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
Demand by Customer Type

Denver Water Retail Treated Water Sales

- Single Family: 47%
- Commercial: 19%
- Government: 4%
- Small Multifamily (2-5 Units): 4%
- Industrial: 4%
- Large Multifamily (6+ Units): 16%
- Irrigation-Only: 6%

Source: 2008-2013 Average Billed Water Use
System Demand and Weather

2012 Water Use and Weather Conditions

2013 Water Use and Weather Conditions

Stage 1 Drought declared on May 1.

Stage 2 Drought in effect on April 1. Stage 1 Drought in effect on June 26.
Single Family Use Breakdown

**Single Family Water Use**

- **Toilet**: 12%
- **Shower**: 11%
- **Clothes Washer**: 9%
- **Faucet**: 8%
- **Leak**: 5%
- **Other**: 3%
- **Bathtub**: 1%
- **Dishwasher**: 1%
- **Total Outdoor**: 50%

Source: 2011 Residential End Use Study
Trends

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

Pre-Drought Avg. ≈ 6.5 kGal/Cust./Month
Indoor

Pre-Drought Avg. ≈ 6 kGal/Cust./Month
Outdoor

Recent Avg. ≈ 5 kGal/Cust./Month
Indoor

Recent Avg. ≈ 4.5 kGal/Cust./Month
Outdoor

≈25% ↓

> 20% ↓
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
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
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!

Mitch Horrie
Mitch.Horrie@denverwater.org
303.628.6703