

# Aurora's Water Conservation Calculator:

## Building an Educated Community and the Benefits to the Utility

City of Aurora Water Conservation Division,  
Aurora, CO

Mark Cassalia

[mcassali@auroragov.org](mailto:mcassali@auroragov.org)

720.238.5081



AURORA  
WATER



# Your Test

Customer calls asking for advice.

Specifically, what retrofit would have the greatest overall cost savings after 1 year?

What other information do you need?

# Variables

Age of House: 1983

Family Members: 4

Bathrooms: 2 full, 1 half

## INDOOR

Toilets:	1990 (3.5), 1990 (3.5), 1983 (4.0)	12 flushes/day
Showers:	1990 (4), 1990 (3)	25 min/day
Bathroom Sinks:	1990 (3), 1990 (3), 1983 (?)	20 min/day
Add'l Faucets:	1995 (3), 1995 (2.75)	12 min/day
Washer:	1990, Top-Loader (49)	10 loads/week
Dishwasher:	1990 (?)	7 loads/week

## OUTDOOR

Irrigation: 1 Zone, 1,000 sq. ft., Bluegrass, Full Sun, Loam,  
Breezy, Mild Slope, DU = ?,

Watering Time: Total Minutes = 679/year

Watering Rate: 30 gpm

# What Is The Priority?



# The Problem with Rebates...

Conserving water is an abstract concept for our customers and decisions on how to conserve are often based on the rebates a utility offers.

# The Savings – Rebate Programs Only

Primary & Secondary Toilet  
Washing Machine  
Xeriscape

For the Customer

Cost of \$2650

46,000 gallons = \$242 / year

For the Utility

46,000 gallons for a cost of \$925 or  
\$6540 per acre-ft

# The Variables

## Indoor Variables

- Age of the Home/Fixtures
- Number of People
- Behavior and Usage Patterns
- Current Fixtures

## Outdoor Variables

- Zone Information
  - Square Footage
  - System
  - Env. Factors
- Current Watering Practices

## Retrofit Variables

- Rebates
- New Fixtures
- New Behavior/Usage
- Cost of Retrofits
- New Watering Practices



# Water Conservation Calculator



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## Welcome Aurora Water Customer,

Understanding where and how much water we use is the first step in beginning to conserve.

The Residential Water Use Calculator serves as an analysis of your current water use and conservation potential, providing you with a long term plan to meet your conservation goals. It is recommended that you review the calculator before using it to determine what data you need to collect. This will be the longest part of the process. The Calculator requires specific information about your property, including:

1. Construction Year
2. Number of family members
3. Indoor appliance usage data  
(Toilet, shower, faucet, washing machine & dishwasher)
4. Zone-by-zone irrigation system details



Once this information is entered, determine which retrofit actions you are interested in taking under the retrofit options pulldown menus. Based on your decisions, your 'Ranked Conservation Plan' will be produced. As you complete these steps, you will be able to view your changes graphically on the following spreadsheet as your water use approaches your conservation goals. Finally, the Water Use Calculator will produce an 'Irrigation Calendar' based on your plant material, environmental factors, and irrigation system information.

**Please be sure to save your progress frequently as the calculator will time out after 15 minutes of inactivity.**



# Section 1

## Indoor Water Use Information

# Fixture Information

## Section 1 - Indoor Water Use Information



Important: You must click the "Save Progress" sub-menu item at the top, before you exit the calculator or click any of the main menu links such as FAQs, or your progress will be lost.

What year was your house built?

How many people live in your home?

Specify the number of full and half baths in your house, and whether you have a dishwasher and washing machine. Note that this calculator can only handle a maximum of four bathrooms.

Number of Full Baths  Dishwasher?

Number of Half Baths  Washing Machine?

Number of Extra Faucets  
(Kitchen, Laundry Room, etc.)

### Toilets

Primary		Secondary		Third		Fourth	
Year	gal/flush	Year	gal/flush	Year	gal/flush	Year	gal/flush
<input type="text" value="1990"/>	<input type="text" value="3.5"/>	<input type="text" value="1990"/>	<input type="text" value="3.5"/>	<input type="text" value="1983"/>	<input type="text" value="4.0"/>	<input type="text" value="1983"/>	<input type="text" value="Std"/>

# Usage Information

**Total Use:** How much does your family use each item per day? If unknown, national averages will be assumed.

Total Toilet Use		Total Shower Use		Total Bathroom Faucet Use		Total Additional Faucet Use	
Flushes	<input type="text" value="12"/>	Minutes	<input type="text" value="25"/>	Minutes	<input type="text" value="20"/>	Minutes	<input type="text" value="12"/>

# Section 2

## Outdoor Water Use Information

Select an irrigation zone from the list on the left, then enter details for that zone. Details will be saved as you switch between zones.

Irrigation Zone 1

**Zone Description**

**Plant Material**

**Square Feet**

**Exposure**

**Soil Type**

**Slope**

**Wind**

**Distribution Uniformity (DU)**

Enter the number of times per week that this zone is watered, as well as the number of minutes per watering.

	April	May	June	July	August	Sept	Oct
Run Times / Week	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="3"/>	<input type="text" value="3"/>	<input type="text" value="3"/>	<input type="text" value="3"/>	<input type="text" value="2"/>
Min / Run Time	<input type="text" value="5"/>	<input type="text" value="5"/>	<input type="text" value="10"/>	<input type="text" value="14"/>	<input type="text" value="10"/>	<input type="text" value="7"/>	<input type="text" value="5"/>

When you select the appropriate Water Use Calculation Method, the form below will adjust according to the type of data to be collected. You do not need to use the same calculation method for all irrigation zones.

Water Use Calculation Method

Precipitation Rate	Total Inches / Year	Total Gallons / Year
2.89	33.02	20571.6

# Section 3

## Water Bill Information



# Section 4

## Indoor Retrofits

# Fixture Information

## Section 4 - Indoor Retrofits and Behavior Changes ^

You may choose to retrofit each item by choosing a retrofit option from each pull down menu. Rows that are disabled are not applicable to your property. Aurora Water offers rebates on high-efficiency toilets, washing machines, and Bluegrass to Xeriscape conversions. [Click here to learn more about rebates.](#)

**Toilets** Cost per toilet is assumed to be \$150 for a 1.6 gpf toilet and \$250 for a 1.2 gpf toilet if left blank. Install Cost is assumed to be \$80 if left blank.

	Current	New gal/flush	Cost / Unit (\$)	Install Cost (\$)	Rebate <sup>a</sup>
<b>Primary</b>	3.5	1.28 <input type="button" value="v"/>	<input type="text" value="250.00"/>	<input type="text" value="80.00"/>	\$ 150.00
<b>Secondary</b>	3.5	1.6 <input type="button" value="v"/>	<input type="text" value="150.00"/>	<input type="text" value="80.00"/>	\$ 0.00
<b>Third</b>	4	1.28 <input type="button" value="v"/>	<input type="text" value="250.00"/>	<input type="text" value="80.00"/>	\$ 150.00
<b>Fourth</b>	0	No Change <input type="button" value="v"/>	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	\$ 0.00

# Usage Information

	Current Use	New Use	
<b>Toilets</b>	12.0	12 <input type="button" value="v"/>	Flushes Per Day
<b>Showers</b>	25.0	25 <input type="button" value="v"/>	Minutes Per Day
<b>Bathroom Faucets</b>	20.0	20 <input type="button" value="v"/>	Minutes Per Day
<b>Other Faucets</b>	12.0	12 <input type="button" value="v"/>	Minutes Per Day
<b>Dishwasher</b>	7.0	7 <input type="button" value="v"/>	Loads Per Week
<b>Washing Machine</b>	10.0	10 <input type="button" value="v"/>	Loads Per Week



# Section 5

## Outdoor Retrofits

Irrigation Zone 1

**Zone Description**

**Back Yard**

**Current Plant Material**

Bluegrass (Turf)

**New Plant Material**

Xeriscape - Ideal Watering

**Current Sq. Ft.**

1000

**Converted Sq. Ft.**

1000

**Cost per Sq. Ft. (\$)**

.75

# Results

Totals and Savings  
Options

**Total Cost & Total Savings**

**Total Upgrade Costs - Rebates**

\$2075.00

**Total Gallons Saved / Yr**

94912

**Total Money Saved / Yr**

\$680.44

**Description of Savings After 1 Year**

**Amount (\$)**

Primary Shower Changes	\$ 118.11
Primary Bathroom Sink Changes	\$ 44.14
Secondary Bathroom Sink Changes	\$ 44.14
Kitchen Faucet Changes	\$ 29.40
Third Bathroom Sink Changes	\$ 19.57
Secondary Shower Changes	\$ 13.00
Secondary Extra Faucet Changes	\$ 7.29
-	\$ 0.00
-	\$ 0.00
-	\$ 0.00

**Suggested Irrigation Calendar**

**April**

Zone	Days	Cycles / Day	Min / Cycle
1	4th T	3	6
2	-	-	-
3	-	-	-

**May**

Zone	Days	Cycles / Day	Min / Cycle
1	4th T	5	6
2	-	-	-
3	-	-	-

**June**

Zone	Days	Cycles / Day	Min / Cycle
1	2nd & 4th T	4	6
2	-	-	-
3	-	-	-

# How Did You Do?

## Calculator

1. Primary Shower
2. Primary Bath Sink
3. Secondary Bath Sink



## Your Results

1. ?
2. ?
3. ?

# The Savings

## Rebates

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## Conservation Calculator

Primary & Secondary Showers  
Bathroom Faucets  
Kitchen and Extra Faucet  
Washing Machine

For the Customer

Cost of \$600

53,000 gallons = \$279 / year

For the Utility

53,000 gallons for a cost of \$176  
or \$1086 per acre-ft

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# Directing Conservation

## Reinventing Customer Service

### Before

Toilet  
Washer  
Irrigation



Rebates

### After

Calculator



Priority 1  
Priority 2  
Priority 3



Rebates

**Customers become their own managers**

# Further Potential

## When Drought Strikes

- Customers already using the calc will be able to manage their water more effectively and receive individualized updates
- Customers wanting to conserve will be able to quantify their savings as a result of their actions
- If necessary more field teams could be mobilized and the utility can quantify the savings

# Conclusions

Although this analysis is for only one customer, the numbers challenge us to take another look at how we design and implement conservation programs. Providing customer service based on data collection and informed action could be a win for our customers and the utility.

# QUESTIONS?

[www.aurorawater.org/ConservationCalculator](http://www.aurorawater.org/ConservationCalculator)