Urban Land Institute

Water Wise Development Coalition

Marianne Eppig, Sr. Director of Resilience, ULI

June 5, 2024

Water Wise Development Coalition

Intro for newbies!

- **Who:** ULI, in partnership with the Alliance for Water Efficiency, the Sonoran Institute, and the WaterNow Alliance, is convening land use and real estate professionals with policymakers and decision-makers. This coalition is supported by the Colorado Water Conservation Board.
- **What:** Advancing water-smart real estate development and supportive policies.
- **When & Where:** Quarterly virtual meetings.
- **How:** Participants will have a say in meeting topics, speakers, and efforts.

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Agenda

- Welcome and Overview (5 min)
- Water conservation + housing affordability presentations and Q&A (60 min: 20 min presentation & Q&A each)
  - **Benji Smith,** Applied Economics PhD Candidate at the Wharton School at the University of Pennsylvania
  - **Caroline Koch,** Water Policy Director of the WaterNow Alliance
  - **Joel Benson,** Planning Director and Former Mayor of Buena Vista, Colorado
- Group Discussion & Updates (25 min)

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The Consequences of Tap Fees on Housing Markets

Benji Smith

PhD Candidate, Applied Economics

The Wharton School, University of Pennsylvania

I thank the Zell/Lurie Real Estate Center at The Wharton School and the Babbitt Center at the Lincoln Land Institute for financial support. All views and errors are my own.

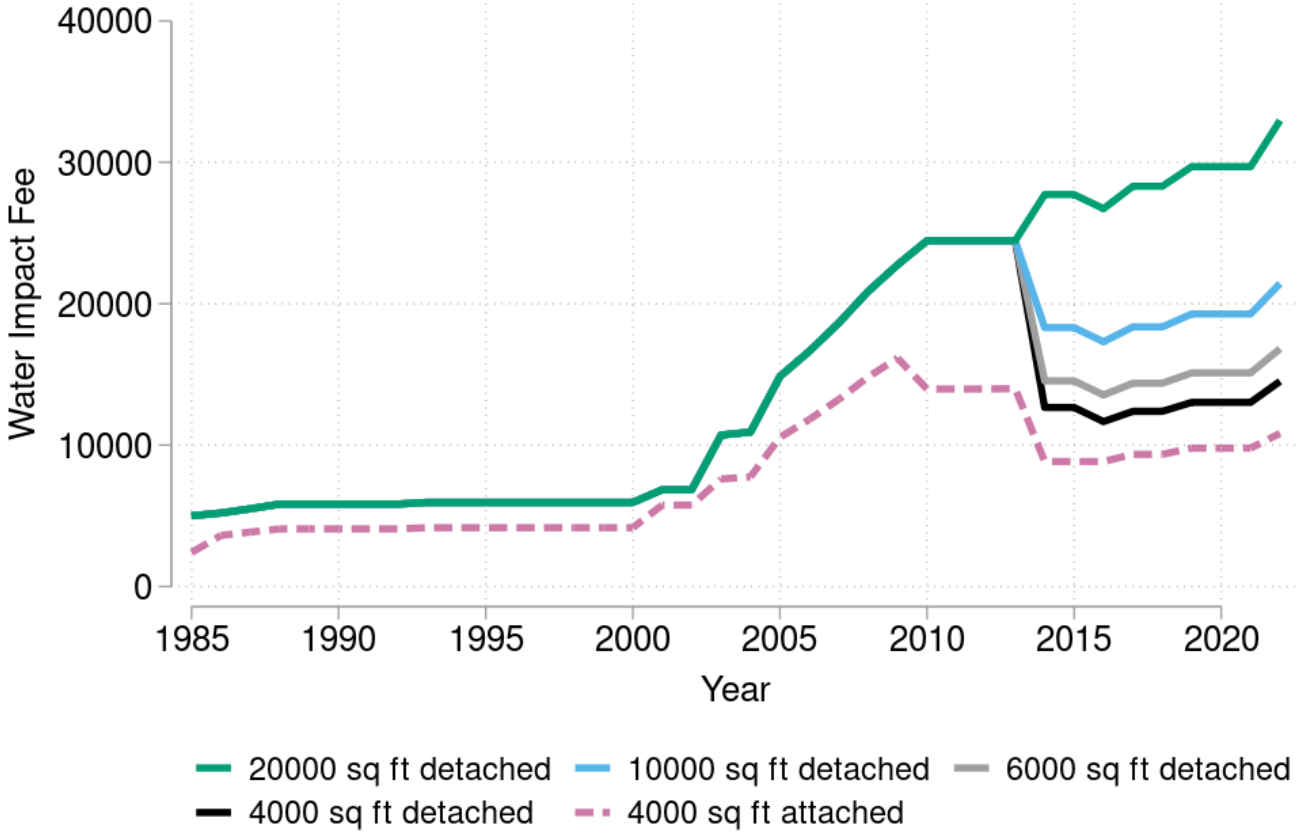
What do we know about tap fees?

- Not much…
- The Alliance for Water Efficiency surveyed 50 fast-growing counties and collected data on tap fees
  - 5/8” tap averages $2,200, with a max of $6,000
  - 3/4“ tap averages $2,600, with a max of $9,000
  - 1” tap averages $3,900, with a max of $26,500
- To build in some parts of the west developers must dedicate water rights, which can cost upwards of $60,000

What are the economics of tap fees?

- I'd call these **water impact fees**
  - Part of a larger class of land use regulations
- Intended and unintended consequences:
  - Increase quality of infrastructure
  - Increase local amenities
  - Promote fairness
  - Increase new house prices
  - Change types of homes that are built
  - Change water use
  - Spillovers into existing housing markets and across jurisdictions
  - Affect land prices, segregation, urban sprawl, carbon emissions, homeownership…

Local policy tools to affect water use in new developments



Water Impact Fees in Aurora, Colorado

Approximately $1 per square foot of lot size

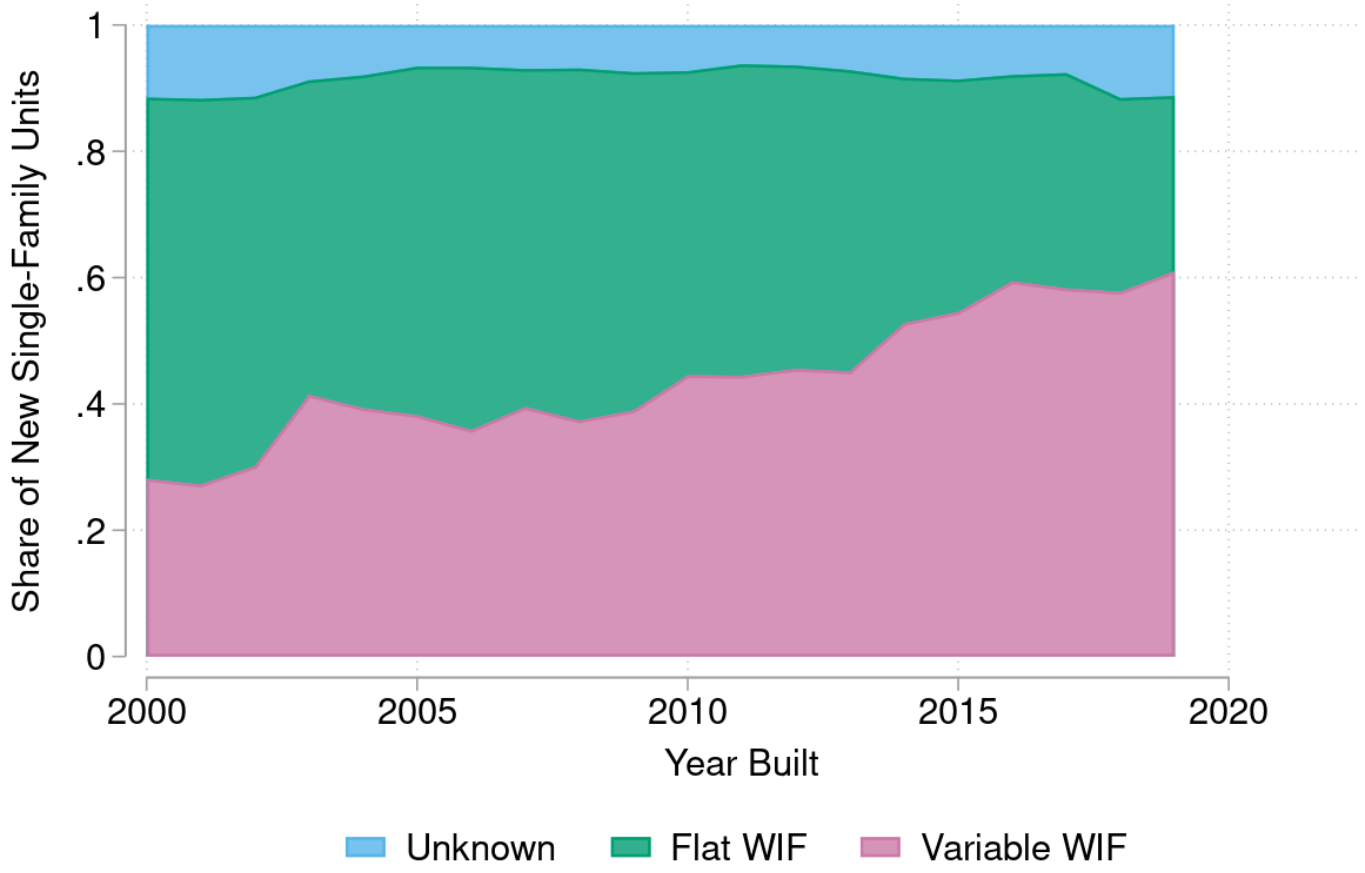
- Water prices and rate structures
- Incentivize or mandate low use in new homes
  - ↪Landscape codes, water system design standards, pipe standards
  - ↪Some places have **conservation-oriented tap fees** (COTFs) which incentivize developers to build water-conserving houses

Data

- 15 counties in the Front Range of Colorado (Fort Collins to CO Springs)
- Tax Assessor Data from 2000-19
  - Single-family house prices and the features of new housing units such as lot size, indoor size
- Water utility service areas and tap fees for over 50 water utilities
  - 2000-2019
  - Estimate fees paid by unit, track COTFs
- National Agricultural Imagery Program
  - Estimate irrigated area for individual parcels

New Insights from this Data in Colorado

- Some of the most expensive water fees in the country are in Colorado, averaging $25,000 in 2022
- Rate of increase has outpaced other price indices
- Both lot sizes and irrigated areas are decreasing
- COTFs have become more common



Methodology

- Happy to discuss methods in detail, but I'm going to skip this to try to spare you all here

- Capitalization Effects:
  - Holding constant the location, time of sale, size, and features of new housing units, a regression compares the relative change in house prices to relative changes in water impact fees:

$$\ln p_{igwt} = \beta \, \mathrm{WIF}_{igwt} + \alpha X_i + \xi_{gwt} + \varepsilon_{igwt}$$

$$\ln p_{igwt} = \beta \, \mathrm{WIF}_{igwt} + \zeta_i + n_i + \xi_{gwt} + \varepsilon_{igwt}$$

- Characteristics of new homes:
  - Two-way fixed effects estimator, plus the heterogeneity-robust estimators of the generalized form

$$y_{wt} = \beta V_{wt} + \xi_w + \zeta_t + \varepsilon_{wt}$$

Summary of Results

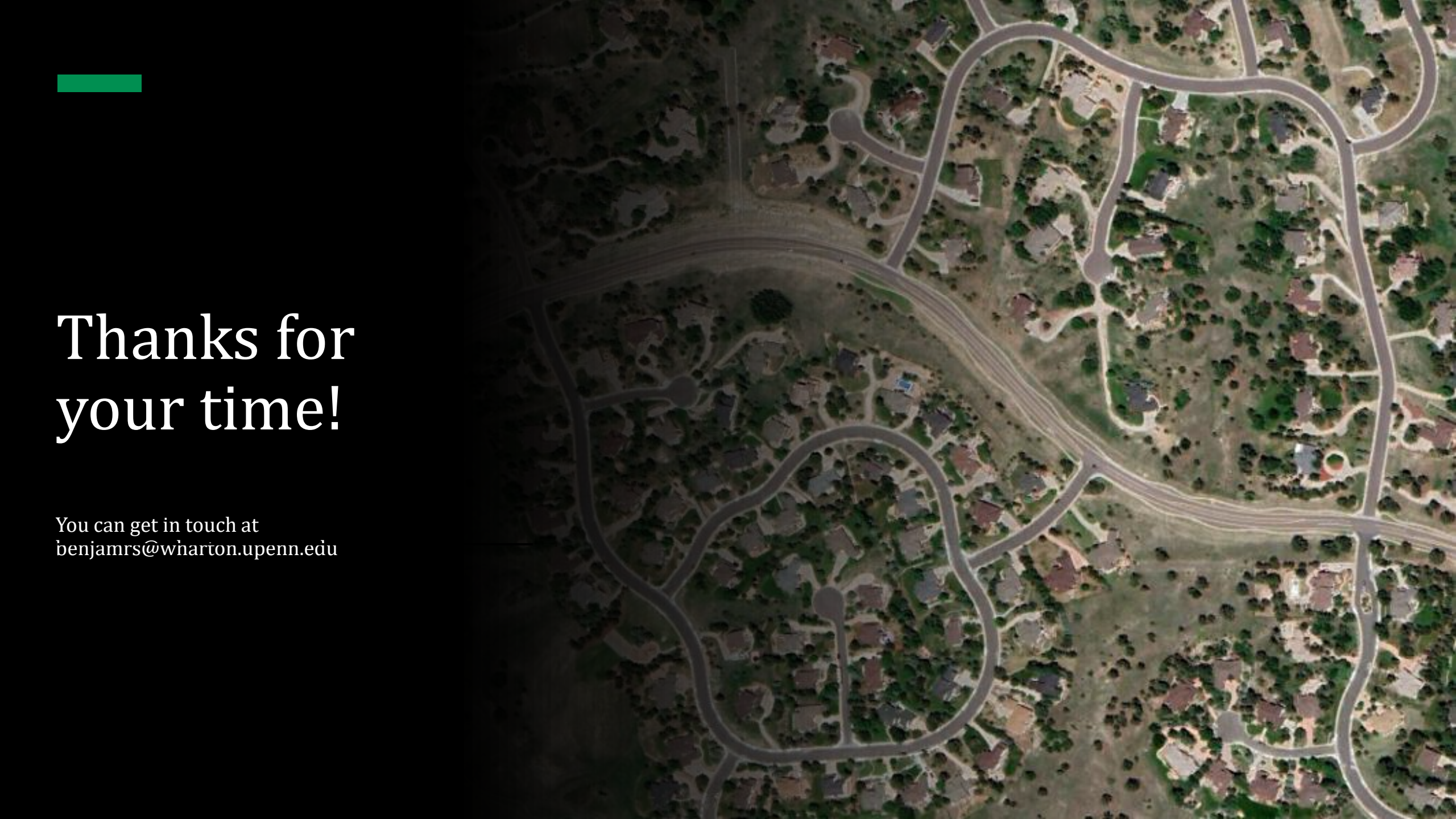
- A $1 increase in water fees increases house prices by $1
  - Both new *and* existing house prices
  - This pass-through is symmetric: policies which decrease the cost of developing new houses are passed onto homebuyers (and existing housing markets)
- COTFs cause development to have
  - Smaller lot sizes (15%)
  - Smaller irrigated areas (30%)
  - More likely to be infill development (30%)
- Generalizing, **water policies affect the pattern of urban form** and the **cost of urban living**.

Questions that I have …

- Are Conservation-Oriented Tap Fees (and, generally, utilities regulating land use) a good policy tool?
  - Economist's approach: efficiency = development pays for its costs
    - Internalities (costs borne by the water utility: pipes, treatment plants, water rights, etc.)
    - Externalities (harm to local water quality, local farming, heat island mitigation, etc.)
- How does banning grass lawns affect housing markets?
  - Even if households value grass, if fees go down this might be a tool to help housing affordability
- How will the recent ruling in *Sheetz v. County of El Dorado* affect developer exactions?
  - Will some of the most burdensome development requirements be challenged in court?

Thanks for your time!

You can get in touch at
benjamrs@wharton.upenn.edu



Pathways to Affordability: Distributed Water Infrastructure Solutions









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WaterNow works to advance transformation in the urban water sector to accelerate the widespread adoption of equitable, climate resilient and environmentally sustainable strategies.

We do this as a national network for local water leaders and decision makers, empowering them with the technical assistance, resources, and tools they need to implement innovative One Water drinking water, stormwater, and wastewater solutions in their communities.

WHAT DO WE MEAN BY SUSTAINABLE?

Providing safe, healthy, and affordable water services for people while preserving the integrity of water resources and the environment for future generations

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WHAT DO WE MEAN BY EQUITABLE?

Water equity means universal access to secure, affordable, safe, and healthy drinking water, and wastewater and stormwater management services. Equitable water infrastructure investment should support the long-term sustainability of our waterways, water systems, and utilities

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WHAT IS EQUITABLE INFRASTRUCTURE?

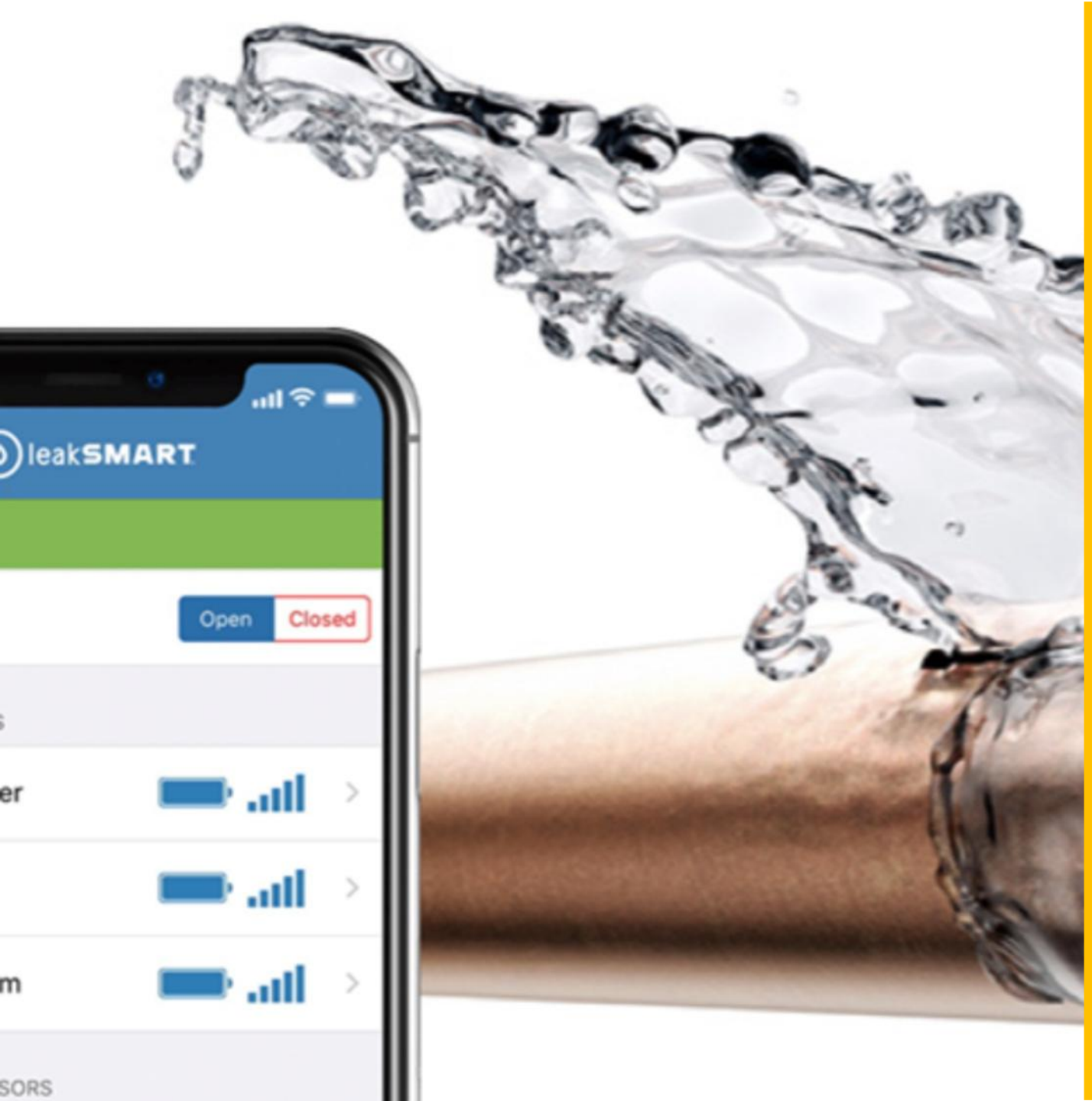
Distributedsolutionsprovidingmultiplewaterandcommunitybenefits

BIOSWALES

PERMEABLE PAVEMENT

GREEN ROOFS & RAIN GARDENS

WATER WISE LAWNS



LEAK DETECTION DEVICES

INDOOR EFFICIENCY

REPLACING LEAD SERVICE LINES

Distributed Infrastructure Is All About Affordability

Lowers household water usage, lowering water bills

Cost-effective investments, keeps utility costs down

Lower water usage in new and redevelopment, keeps developer costs down

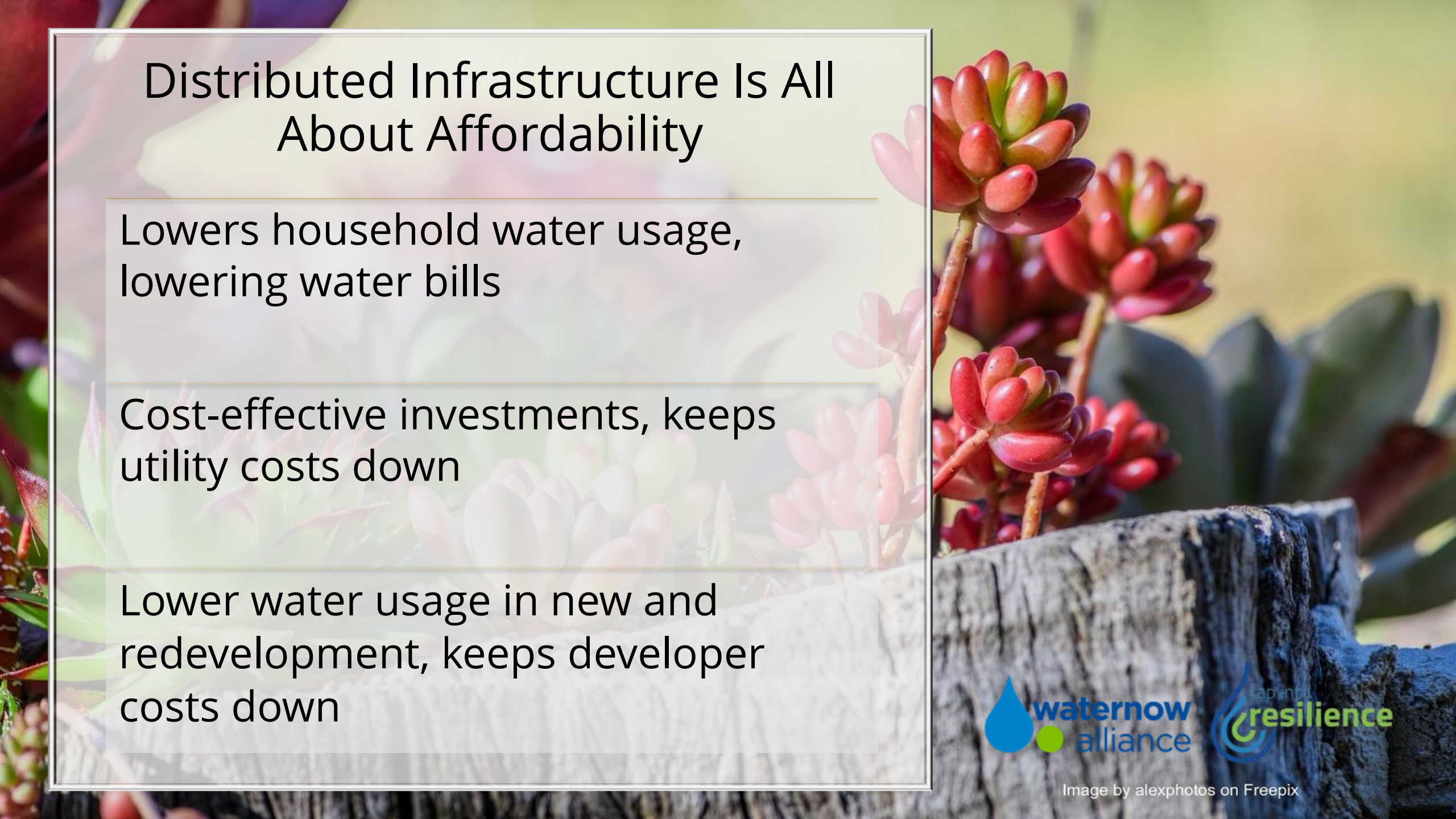


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Image by alexphotos on Freepix

Distributed Infrastructure Provides Co-Benefits for Developers

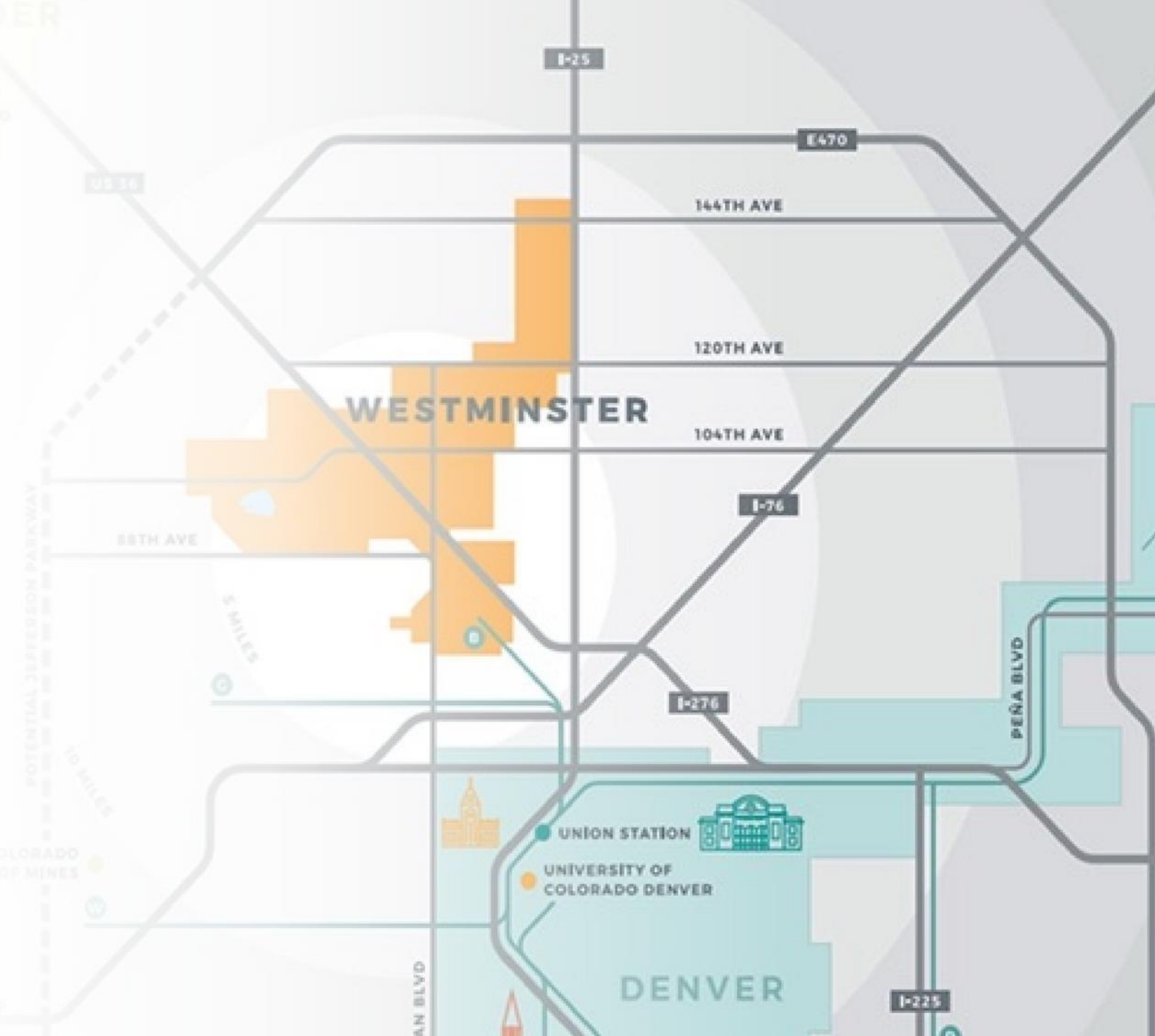
Increased property values

Regulatory compliance

Increased ROI and marketability for sustainable development

Water Use Efficiency Case Study

Westminster, Colorado



EFFICIENCY & ASSISTANCE PROGRAMS

- Efficiency Household Sprinkler
- Consultations **Lawn Replacement**
- Xeric Garden Kits
- Income-Qualified Assistance (< 60% AMI)
- Monthly Bill Credit ($15/mo) Single-Family
- Fixture Replacement One-Time Hardship
- No-Cost Leak Repair **Multi-Family**
- **Fixture Replacement**
-
-

MULTI-FAMILY DIRECT INSTALL

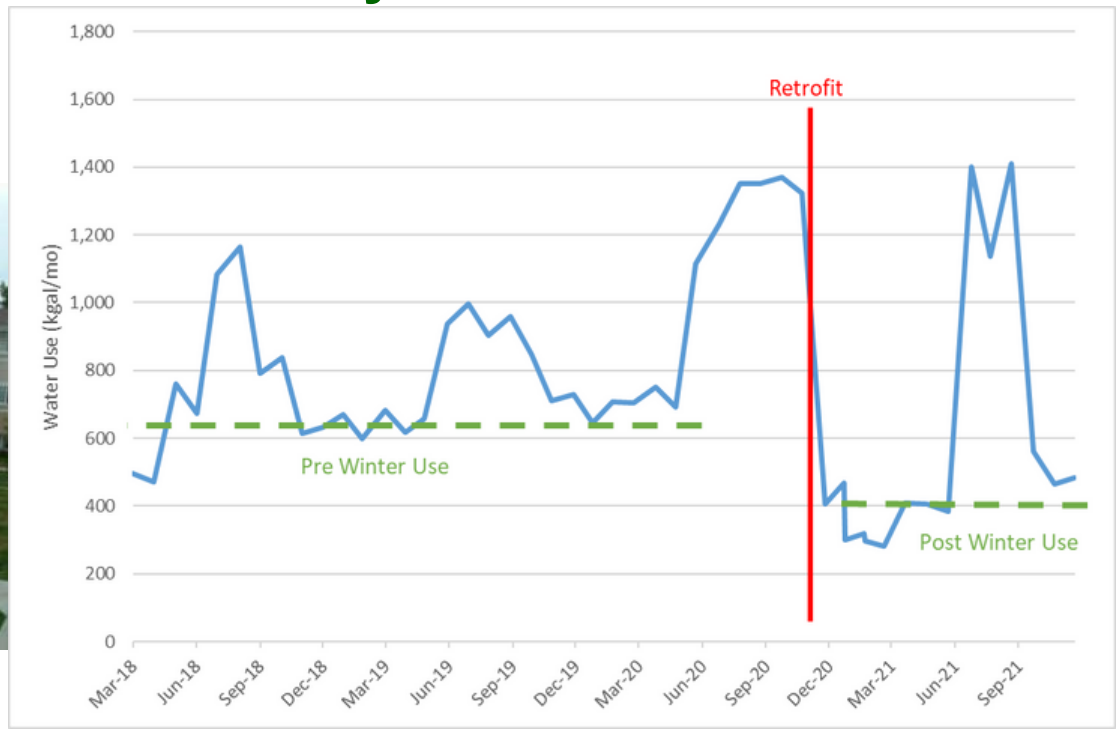
- Approached Maiker Housing Partners & Foothills Regional Housing

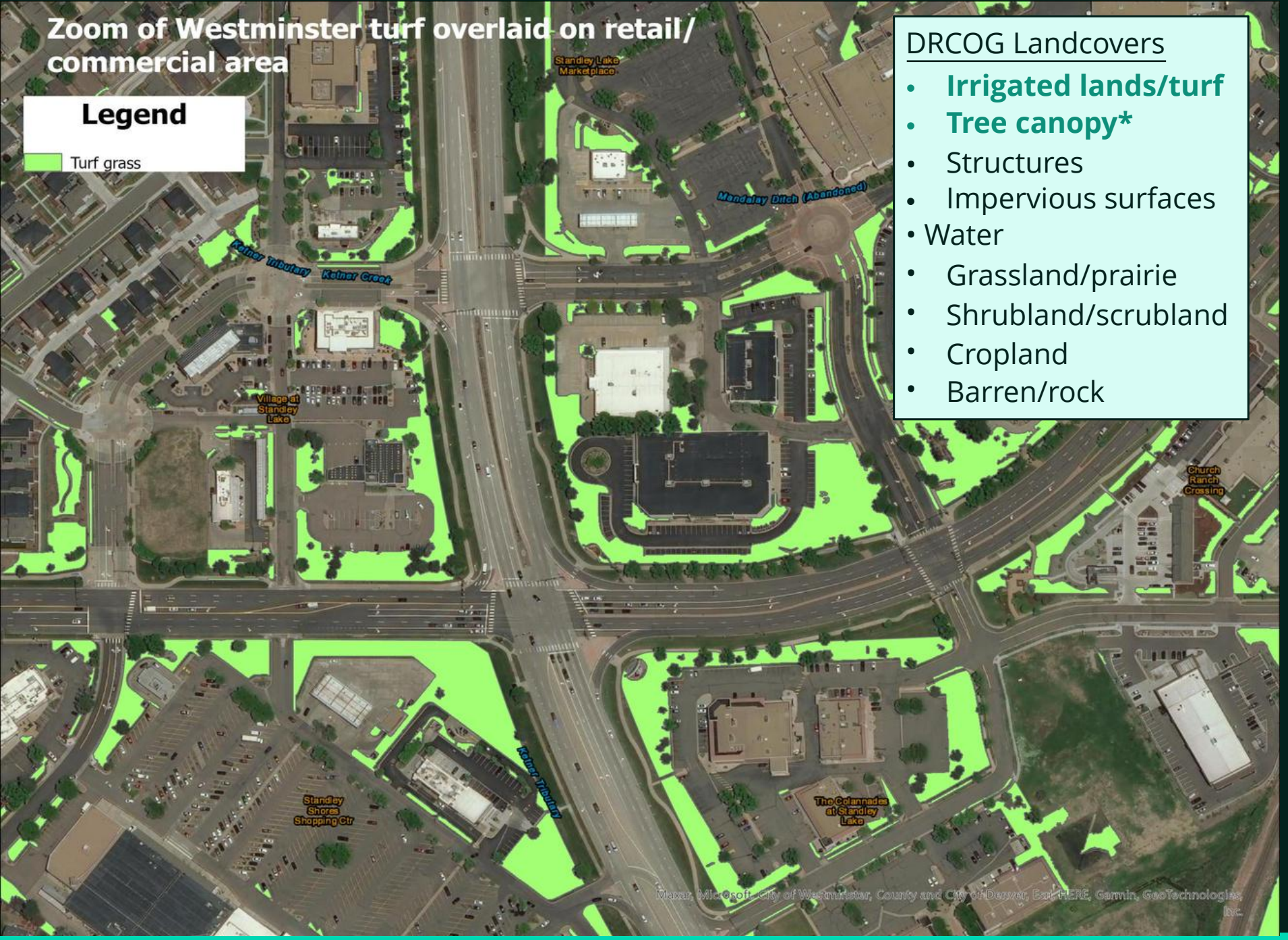
- Joint selection of Mile High Youth Corps in competitive bid

ORCHARD CROSSING PROPERTY (MAIKER)

- ü 72 Units: 83 HE toilets, 84 bath aerators, 20 kitchen aerators, 8 showerheads
- ü ~1 week on-site; $30K city expenditure = ROI 6 months

250,000 gal/mo water savings (40%decrease) à **$65,000 reduction in annual utility bills**





DRCOG Landcovers

- **Irrigated lands/turf**
- **Tree canopy***
- Structures
- Impervious surfaces
- Water
- Grassland/prairie
- Shrubland/scrubland
- Cropland
- Barren/rock

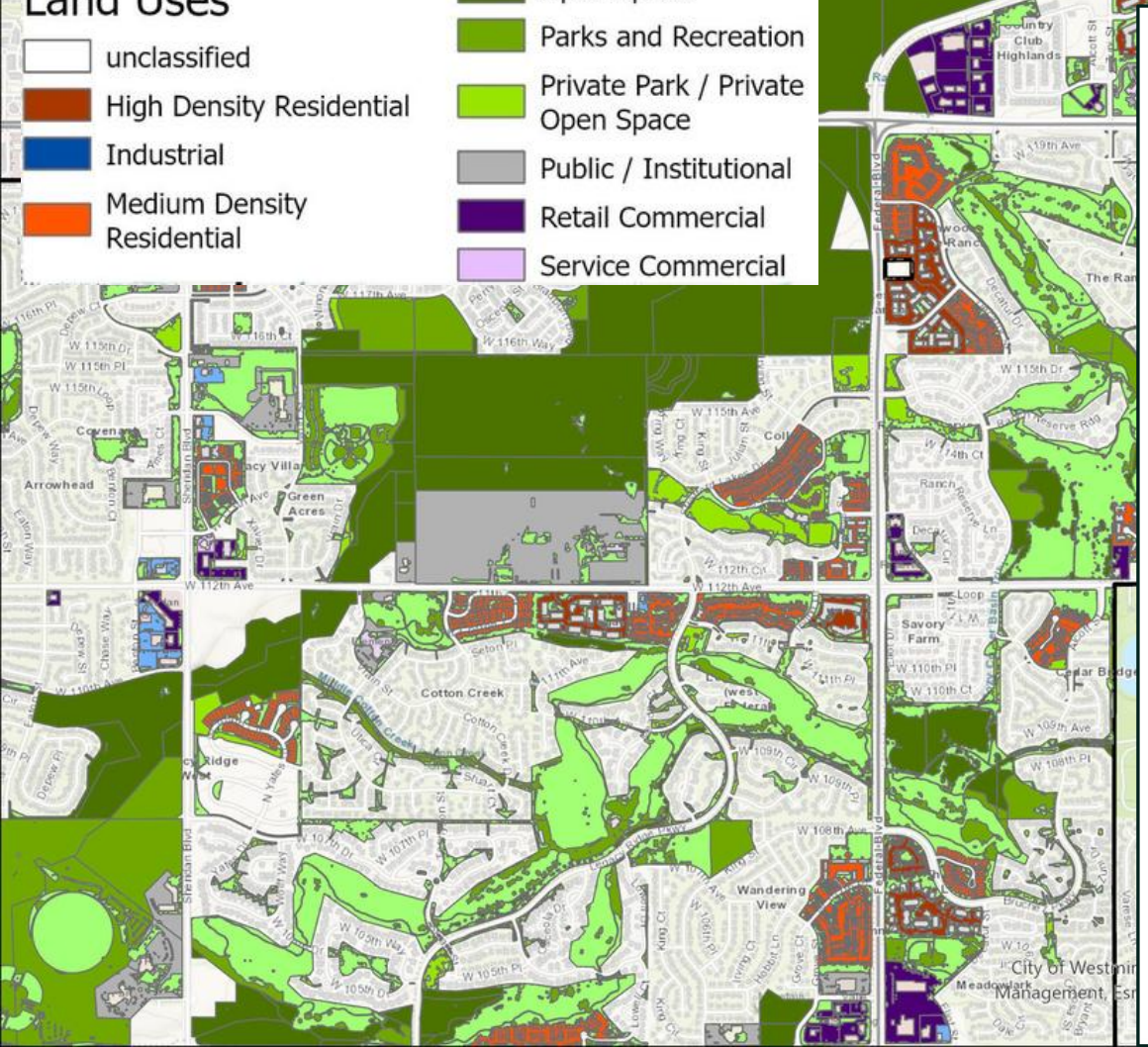
drcog
DENVER REGIONAL COUNCIL OF GOVERNMENTS

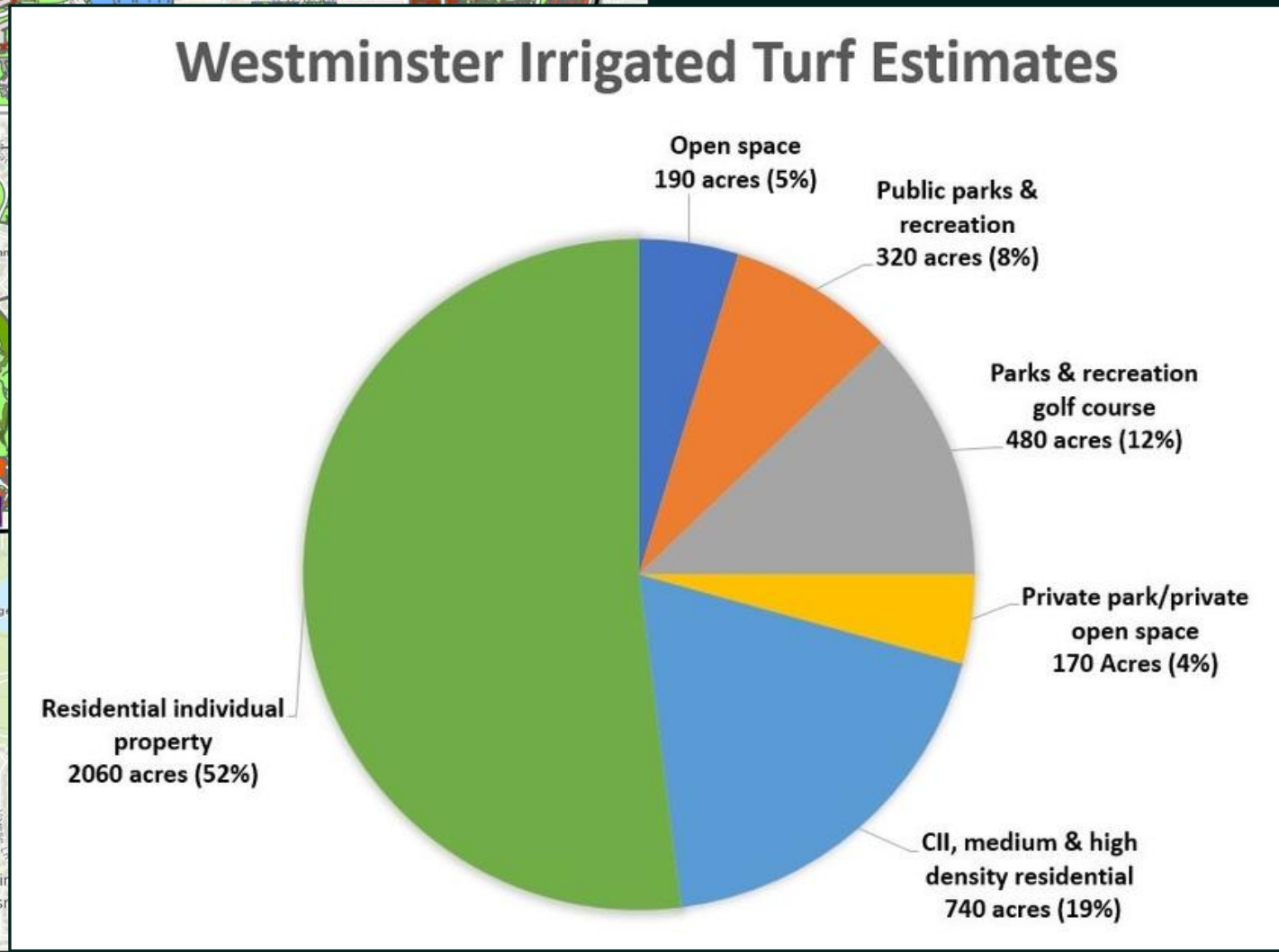
Regional Land Use Land Cover Project

https://drcog.org/services-and-resources/data-maps-and-modeling/regional-land-use-land-cover-project

2020 Imagery

Irrigated Turf





Benefits of Replacing Turf with Water Wise Landscapes

- Potential to save 1,310 to 4,190 AFY (7% to 22% of total use)
- Saves 84-86% on cost per acre-foot
- Rebates at $1.50-$2.00 per sq ft are economical

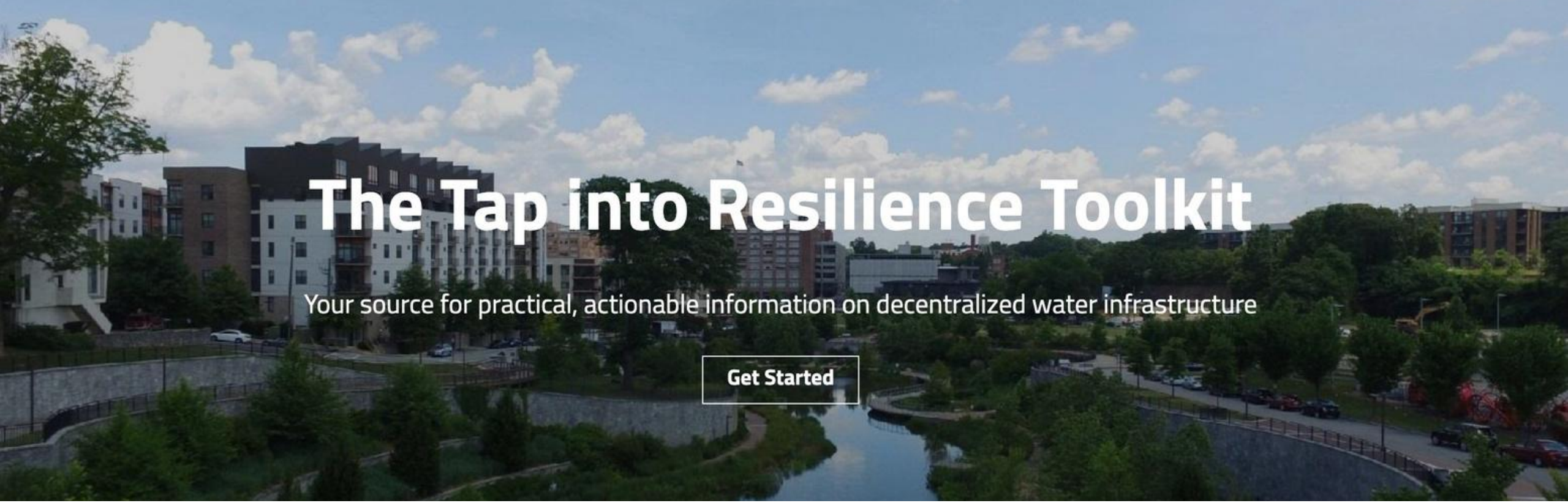
Key Takeaways & Lessons Learned

Water use efficiency for affordable housing results in significant water and cost savings

Replacing non-functional turf results in significant water and costs savings

Costs savings for affordable housing can translate into more affordable housing developments

Incentives for water wise landscapes benefit property owners and water systems



RESOURCES FOR EQUITABLE, AFFORDABLE INFRASTRUCTURE INVESTMENT

tapin.waternow.org/toolkit

waternow alliance

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Water Equity and Climate Resilience for Frontline Communities

Welcome to the WaterNow's Frontline Communities module! This Toolkit module is for utility leaders nationwide facing the first, and worst, water challenges—from flooding, to drought to basement backups to water contamination and more—all of which are exacerbated by climate change.

The Water Equity and Climate Resilience for Frontline Communities module is designed to help leaders at all levels within drinking water, wastewater, and stormwater utilities and public works departments navigate these challenges, building their knowledge, skills and abilities to be changemakers and solve for these complex problems. Within this part of the TiR Toolkit you will find a set of resources curated to address the pressing needs of communities at the forefront of the struggle for clean, safe, healthy, and reliable water services for everyone.

There are 6 major sections, starting with: **What is a Frontline Community?** Other topics include: **Meeting Water Challenges with localized Water Infrastructure**, **Equitable & Affordable Water Infrastructure Investments**, **Building Capacity Through Partnerships**, and **Avoiding Water Shutoffs**. We are particularly excited about our **Storymap**, an interactive ArcGIS-based portal to case studies and solutions developed to help water leaders quickly identify similarly situated communities and others working to address locally relevant challenges. Looking for a quick walkthrough of the module before you dive in? Check out our TiR Toolkit: Frontline Communities Module Overview video!

Direct Installations and Other Strategies to Implement Localized Infrastructure on Private Properties in Frontline Communities

Private properties of various kinds represent roughly 60% of the land mass of mc cities and towns in the U.S. So large-scale adoption of onsite localized water infrastructure that could generate multiple benefits for low income and majorit minority communities depends on successful partnering with homeowners, busir and institutions of all kinds. These partnerships are most successful when the city, town or develops a specific, intentional approach to **motivate and incentivize private property ov** or caretakers, to participate and implement these strategies and technologies.

Utilities and water resource agencies serving frontline communities face additional challen incentivizing adoption of localized strategies. Low-income households typically do not parti in rebate programs because they cannot pay the upfront cost of appliances, green infrastru or other onsite systems. In addition, the processing times associated with reimbursements prohibitively burdensome. And renters are often not eligible for incentive programs.

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DIRECT INSTALLATIONS OF LOCALIZED WATER INFRASTRUCTURE

A HOW-TO GUIDE FOR LOCAL WATER LEADERS

THE CHALLENGE: WATER REBATE PROGRAMS LEAVE OUT LOW-INCOME RESIDENTS

Low-income households typically do not participate in water rebate programs because the challenges of paying the upfront costs, and the processing times associated with reimbursements, are prohibitively burdensome. This represents a critical missed opportunity to address undetected leaks, reduce water waste, and manage stormwater—steps that can lower water bills, protect residents' homes and health, and help utilities build water supply resilience. Direct installation programs can help overcome these challenges, lower the likelihood of water debt and water shutoffs, and foster more equitable utilities.

THE FIX: DIRECT INSTALLATION PROGRAMS CAN ENGAGE LOW-INCOME POPULATIONS

Through direct install programs, utilities provide various types of onsite, distributed water infrastructure at no- or low-cost to customers, without the need for a rebate or reimbursement after the infrastructure is installed. Direct installation programs can support a range of strategies, across both indoor and outdoor water use, including:

Water Use Efficiency
- → Indoor High Efficiency Appliances and Fixtures (e.g., Aurora, Seattle, Evans)
- → Native and Water Efficient Landscaping (e.g., Santa Clara Valley Water District, Aurora)
- → Smart Irrigation Controllers (e.g., Spanish Fork)
- → Leak Detection and Repair (e.g., Sacramento, Madison)

Stormwater and Flood Management
- → Rainwater Harvesting (rain gardens, rain barrels and cisterns) (e.g., Tucson, Pasadena)

Water Reuse
- → Greywater Laundry to Landscape (e.g., Pasadena)

1

Access the resource

Click here

Addressing Affordability Challenges

Households in the United States have experienced considerable increases in the cost of water and wastewater services over the past decades. According to a 2020 **Boston University study**, water and sewer costs are the fastest-growing category of household costs. Since 2010, water and sewer service costs grew by 4.83% per year. A 2019 study by **The Thurgood Marshall Institute at the NAACP Legal Defense and Educational Fund** found that rising water rates are most likely to impact communities of color. With these increases in cost, shutting off water service has become a standard utility practice for addressing non-payment challenges.

> "The COVID-19 pandemic has made this affordability challenge, which had already been growing more acute for years, far worse."
> ~ Moonshot Missions, Addressing the Affordability of Water and Wastewater Services in the U.S.

To be clear, no utility desires or seeks to shut off critical water services for any customers. Shutoffs are typically regarded as an authority required to ensure a utility's fiscal health as a "last resort" for addressing customers far in arrears on bill payment. The federal government's response to the COVID-19 pandemic included creation of the first federally-funded water-related customer assistance program (the **Low Income Household Water Assistance Program**) with $1.1 billion available as of 2021 to help those struggling to pay their water and sewer bills. However, it is uncertain whether this federal assistance will available going forward. Local utilities—especially those serving at-risk communities—will therefore continue to be on the frontlines of providing clean, safe, reliable water, wastewater, and stormwater services while also ensuring those services are affordable for everyone. The challenge for these utilities is how best to address non-payment challenges without resorting to service shutoffs which can have devastating impacts, particularly in hard hit frontline communities.

Click through the sub-sections below to learn about strategies for avoiding water shutoffs and find success stories from utilities keeping rates affordable and the water turned on.

Strategies for Avoiding Water Shutoffs +

Affordability Success Stories +

Avoiding Shutoffs

Shutting off water service for non-payment of water utility bills has been standard utility practice nationwide for decades. This approach has been criticized for many years—water and sanitation are basic human needs. However, the COVID-19 pandemic thrust the issue into public consciousness and debate at a new level and there is a growing consensus, although by no means unanimity, that it is crucial for water utilities to develop strategies to avoid water shutoffs, and to develop alternatives to address non-payment of water service bills. The issue is particularly acute in frontline communities where residents can be especially vulnerable to shutoffs.

There are a number of strategies available to utilities to avoid shutting off water to households in frontline communities. These include primarily:

- ✓ Investing in **water use efficiency**, conservation, and **other localized infrastructure** implemented via grant or **direct install programs** that enable households to lower their water use and reduce their bills
- ✓ Customer assistance programs
- ✓ Tiered rate structures
- ✓ Community liaison programs
- ✓ Adjustments to billing systems to reduce billing mistakes
- ✓ Improved customer outreach

Jump to the full **Avoiding Water Shutoffs** section below to learn more about these strategies, find utility success stories where they have prevented shutoffs, and access additional resources for preventing shutoffs.

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THANK YOU!

For more information email:

cak@waternow.org

va@waternow.org

Resources:

tapin.waternow.org

Buena Vista's (evolving) Water Allocation Policy

Photo: Tripp Fay/Summit Daily News archive

As of June 11, 2024

Joel Benson, Planning Director

Why Water Allocation Policy?

- Problem: how do you address dual-issue of a limited water supply and housing diversity shortage?
  - Encourage building sooner
  - Deter hedging behavior
  - Give water to people when it’s needed, time with infrastructure capacity
  - Potentially balance a diversity of projects
  - Be aware of small and large projects, long-time/new residents
  - Build in flexibility as conditions change

Context of the Community

- Values and Community Vision as a whole
- Keys to address:
  A. Water as limited supply and public good;
  B. Housing stress;
  C. Services and efficiency (focus development/infill);
  D. Infrastructure (long term maintenance and network;
  E. Economic desires v needs; and,
  F. Sense of community

Assumptions

- Building will not fix housing issue; will increase demand for limited water
- Dry-year peak demand water as basis for upper limit, across all users
- Conservation potential is “bonus” (until new trend line)
- Not a senior right? Not counted in portfolio
- New water going through water court not to be counted until assured
- Capacity for production and distribution monitored simultaneously

How it works

- Set aside water into categories (triggers in place to revisit), e.g.

Infill	Emergency	Workforce / Affordable	Econ Develop	Public / Non-profit	General Develop	Small Projects

- Water dedicated via fee at building permit or PIA—categories determined by Planning Dept/approved by Trustees with credible commitment
- Assure water for 10 years for major subdivision, then as available
  - Encourage smaller phasing, housing now, reduce hedging
  - Maintenance fee per water unit kicks in after 5 years

Lessons

- Planning and Water difficult to coordinate given staff paradigms (e.g. “it’ll rain again" v “cannot count on conservation water as a secure source.”
- Need to adjust options for pulling from various categories - currently missing some stick or carrot to ‘require’ workforce/affordable category.
- Seek additional incentivized zoning options to help with creativity to mix and match categories
- Asymmetry of information - Town is public entity working with private industry that likely doesn’t disclose financials
- Promises versus a credible commitment
- Massive campaign to educate on water, on process, on planning

Group Discussion & Updates

- Are there any other resources related to water conservation and housing affordability?
- We started resource lists for water wise landscapes and policies
- 2024 Next Generation Water Summit on June 20-21: https://ngws.vfairs.com/en/#agenda

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Coalition Programming

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Programming Brainstorm

Let us know what you want for coalition meetings!

Cohort Programming Agenda	Subject Brainstorm
July/Aug/Sept 2024	Water neutral development and development review process (AWE, Mary Ann Dickinson)
Oct/Nov/Dec 2024	Water and land use forecasting, data-driven planning that incorporates water, using data to right-size taps and water infrastructure (Babbitt Center)
Jan/Feb/March 2025	Water reuse (Water Reuse Foundation, Pacific Institute)
April/May/June 2025	One Water Approach + land use (US Water Alliance, Denver One Water, Tucson)
July/Aug/Sept 2025	Colorado Water Wise guidebook on best practices (Colorado WaterWise, Brendle Group, Peter Mayer, Victoria, Lindsay)

ULI Fall Meeting 2024 - Vegas

- ULI's Fall Meeting in Las Vegas: October 28-30, 2024
- The Lewis Center for Sustainability Forum will take place on October 28th from 8am to 3pm
- Forum with have Water Wise theme and will feature national experts
- Water Wise tours of the Venetian and Bellagio
- Updates and information available at https://fall.uli.org/future-meetings/

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THANK YOU FOR JOINING US!

You can reach me at Marianne.Eppig@uli.org

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Implementation Project Ideas

Pending funding

- **A Water Wise Development Symposium** bringing together the public and private sectors to advance water wise strategies for real estate.
- **Convening local roundtables** and/or focus groups between public and private sector land use and water professionals, aimed at supporting water-wise real estate and supportive policies.
- **The creation of educational materials** that advance and document market demand for water-wise land uses.
- **Other ideas?**
  - Tours
  - Case studies with financials
  - Etc.