Water Supply Authority, Douglas County government. An official with EPA Region 8 gives of her personal time to speak on NEPA and the EPA Water Sense program. (DCWRA is an EPA WaterSense Partner, and has passed a resolution of support for legislation in Congress that would extend tax breaks for installation of WaterSense appliances.) Please see: [www.DCWater.org](http://www.DCWater.org)

d) Creation of an eight-minute water tips high definition video program for schools and public access television stations that draws a line between the importance of conserving water on space exploration missions to the Moon and Mars, as well as the importance of water conserving efforts in our homes. Local and Federal officials appear on camera to make comments supporting water conservation efforts. In addition, school age students were invited to enter a contest by creating and submitting a two to three minute water conservation video with a space twist. The winner will travel to Florida to watch a launch of the Space Shuttle, and have lunch with an astronaut.

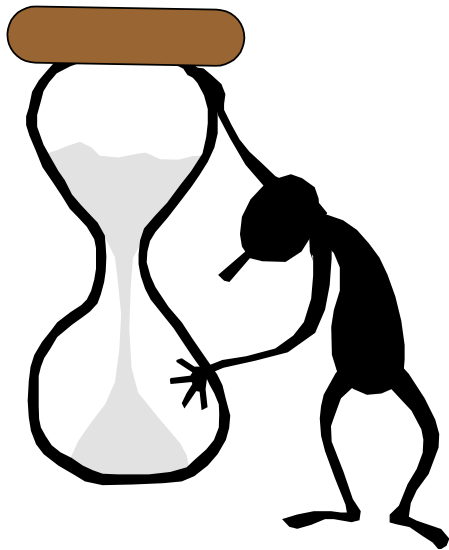


### **Success Stories**

Water conservation success stories within the region include:

- Implementation of numerous water budget based billing systems
- Indoor and outdoor audits offered for free to many customers
- One member's six million gallon reduction in use through conservation marketing
- 45,000 square feet of Kentucky Bluegrass removed from common areas
- Reuse applied to irrigate multiple parks and golf courses
- Use of artificial turf on recreational ball fields
- Water Wiser Smartscape Renovation Rebate (\$1 per sq.ft. to remove sod, etc.)
- Xeriscape demonstration gardens
- Education program reduced one HOA's outdoor water usage by 46%.
- An outdoor audit revealed irrigation had been running eight hours per day
- Sod replaced with native grasses in business parks
- Developers required to use low-water landscape techniques on commercial properties
- Irrigation controllers used in right-of-way landscape conversion projects

- Irrigation provided from non-potable sources
- Education efforts demonstrate sustainable practices
- Water hogs are subjected to possible water service cut-off
- Land use policies encourage dual piping in new projects
- Watering schedules reduce peak day demands on Water Treatment Plant capacities
- Higher water rates for large use irrigation customers
- Partnering with civic organizations, such as Kiwanis, to expand communication efforts
- Advertising water conservation on Colorado Rockies baseball television broadcasts
- Displaying our booth at water conferences around the State
- Creating a thirty-eight page Water Ambassador document to drive education efforts
- Additional enhancements for our website, [www.DCWater.org](http://www.DCWater.org)
- Full support of our water education efforts by the local schools



### **Areas of Concern**

Areas of concern in the region with regards to water conservation include:

- Finding meaningful ways to help HOAs correctly manage their systems to conserve water

- Past regulations required 25% of landscaping to include high water use treatments
- Some areas were historically overwatered, and it takes time to cut back water usage
- Customers don't understand seasonal restrictions, or where construction is occurring
- New conservation technology incentives are tough to discern and reward given weather
- It's hard to teach customers that they don't need to water when the soil is wet
- It's difficult to encourage conservation when customers can easily pay higher bills
- While 80% of residents believe water is the biggest issue facing our area, some customers don't yet understand the importance of water conservation efforts
- Given modern construction, it's difficult to demonstrate how leak detection is cost effective, especially in current slow economic conditions
- We cannot conserve our way out of our water issues, locally, or in the State, or the West



### **Conclusions:**

Water conservation efforts of members of DCWRA are exemplary within the State of Colorado. This is not simply because conserving water is the right thing to do, or because we're nice. It's because we have to do it. Dependence upon Denver Basin Groundwater has left our area in great need of renewable water source and prudent management of the aquifer supplies. Conservation and reuse are only parts of our renewable water future, but they are very important parts. We have come a long way on our conservation path. We can do more. We should try to do more. The Town of Castle Rock is one of our members who is leading by example with their water conservation efforts, with other members implementing similar measures. There is likely a limit to how much we can conserve as a region, and clearly it is not possible for us to conserve what we don't have. We support other regions of the State to pursue

conservation measures that fit their water demands with the same vigor we have pursued our conservation efforts. The Statewide Water Supply Initiative clearly illustrated that additional water molecules are needed in the S. Platte Basin to meet the needs of future generations of Coloradoans. It is not in the future, but now, that planning must proceed to ensure a sustainable water supply for the 325,000 residents already in our region.



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The members of DCWRA are Arapahoe County Water and Wastewater Authority, East Cherry Creek Valley, Castle Pines North Metropolitan District, Castle Pines Metropolitan District, Centennial Water & Sanitation District, Parker Water & Sanitation District, Douglas County Government, Town of Castle Rock, City of Lone Tree, Inverness, Meridian, Castleton, Franktown, Dominion, The Pinery, Roxborough, Cottonwood, Stonegate, and Northern Douglas County.