Summer 2025

Watershed Management Group

A Watershed Moment

A NEWSLETTER OF WATERSHED MANAGEMENT GROUP

watershedmg.org 520-396-3266

A New View on Cooling our Cities

Our back patio has a fantastic view of the Catalina Mountains right in midtown Tucson. Every day the mountains inspire me, and I have preserved the view fanatically through every decision about how we landscape our yard.

Until this spring. I decided the view was no longer worth the hot patio it created — a patio on the north side of our house, too hot to use during a summer day. And our summers keep getting longer.

When my husband Catlow and I first moved into our house, we repurposed an old concrete pad into concrete pavers, defining our back patio space. Our creative recycling turned out to be a hot mess, or should I say a hot mass—thick concrete pavers created a thermal mass that soaked up the sun's heat and re-released it at night, right next to our house.

It was high time to cool that hot patio. The plan to remodel was solidified by teaching a new workshop series for our Cool Tucson 5° initiative. The workshops help people understand how nature can create cooling micro-climates that can reduce temperatures in our outdoors spaces by 5 degrees or more. This is critical in a city that is 7 degrees warmer than the surrounding desert solely from the urban heat island effect.

In April, we led a tour of our home as part of the Sustainable Desert Living Home Tour Series, and participants helped us plan the cool down project. We asked each person to imagine they were a shade tree, and plant themselves where they would want to shade our backyard. Soon we had a forest of tree people. Everyone explained why their location was best for a shade tree. One tree woman shouted, "Why just plant one tree…why not plant all of these trees and create a forest?"

Her exuberant suggestion struck a chord with me. Yes, why couldn't we plant more trees and create a forest? This mountain view I had been so carefully protecting could be seen from other places, and a new view, one of a cooling forest, could bring just as much inspiration to my day.

So, after years of debating how to remodel our back patio, Catlow and I sprang into action. Within weeks, we removed our concrete patio and replaced it with a decomposed granite patio which has less thermal mass. We planted a native velvet mesquite tree to shade our seating area, surrounded by jojoba, little leaf sumac, and hopseed bush–native shrubs that will cool the soil and block hot breezes.

Everything was planted in a rain basin to maximize the natural water cycles to grow our native garden. At the same time we set up a drip irrigation system to get the plants established and make it through times of drought.

Now as we wait for our shade garden to grow, we're planning how to expand the forest each year. In the meantime, we will cherish our changing view as our plants grow into a shady forest.

-Lisa Shipek, Executive Director

Writing & editing: Lisa Shipek & Cody Calamaio
Photos: Julius Schlosburg, WMG
Graphic Design & Illustrations: Dennis Caldwell
Special thanks to TEP for supporting WMG's Cool Tucson initiative.

Cover: Tucsonans participate in our Cool Tucson workshops and take home a Cooling Kit with native trees and shrubs.

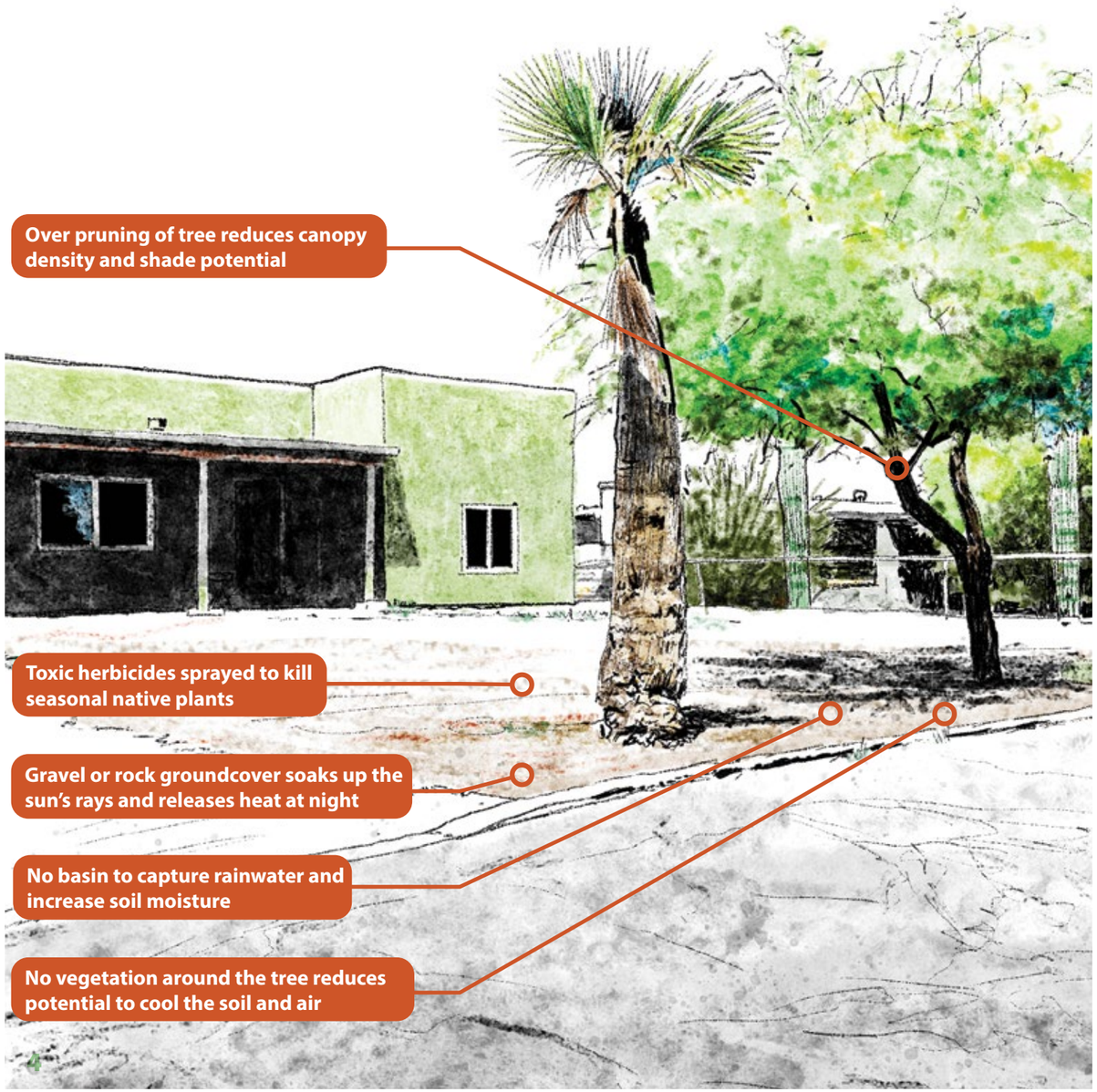
Lisa Shipek, Executive Director, teaches a workshop on how to create cooling micro-climates with native plants.

Plant a Cooling Forest, Not Just a Tree

In nature, forests are fantastic cooling micro-climates. The forests that are coolest have a dense canopy and multiple layers of plants under the canopy—called an "understory." When we create urban forests, we multiply the cooling benefits of individual trees, and steward an ecosystem that supports other plants and animals. By harvesting rainwater, we can bring more moisture into these natural cooling systems.

Consider the trees in your area… can you turn them into a forest?

Typical Urban Tree



Cooling Urban Forest with Understory

Cool Your Corner by Reversing the Urban Heat Island

Our cities are getting hotter!

The City of Tucson has gotten 7 degrees hotter just from the urban heat island, solely on how the city was designed and built. With climate change, the city has warmed another 5 degrees, making Tucson 12 degrees warmer.

Here's the good news: we each can help reverse the warming trend at our own homes, schools, churches, businesses, streets and parks.

What is the urban heat island?

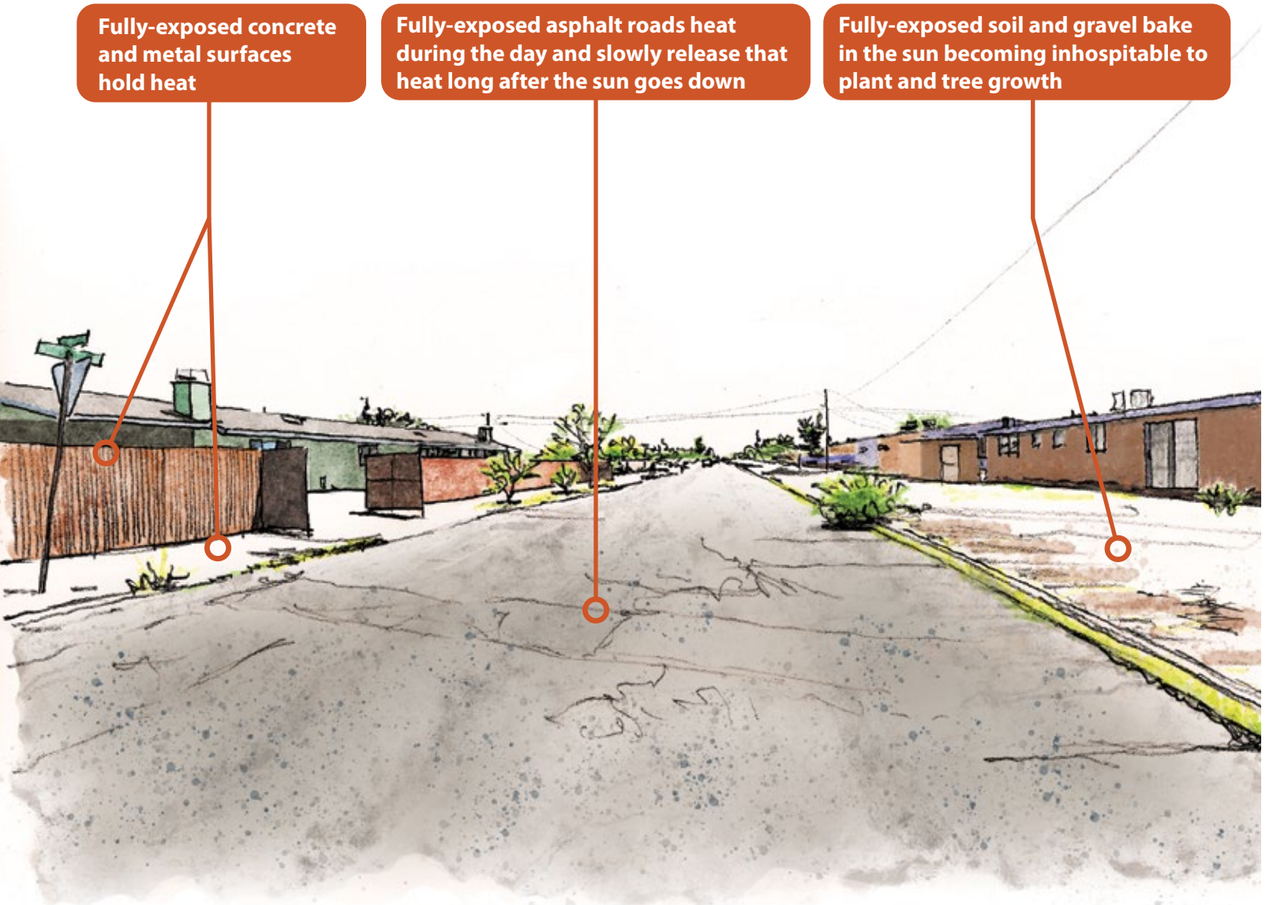
The urban heat island effect is when our built environment—our roads, parking lots, and buildings—absorb the sun's heat during the day and then continue to release the heat into the night.

On the other hand, nature—trees, shrubs, vines, natural groundcovers, rivers, and wetlands—mitigates the heat and reduces surrounding temperatures.

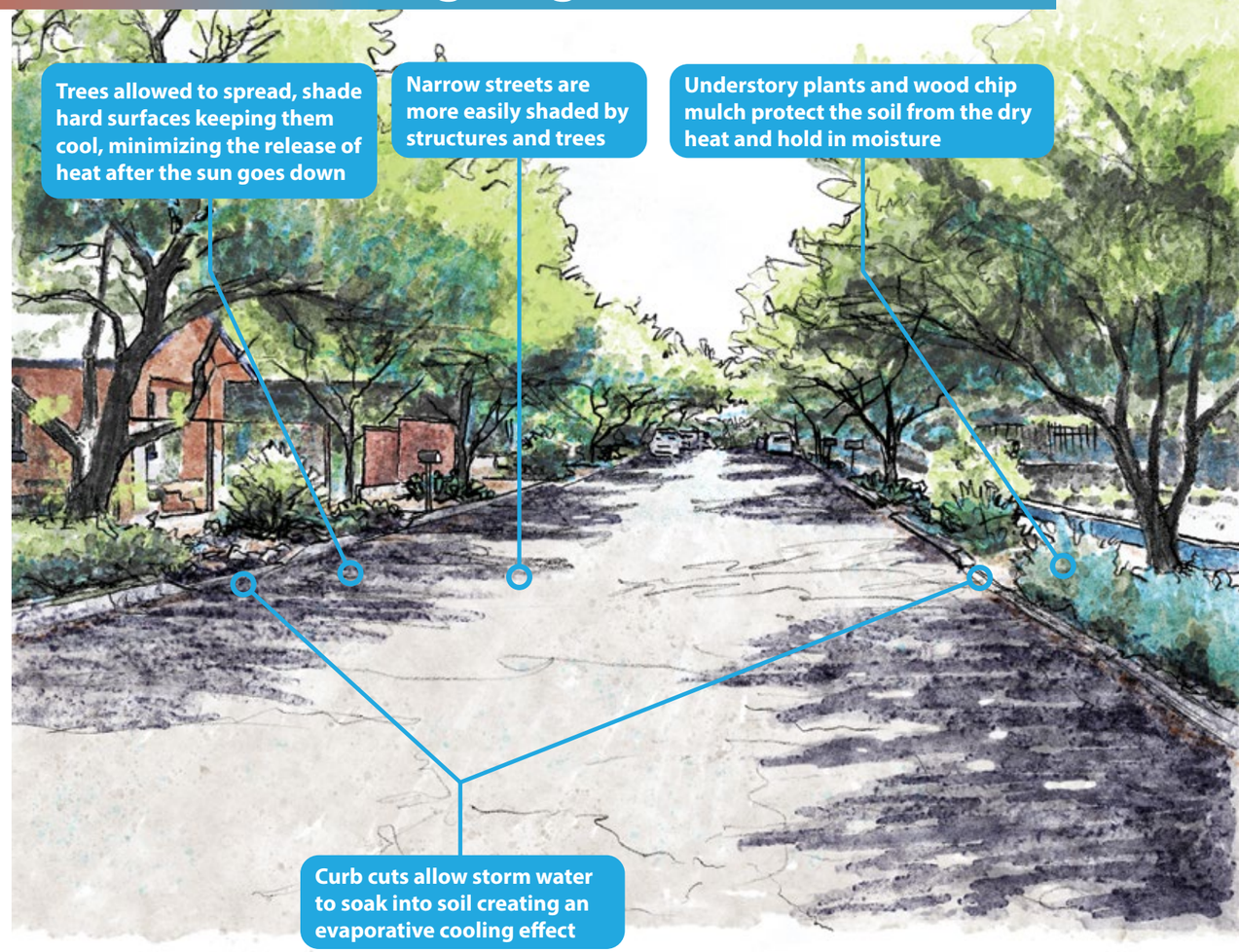
Create a micro-climate to cool your corner by 5 degrees

We can each do our part to cool our city, by learning from and mimicking nature, observing the sun, wind, plants, soil, and rain.

Warming Neighborhood



Cooling Neighborhood



What Makes a Micro-Climate?

How to Cool Down a Space instead of Heating Up a Space

How we design our landscapes has a big impact on the temperature of our spaces. Choose a few of these cool down strategies to create your own micro-climate.

Factors that Affect Urban Micro-climates:

Sun

Cool Down: Understand the sun's seasonal angles and design buildings and gardens to utilize passive heating and cooling.

Heat Up: Disregard the sun's seasonal angles and position buildings and patios to absorb hot summer sun and block out winter sun.

Vegetation

Cool Down: Create dense vegetated areas and native forests to maximize natural evaporative cooling.

Heat Up: Just plant cactus or plant vegetation sparsely.

Groundcover

Cool Down: Use natural groundcovers, like woody mulch or native plant groundcovers.

Heat Up: Use lots of hardscapes that have high thermal mass, like concrete, asphalt, brick pavers, and gravel or rock mulch.

Water

Cool Down: Build rainwater harvesting features to capture and infiltrate rainwater in soil and naturally cycle rainwater in plants.

Heat Up: Let rainwater run off surfaces, become stormwater, and be lost to evaporation.

Wind

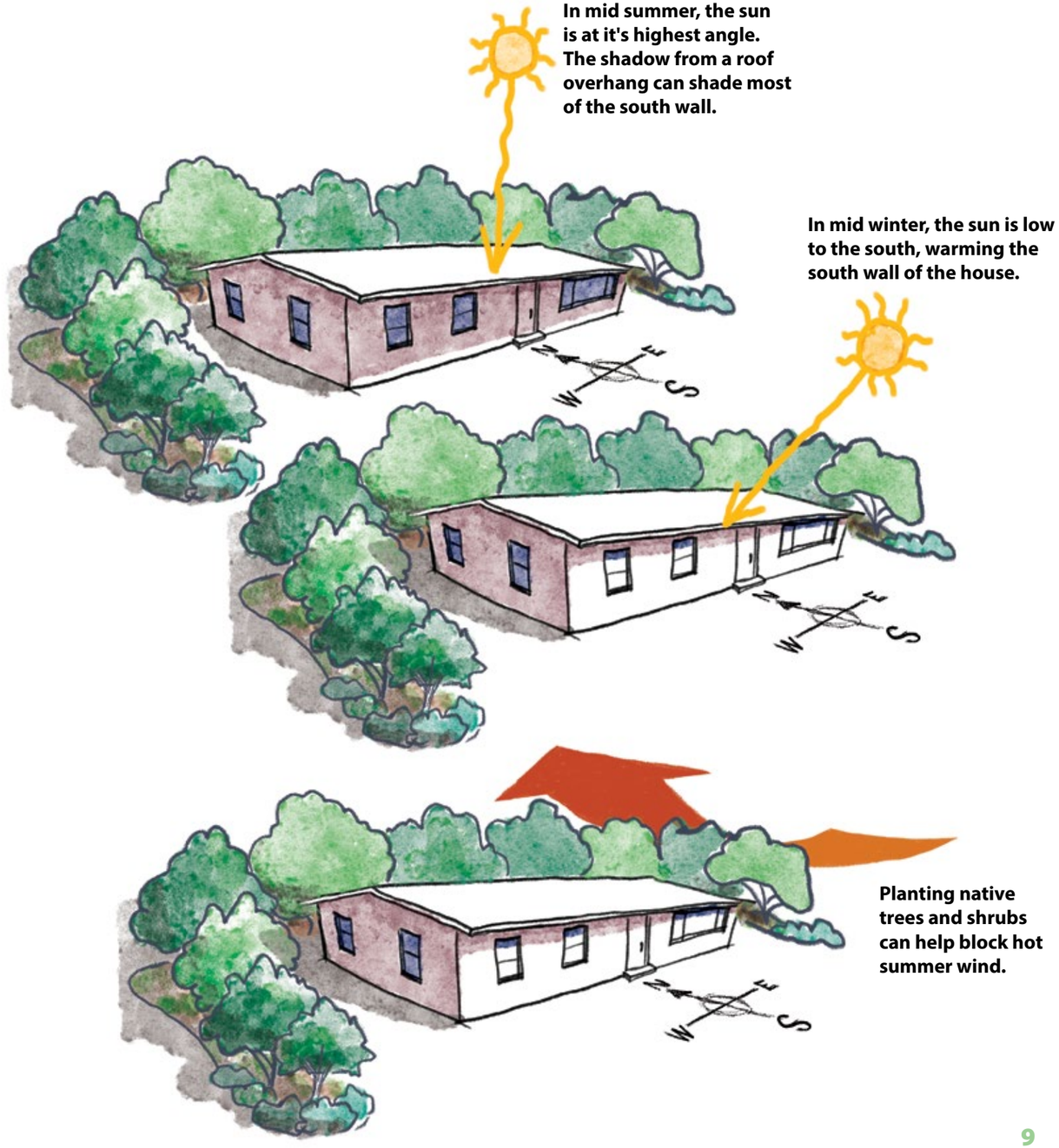
Cool Down: Strategically grow plants to buffer winds and create shelter from hot, dry winds.

Heat Up: Create open, sparse landscapes that let winds blow unobstructed.

Built Environment

Cool Down: Use materials that reflect the sun's rays and orient structures to create shade for people or plants.

Heat Up: Use materials that absorb the sun's rays and re-release at night; orient structures to reflect heat into spaces with people or plants.



Velvet Mesquite

Blue Palo Verde

Ironwood

Rewild!

Let Nature Plant the Trees

Have you ever noticed little trees or plants sprouting in your yard? Well, that's a tree sprouting on its own, from a seed of a nearby tree or a seed moved with stormwater or by a bird!

If it's a native tree, why not keep it? A tree that sprouts on its own just needs a little help to succeed. New trees, shrubs, and native groundcovers come up naturally with rainy seasons. After a rainy season, walk around and assess what has started growing.

Then cage the new trees and shrubs with a little wire fence – to protect it from people stepping on it or wildlife that may eat it. The benefit is this plant likely doesn't need any additional watering, since it rooted on its own.

Instead of pulling seasonal plants like native wildflowers and groundcovers, let them remain and do their thing. When the season is over, then help them become part of organic mulch by "chopping and dropping" or stomping them down.

How To Transplant Native Sprouts

Do you have a native tree or shrub sprout that you want to keep, but it's not quite in the best place? Here are some tips to help you move the plant. Your success rate will vary depending on local conditions, so observe your plants and learn along the way.

1. Identify sprouts 3 to 12 inches in size. The smaller the sprout, the more likely it is to re-establish in a new place.

2. Transplant during the rainy season or in the cooler season to reduce heat stress. If the soil is dry, soak the ground the night before digging it up.

3. Carefully dig around the plant and preserve as much of its roots as possible.

4. Dig a hole in the desired location. You can make the hole wider and deeper if the soil is really compacted.

5. Preserve the root ball when transplanting. Create a small basin around the plant to capture water. Put woody mulch around the plant to reduce evaporation.

6. You can also transplant into a pot (1 gallon) particularly if you have several plants you'd like to move. Care for them to transplant in your yard later or give them as presents to friends or neighbors.

7. Observe and love your plant. Water it at the time of transplanting and then occasionally for the first 3-6 months if the plant looks stressed. Visit your plant, talk to it, and give gratitude for its shade!

Our green infrastructure bike tour is always a favorite part of our Water Harvesting Certification, highlighting how sustainable transportation and water harvesting are complimentary.

Cool The Planet
With Your Transportation Choices

The planet is heating up due to climate change, and we're all experiencing the impacts: from heat stress, including more intense storms and flooding, to intense droughts and water shortages.

Climate change is the biggest environmental issue the U.S. and the world is facing, and our government is not going to solve the problem anytime soon. The good news is that we all play a part in solving the climate change problem, and communities can lead the way in creating a healthy planet for us all.

What is the number one thing we can do personally here in the U.S. to reduce our carbon output and climate-warming pollution?

We can proactively shift our transportation habits and choose sustainable modes of transit.

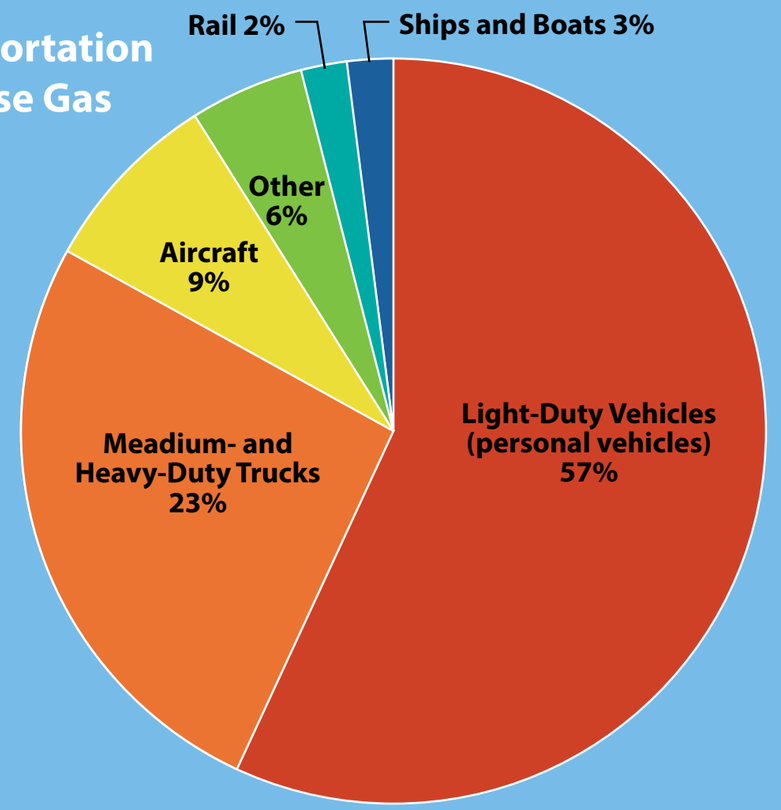
Sustainable mobility is taking the bus, biking, and walking whenever possible. It's planning less car trips and airplane rides and making a practice of carpooling. It's reducing the use of personal vehicles, choosing not to own a car, sharing one car with your household, or if your means allow, purchasing an electric vehicle. And if you have an electric vehicle, install solar panels to charge your vehicle to reduce the use of coal and gas that typically power our electricity grid.

Transportation is the largest source of carbon emissions in the U.S. at 35%, and road travel by personal vehicles is the largest contributor within the transportation sector. So, if we're serious about reversing climate change, let's get serious about sustainable mobility!

We can create cooling micro-climates as part of a bigger shift away from depending on personal vehicles, reclaiming neighborhood streets, driveways, and parking lots to be green spaces, for the benefit of people and the planet.

Attend one of WMG's Sustainable Mobility events this fall! We'll help you get comfortable with taking the bus and riding a bike for routine trips. See all events at:: **Watershedmg.org/event**

U.S. Transportation Green House Gas Emissions by Source



Data for 2022. Totals are rounded. Transportation emissions do not include emissions from non-transportation mobile sources such as agriculture and construction equipment. "Other" sources include buses, motorcycles, pipelines and lubricants.

Source: epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions

Free Workshops and Plants Help People Create Cooling Micro-climates

Imagine if we all picked one area to cool down: One place we frequent, like our yard, neighborhood street, or church. WMG is helping people cool their spaces 5 degrees or more, by offering free workshops as part of our Cool Tucson 5° initiative.

What happens at one of our workshops? We provide hands-on learning covering the basics of micro-climates, sun angles, native shade tree identification, and rain garden construction. It's all topped off with a free Cooling Kit, including two native shade trees, two native shrubs, seeds, and organic woody mulch.

Come join us at a future event or consider scheduling one of our cooling consultations!

Learn more at:
Watershedmg.org/CoolTucson

Marci Pullen learns how to use a bunyip, a simple water level that can be used to measure slope and grade changes to construct basins and swales.

Nicole Parks, Sustainable Built Environment Project Manager, co-teaches a Cool Tucson workshop with Lisa Shipek, Executive Director.

7th and 8th grade students and teachers at Roberts-Naylor School work on the sensory rain garden with WMG staff.

Advancing Shade Equity Through Education

Like Many Other Resources, Shade is Often a Privilege

Explore an interactive story map about this project:

Underserved neighborhoods often have fewer trees and vegetation, meaning less shade and hotter streets. WMG is working to remedy this by not only designing and installing cooling rain gardens, but inspiring the next generation to care for the places they call home.

Our Community Conservation team recently worked with 7th and 8th graders at Roberts-Naylor K-8 school in the Alvernon Heights neighborhood of Tucson. The school has one of the district's largest immigrant and refugee populations, with students and their families coming from a variety of backgrounds and experiences.

WMG worked with science teacher Andrea Shirley to design an interactive 6-week program that balanced classroom education and hands-on learning as students designed and installed their own rain garden at the school. Students learned how to figure out where rain will flow and pool, the best places to plant trees, what types of native trees and plants will thrive, and how to maintain the rain garden as it matures.

"We live in the most diverse desert ecosystem in the world but we've got so much concrete," Andrea said. "It really gave them an opportunity to learn about and re-establish the natural flora."

The work at Roberts-Naylor was made possible through Grow Tucson, a USDA Forest Service-funded project launched in 2024 to increase climate resilience in Tucson's highest-need neighborhoods. Rain basins also have benefits beyond reducing the heat island effect, including attracting more wildlife and pollinators, reducing noise, and beautifying neighborhoods to improve overall wellbeing and mental health.

"It's a great opportunity to educate our community as a whole because it starts with our kids," Andrea said. "I know all my students went home and were telling their parents about different plants and the bugs they were learning about, so it was a really good opportunity to spread that knowledge."

The rain garden project was an opportunity to go beyond the textbook and engage students in learning about the local landscape and its rich history of water stewardship, and encouraging them to be a part of caring for its future.

"I really saw myself in those kids," said WMG's Community Engagement and Education Project Manager Joselyn Aguilar, who grew up in the border towns of Ambos Nogales. "We're helping people from all over the world learn about the place they now call home."

"It's a great opportunity to educate our community as a whole because it starts with our kids," Andrea said. "I know all my students went home and were telling their parents about different plants and the bugs they were learning about, so it was a really good opportunity to spread that knowledge."

Summer Nights in Ciénega Creek

Fireflies light up this wetland along Ciénega Creek, slated for beaver reintroduction later this year by Arizona Game and Fish. WMG friend and photographer extraordinaire, Julius Schlosburg, captured this scene on a July evening through condensing several hundred photos taken over 30 minutes into a single image.

Julius has a passion for these rare insects that give insight into our riparian past. “Prior to colonization, the interconnected waterways of the Sonoran desert were brimming with fireflies, lighting up the land every summer for millennia," Julius said. "They are now relegated to small pockets and hidden canyons, each population cut off from one another - isolated, vulnerable. I'm hopeful that with the work of organizations like Watershed Management Group we can see a day where fireflies are not a secret, where our rivers bring not just water but the wonder, joy, and beauty of countless incredible creatures, plants, and landscapes.”

river run
NETWORK

Be the Beaver

Beavers are the best at creating wetlands and recharging our aquifer. So we like to mimic them, and “Be the Beaver” by making beaver dam analogue (BDA) structures. BDAs are made with posts, logs, mud, and other nearby found materials to slow and spread the water in the creek.

The Babocomari River is a beautiful tributary of the San Pedro River in Southern Arizona that still has some of its historic perennial reaches. WMG has been working with landowners along the river to bring more of the flow back and expand the wetlands - expanding the riparian forest and the wildlife it supports.

We built 17 BDAs structures along a 1/4 mile of the creek through River Run Network workshops with volunteers and a special River Restoration Practitioners workshop.

Just one year after installing some of these structures, we noticed water levels were higher than the year before, even though the winter 2025 was much drier than the previous year. Just imagine what more beavers could do!

This is perfect beaver habitat, and we’re happy to see new beaver evidence! In fact, a beaver recently moved into the area and added another three dams just upstream of ours.

Participate in our beaver restoration efforts by joining the River Run Network:
Watershedmg.org/RRN

The Babocomari Creek creates a ribbon of green with cottonwood and willow trees. WMG organized a River Restoration Practitioners workshop in February that filled up quickly with 30 participants representing 15 different non-profits and government agencies.

Participants learned how to act like a beaver: observing the creek, learning how to slow and spread flows, and building simple structures with materials from on site. This work expands the creek flow which in turn will expand the riparian forest.

Watershed Management Group
1137 N Dodge Blvd
Tucson, AZ 85716

Help us keep it cool

Do you share our vision to cool our cities and restore our heritage of flowing rivers? Our work is made possible thanks to donor support.

Make a donation, become a monthly supporter, or explore our tax-smart giving options at: **Watershedmg.org/Give**