

SINGLE FAMILY RESIDENTIAL OUTDOOR WATER DEMAND: *TRENDS, MOTIVATIONS & FUTURE STRATEGIES*



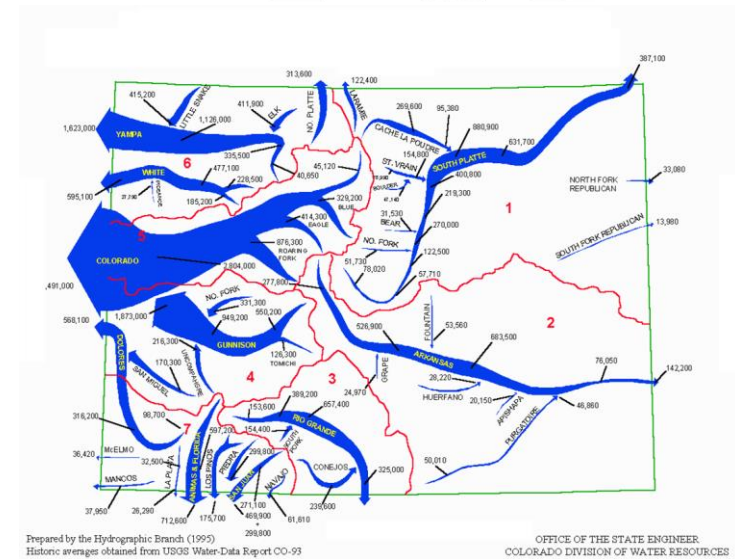
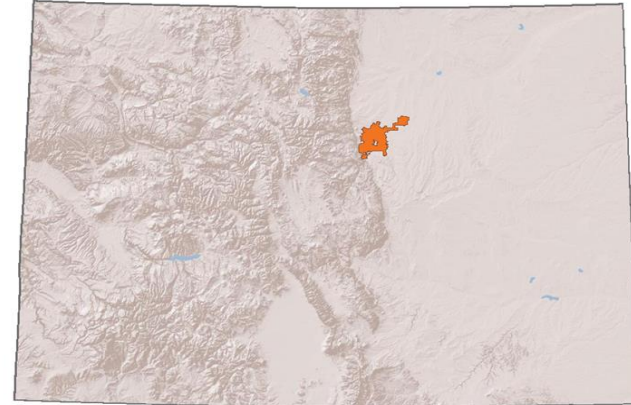
*3rd Annual Urban Water Demand Roundtable
February 9-10, 2015
Mitch Horrie, Denver Water*

Topics Covered

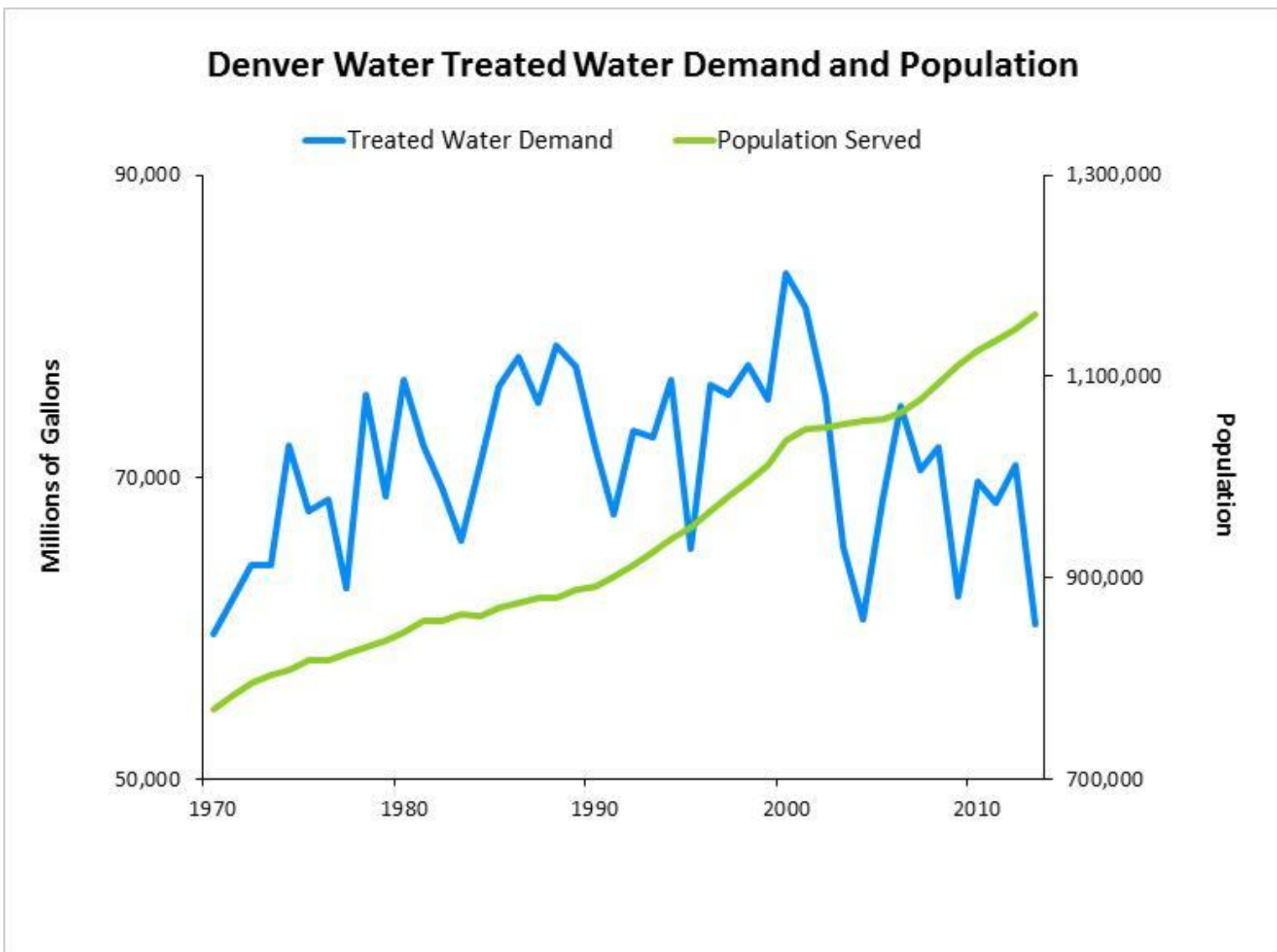
- Denver Water Overview
- Single Family Residential Outdoor Demand Trends
- Programs, Activities, Initiatives
- Recent Research
- Future Strategies

Denver Water Facts & Statistics

- Serve 25% of state's population with 2% of the state's available water
- <1% of state's land area
- Serve water to about 1.3 million people
- 4,000 square mile (2.5 million acre) collection system
- 19 reservoirs

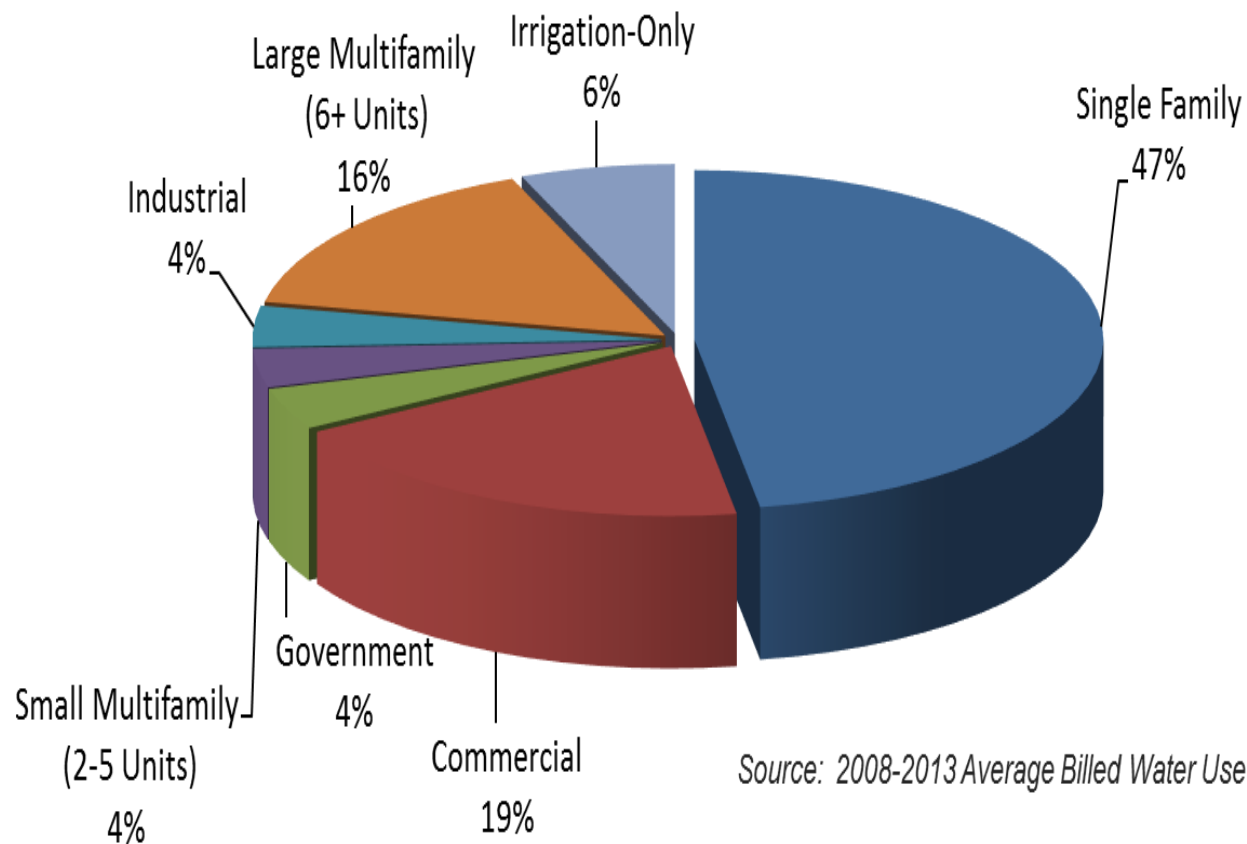


Denver Water Treated Water Demand and Population



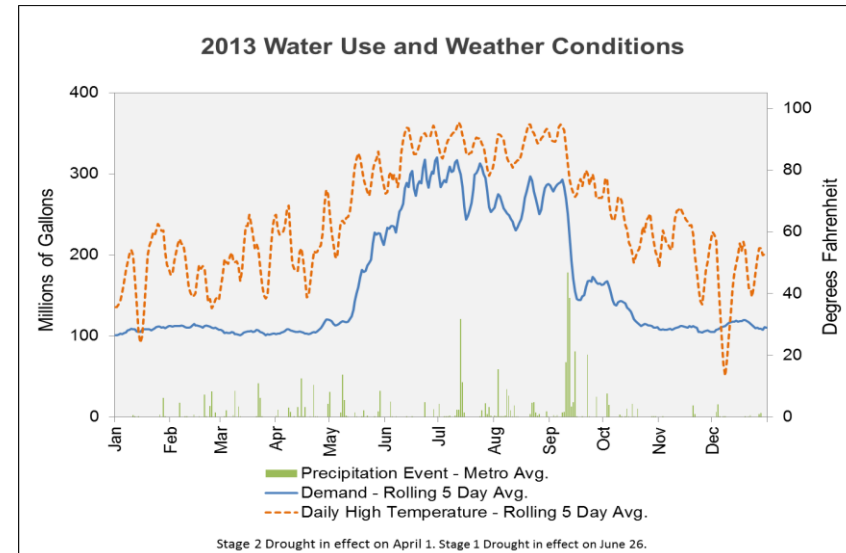
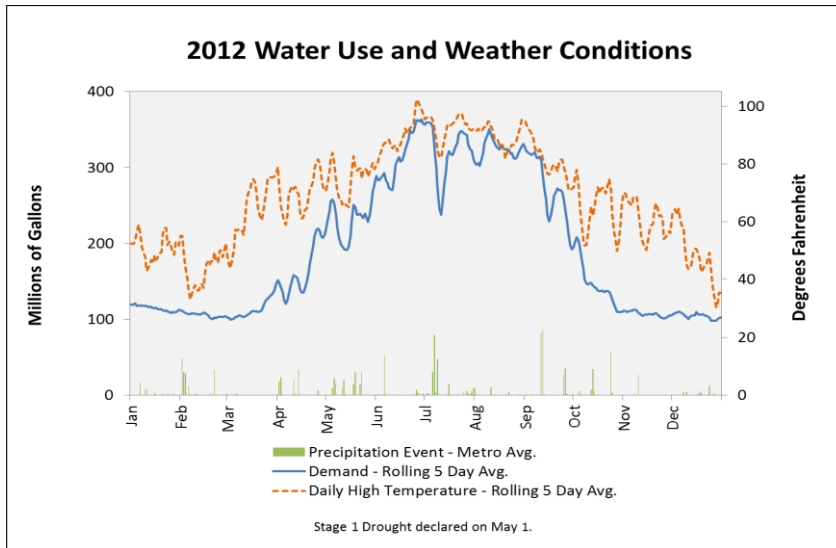
Demand by Customer Type

Denver Water Retail Treated Water Sales



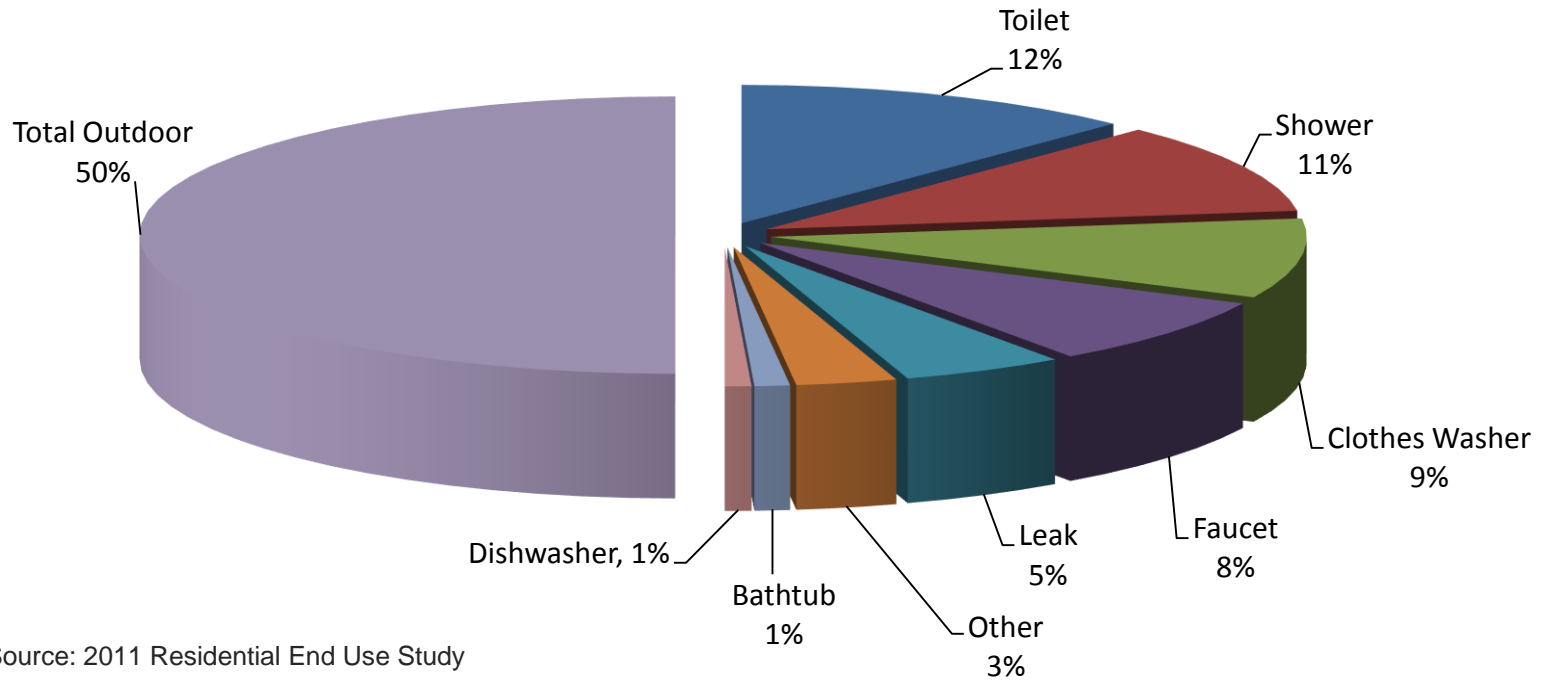
Source: 2008-2013 Average Billed Water Use

System Demand and Weather



Single Family Use Breakdown

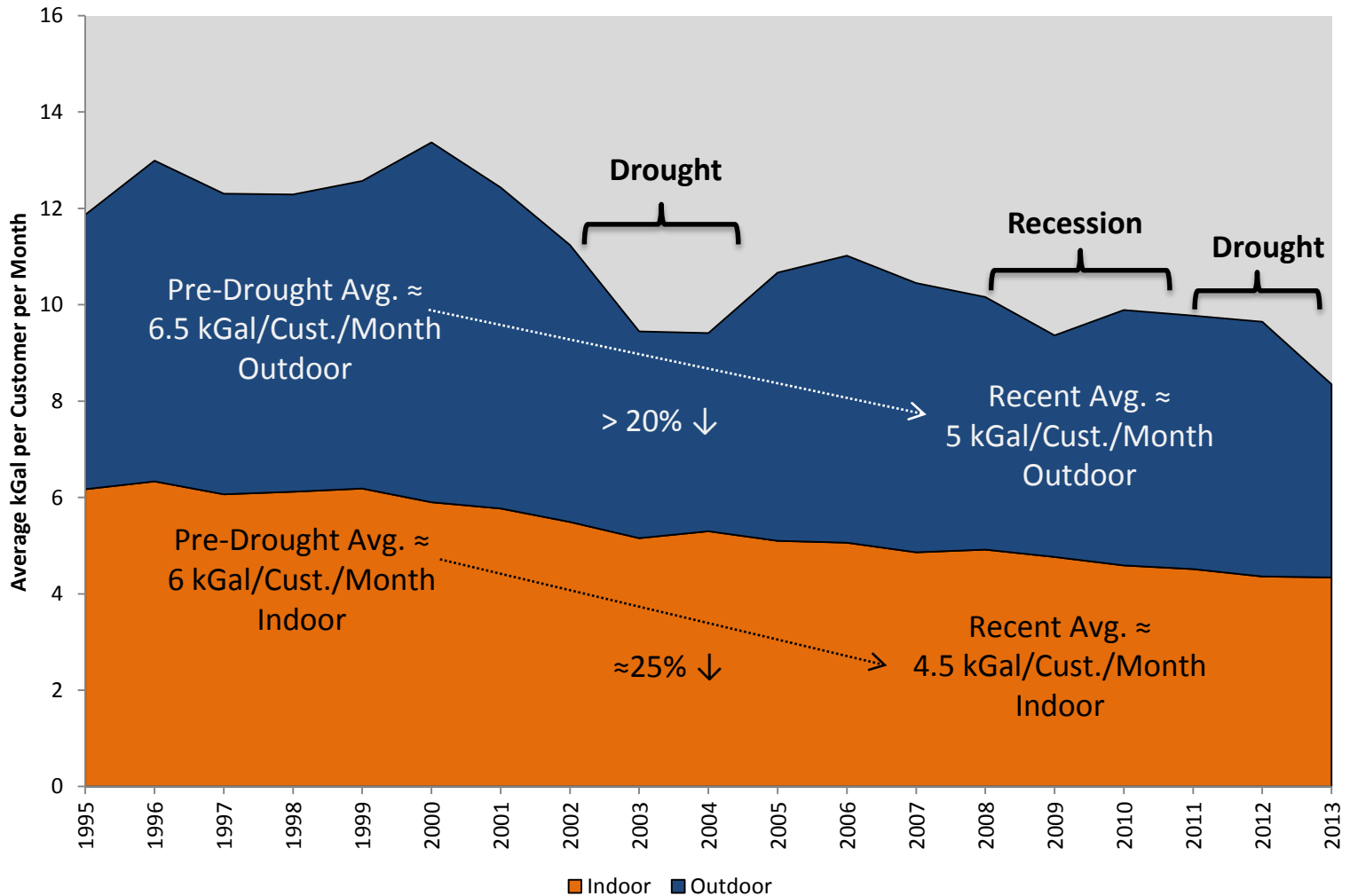
Single Family Water Use



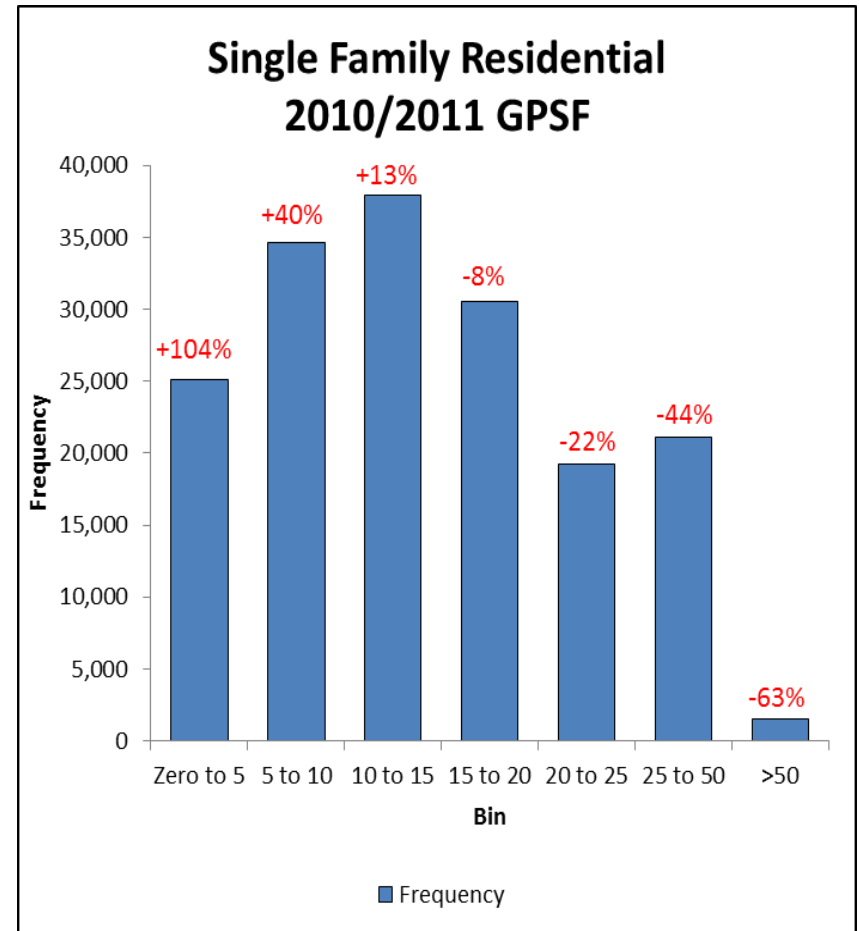
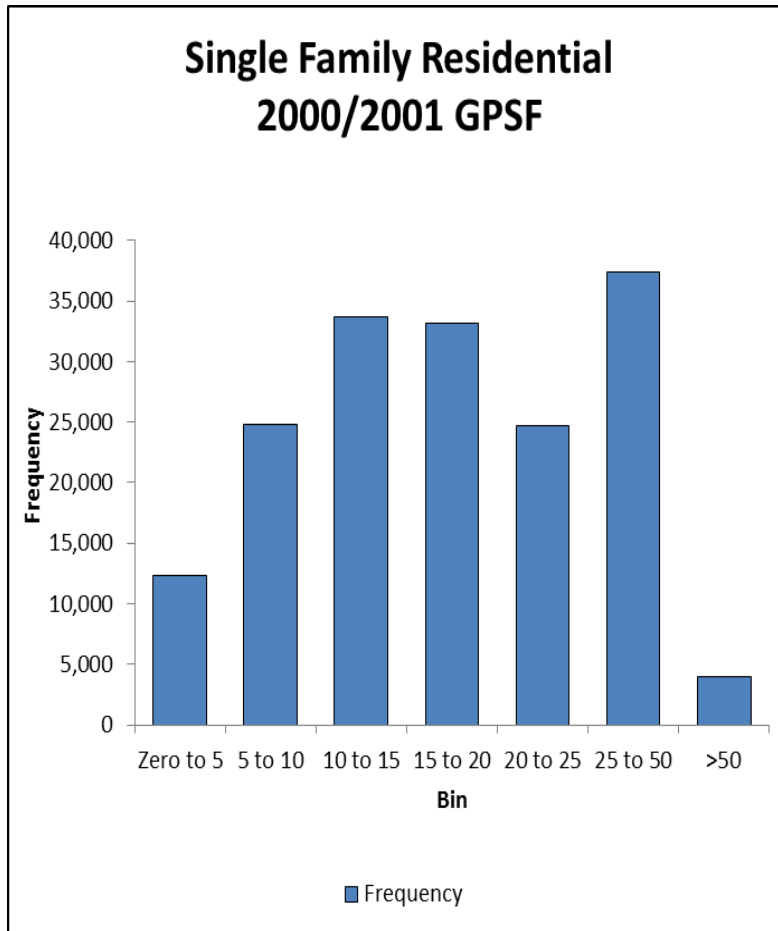
Source: 2011 Residential End Use Study

Trends

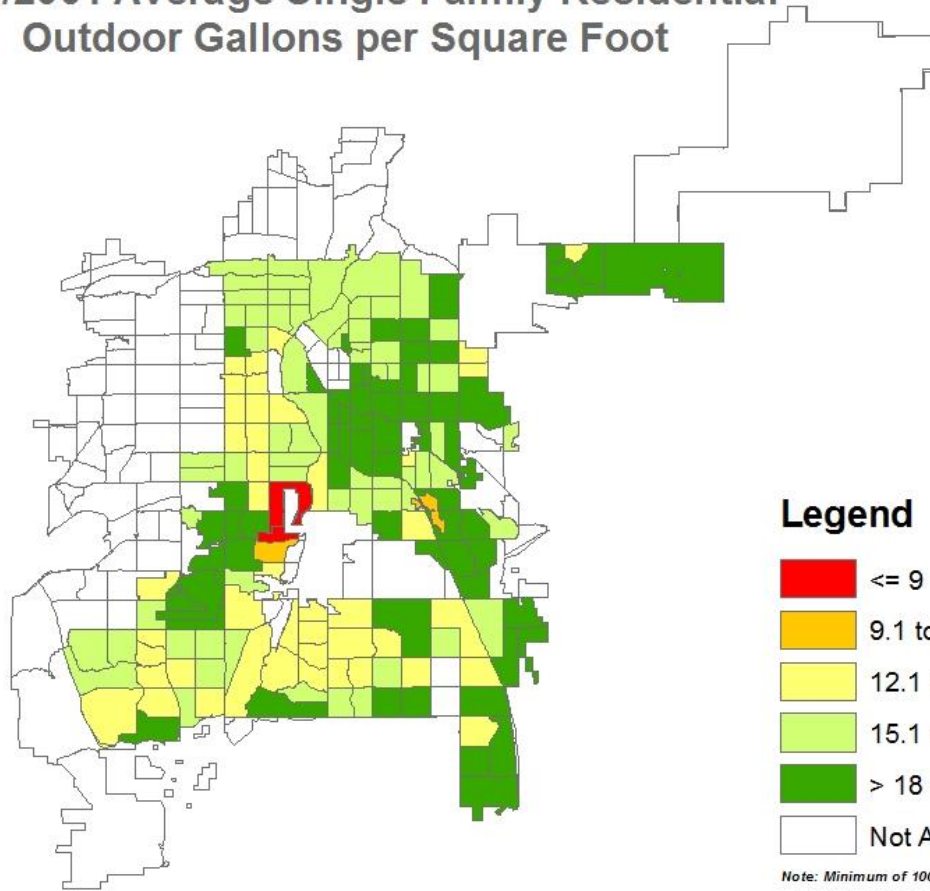
All Single Family Residential Average Monthly Indoor/Outdoor Demand, 1995-2013



Gallons per Square Foot



2000/2001 Average Single Family Residential Outdoor Gallons per Square Foot



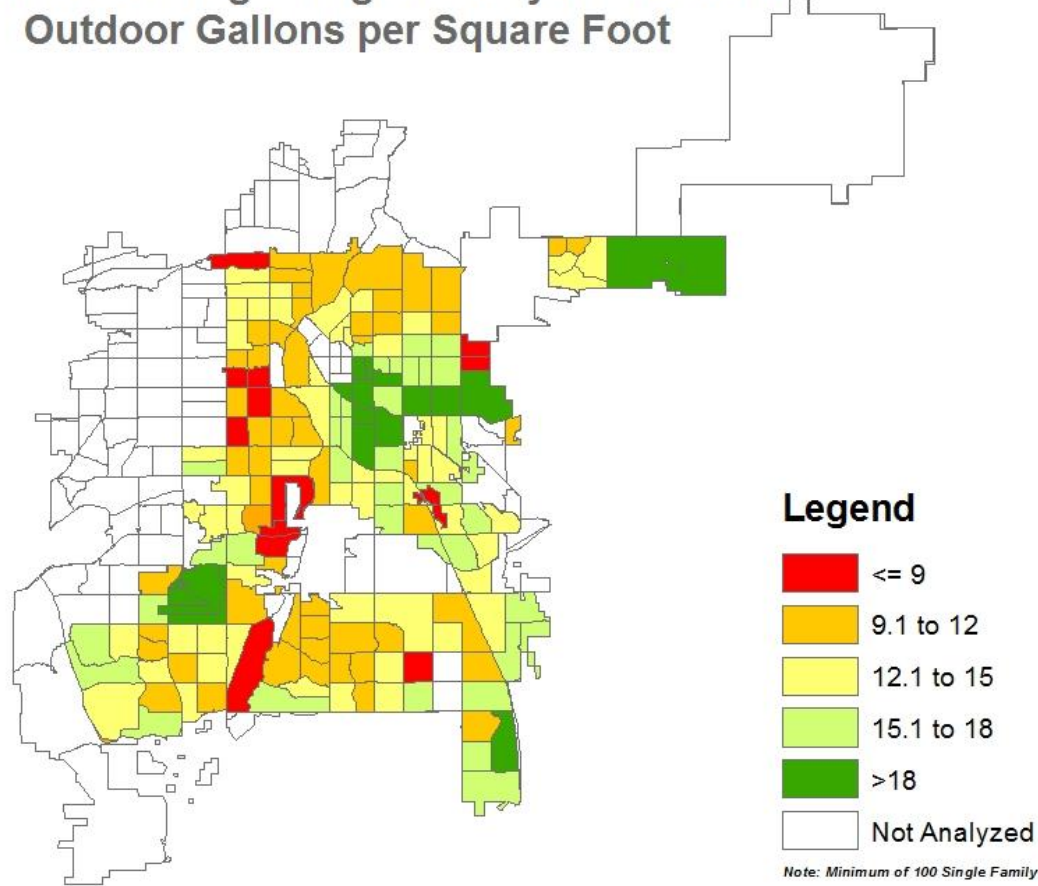
Source: Denver Water GIS, 2014



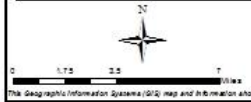
DENVER WATER
GIS
Map Date: October 8, 2014
Author: MGH
Source(s): CDW Extract

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2010/2011 Average Single Family Residential Outdoor Gallons per Square Foot



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DENVER WATER
 GIS
 Map Date: October 9, 2014
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Programs

Programs:

- Rebates (ET Controllers & Nozzles)
- Audits & Water Use Reports
- Education/Drought Patrol
- Garden in a box



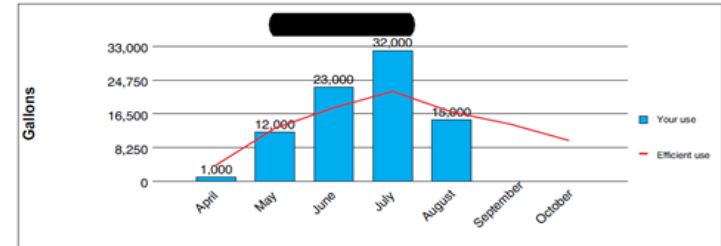
Direct Outreach & Targeting

- Data-driven program to educate customers
- Shows customers what efficient for them means
- Allows us to target inefficient customers and congratulate efficient customers

Your consumption compared with efficient use

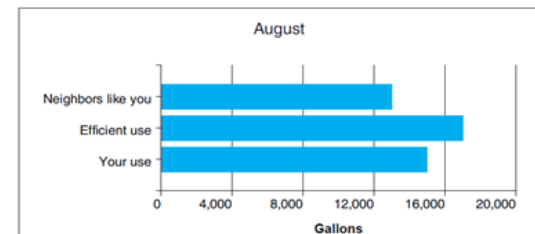
Our records indicate that you have 7,563 square feet of irrigable area and use about 1,000 gallons of water indoors a month.

Based on this information we estimate that you used 2,000 gallons less than the maximum amount of water considered efficient for a home like yours. Thank you for being a wise water user!



How do you compare with neighbors who have similar-sized yards and indoor water use patterns?

For this comparison, we looked at the median consumption of homes that have 7,000 to 7,999 square feet of irrigable area and use 0 to 2,999 gallons per month indoors. There are 334 homes in your area that have similar characteristics.



How does Denver Water determine efficient use for your property?

To calculate the maximum irrigation requirement, we use GIS to measure irrigable areas of your property. Then we combine that data with the irrigation requirements of Kentucky bluegrass, which requires more water than most trees and shrubs. Indoor use throughout the year is based on winter use at the property.

Help eliminate outdoor water waste by following Denver Water's watering rules:

1. Never water between 10 a.m. and 6 p.m., and never more than three days a week.
2. If it rains, skip a day, and always remember to turn off your sprinklers during rain and wind.
3. Adjust irrigation run times monthly according to landscape requirements and weather changes. Visit www.denverwater.org/lawn for more information about watering times.
4. Request a free water audit of your irrigation system by visiting www.denverwater.org/audits.

Recent Research

- What's motivating/influencing outdoor demand?
- How sustainable are the water use reductions we are seeing?
- How can we communicate efficiency to our customers?
- Exploratory Regression Analysis (Fall 2014)
 - Correlation of demographic factors and change in SFR outdoor consumption
- Customer Survey (January 2015)
 - Understand what motivated people's decisions to change landscapes or watering behaviors
 - Program design and customer targeting

Findings – Exploratory Regression

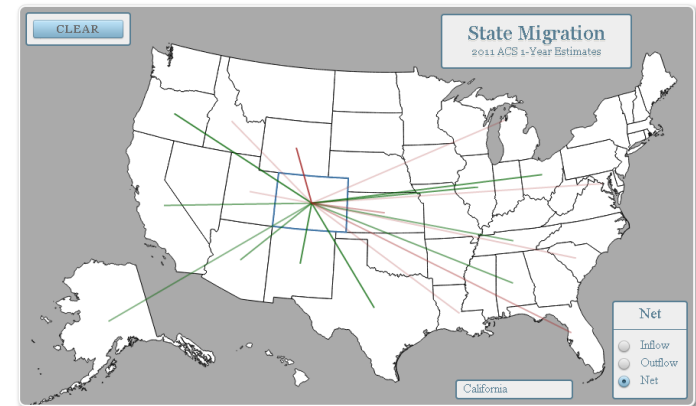
Statistically significant factors:

- + % Δ in population from another state
- % Δ in White population
- Δ in % unemployment
- + % Δ in median age
- % Δ in per capita income

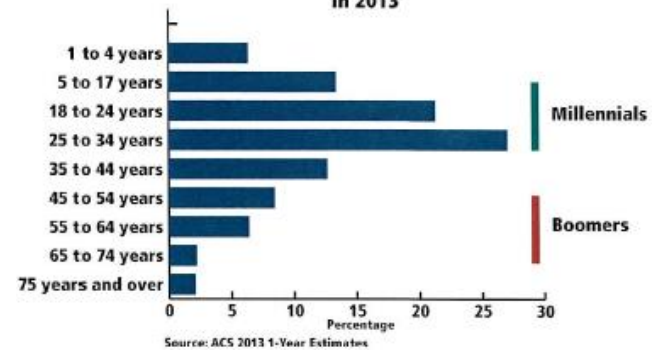
Unexpected:

- No strong correlation with median home value
- Negative correlation with per capita income
- No strong correlation with level of education

State to State Migration 2011



Age Distribution of Out of State Migrants to Colorado in 2013



Customer Survey

- Telephone Survey (January 2015)
 - Customer subsets for surveys:
 - “Target” – Inefficient to efficient irrigators
 - “Rebounders” – Low or non-irrigators to irrigators
 - “Risk?” - Irrigators to low or non-irrigators
 - Analysis of results is currently underway



Where are we going?

Efficiency rather than volumetric or % reduction goals:

- Understand our customers
 - What are they irrigating?
 - What are their motivations and preferences?
 - Efficient outdoor water use goal?
- Educate our customers
 - What efficient can look like for them
 - How to become efficient
 - Be an informational resource

Challenges

Landscapes

- Debate at the state level
- Social, cultural and economic components

How do we define efficiency?

Efficiency is a moving target

- Climate change
- Regulations, ordinances



Photo: Denver Post

Opportunities

“Local Water”

- Graywater
- Centralized reuse
- Rainwater
- Stormwater

New Residential Development
New Customers

Integrate water demands and land use planning



THANK YOU!

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