



Sacramento

QUICK FACTS

WHO

Urban Forestry section in the Department of Public Works

STAFF

27 full-time personnel, including an urban forestry manager, an operations manager, crews and inspectors

CANOPY

100,000 street and park trees, plus 10-15,000 city facility trees actively maintained by the department and 85,000 street trees in public utility easements maintained by property owners

KEY FORESTRY TASKS

Street tree maintenance; contract administration; code enforcement

PARTNERS

California Department of Forestry and Fire Protection (CAL FIRE), Sacramento Tree Foundation





KEY TOPICS

- Energy Conservation and Heat Islands
- Long-term Maintenance Plan
- Neighborhood Improvement Projects
- Public-Private Partnership
- Regional Cooperative Effort
- Tree Giveaways

AS E. Gregory McPherson and Nina Luttinger convey in their 1998 article “From Nature to Nurture: The History of Sacramento’s Urban Forest,” in the 1800s, Sacramento was known as a City of Plains, but in just 100 years, it would be transformed into a City of Trees. They detail how:

- Less than 10 years after the Sacramento area was first settled in 1839, land lots were set aside for city parks;
- By 1853, the City Council would plant trees along the city’s levees;
- The city would institute a planting ordinance in 1874 to plant eucalyptus trees for public health reasons; and
- In the early 1900s, *Sacramento Bee* editor C.K. McClatchy and others would become strong advocates for protecting and increasing the city’s tree canopy.¹

This is a city steeped in a rich tree culture. Regardless of history, though, Sacramento’s modern urban forest faces the same difficulties as many others across the country — namely, funding and maintenance concerns. In Sacramento, three dedicated partners are committed to tackling these problems and caring for the city’s trees.

FROM PARKS TO TRANSPORTATION TO PUBLIC WORKS

Sacramento created its Parks and Recreation Department in 1911. For the next 96 years, this group would oversee the city's urban forestry concerns — from annual street tree plantings beginning in 1923 to a series of tree-damaging catastrophic windstorms from the 1930s to 1950s to an aging, sick elm canopy in the 1980s.² By the early 2000s, though, the city's urban forestry program was languishing as a tiny section for Parks Maintenance within the Parks and Recreation Department. That would soon change.

From 2003 to 2004, the department brought in an industry expert to conduct a best management practices study. This study focused on operations activities, such as crew training levels and work output. When the study was completed, a recommendation that would change the city's urban forestry practices emerged: to elevate urban forestry out of Parks Maintenance into a division of its own that would be run by a new urban forester who would serve as the division manager. This idea was seconded by a citizen advisory group that was put together to offer feedback on prioritizing the study's recommendations.

In 2005, the city hired Joe Benassini to fill this management role: "The idea was to address not just some of the operational things, but also some of the policy issues because the best management practices study also pointed out [urban forestry's] lack of strategic planning and policy foundation."

For the next several years, the Urban Forestry team worked to address structural issues within the new division, hiring Todd Martin, an experienced operations manager with a background in municipal, utility and commercial arboriculture. The division would devote many staff hours and resources to training, bringing its staff and crew up-to-speed with the best practices for urban

forestry work. Part of this work involved looking to outside experts to help with maintaining the city's canopy. "One of the key elements was to recognize that we couldn't do it all ourselves," says Benassini. "Our crews have specific talents and responsibilities, but there was just no way to get through all of it. We had a five-year backlog of work orders. Today, we have none."

A few years into Benassini's tenure as the urban forestry manager, the division would undergo another change, as it was transferred from Parks and Recreation to the Department of Transportation in 2007 — a change that made logistical sense because 70 percent of the Urban Forestry team's work focused on right-of-way spaces, which are the purview of Transportation. This change also allowed Parks and Recreation to focus on the social issues of recreation, while the maintenance side was handled elsewhere. Cross-training opportunities between forestry and street crews arose from the new arrangement.

In 2012, the city departments would realign again. Transportation became Transportation Engineering, narrowing its focus to traffic engineering concerns, and Urban Forestry found itself as a section of the Department of Public Works. However, this latest administrative change



KEY POINT

To maintain a healthy urban forest, Sacramento is focused on a three-point management plan:

1. a healthy pruning cycle;
2. planting new trees every year; and
3. properly irrigating new trees in the first few years.

115,000

street, park and city-facility trees are managed by Sacramento's Urban Forestry section.



Trees provide shade for a Sacramento neighborhood.

hasn't affected Urban Forestry's plans or focus. "The objective has always been to go from a reactive to a proactive goal for tree work," says Benassini.

"One of the struggles that cities have is that they were founded, developed and planted — or sections were — and then the planners moved on," Benassini continues. "You end up with an even-aged stand that grows, flourishes and provides a wonderful canopy and then begins to decline as a result of trees aging. The big trick is how you provide for a mix of trees across the city that provide even benefits citywide over a long period of time sustainably." In Sacramento, the Urban Forestry team is addressing these concerns in a few ways.

Step one was beginning a three- to five-year pruning cycle in 2007 and 2008 — which

matches industry standards for tree pruning, but is often not something cities are able to accomplish with limited funds — to help protect and maintain the existing urban canopy. Step two is planting between 1,000 and 2,000 trees per year to maintain the diversity of ages in the canopy. Step three is ensuring these new trees survive in Sacramento's arid climate by addressing irrigation needs for the first three to five years of a newly planted tree's life, along with early structural pruning. With this system in place, Sacramento's Urban Forestry team hopes to maintain and increase the 115,000 street, park and city-facility trees for which it is responsible, particularly in underserved areas where canopy coverage is low. While Urban Forestry is doing this work, other groups in the city are focused on building Sacramento's urban forest to help with other concerns.

"The big trick is how you provide for a mix of trees across the city that provides even benefits citywide over a long period of time sustainably."

JOE BENASSINI

Manager
Sacramento Department of Public
Works Urban Forestry section



KEY POINT

SMUD's Shade Tree program recognizes that the energy-saving benefits of the program are not instantaneous; they accumulate over time.

Sacramento Urban Forestry staff members and others during the removal of an old camphor tree in the city's midtown area

“There was no information on the kWh savings a tree could provide. We turned this program into science. We have all kinds of data now.”

MISHA SARKOVICH
Ph.D.
Sacramento Municipal
Utility District

SAVING ENERGY

There are two essential things to know about the air in Sacramento. First, it's polluted. The American Lung Association's State of the Air 2012 report card gave Sacramento County “F”s for both high ozone and particle pollution days — along with much of California.³ Second, it's warm for much of the year. Average July and August temperatures are above 90 degrees Fahrenheit.⁴ Thirty years ago, the publicly owned Sacramento Municipal Utility District (SMUD) recognized that trees could help with reducing the utility's air conditioning electric load, while simultaneously helping with other environmental issues.

In 1989, by a public vote, SMUD's Rancho Seco Nuclear Generating Station was shut down, causing the electric utility to lose up to half of its power capacity. After weighing a number of options to retain the effectiveness of its services, SMUD's management and board of directors decided to “invest aggressively in energy-efficiency programs,” according to Misha Sarkovich, Ph.D., with SMUD's customer programs and services. This led to the 1990 creation of SMUD's Shade Tree program.

Based on the knowledge that properly placed trees around buildings can reduce heating and cooling costs for homes and businesses, SMUD approached the nonprofit Sacramento Tree Foundation about setting up a large-scale tree planting program designed to reduce energy needs among SMUD's customers. The program was simple in premise. SMUD would provide the funds for trees and contract with the Tree Foundation to deliver them and provide planting demos and other expert help. And, it did help get trees in the ground — but it didn't help energy demands.

“In the early years, we didn’t have firm guidelines. It was basically plant the tree anywhere but north,” says Sarkovich. “That’s exactly what the Sacramento Tree Foundation did. Sometimes the trees were planted so far away from the building that they couldn’t provide any direct shading, so we could get no benefit. We learned quickly that not all trees are created equal — that large trees provide much more shading canopy than smaller trees, and that trees planted on the west offer more direct shading benefits than trees planted on the east or south.”

In 1992, SMUD hired a team devoted to figuring out the cost effectiveness of its energy-efficiency programs, including shade trees. This was Sarkovich’s task, as an economist by trade, but a task that would be difficult because no secondary market research was available in 1992 on this topic. “There was no information on the kWh (kilowatt-hour) savings a tree could provide,” Sarkovich relates. “We turned this program into science. We have all kinds of data now.”

Over the next few years, SMUD compiled extensive information on the shading benefits of trees and, with the help of U.S. Forest Service researchers, published the results of the research in 1995. These results came in the form of modeling 72 different possible shading scenarios. Each scenario was assigned a present value benefit (PVB) amount, which ranged from just a few cents to up to \$150. Moving forward, SMUD would focus on placing trees where the PVB values were greatest.

Sarkovich relates that in order to receive a tree from SMUD, a Sacramento Tree Foundation community forester must survey the site and identify if there is a shading scenario that will provide a PVB value between \$20-\$150 (approximately 20 scenarios exist that would provide this value). If so, the customer qualifies for a tree — even if it’s not the small ornamental tree the family hoped for, as trees are placed for their economic and environmental benefit and not aesthetic desires of the homeowner. “This is not a free tree program,” says Sarkovich. “This is a shade tree program. We are planting trees specifically to maximize shading.”

Over the years, SMUD has continued to update its modeling with new data and has made sure that the data is transferrable to any community or home in the country by incorporating details such as the user’s electricity costs; type, number, age and location of trees; and U.S. location to determine climate zone. Anyone can visit SMUD’s website (www.smud.org) to calculate the energy savings of a building’s trees by using the tree benefits calculator built from SMUD’s years of research and data.

For SMUD, the program has been responsible for more than half a million new trees in Sacramento since 1990 at a cost of more than \$35 million. More interesting, though, is the cost savings for the company — or lack thereof. The goal of SMUD’s Shade Tree program is to create \$700,000 in PVB with new tree plantings each year, but the annual budget for the plantings is \$1.5 million, roughly twice the amount the utility will be theoretically saving. But while SMUD might not appear to be gaining monetarily from this program, Sarkovich and the utility’s management believe that the benefits extend beyond the money.

Sarkovich is quick to point out that the program’s PVB results don’t factor in the monetized value of carbon sequestration or air quality gains from the new trees — although, SMUD’s tree benefits calculator does provide estimates on the amount of carbon sequestered by trees. He also relates how the program is SMUD’s most recognizable program, and in annual surveys of SMUD customers, it receives a 98 percent satisfaction rating, making it a huge public relations benefit for the company. Maybe most importantly, though, is SMUD’s recognition that the benefits of the program accumulate over time.

“What we’re doing now is reaping the benefit of the trees planted in 1990,” says Sarkovich. “It takes years for a tree to grow and develop any kind of canopy. You have to be patient. The beauty of this is that we recognize that one individual tree provides a small benefit, but if you plant a large number of trees and multiply it by a small benefit, you have a huge benefit.”

SMUD SHADE TREE PROGRAM

ABOUT THE PROGRAM

Since 1990, SMUD has partnered with the Sacramento Tree Foundation to provide free shade trees to customers. The organizations provide the trees and planting information and restrictions to homeowners, who are then responsible for putting the tree in the ground and caring for it.

ANNUAL BUDGET

\$1.5 million

ANNUAL NO. OF TREES

18,000

PROGRAM INVESTMENT SINCE 1990

\$35 million

PROGRAM LIFETIME NO. OF TREES

More than 500,000

“We have a very strong tradition of planting trees in Sacramento. In one era, it will be local government, in one era outstanding individuals and other times the Chamber of Commerce or Boy Scouts.”

RAY TRETHEWAY

Executive Director
Sacramento Tree Foundation

BY DOUBLING SACRAMENTO'S URBAN CANOPY:

10

- million pounds of air pollutants removed annually;
- years typically added to asphalt lifespans;
- percent increase in property values

A COMMUNITY OF TREES

“Trees have no political boundaries,” says Ray Tretheway, executive director of the Sacramento Tree Foundation, “so why just focus on one city or county?”

This question led the Sacramento Tree Foundation to lead a charge in the early 2000s for a regional approach to urban forestry in Sacramento. In 2001, elected officials from 28 Sacramento-area municipalities signed an Urban Forest Compact, and over the next four years, the Sacramento Tree Foundation worked with these public partners and citizen groups to develop the Greenprint Initiative — designed to be a companion to the region’s Blueprint Initiative for gray infrastructure initiatives. The Greenprint Initiative has a simple, yet complex goal: “To guide cities and counties of the Sacramento Area Council of Governments region in developing urban forest initiatives.”⁵

It plans to do this through a combination of properly managing public trees, as well as expanding the region’s trees by five million; adopting strong tree ordinances and policies regulating both public and private trees; and engaging in community partnerships since 80 percent of the area’s urban forest is on private land.

“Urban trees are all about people and their value and benefits,” says Tretheway. “We know that there are a lot of businesses and a lot of governmental departments, agencies and elected officials that want to invest in worthy and successful civic engagement and volunteer activities.” The key to the Sacramento Tree Foundation’s success has been making the connection with these groups and working together toward common goals.

When SMUD turned to the Sacramento Tree Foundation to help implement its Shade Tree program, it helped expand the small nonprofit comprised of volunteer, part-time staff into a major partner for urban forestry work. Today, the two partners plant 18,000 trees a year, but while 13,000 go toward the traditional shade tree model, 5,000 are serving another purpose.

In 1998, SMUD began designating some of its trees for a community trees program. Designed to help enhance the tree canopy in public areas like schools and parks, these larger (15-gallon) trees don’t fall under SMUD’s shade policies, allowing the Tree Foundation, SMUD and Urban Forestry program to work together to get trees planted in needed areas in the city.

But the Greenprint Initiative has a major uphill battle to fight, as its Blueprint companion indicated a need for more public or low-impact transportation to help a city that’s population continues to expand — expansions that are eliminating urban forest space.

“Where we had projects that might accommodate 10 housing units per acre, we’re now getting 50 units on an acre. That means zero sidewalks. That means instead of a 30-foot yard, you have a 10-foot yard,” says urban forestry manager Benassini. “There is less and less space in the modern urban area for green infrastructure. It’s troubling. There’s no place to put big trees. Trees are not always considered part of the necessary infrastructure. They’re considered an amenity rather than a necessity.”



SACRAMENTO TREE FOUNDATION

Planting trees at a Sacramento Tree Foundation event

However, according to the Greenprint Initiative, by doubling the region's urban canopy, 10 million pounds of air pollutants will be removed annually, while shade trees also can extend asphalt's life by 10 years and increase property values by 10 percent.⁶

"We all talk about the importance of urban forestry and trees," relates Benassini, "but somehow between talking about how important it is and executing it, we've got a disconnect. We need policies, like tree ordinances, that reflect that the community support is there and what the elected officials think are great ideas."

Getting Sacramento's policies and actions to align with the city's pride in its trees is a major priority for the Urban Forestry program over the next several years, but thanks to the fact that the city has a history of tree planting and preservation, accomplishing that task successfully is very feasible.

"We have a very strong tradition of planting trees in Sacramento," says Tretheway. "In one era, it will be local government, in one era outstanding individuals and other times the Chamber of Commerce or Boy Scouts. We have a rich and deep history of trees."



SACRAMENTO TREE FOUNDATION

Community planting leader and intern with Sacramento Tree Foundation

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Municipal Utility District

Ray Tretheway,
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Sacramento Tree
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