

The Hidden Value of Landscapes



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Introducing the California White Paper

9%:
Perspective on
the California
drought and
landscape
water use

Landscapes and the water they use are under relentless attack as California confronts ongoing drought. Most of these attacks are misguided when one looks at the facts, however.

Donald R. Hodel
Dennis R. Pittenger

University of California Cooperative Extension - May 2015

- Published by University of California Cooperative Extension in 2015
- Used to clarify and quantify the water used for landscape use in California
- Addresses misconceptions and misguided attacks
- Offers BMPs for landscapes

Introducing the Colorado White Paper

The Hidden Value of Landscapes: Implications for Drought Planning



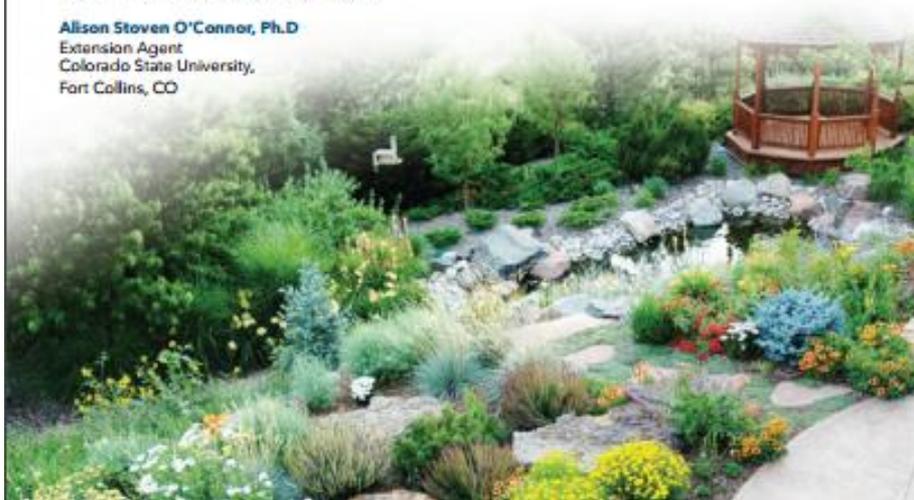
3%

A study of the contribution of landscaping to the environment, quality of life and property values in Colorado which should be taken into account when planning for drought.

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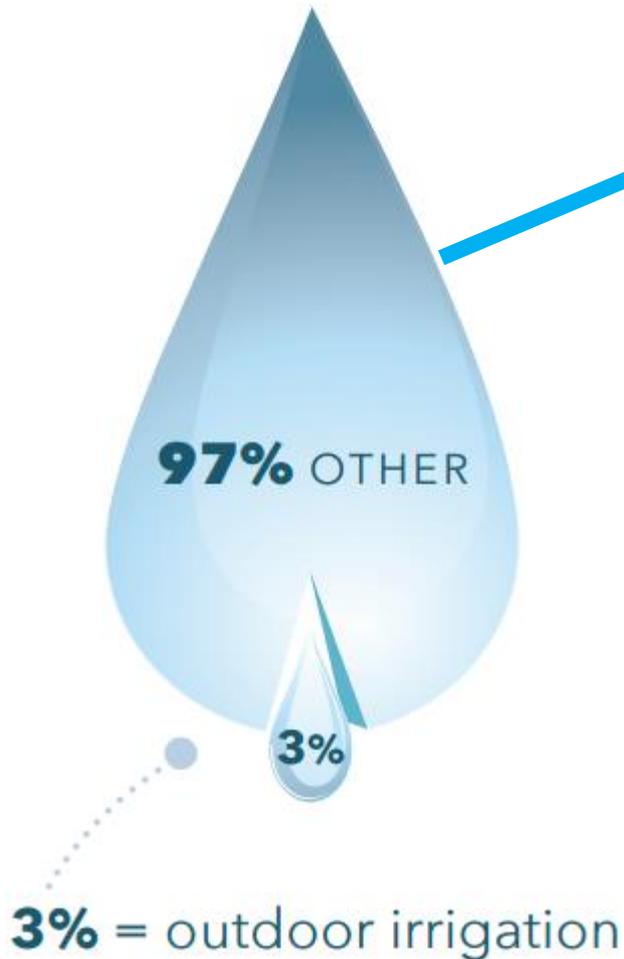
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- Written to clarify and quantify the water used for landscape use in Colorado in response to the Colorado Water Plan and the many benefits of landscapes.

3% of Colorado's Water is Used for Landscapes and Recreational Areas



- “Other” includes:
 - Down stream users*
 - Agricultural use
 - Drinking water
 - Bathing and cooking
 - Mining and hydroelectric generation
 - Lost to evaporation
 - And many more uses!

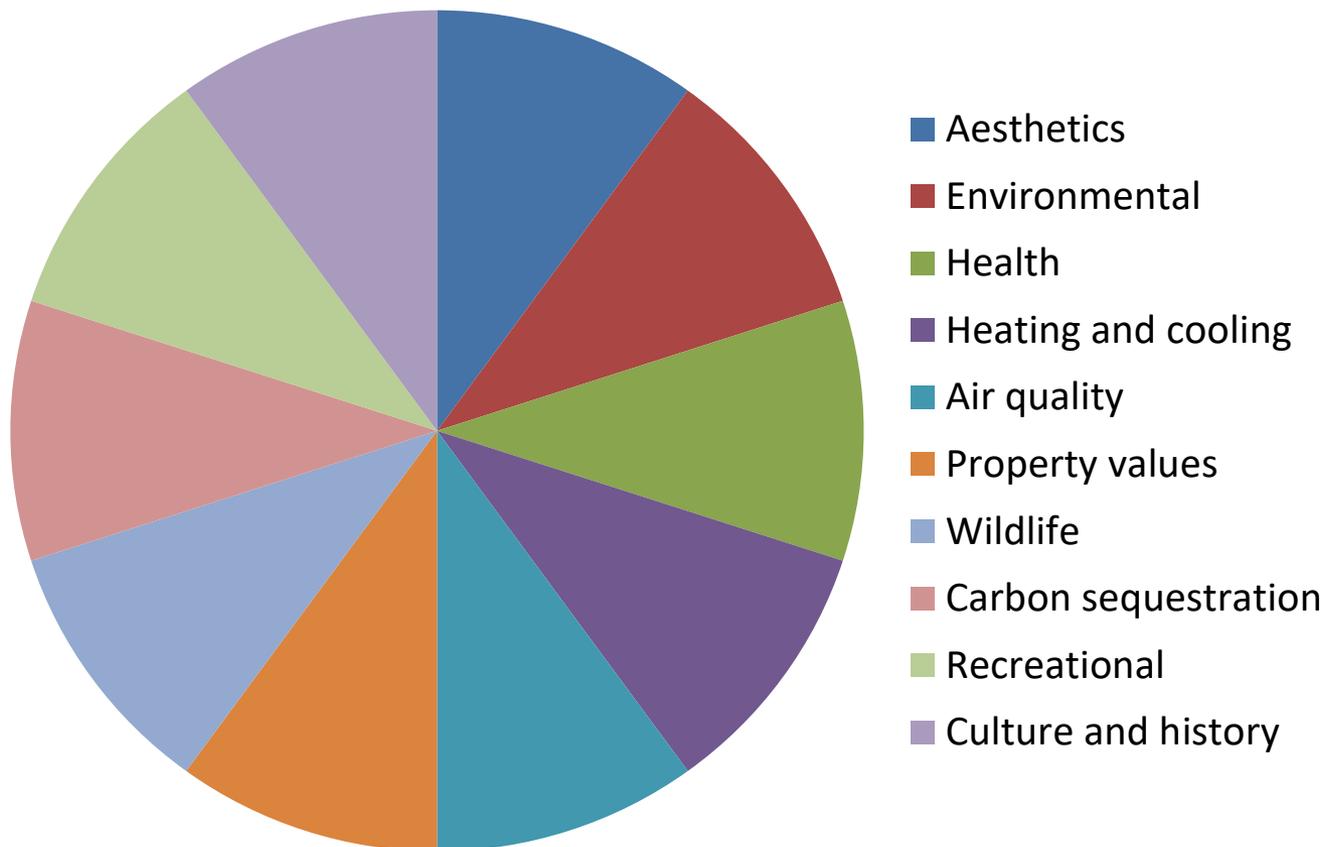
*60% of Colorado's water leaves the state and is used by others downstream

Conserving Water is Paramount

- Colorado's population is expected to double to 9 million people by 2050
- That means demand for water will increase
- Citizens and industry need to work together to spread awareness and practice water conservation
- These steps will help us face natural disasters in a more prepared way—fire, flood, drought and temperature extremes

The ROI on 3%

- Though important, aesthetics is only one of the many benefits that landscapes provide

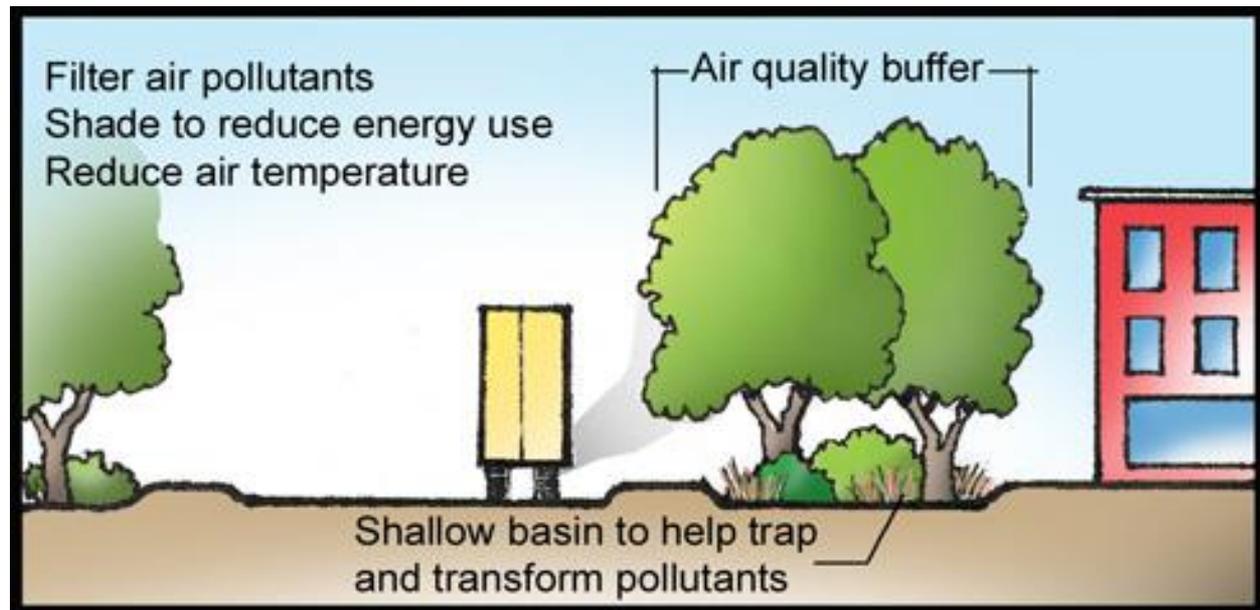


Air Quality: Carbon Sequestration

- Carbon inputs from industry, automobiles and burning fossil fuels can be offset by vegetation
- Trees have been found to store 5% of all human-caused carbon emissions
- Lawns can sequester carbon up to 30 years and have greater carbon storage when they are well-maintained
- Well-placed trees can reduce heating and cooling costs and reduce the need for fossil fuels

Air Quality: Reducing Airborne Pollution

- Pollutants are primarily trapped by the leaves of trees
- The tree canopy for the Denver Metro provides air quality benefits in excess of \$1.7M



Cooling Effects of Vegetation

- Where there is limited vegetation, buildings and hard surfaces absorb solar radiation and can increase the surface temperature of urban structures 18-38°F higher than the ambient air temperature
- Three trees around the home can save \$100-250/year in energy costs



Cars parked under trees are 45° cooler

Stormwater Management



- Pervious surfaces, such as lawns and planting beds, help treat stormwater runoff close to the source
- When stormwater is slowed by landscaped areas, the amount of runoff into storm drains is reduced along with sedimentation of streams, rivers and lakes

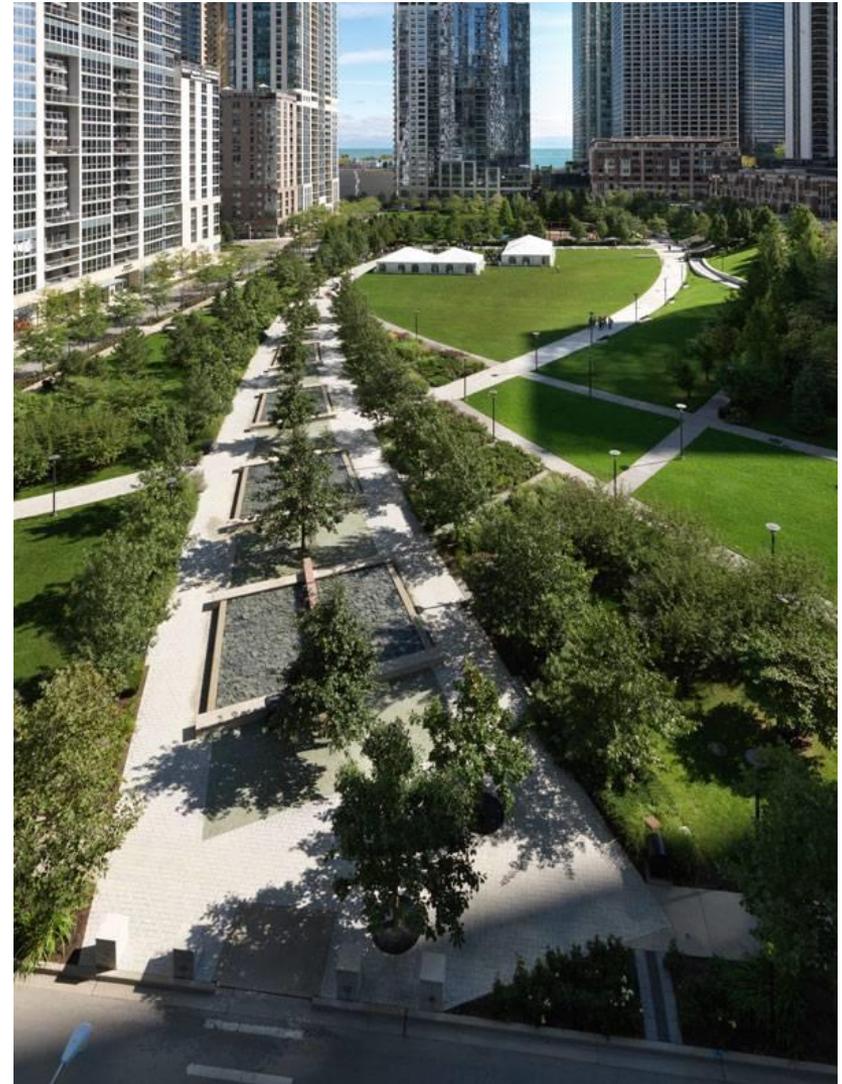
Creating Areas for Wildlife

- Golf courses, HOAs and commercial businesses can become Audubon Sanctuary properties, where they take measures to protect and encourage habitat for wildlife
- Landscapes can provide wildlife refuge, migration corridors, food, shelter and areas to reproduce



Real Estate and Property Values

- For every \$1 invested in landscaping a property, there is an ROI of \$1.35
- Large street trees can increase a home's value by up to 15%
- Street trees and well-maintained landscapes also increase rent prices (for offices and homes)



The Park at Lakeshore East, Chicago, IL

Landscapes Improve Our Lives

- Landscapes help people connect to nature
- Green spaces and vegetation facilitate personal relaxation, rejuvenation and socialization by pulling people outdoors to engage within their community



Landscapes Improve Our Lives

- A single tree can serve as informal meeting places for group and individual activity
- These noted psychological and physical benefits span across gender, generations and culture



Village meeting in Kenya

Landscapes Reduce Crime

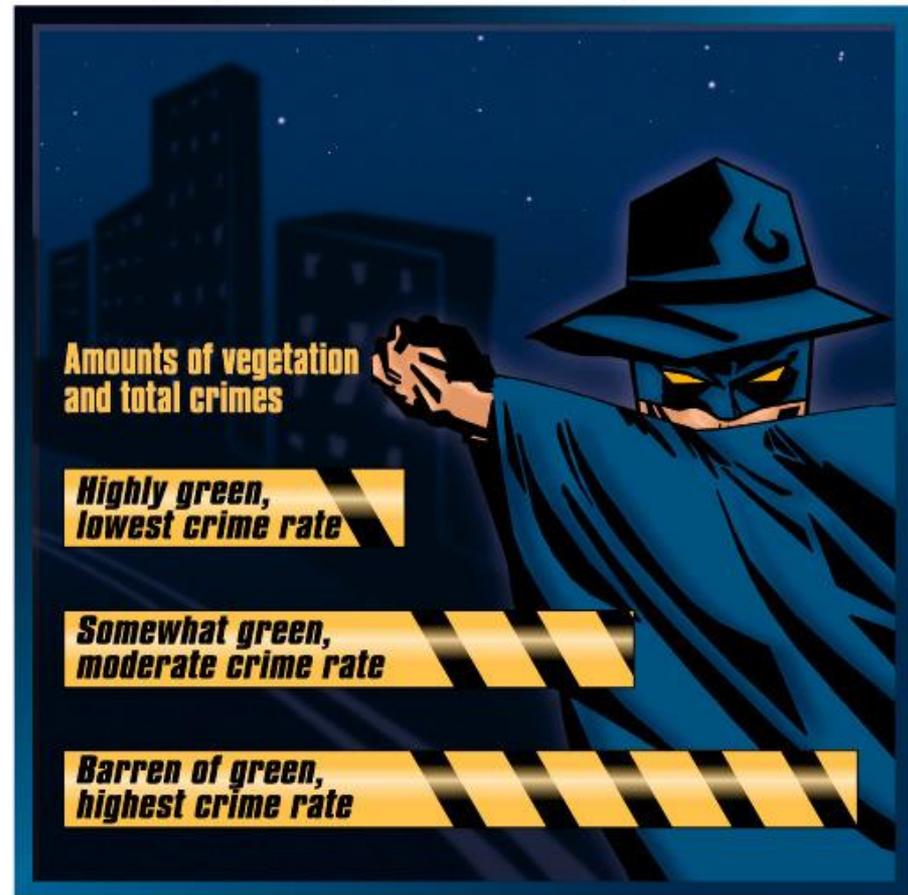
- Landscape vegetation around buildings can mitigate irritability, inattentiveness and decrease impulsive behavior—all of which are well-established psychological precursors to violence



Landscapes Reduce Crime

- Residents in public housing reported 25% fewer domestic crimes when landscapes and trees were planted near their homes
- Landscapes invite people to spend time outdoors, which results in getting to know your neighbors

Green Streets, Not Mean Streets
In an inner city neighborhood, the greener the residence, the lower the crime rate.



Landscapes Increase Child Development

- Provide areas to play and be a kid!
- Landscapes also increase imagination, creativity, intellect and cognitive function
- Children diagnosed with ADD had reduced symptoms when exposed to green space, even if through a window



Landscapes Reduce Stress

- The majority of people retreat to a natural setting when stressed (66%)
- 95% of people experiencing stress and anxiety felt calmer and more relaxed after spending a short time in a landscape



Landscapes Improve Health and Fitness

- Yard work provides sufficient exercise to meet the Center for Disease Control's guidelines for physical activity
 - Mowing your lawn (walking) can burn up to 370 calories per hour
- People who joined a community garden had lower body mass indexes (BMI) than their neighbors who were not in the community garden program and were less likely to be overweight



Unintended Consequences: “Cash for Grass”

- When water becomes scarce, it's easy to target landscapes and simply encourage people to turn off the water
- The “Cash for Grass” programs in California and Nevada gave homeowners money for removing turf





Existing trees

If no irrigation is provided,
how long will they last?

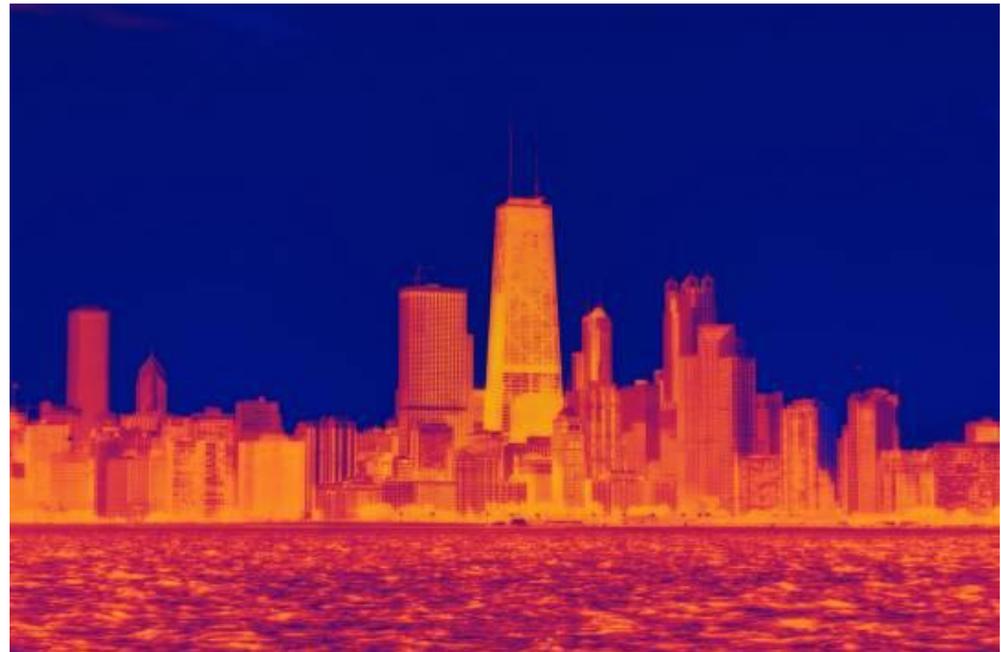
Unintended Consequences: “Cash for Grass”

- Rockscapes can increase ambient temperature
- Nutrient and sediment run-off is increased
- No place for kids or dogs to play
- Weed control remains
- Disjointed look to neighborhoods
- Loss of carbon storage benefits

Unintended Consequences:

Increase in Ambient Air Temperature

- With the loss of vegetation and their ability to shade, ambient air temperature often increases
- Shaded streets are often 30-40 degrees cooler
- Converting to rock or synthetic turf does not help with cooling effects



Air Temperature was 82 degrees F





Unintended Consequences: Loss of Recreational Space

- People in communities with abundant greenspace generally enjoy better health
- Tree lawns contribute to perceptions of more walkable streets, which can promote more physical activity in children and youth
- Elderly people that had nearby parks, tree-lined streets, and space for taking walks showed higher longevity over a 5-year study period

Planning for Drought: Policies

- Develop clear policies and work together with all interested parties
- Start the process before crisis occurs
- Keep the public informed

City of Greeley launches water budget program, setting personalized budgets for every Greeley household

Article

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Greeley Tribune
January 29, 2017



Planning for Drought: BMPs

- The GreenCo Best Management Practices (BMPs) were introduced in the 2002 drought and have been updated several times
- These are the guidelines on how to reduce water consumption and protect water quality while producing, designing, installing and maintaining healthy, beautiful landscapes



Planning for Drought: Prioritize

- Prioritize watering of healthy large trees and shrubs
- Focus irrigation efforts on recreational areas for physical and psychological benefit of people
- Avoid over-irrigation and runoff!



Planning for Drought: Financial Incentives

- Many water districts and cities offer rebates or financial incentives for water efficient technology

Residential Sprinkler Equipment Rebates

New technology is available to help make sprinkler systems more water-efficient. Fort Collins Utilities offers rebates on qualifying equipment, including:

1. Rain sensor: wired, \$15, wireless, \$30
2. Soil moisture sensor: \$45
3. High efficiency nozzles: \$25 (purchases of \$50-\$99), \$50 (purchases of \$100-\$199), or \$100 (purchases of \$200+)
4. Pressure-reducing heads: \$20 (purchases of \$40-\$79) or \$40 (purchases of \$80-\$159), or \$80 (purchases of \$160 or more)
5. WaterSense stand alone controller: \$100
6. WaterSense add-on weather station: \$50
7. PRV at Point of Connection: Varies
8. Drip Conversion Kit: 50% rebate, not to exceed \$50

City of Fort Collins

Planning for Drought: Budgets

- Budget accordingly to repair broken heads, leaks, inoperable valves and rain sensors, malfunctioning drip system components, and sprinkler overthrow
- Making repairs will ensure that irrigation systems are operating at optimal efficiency when used



Planning for Drought: Education

- Provide formal and informal educational opportunities for constituents
- Educate consumers about water-saving technologies, appropriate plant material and services offered by local water utilities and the green industry
- Help consumers realize they might already possess water saving technologies, such as controllers with seasonal adjustment options and water restriction settings



Planning for Drought: Homeowners

- Plant selection
- Develop a plan for the landscape
- Prioritize watering
- Delay planting
- Utilize new technology
- Use mulch
- Apply pesticides cautiously and practically



We Can Learn from the Past to Plan for the Future

There's a big **ROI**
on that **3%**.

That's why we need to **preserve landscapes**
while we **conserve water**.

