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# The Value of Landscapes in Climate Action Plans

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Bryce Carnehl & Warren Gorowitz

October 2019





# Green Infrastructure



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# Green Infrastructure: Community





# Green Infrastructure: Health and Well-Being





# Green Infrastructure: Environment





# Green Infrastructure: Economy





# Green Infrastructure: Performance

05.02.17

## These Cities Are Replacing The Worst Kind Of Infrastructure With The Best

R.I.P. parking lots.



3/7 [Image: courtesy SWA]

LANDSCAPE  
PERFORMANCE  
SERIES

Case Study Briefs  
Fast Fact Library  
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Collections

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The Landscape Performance Series is the online set of resources to help designers, agencies, and advocates evaluate performance, show value and make the case for sustainable landscape solutions.



Renaissance Park



Uptown Normal Circle

Active Living >

Resilience >

Biodiversity >

Health & Wellbeing >

Carbon & Climate >

Urban Agriculture >



Frontier Project

Revitalization >

Social Equity >

Water Management >



Sarah E. Goode STEM...



Dutch Kills Green

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# Green Infrastructure

“Based on ample evidence from the research literature, it is suggested that urban GI planning can make a major contribution to conserving and enhancing biodiversity, improving environmental quality and reducing the ecological footprint, adapting cities to climate change, and promoting social cohesion. In addition, GI planning may support the shift toward a green economy.”

## Urban Landscapes and Green Infrastructure

Stephan Pauleit, Rieke Hansen, Emily Lorance Rall, Teresa Zölch, Erik Andersson, Ana Catarina Luz, Luca Szaraz, Ivan Tosics, and Kati Vierikko



# Green Infrastructure: Climate Action Plans

## CALIFORNIA CLIMATE STRATEGY

*An Integrated Plan for Addressing Climate Change*



### VISION

**Reducing Greenhouse Gas Emissions  
to 40% Below 1990 Levels by 2030**

### GOALS



**50%  
renewable  
electricity**

**50%  
reduction  
in petroleum  
use in vehicles**



**Double energy  
efficiency savings  
at existing buildings**



**Carbon  
sequestration  
in the land base**



**Reduce  
short-lived  
climate pollutants**



**Safeguard  
California**





# Green Infrastructure: Climate Action Plans

**SUSTAINABLE MANAGEMENT PRACTICES TO REDUCE EMISSIONS, BUILD CARBON STOCKS AND INCREASE RESILIENCY**

## Climate-Friendly Farming

Thirty-eight percent of the Earth's land area is dedicated to agriculture. Agriculture accounts for 14% of all of GHG emissions (IPCC, 2007), with significant emissions generated from soil tillage, erosion, irrigation, fertilizer use, biomass burning and livestock management. Including the deforestation that often precedes agricultural expansion — occurring at the highest rates in the world's carbon-rich tropical forests — agriculture is ultimately responsible for nearly one-third of all GHG emissions (WRI, 2008). Alternatives exist: sustainable, climate-friendly agriculture can conserve forests, reduce emissions and prepare farmers to adapt to changes in their climate.

The Rainforest Alliance and Sustainable Agriculture Network (SAN), in close collaboration with project partners including Efico, the Efico Foundation, Anacafé and others, are developing the means, tools and guidance for farmers to engage in climate-friendly farming.

### A Leading Standard, More Climate-Friendly

- Criteria to guide farmer adoption of best practices to reduce climate impacts and adapt to a changing climate — a "climate module"
- Voluntary add-on to the SAN Standard — a leading sustainable agriculture certification used by over 85,000 farms in nearly 30 tropical and subtropical countries
- Module can be applied on all certified farms, which cover over 600,000 hectares

### Extensive Research, Testing and Consultation

- Work began in July 2009, in close collaboration with leading research institutions, local conservation nonprofits, companies and donors
- Experts' analyses of SAN Standard and draft criteria: thorough literature reviews to assess the state of the science and answer the question "what is best climate practice?"
- Pilot audits in multiple crops and countries to assess implementation and identify gaps, together with farmers and local stakeholders
- Public consultations in Central and South America, East and West Africa and Southeast Asia: a 100-day online consultation yielding comments from 40+ countries

### Our Goals

- Provide farmers with practical tools and guidance to carry out climate-friendly practices
- Encourage farmers to adapt to climate change and demonstrate how they are doing so — increasing their farms' resiliency, proactively planning for changes and, as appropriate, engaging with their community on adaptation efforts
- Enable farmers to benefit from the climate services their sustainably managed lands provide

### Good for Farmers, Agriculture and the Climate

- Proactive preparation for risks posed by climate change, including extreme weather events
- Improves bottom line: cut costs in the near-term by reducing energy and water use, optimize application of fertilizers and shade on-farm
- Efficiently and cost-effectively generate data for on-farm monitoring; enable food and beverage companies to address GHGs in their supply chains
- Farmers better positioned for potential inclusion in Payment for Environmental Services systems
- Reduce emissions and increase levels of carbon stored on farms throughout the tropics

### The Path Ahead

- Education and awareness-raising activities for farmers and local stakeholders
- Training tools and guidance for farmers, extensionists and auditors
- Comparative farm research in East and West Africa, Southeast Asia and Latin America
- Raise awareness to generate support for this work in supply chains

**Climate-friendly farming means farmers are reducing GHG emissions, increasing carbon storage on their farms and improving their ability to adapt to a changing climate.**

 **Rainforest Alliance**  
www.rainforest-alliance.org

The World Bank: [data.worldbank.org/indicators](http://data.worldbank.org/indicators)  
Agriculture and Land Development  
World Resources Institute (WRI) (2008)  
Climate Analysis Indicators Tool (CAIT)  
January 2008, available online at: [cait.wri.org](http://cait.wri.org)

**PROJECT PARTNERS**  
Sustainable Agriculture Network


**FINANCIAL SUPPORT FROM**  
EFICO FOUNDATION  
Anacafé  
EFICO  
Caribou COFFEE  
THE ROCKEFELLER FOUNDATION


The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behavior.

## LINKING CLIMATE-FRIENDLY FARMING PRACTICES TO SAN DIEGO COUNTY'S CLIMATE ACTION PLAN:

An Opportunity Analysis of Carbon Farming in the Unincorporated County

MARCH 2018

  
Prepared by

  
BATRA ECOLOGICAL STRATEGIES  
Puja Batra, Ph.D.



# Green Infrastructure: Irrigation

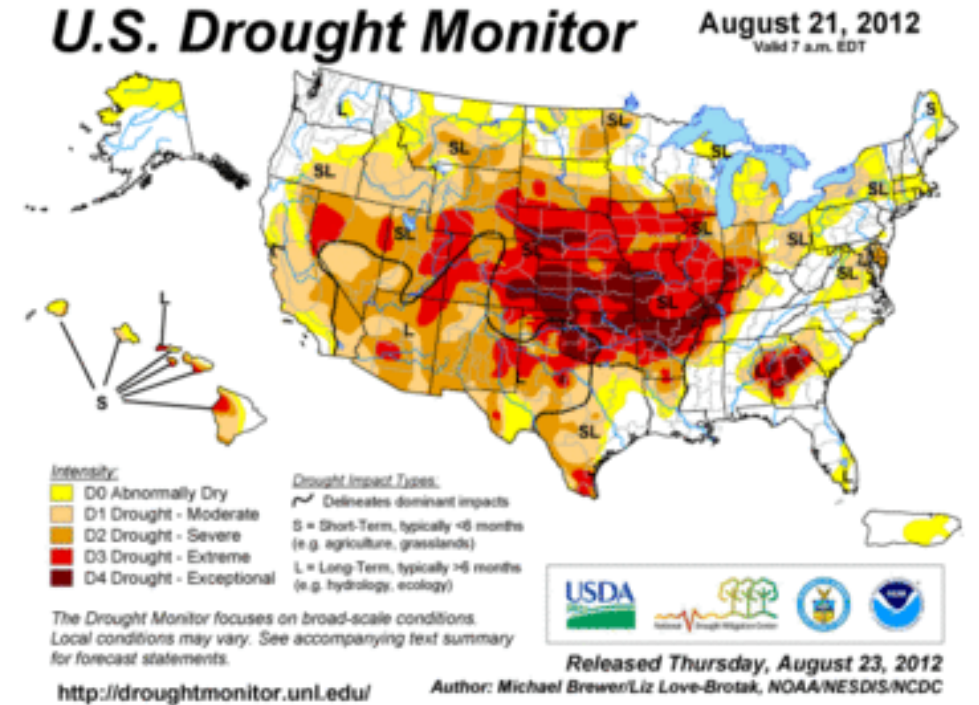


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# Times of Crisis



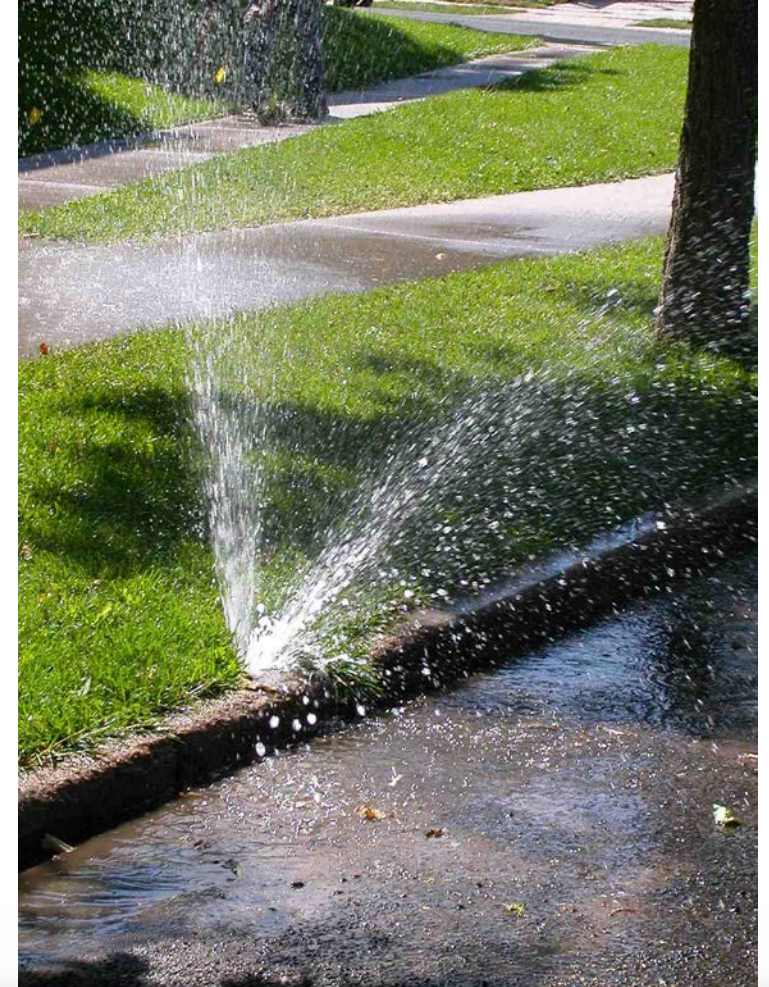


# Times of Crisis





# Times of Crisis: Landscape Issues





# Times of Crisis: Landscape Issues



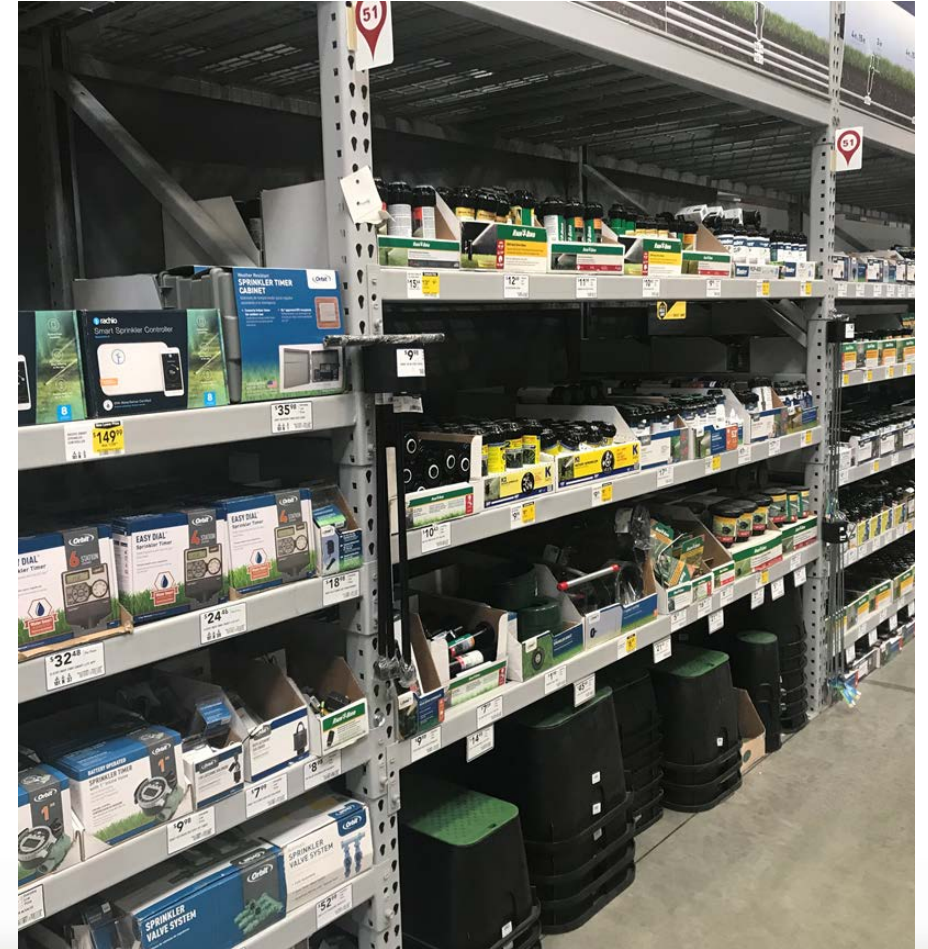


# Times of Crisis: Landscape Issues





# Times of Crisis: Landscape Issues





# Times of Crisis: Drastic Measures





# Times of Crisis: Drastic Measures





# Times of Crisis: Drastic Measures



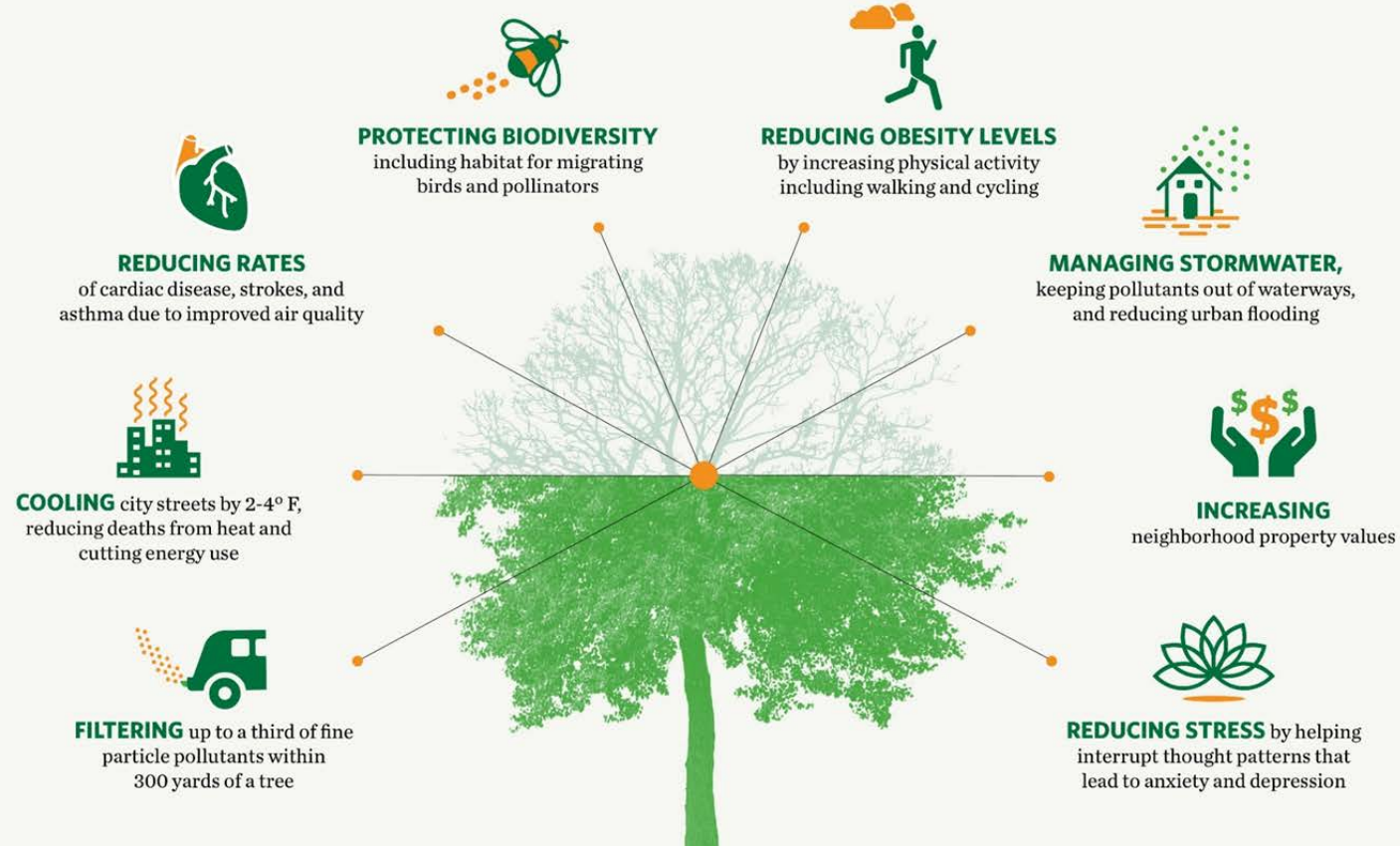


# Times of Crisis: What are we loosing?

## Benefits of Urban Trees

*Research has linked the presence of urban trees to...*

The Nature Conservancy 





# Partnerships

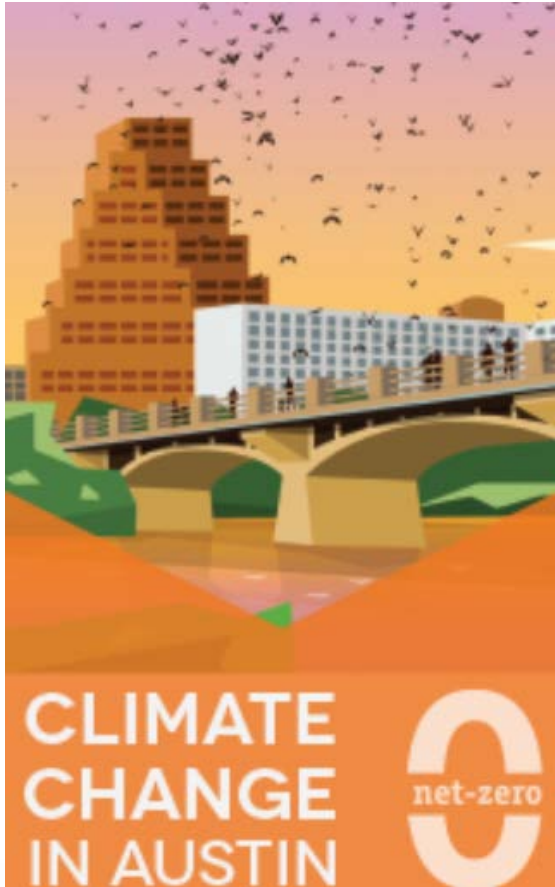
## Build Partnerships to Sustain Green Infrastructure



...water plays a vital roll

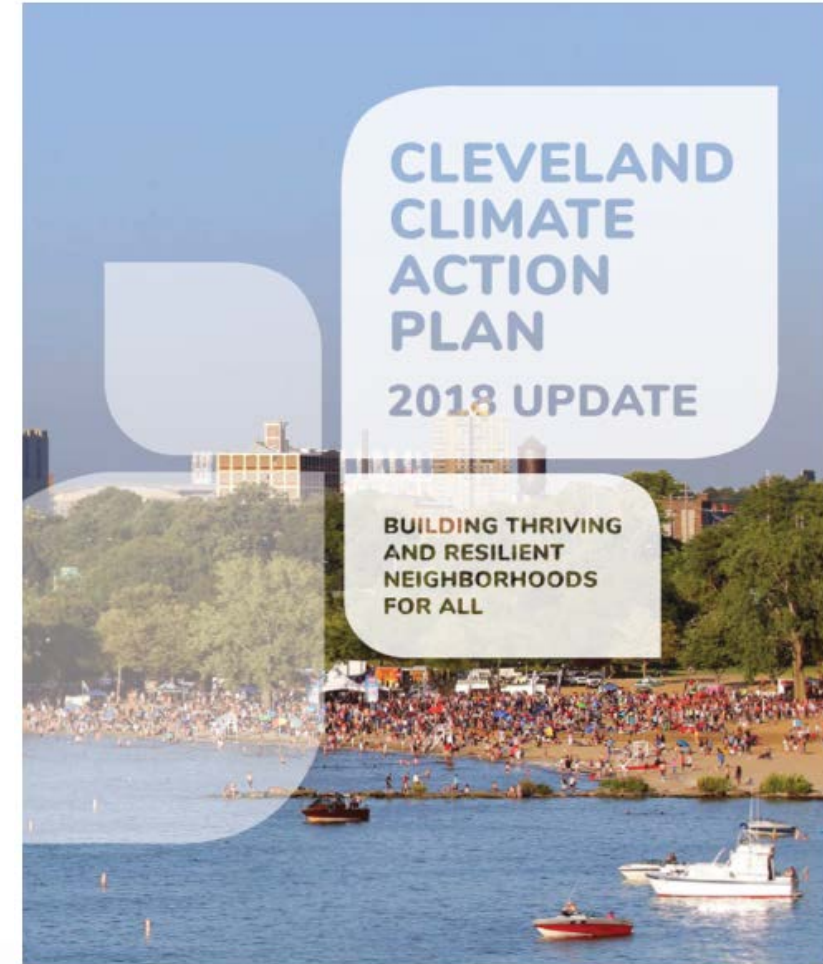


# Partnerships



## Trees

Trees are integral to meeting San Diego's commitment to climate change, carbon sequestration, storm water runoff reduction, and water conservation. As part of our [urban forest](#), trees are found on both public and private property and help make our communities more sustainable and livable.






# Partnerships





## VIBRANT CITIES LAB

TREES IMPROVE














# Urban Wood Reuse

 SHARE  SAVE

With more trees removed from urban areas than National Forests, urban wood reuse industrial clusters have emerged that include powering cities, art sculptures and nanotechnologies. They create jobs, protect natural forests and reduce environmental impact.

SEE HOW TREES IMPROVE

 <p>HUMAN HEALTH</p>	 <p>ECONOMIC DEVELOPMENT</p>	 <p>WATER QUALITY</p>	 <p>AIR QUALITY</p>
 <p>PUBLIC SAFETY</p>	 <p>EQUITY</p>	 <p>TRANSPORTATION</p>	 <p>EDUCATION</p>
 <p>CITY PLANNING</p>	 <p>SMART CITIES TECH</p>	 <p>URBAN WOOD REUSE</p>	



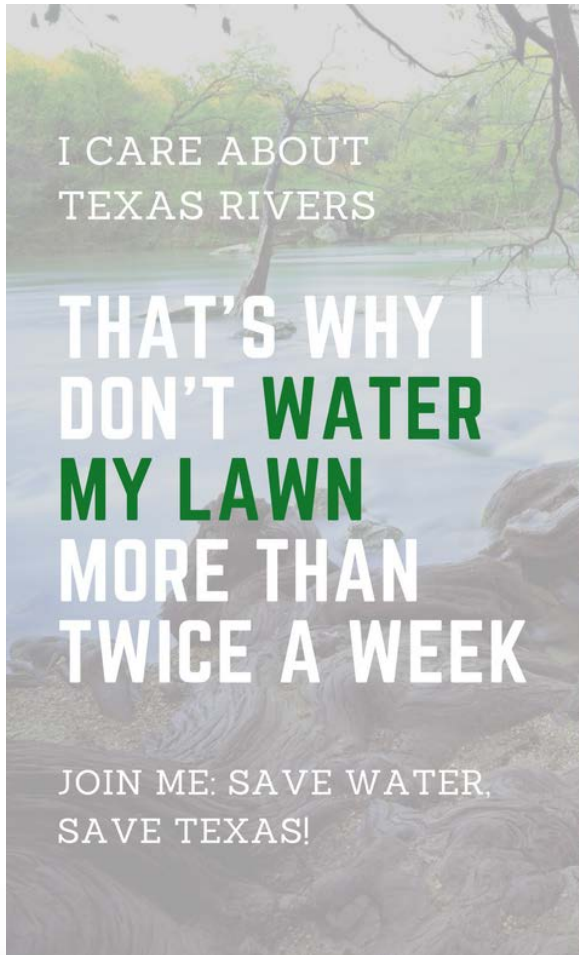
# Certification



Welcome to NGICP, the standard for national certification of green infrastructure (GI)  
construction, inspection, and maintenance workers.



# Communication





# Green Infrastructure Value



Save Our Water  
and Our Trees!

[saveourwater.com/trees](http://saveourwater.com/trees)

CALIFORNIA URBAN FORESTS COUNCIL | INVEST FROM THE GROUND UP |

## HELP YOUR TREES SURVIVE THE DROUGHT

**BE WATER-WISE. IT'S EASY. HERE'S HOW.**

Trees and water are both precious resources. Trees make our houses feel like home—they also improve property values, clean our water & air, and even make our streets safer & quieter. When we water wisely and maintain our trees carefully, we enjoy a wide range of benefits at a low cost and with little effort.

YOUNG TREES	MATURE TREES	EXPOSED TREES	DECIDUOUS TREES
The roots of younger trees are less established & need easier access to water to establish deep root systems.	Mature trees require MORE water when growing near heat traps such as driveways & foundations.	Water loss is greater where trees are exposed to hot afternoon sun & strong or constant wind.	The critical time for water is during later winter/early spring when new buds and leaves are forming.

THE RIGHT AMOUNT	IN THE RIGHT PLACE	CONSERVE & RECYCLE WATER	THE RIGHT TIME	DON'T WASTE WATER
Water young trees twice per week (about 5 gallons) & mature trees once per week in several places (the	Water the "drip zone," area directly beneath the foliage & shaded by the tree. Also, add mulch to lower soil	Inside: Place buckets in the shower to collect warm up water. Recycle water from	Water early in the morning or after the sun has set, as this is when trees replace the water they've	Water should soak into the ground rather than running off into the drain.



# Sustain Green Infrastructure

