

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com

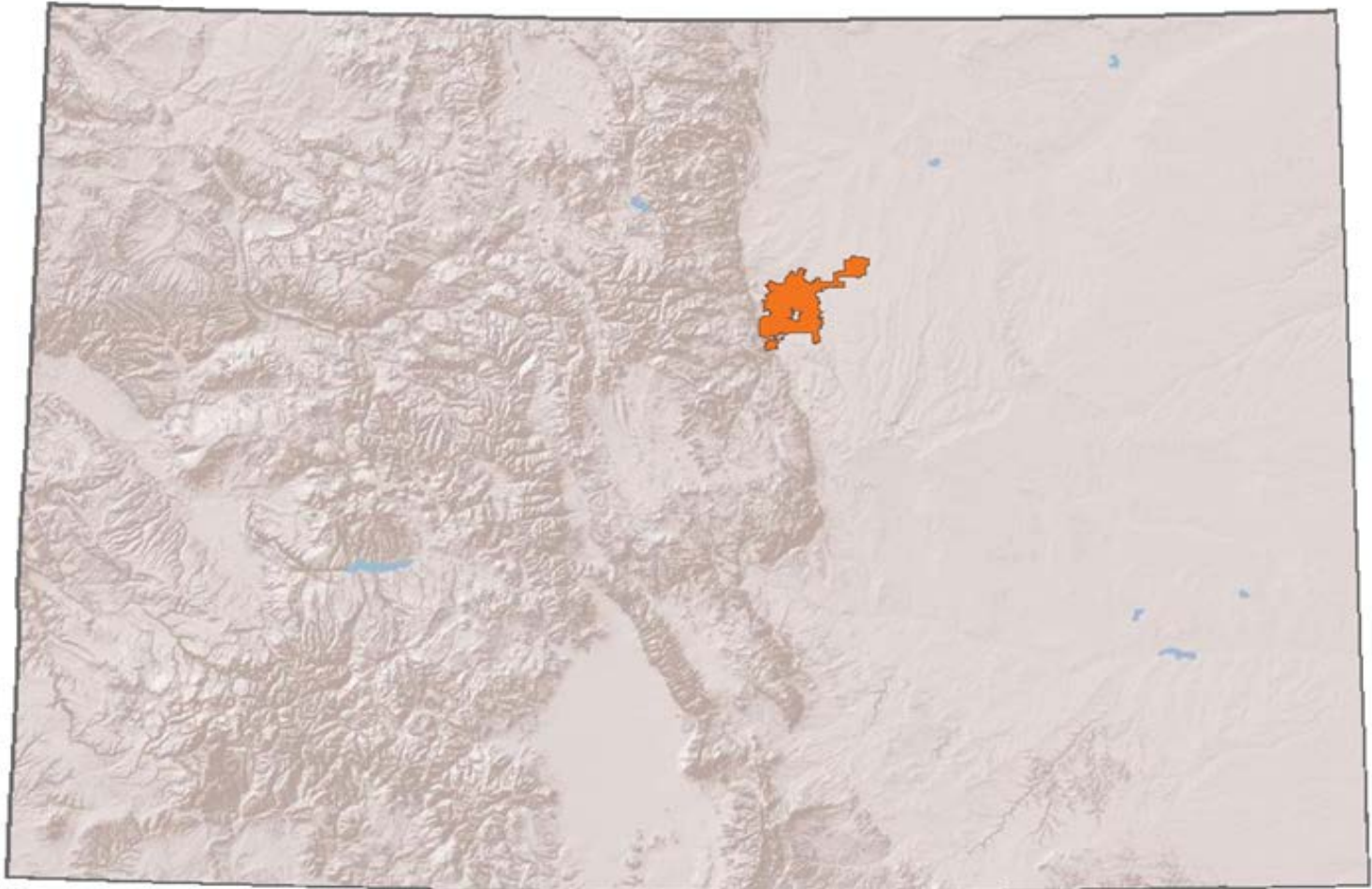


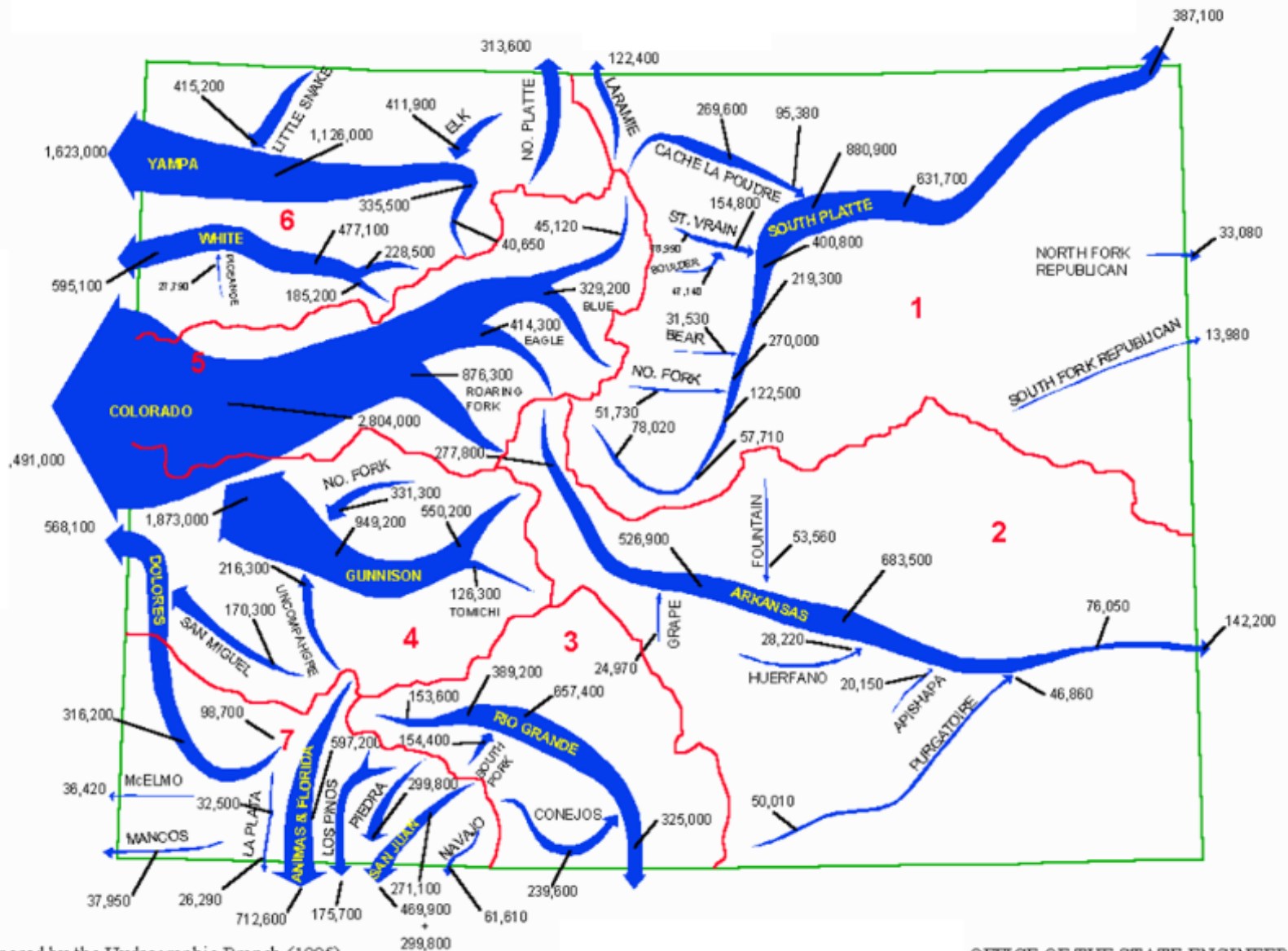
RISKS OF OVERGENERALIZATION



Phil Segura and Mark Cassalia

Denver Water



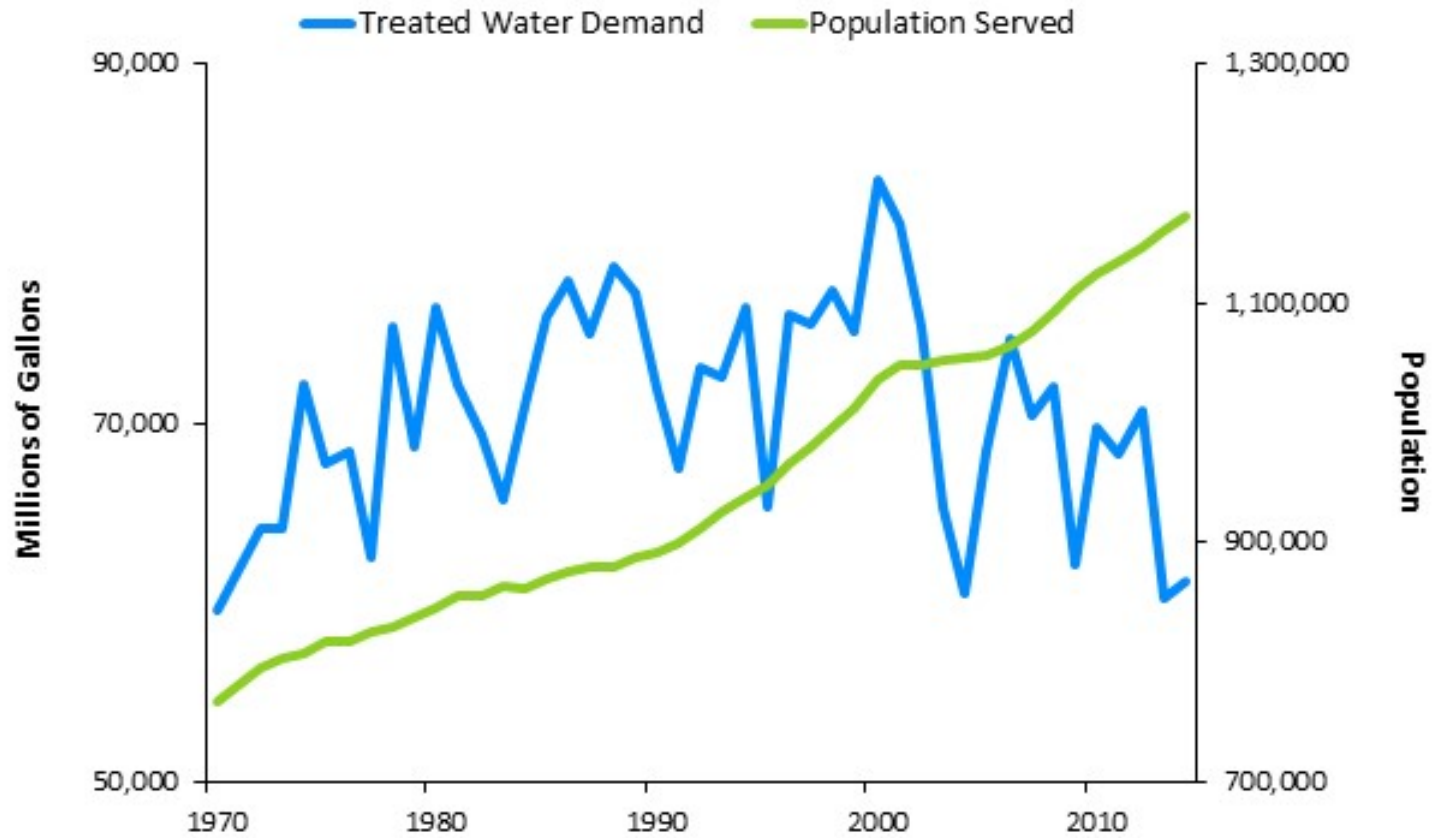


Prepared by the Hydrographic Branch (1995)
 Historic averages obtained from USGS Water-Data Report CO-93

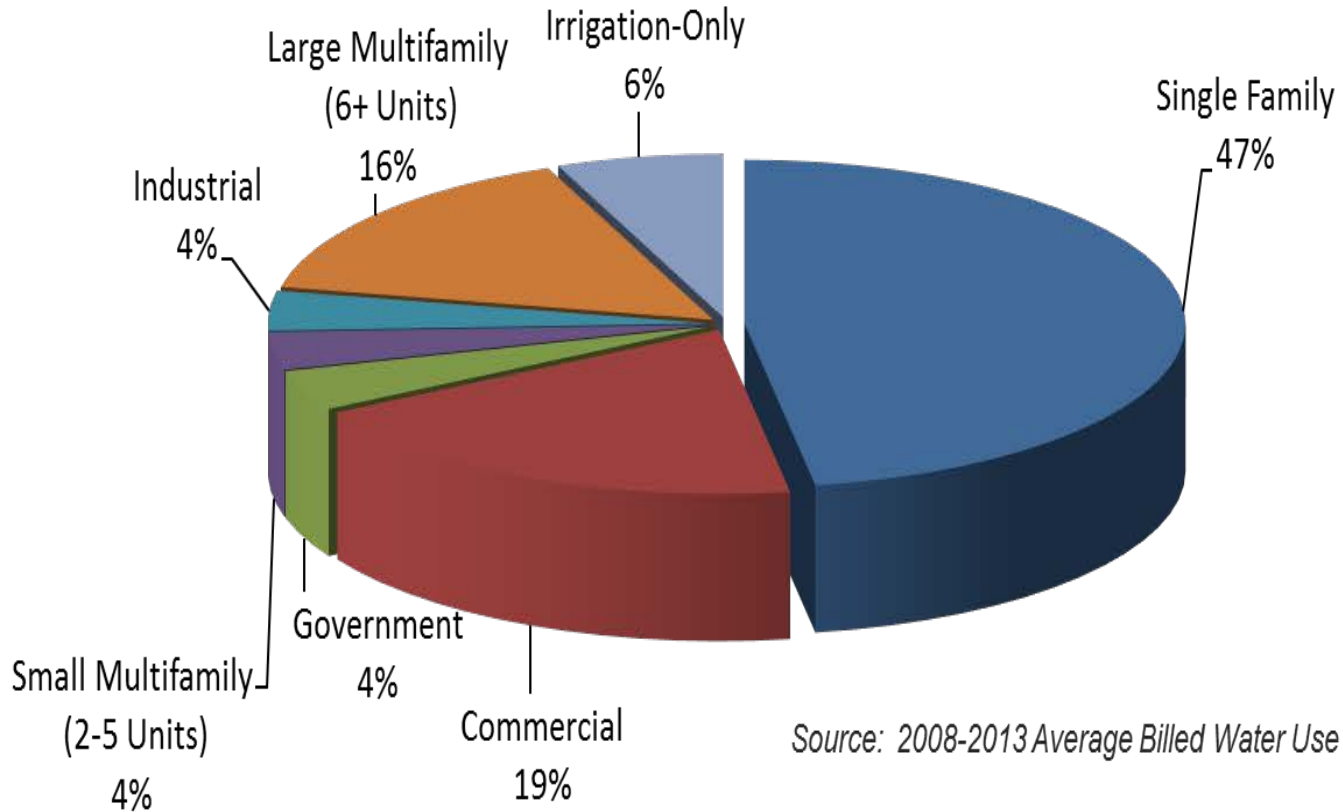
OFFICE OF THE STATE ENGINEER
 COLORADO DIVISION OF WATER RESOURCES



Denver Water Treated Water Demand and Population



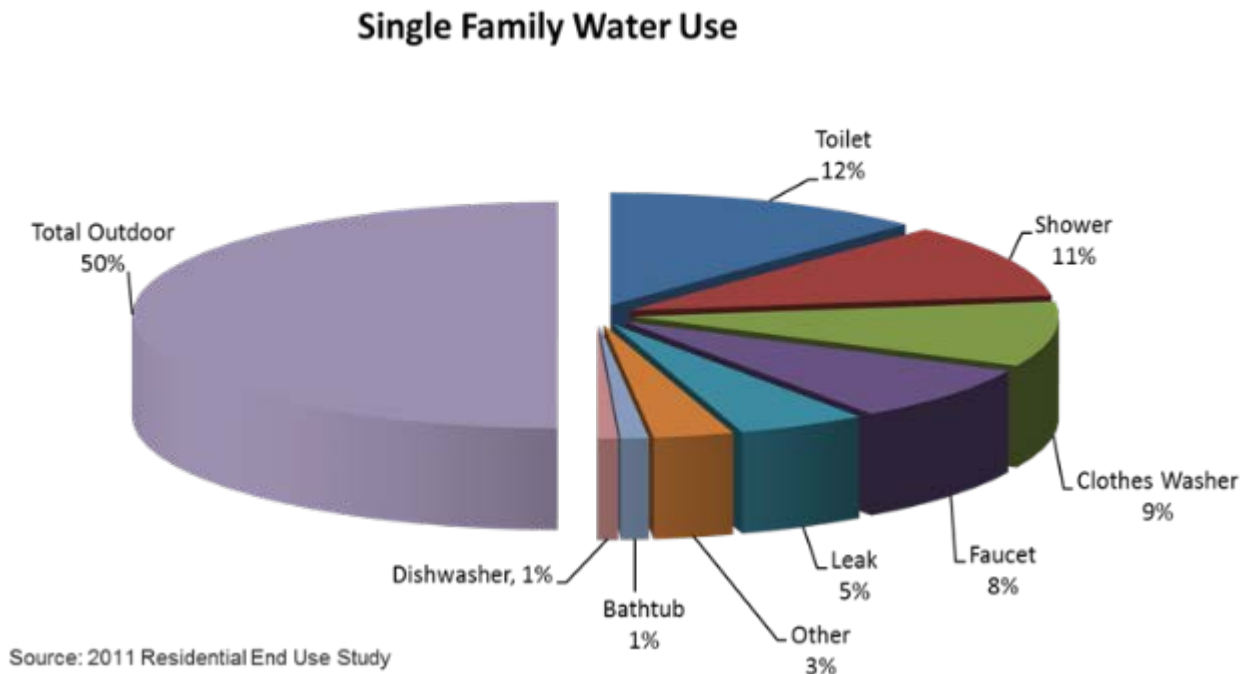
Denver Water Retail Treated Water Sales



25% of the water sold by Denver Water each year, is used outdoors by single family customers.

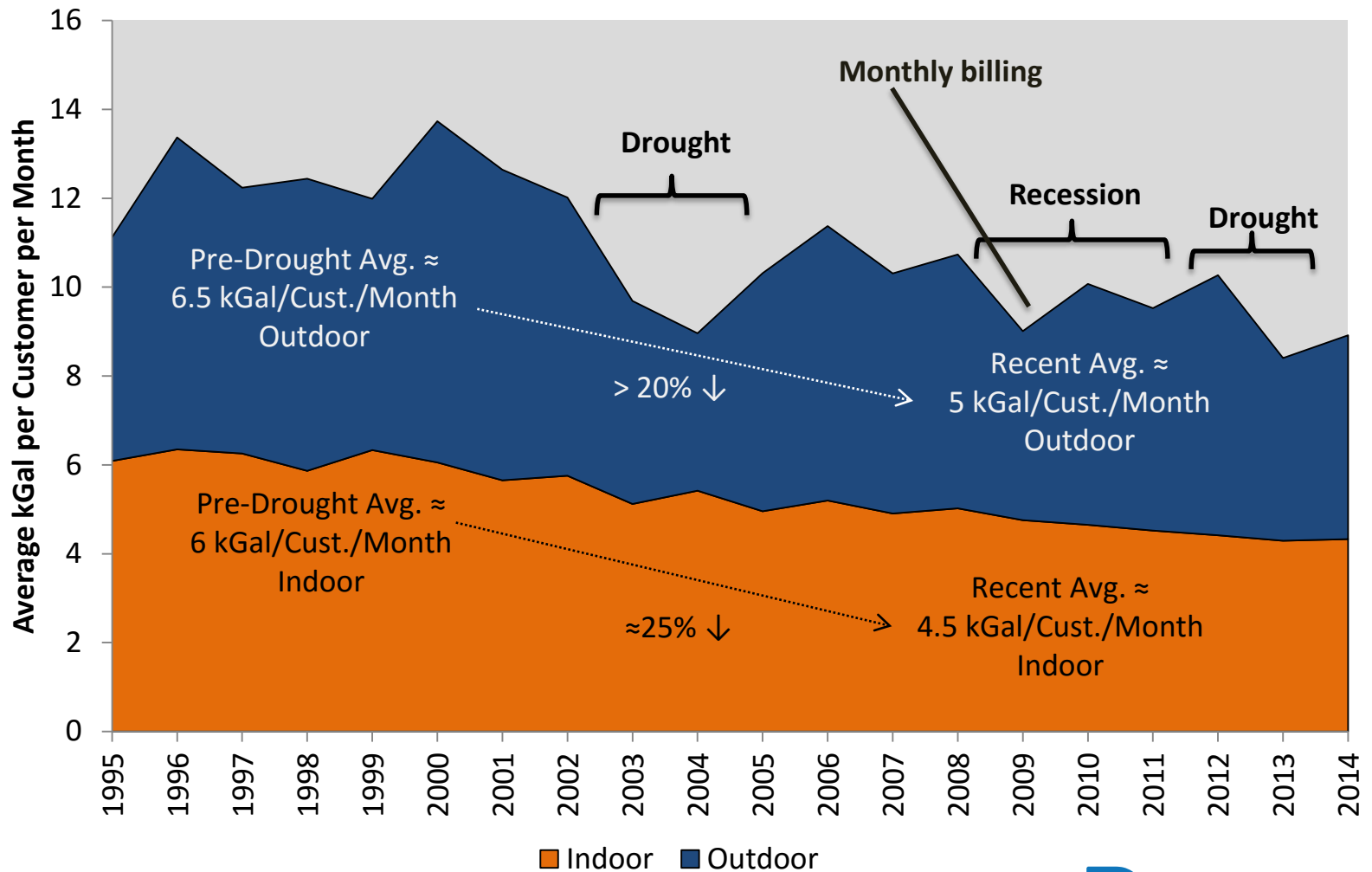
Single Family Outdoor Demand

Single family residential customers in the retail and master meter service areas use about **16.6 billion gallons** of water outdoors each year.

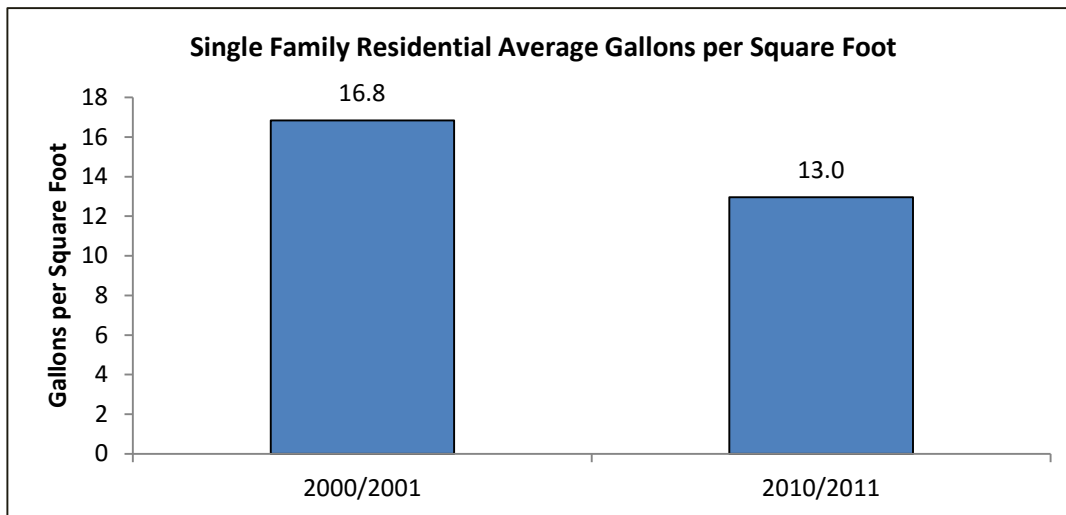
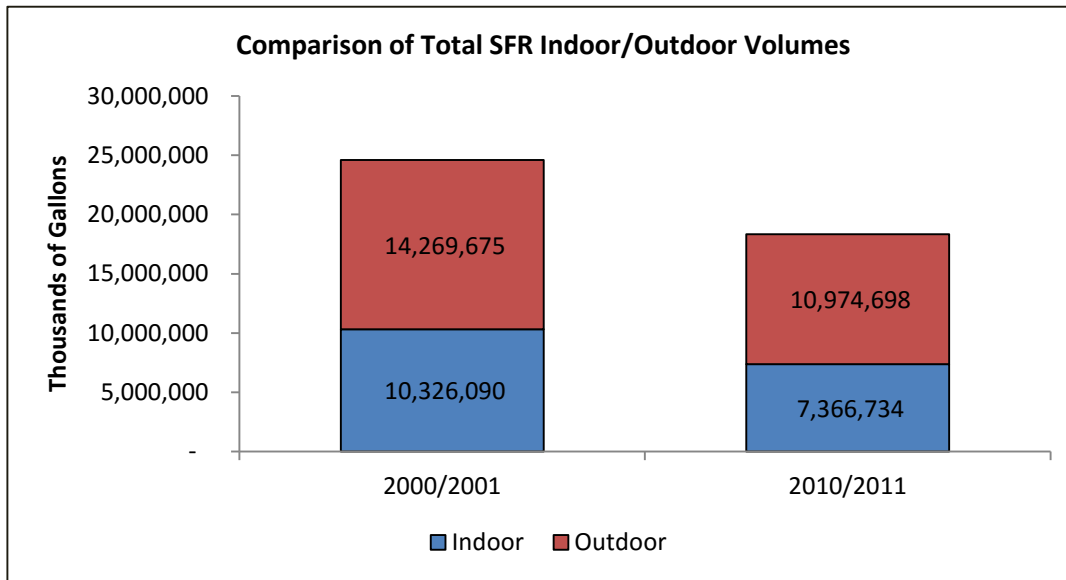


Trends

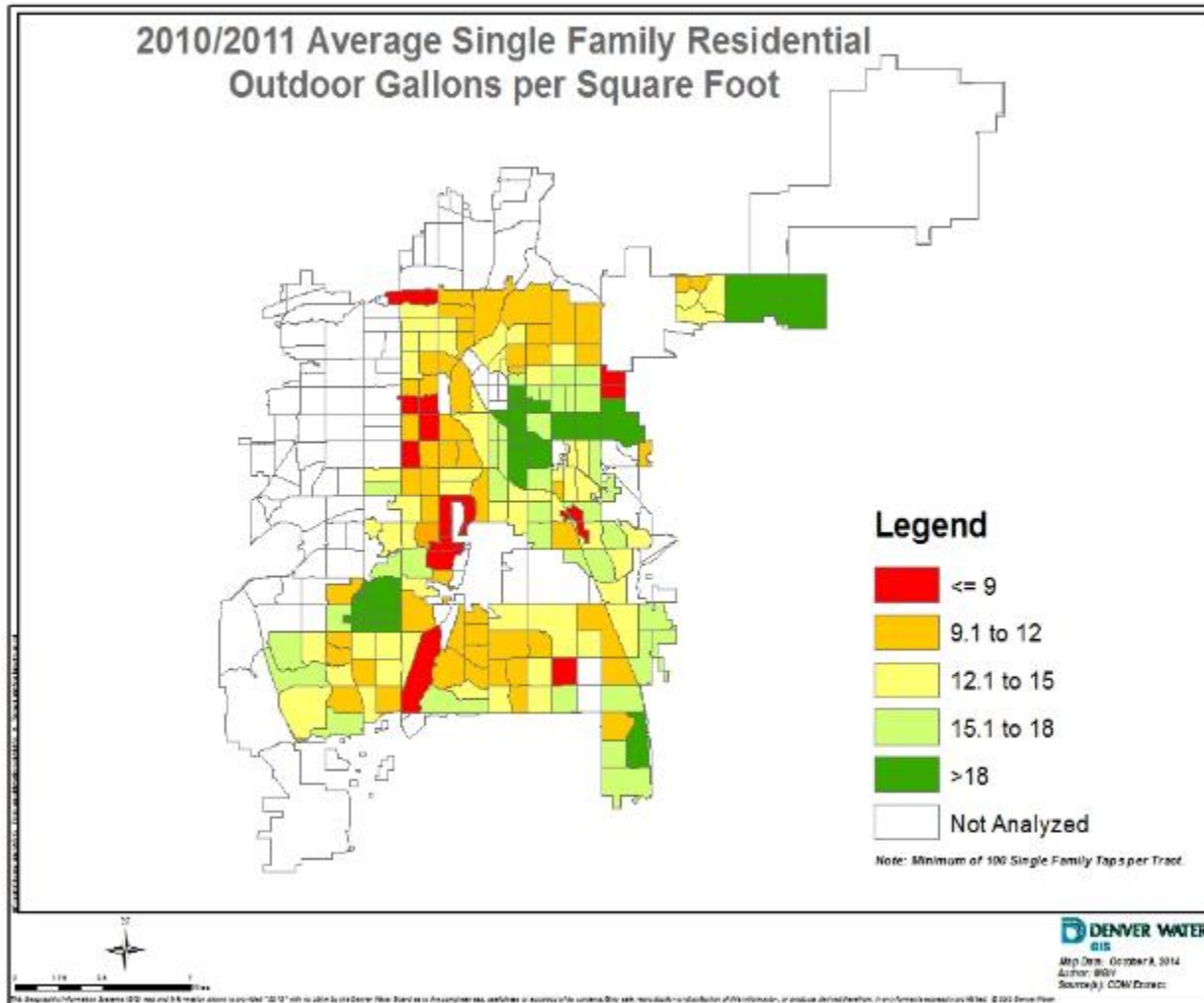
All Single Family Residential Average Monthly Indoor/Outdoor Demand, 1995-2014



SFR Outdoor Demand, 2000/2001 vs. 2010/2011



Census Tract-Level Analysis

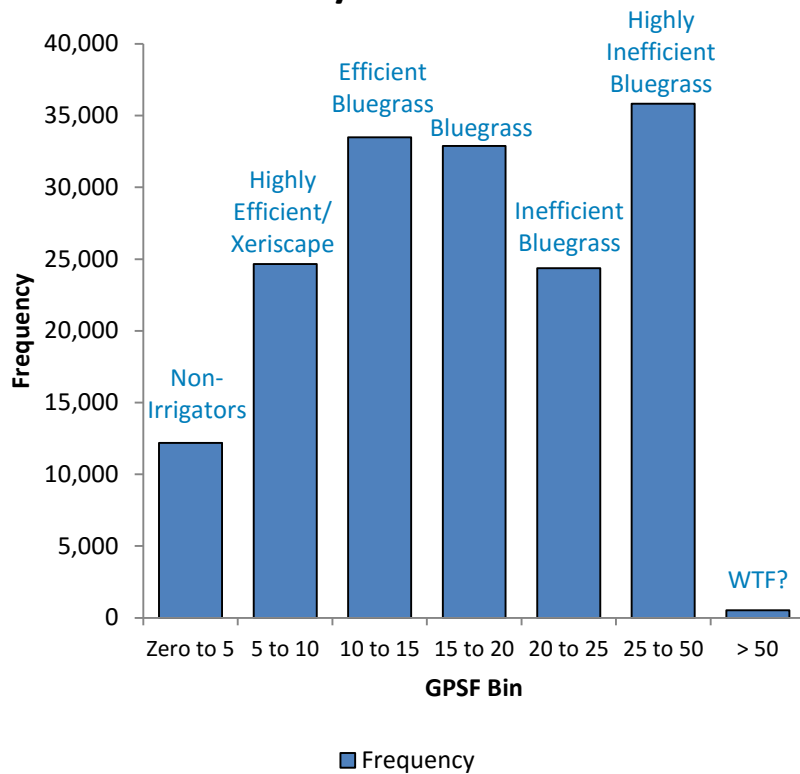


Research Questions

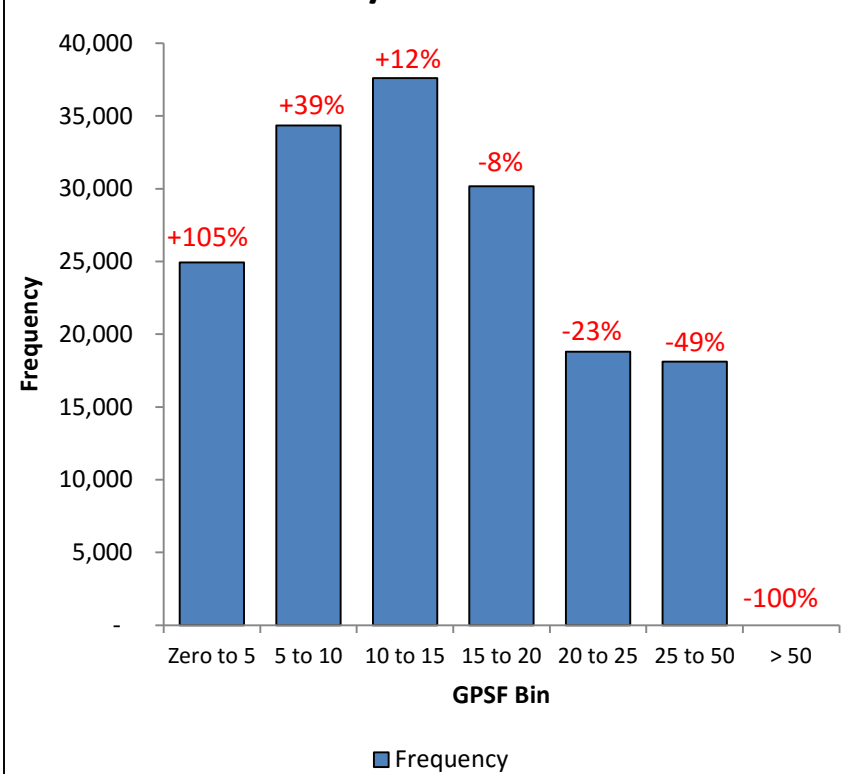
- Is this reduction sustainable?
- What is the risk for rebounding outdoor water use?
- What factors/motivations are contributing to the observed reductions?

Gallon per Square Foot Histogram

Single Family Residential 2000/2001 GPSF



Single Family Residential 2010/2011 GPSF



Closer Look at Customer Shifts in Outdoor Water Use

Current Water Use

	High	Moderate	Low	Minimal
High	34,787	20,501	13,951	4,593
Moderate	8,326	13,299	14,901	4,706
Low	4,006	6,873	16,837	9,187
Minimal	973	1,265	3,755	5,840

Water Use 10 Years ago

By 2017 (100%) (42%) customers shifted to a high or moderate outdoor water use category.

Closer Look at Changes in Water Use

		Current Water Use			
		High	Moderate	Low	Minimal
Water Use 10 Years ago	High	Inefficient	Sustainable	Risk	Risk
	Moderate	Inefficient	Sustainable	Risk	Risk
	Low	Rebound	Sustainable	Risk	Risk
	Minimal	Rebound	Rebound	Sustainable	Risk

Here were our Initial Assumptions Sustainable



Here were our Initial Assumptions Rebound



Here were our Initial Assumptions Risk



The Survey

- Who maintains the landscape?
- Major changes made and the motivation?
- In-ground sprinkler, If so, who sets it?
- Has the amount of water you use changed?
- **How satisfied are you with your landscape?**
- What would you do to increase satisfaction?
- How have the landscapes in your neighborhood changed?
- Demographic info

Satisfaction with your Landscape

- Risk (5.9 mean score)
 - 44% rated their landscape between 7-10
- Rebound (7.4 mean score)
- Sustainable (7.2 mean score)

	Low (1-4)	Medium (5-6)	High (7-10)
Risk	27%	29%	44%
Rebound	6%	22%	72%
Sustainable	9%	24%	67%

Satisfaction with Landscapes in your Neighborhood

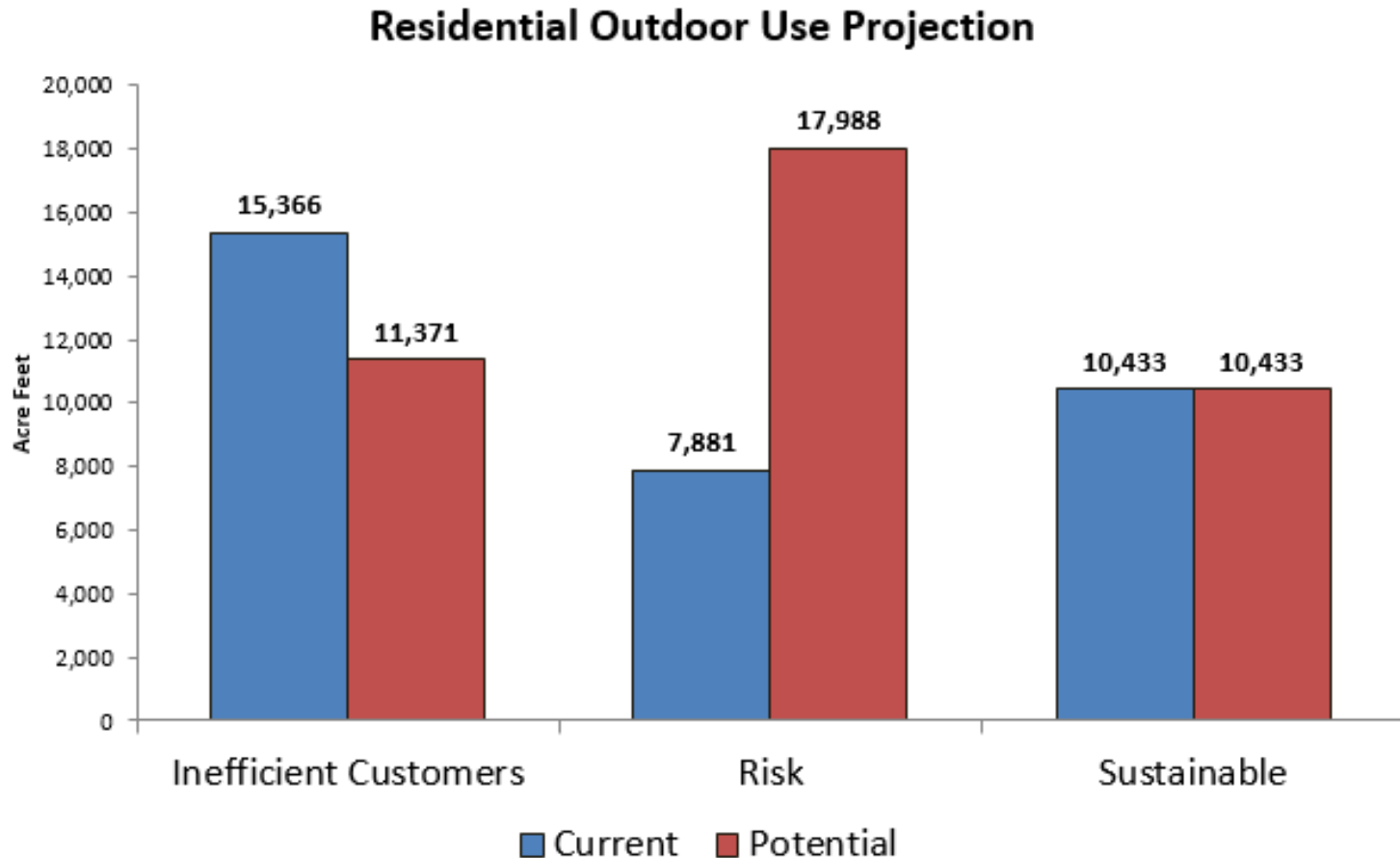
	Better	Worse	Stayed the Same
Risk	34%	9%	55%
Rebound	37%	8%	52%
Sustainable	30%	11%	56%
TOTAL	34%	9%	54%

Has the Amount of Water You Use Increased or Decreased

	Sustainable	Risk	Rebound
Increased	5%	6%	13%
Decreased	40%	44%	33%
Same	41%	45%	47%
Don't Know	14%	5%	7%

- 2 out of 3 people misjudged their change in water use

Will the Savings Last?

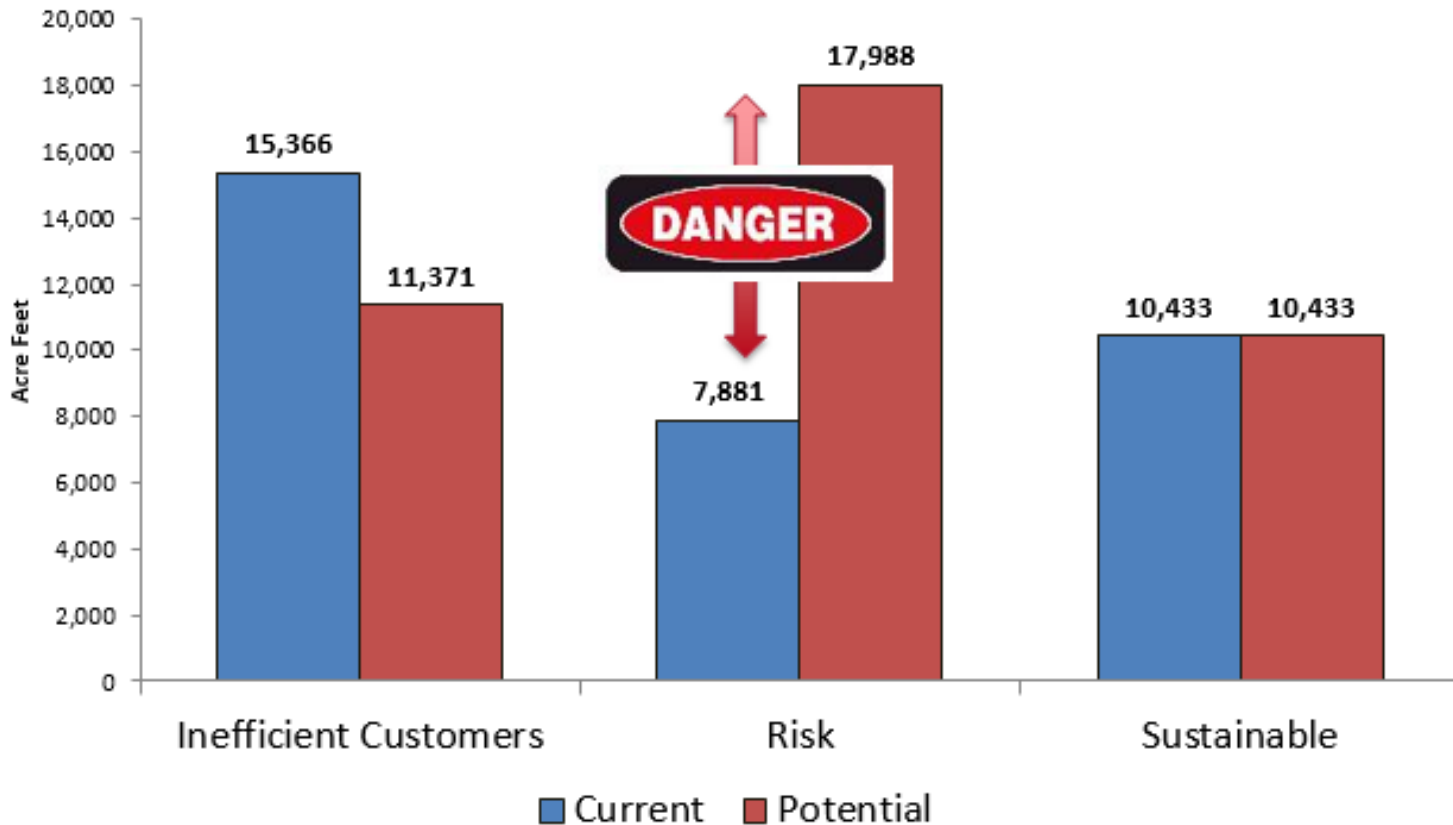


What if current inefficient customers become efficient?

What if customers that reduced return to pre-drought levels of use?

Will the Savings Last?

Residential Outdoor Use Projection



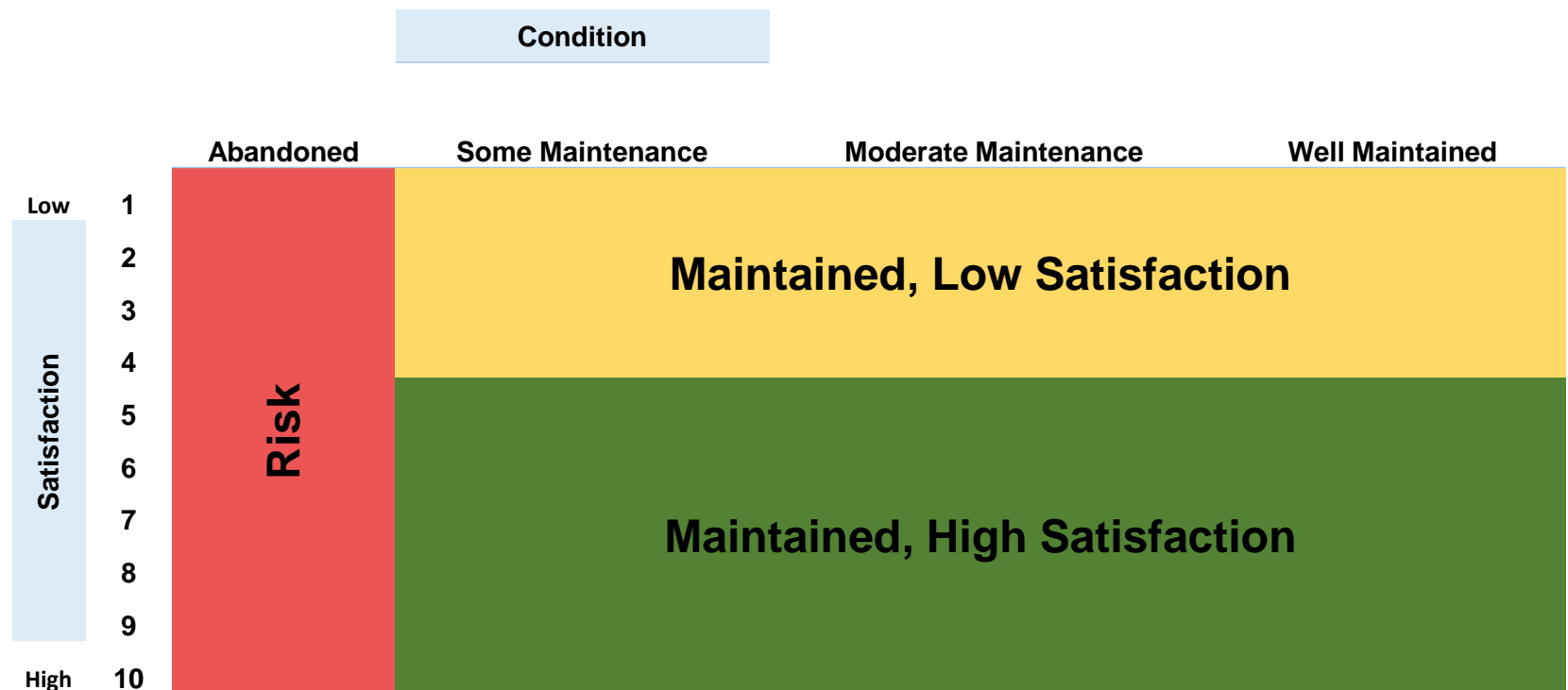
Abandoned



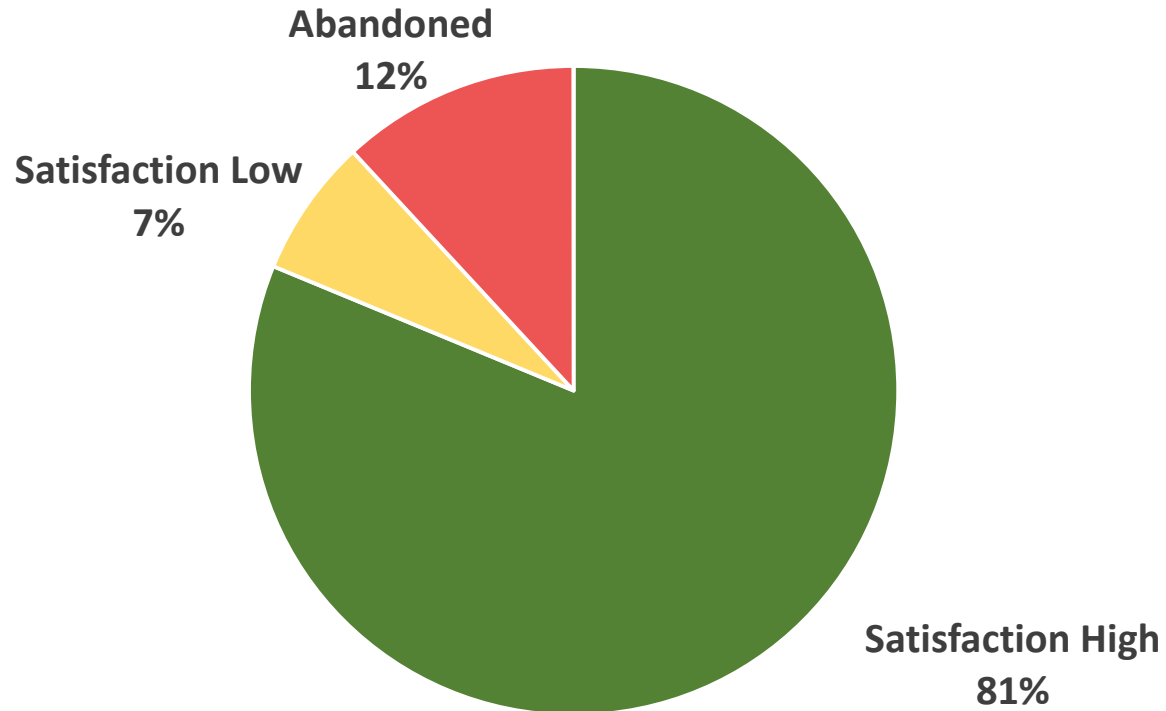
Well Maintained



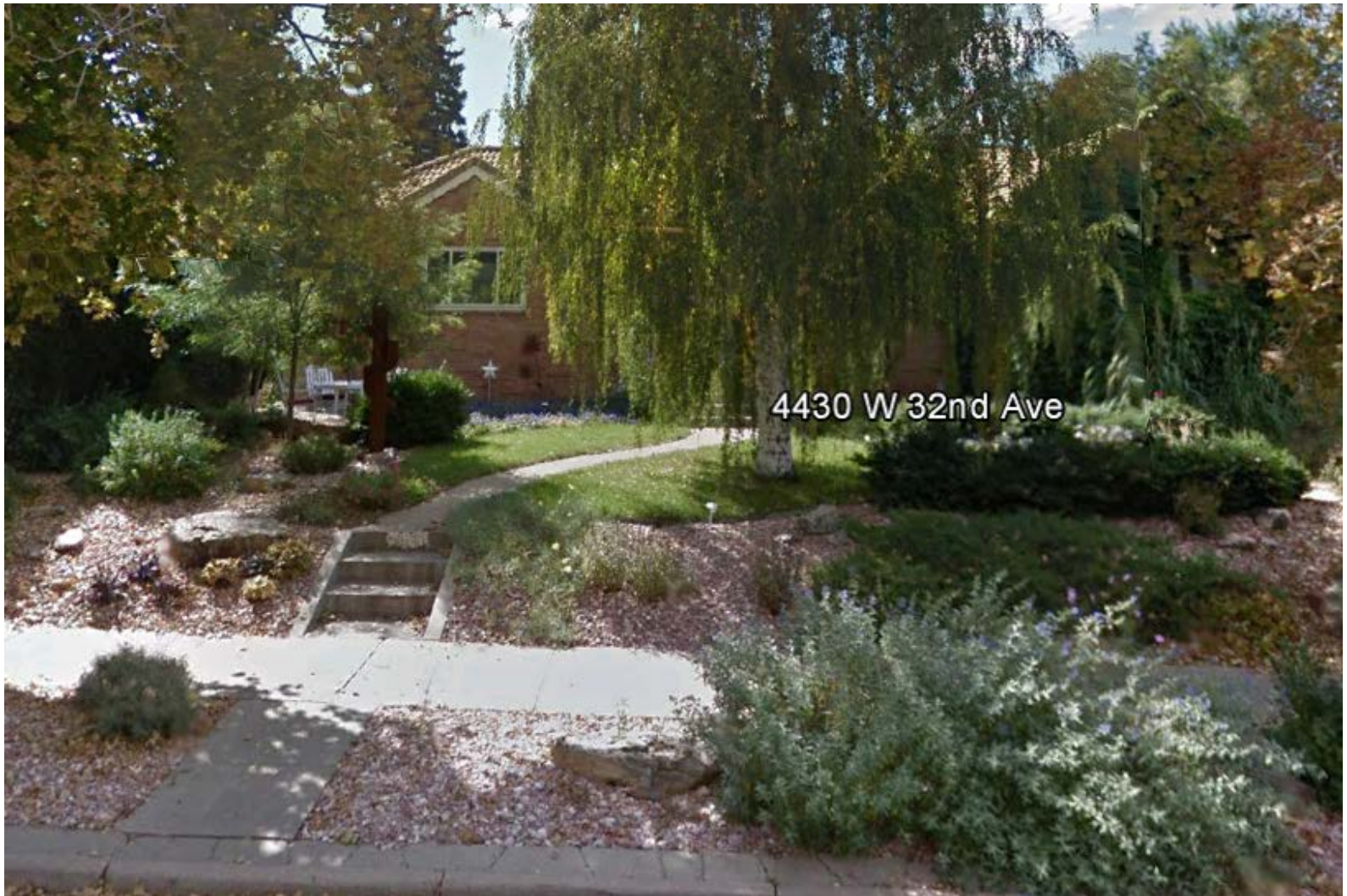
Closer look at the “RISK”



“Sustainable” Group



“Sustainable” Group

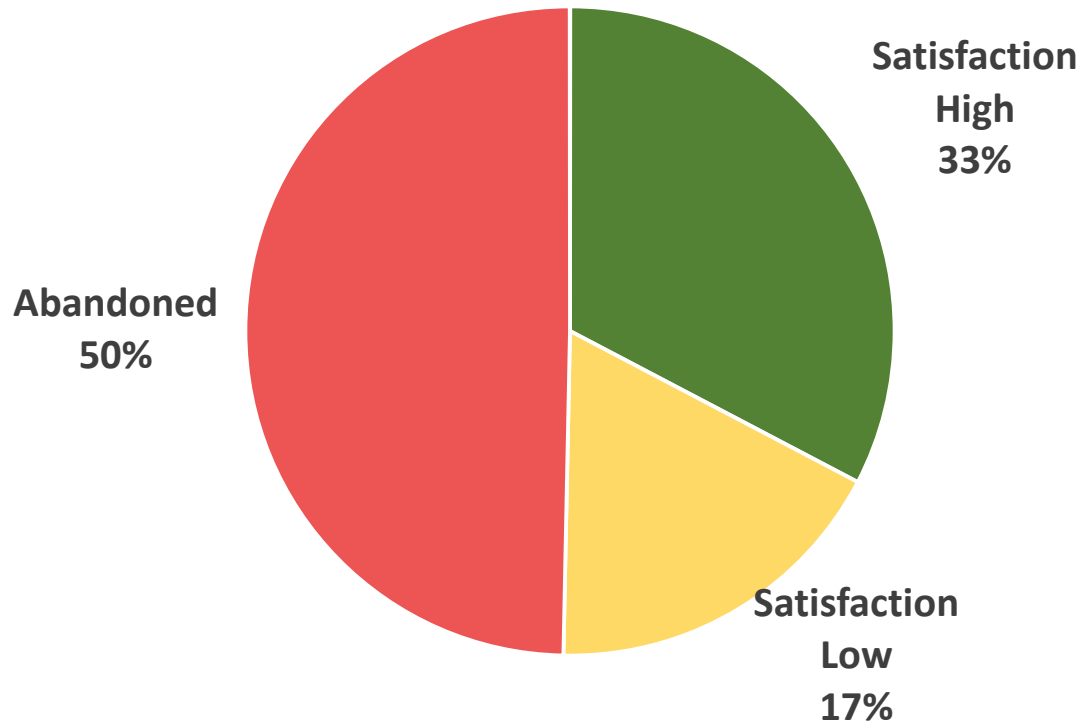


“Sustainable” Group



1067 St Paul St

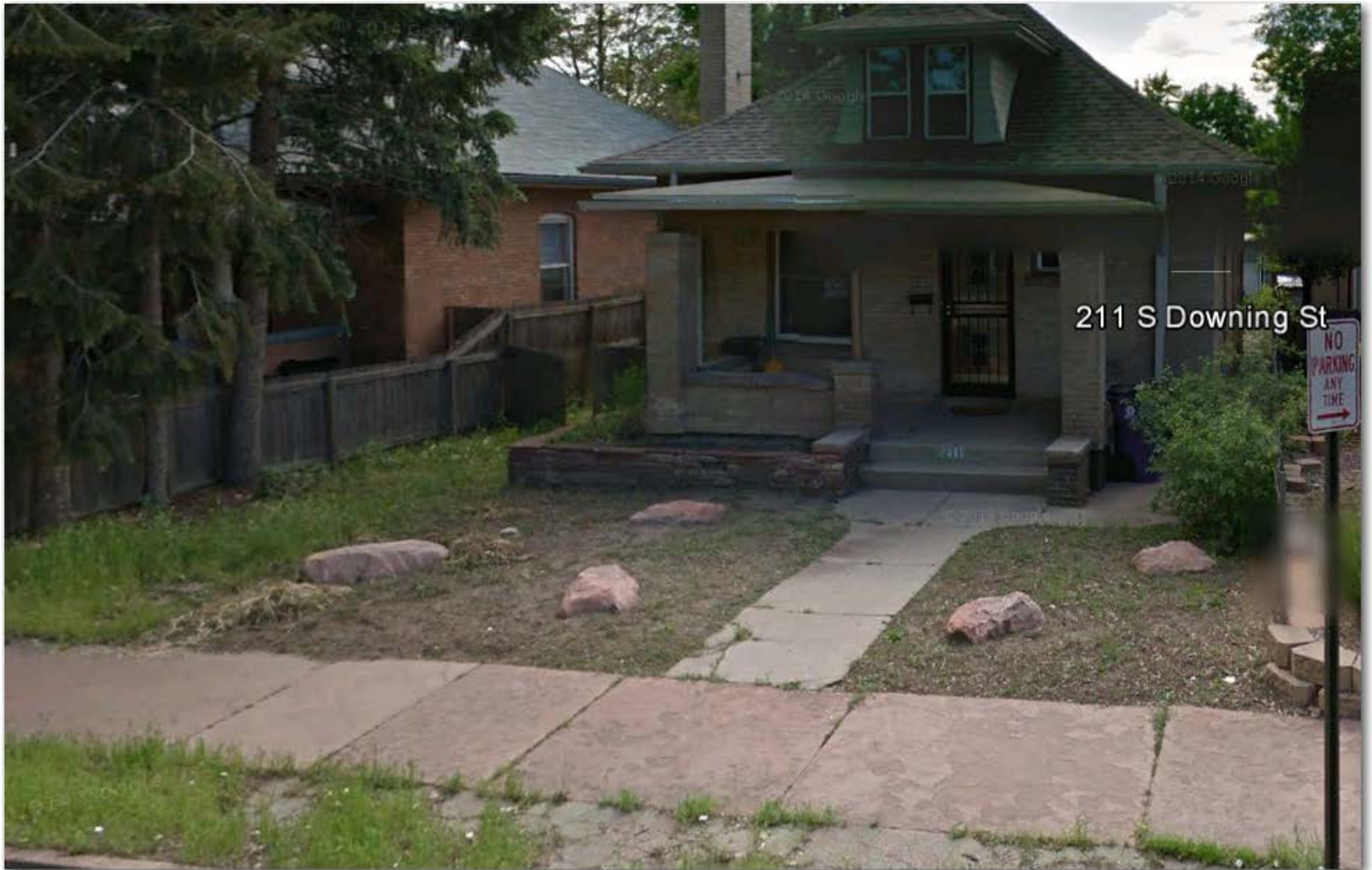
“RISK” Group



“RISK” Group



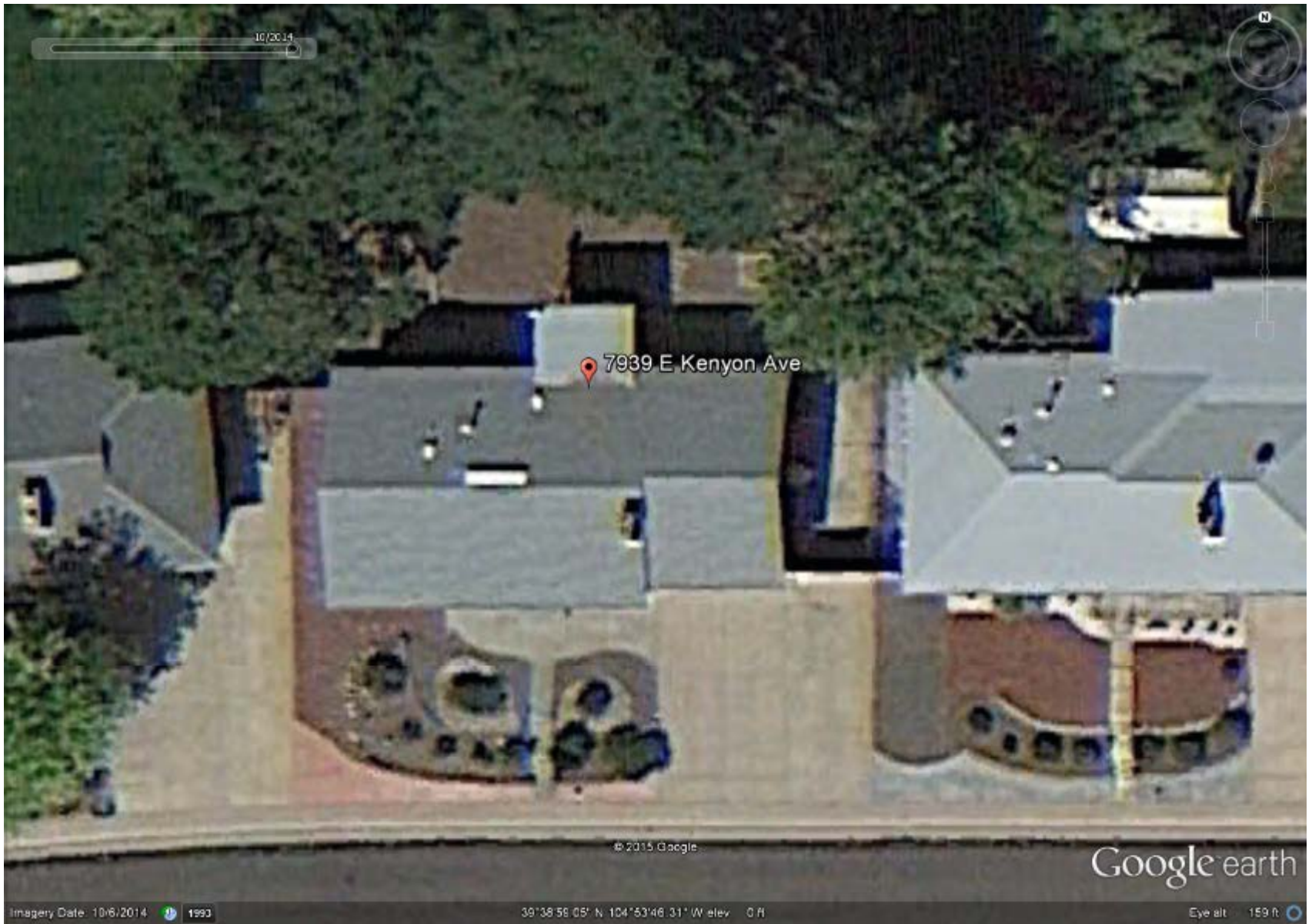
“RISK” Group



“RISK” Group

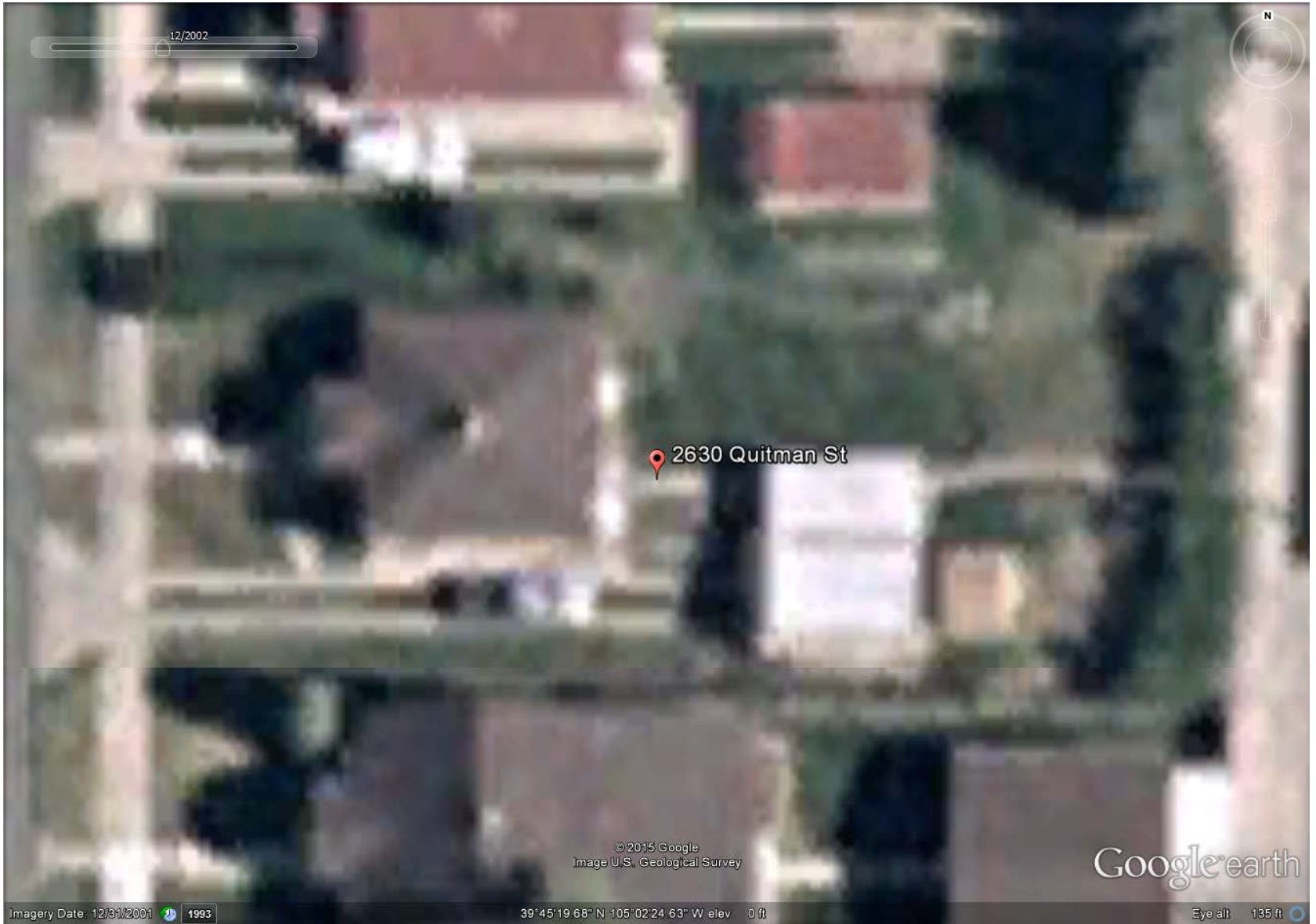


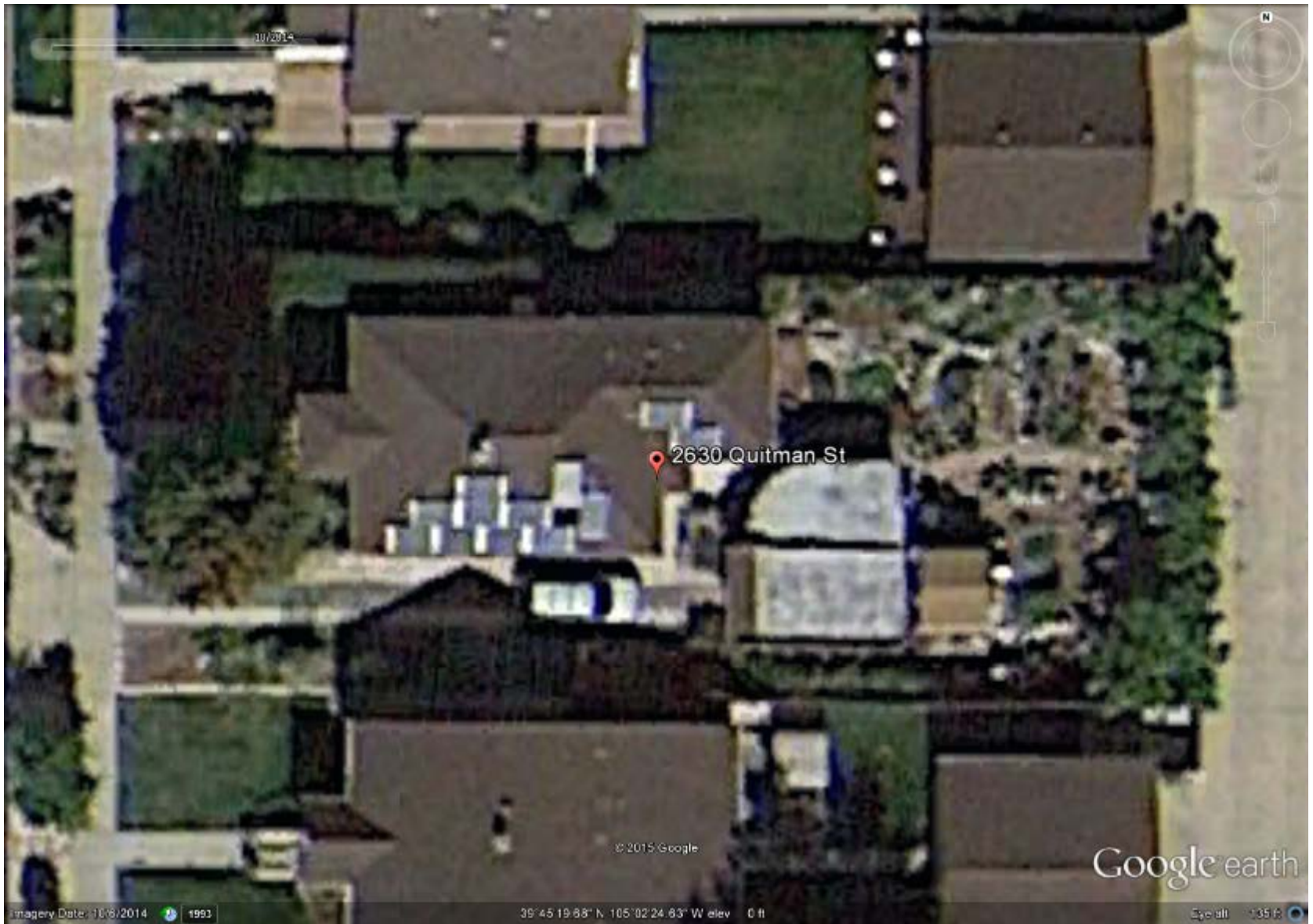






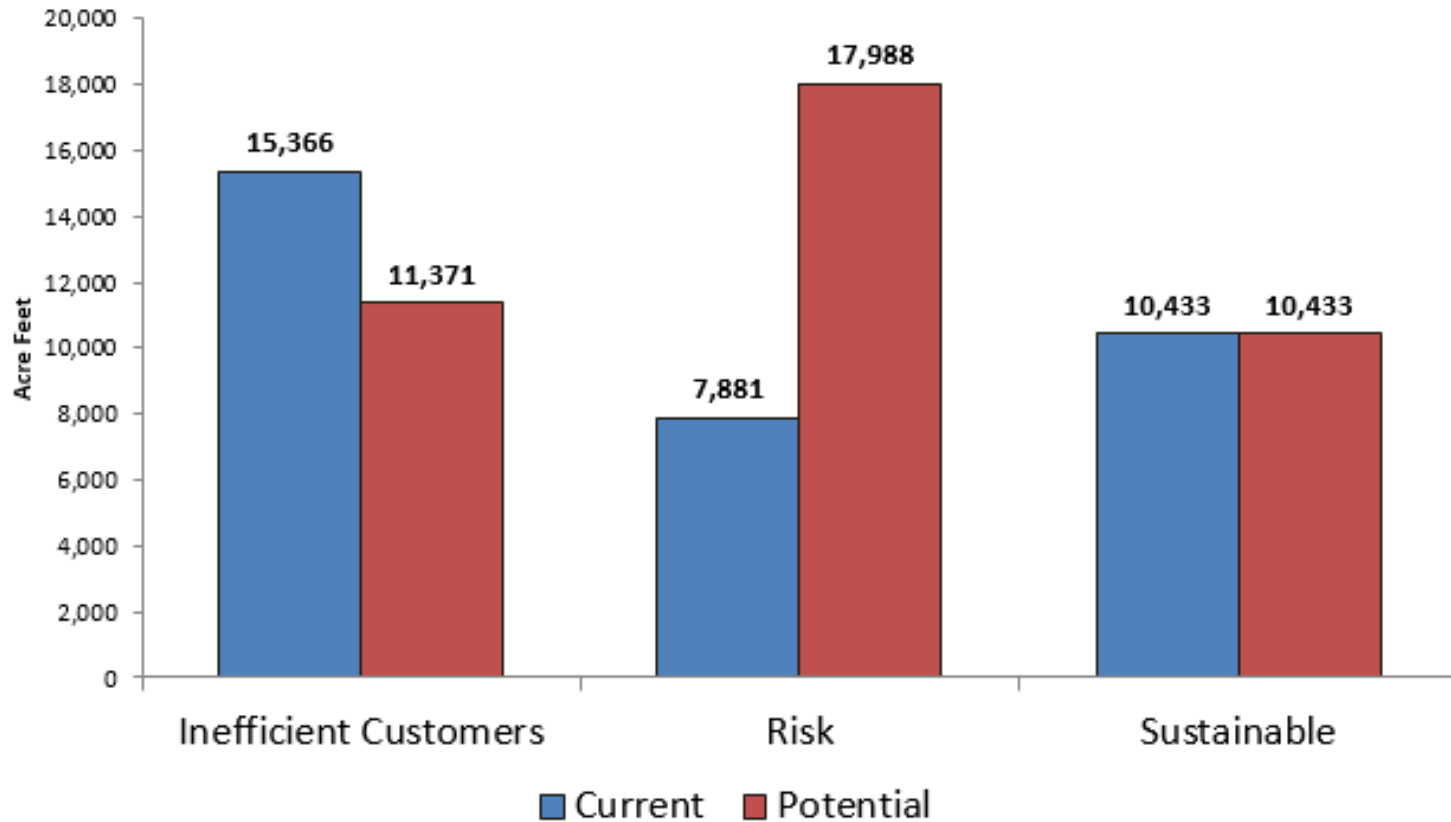




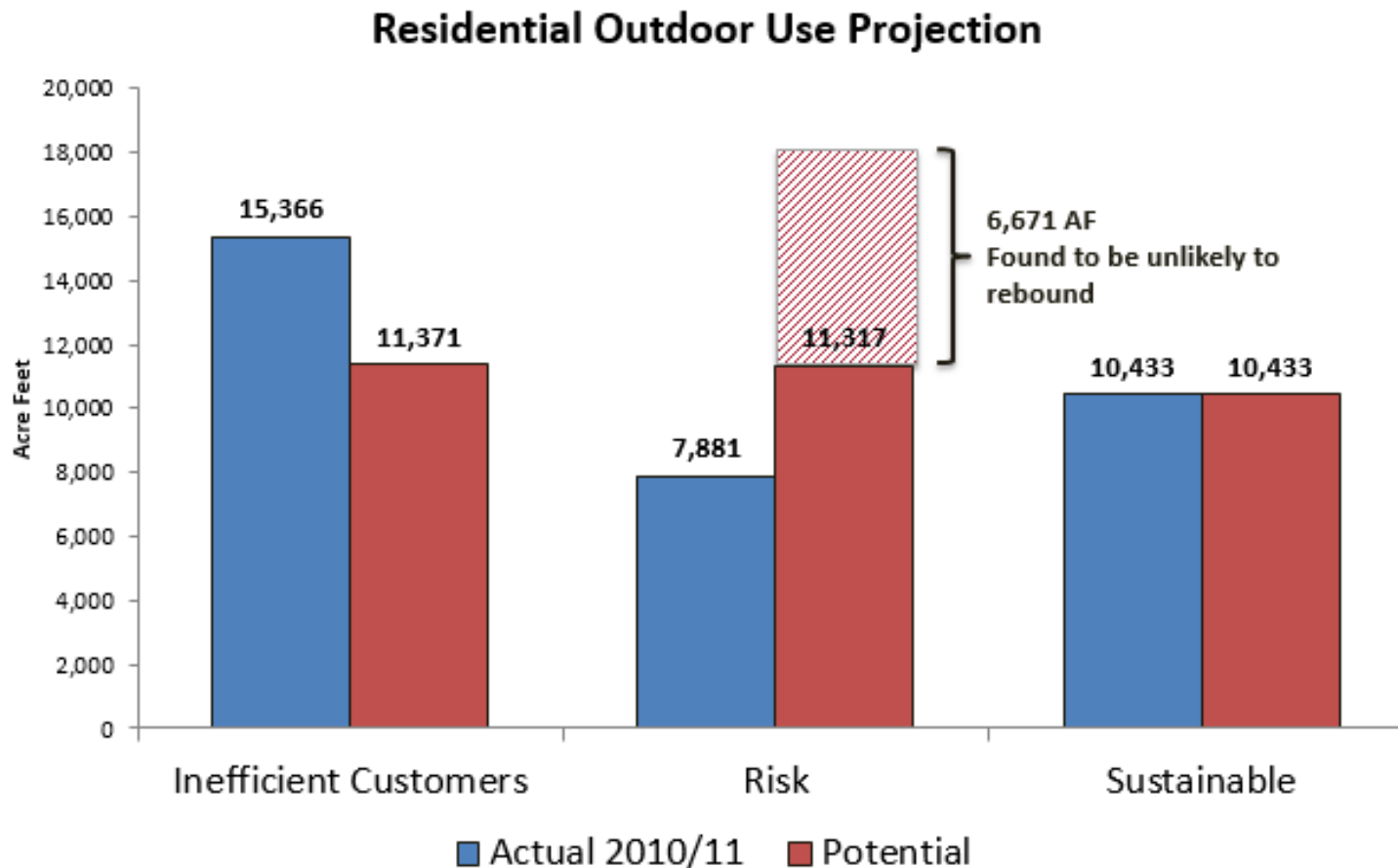


Will the Savings Last?

Residential Outdoor Use Projection



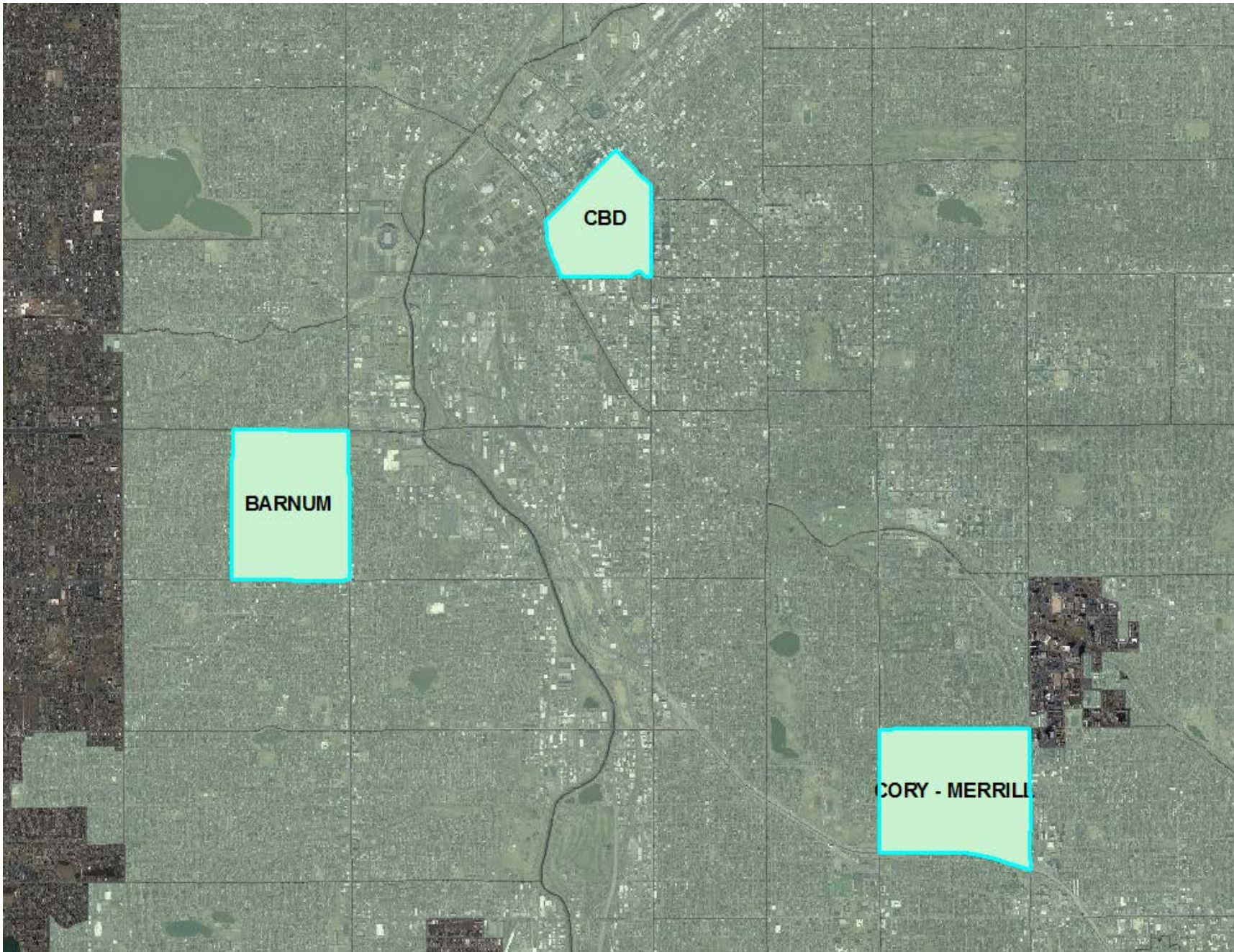
Will the savings last? I'd bet the farm on it.



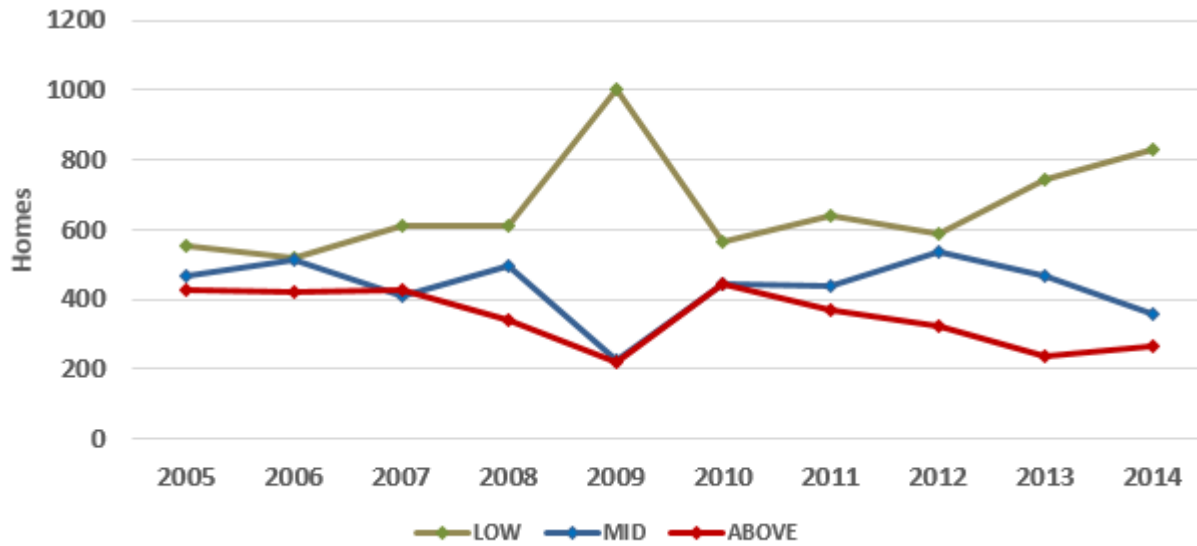
50% of Risk deemed sustainable, 15% of remaining Risk to remain abandoned

Demand Management

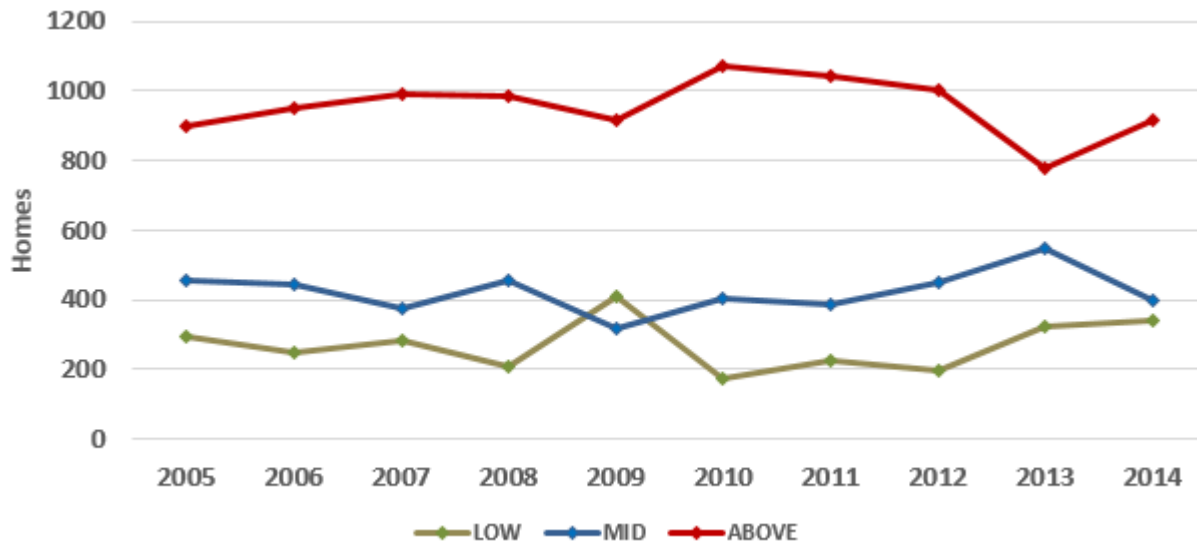




Barnum



Corey Merrill



Questions?