

This presentation premiered at WaterSmart Innovations

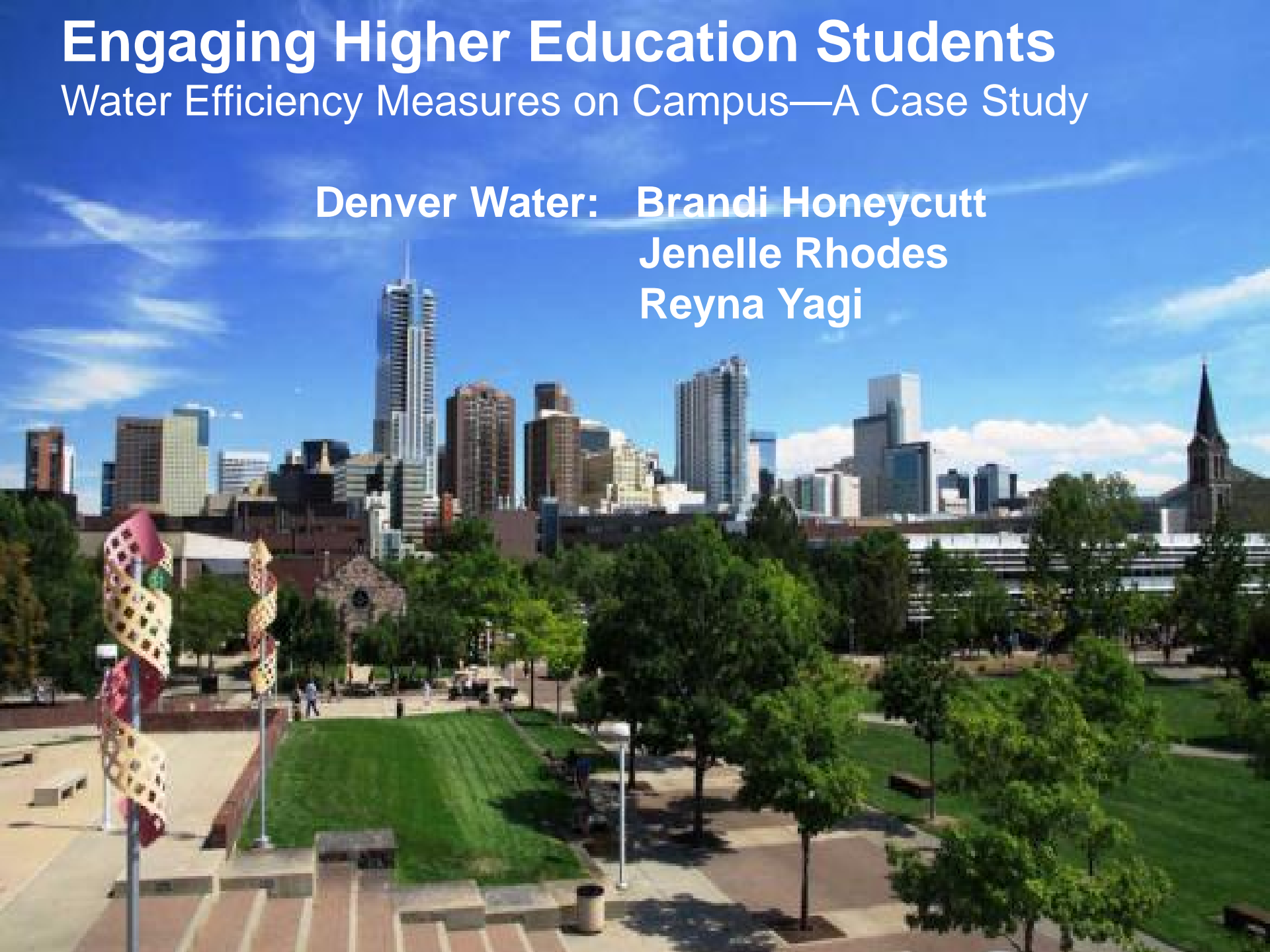
watersmartinnovations.com



Engaging Higher Education Students

Water Efficiency Measures on Campus—A Case Study

**Denver Water: Brandi Honeycutt
Jenelle Rhodes
Reyna Yagi**



Outline

Key players

History

Process

Conclusions

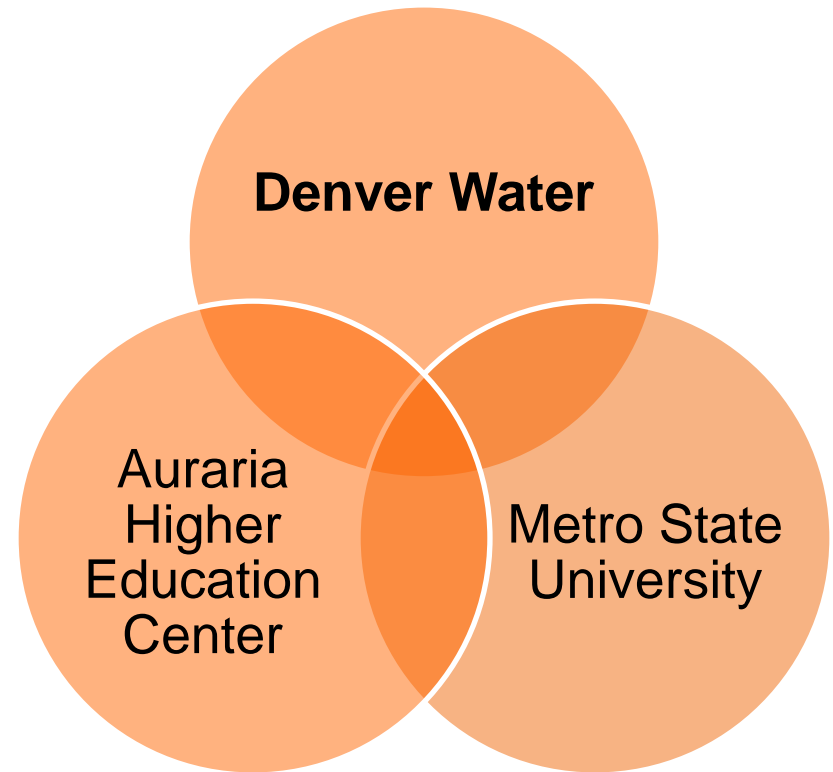
Lessons learned

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denverwater.org

Denver Water

- **Conservation Goals**
- **Conservation Programs**
 - Free audits
 - Rebates
 - Incentive contracts
- **Youth Education**

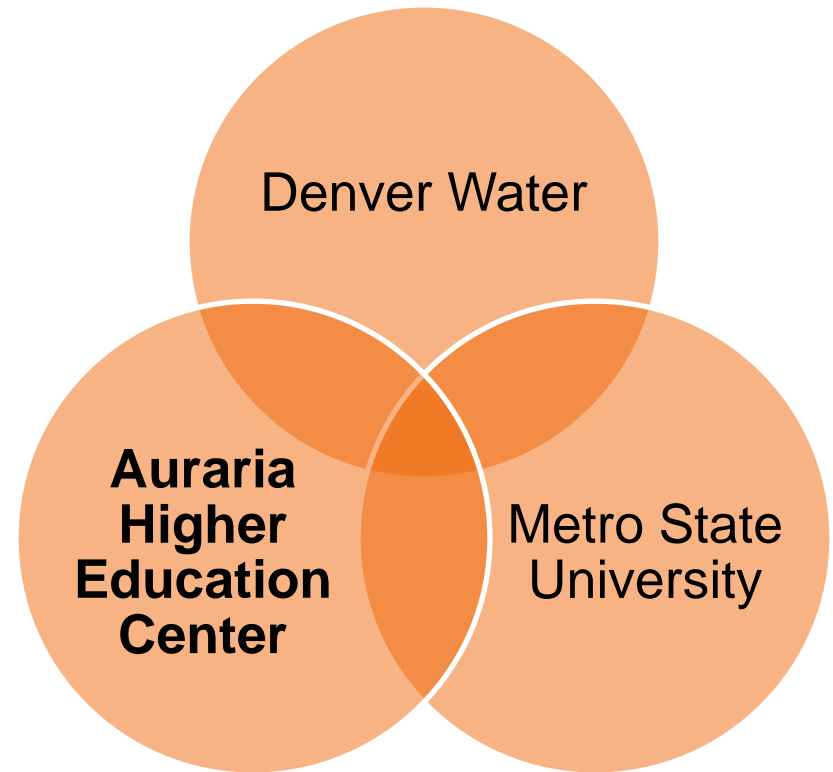


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Auraria Campus

- **3 Institutions**
 - Metro State University
 - University of Colorado
 - Community College of Denver
- **AHEC**
 - Sustainability



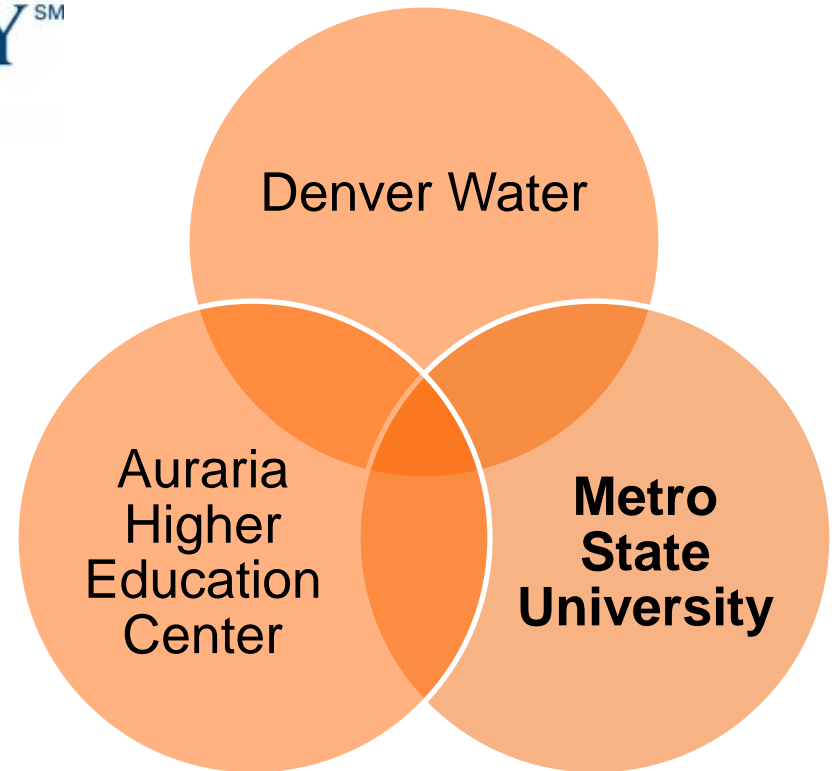
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METROPOLITAN
STATE UNIVERSITYSM
OF DENVER

- **Water Studies Minor**
 - One World One Water

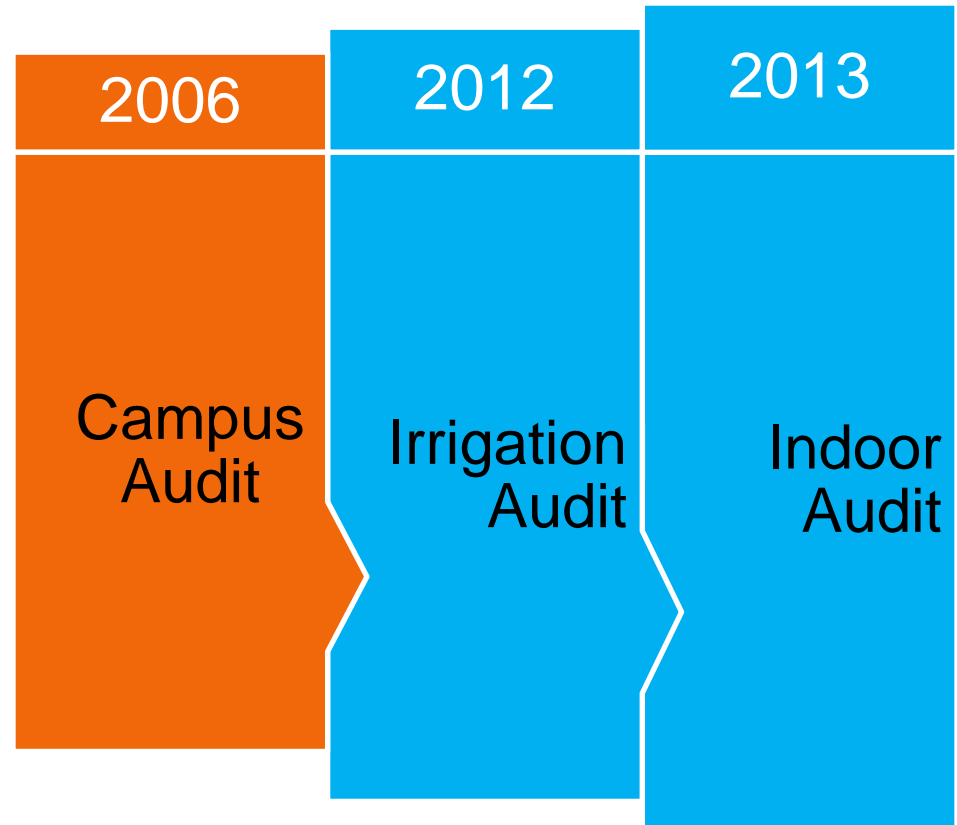


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History with Auraria Campus

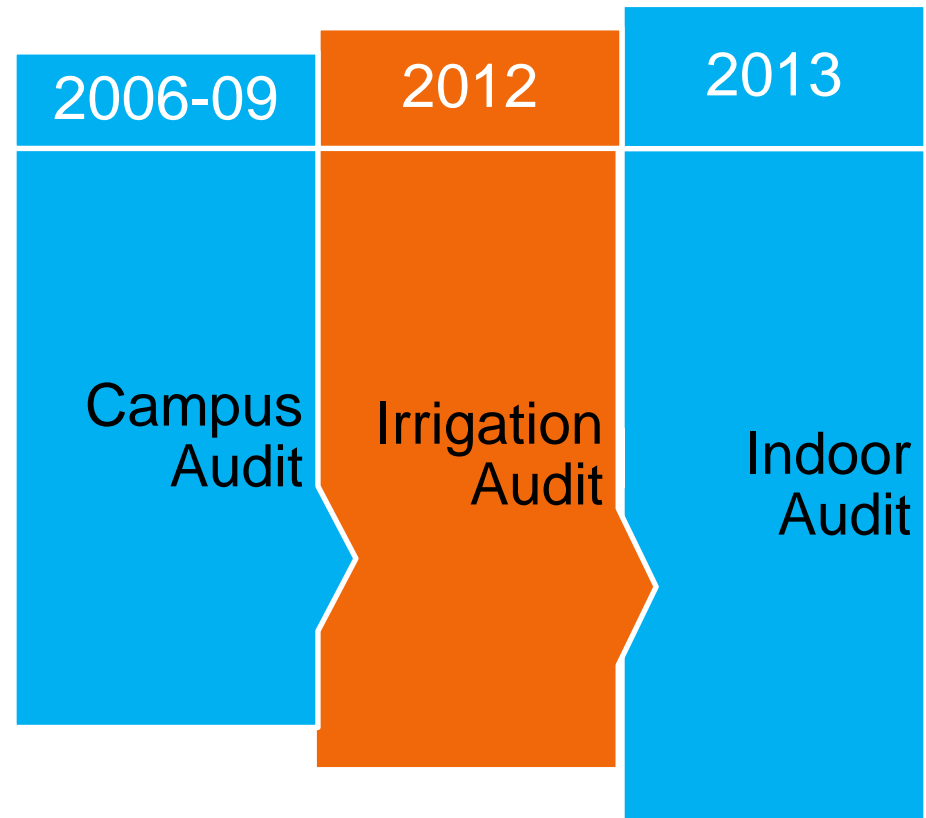
- **Low flow toilets and urinals**
 - Housing facilities
 - Classroom facilities
- **Cooling Tower Audits**
- **No student involvement**
- **No Sustainability Coordinator**



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History with Auraria Campus

- **2.5 weeks**
 - Communication
 - Disorganized system
 - No parking!
- **Inefficient!!**
 - 9 million gallons
- **\$20,000 Grant**
 - Equipment
 - Savings



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Annual Water Use Report for: AURARIA CAMPUS

2011 IRRIGATION REPORT

2011 Consumption (Gallons)	24,049,870
Total Irrigated Area (Sq Feet)	1,260,477
Gallons of Water Used per Sq. Foot (GPF/SF)	23

Based on 2011 Auraria West Water Consumption

2011 IRRIGATION REPORT

2011 Consumption (Gallons)	19,303,310
Total Irrigated Area (Sq Feet)	567,709
Gallons of Water Used per Sq. Foot (GPF/SF)	33

Based on 2011 Auraria West Water Consumption

2011 Consumption Rating

Gallons Per Square Foot (GPF/SF)

- 15 : EFFICIENT IRRIGATION
- 15 - 25 : MODERATELY INEFFICIENT
- 25 : SEVERELY INEFFICIENT



0 250 500 750 1,000 Feet

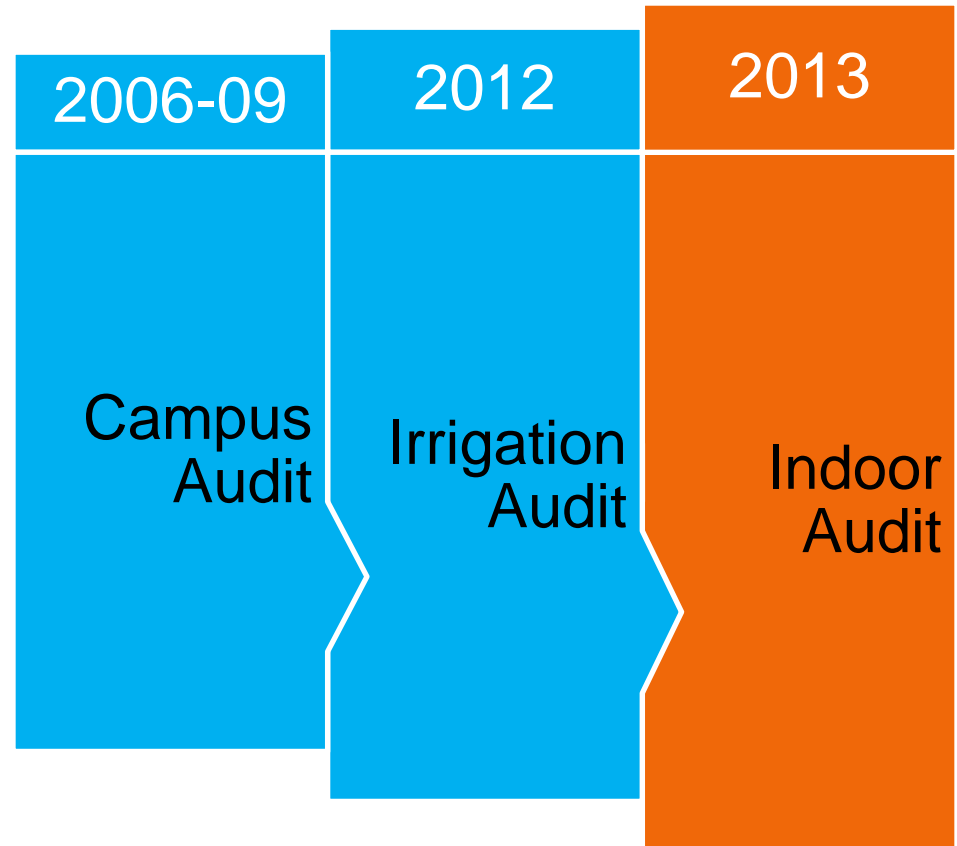
2012 Bing Maps Image

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DENVER WATER CONSERVATION SECTION
MAP DATE: December 10, 2013
MAP SOURCE: TCD/CORALE/ETW

History with Auraria Campus

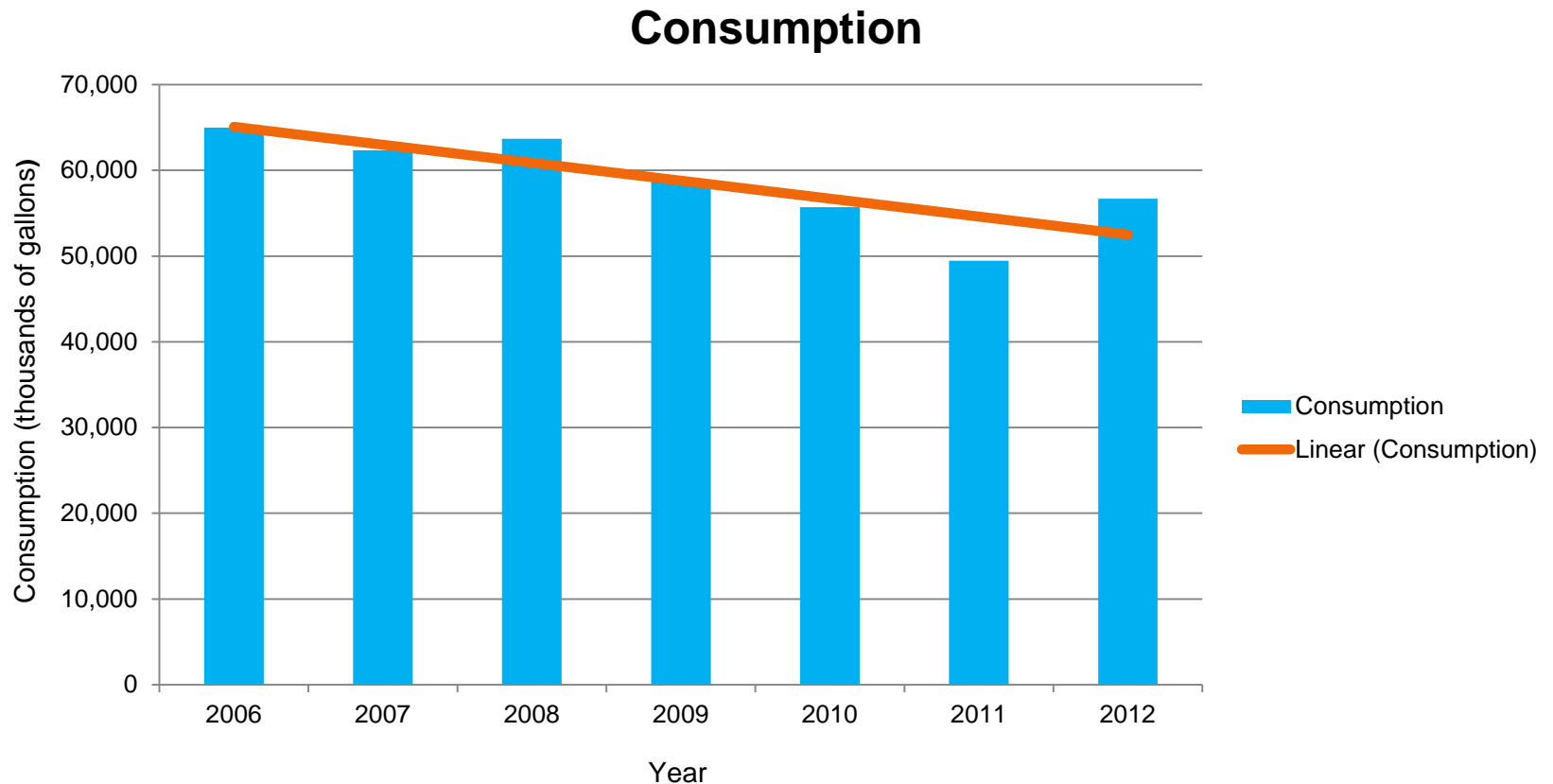
- **MSU and OWOW**
 - ENV 4290
Water Auditing and Analysis
- **5 Buildings**
- **6 Cooling towers**
- **4 Field Technicians**
- **12 students**



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Auraria Consumption 2006-2012



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Course and Audit Process

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ENV 4920 Water Auditing & Analysis

- **Winterim 2013**
 - **January 2nd – January 18th**

“This course exposes students to the methods and techniques used in water auditing and analysis. Students will learn how to complete and indoor water audit, including fixture repair, analyze their results, and summarize the implications of the results.”

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Commercial Indoor Water Audit

Field Process



Report

Summary of
savings

Historical
consumption

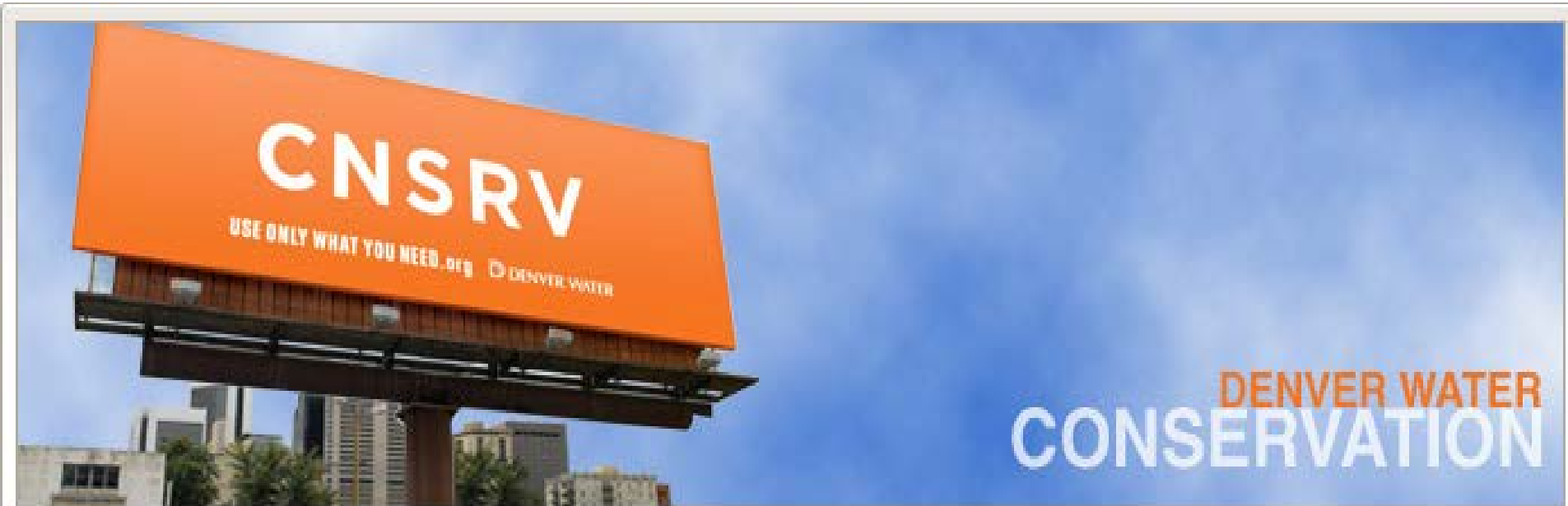
Cooling
tower
analysis

Rebates

Incentive
Programs

In-Class Presentations

- Denver Water and Conservation
- Cooling Towers
- Creating Reports



Equipment



- **Leak kits**
 - Flow bag
 - Drip gauge
 - Toilet dye-tabs
- **Info Sheets**
 - How to determine flow rate
 - Cooling towers
 - Resume recommendations
 - DW info packet

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Worksheets – Record Findings

- Water-use processes
- Number of fixtures and location
- Flow rate
- Leaks
- Hours of operation
- Fixture Use



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Cooling Tower



- **Audit Process**
 - Check for leaks
 - Conductivity set-point
 - Cycles of concentration
 - Hours of Operation
 - Model and Serial #

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Participation Feedback

- Resources provided useful
- Interest in working at Denver Water
- Enhanced skill set for career in water industry

“I have never been so excited about toilets before!”

(in regards to the free flappers we gave out)



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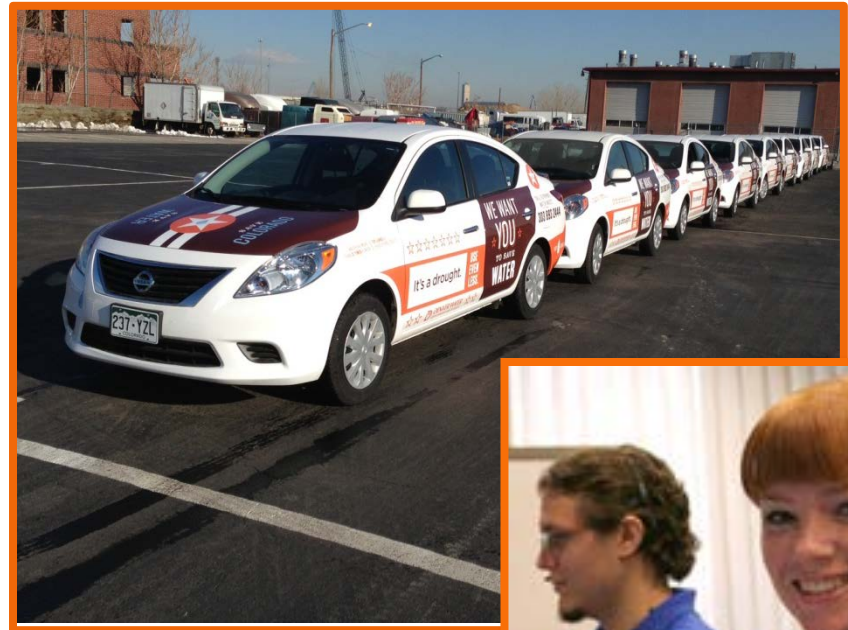
Conclusions & Lessons Learned

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Benefits to the Utility

- Water Savings
- Training future water professionals
- Leader in our field
- Foster solid relationships with community
- Campus as great classroom
- Staff professional development opportunities



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Benefits to the School



- FREE!
- Hands-on experience from local water pros
- Understand water use and behaviors
- Identify campus sustainability projects
- Positive relationship with community and utility
- Aid with future endeavors

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Getting “schooled” – what we learned

- Broader Communication
- Condense the audit
- Develop set curriculum
- Train-the-trainers

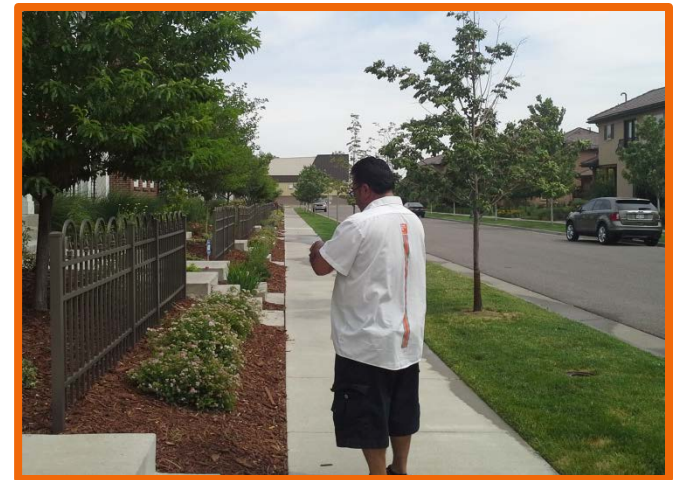
Our hopes: water education and conservation has a permanent place at Auraria

New Happenings at Auraria

- Fixture follow-up
 - Weather Station
- Xeric Garden Talks
- Campus Water Management Plan
- AMI Pilot Project
- OWOW
- Audit Class set for 2014!



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Higher-Education Prospects at Denver Water

- University of Denver Audit
- University of Denver Xeric Garden
- Front Range Community College Tour



Project Xeri students at finished xeriscape work site

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Questions?



OWOW

www.msudenver.edu/owow/

Auraria Campus

www.ahec.edu/

Denver Water

www.denverwater.org/

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