



Urban Forest Research

Summer 2005

Center for Urban Forest Research • Pacific Southwest Research Station • USDA Forest Service

Making Research Work for You The Story of Greenprint

Just ten short years ago we knew very little about tree benefits, especially what they were worth. We also knew very little about what makes local elected officials tick, particularly when it comes to supporting community tree programs.

But since then, several prominent researchers have been able to demonstrate scientifically that trees have real monetary value, and actually pay us back for the care and maintenance we provide. And interestingly enough, about the same time we were discovering the value of trees, we were also realizing that the secret to obtaining an investment in community trees from local elected officials is through more effective communication and packaging of information.

In reality, it is a marketing technique to produce a better understanding of our message—a technique we adopted from [Everett Rogers'](#) work that has helped us make the benefits of trees relevant to local elected officials. You may recognize this technique as our "[Marketing the Urban Forest](#)" program we developed using Rogers' work and our own market research.

To put it in very simple terms—realizing that it is not as simple to



achieve—the formula for success in making research work for you can be found in combining scientific evidence of the value of trees with “marketing” the value of trees to local elected officials. This is what is currently happening in the six-county region around Sacramento, California.

This is the story of [Greenprint](#).

The foundation is research

The building blocks for this story are the research findings from our Center and other researchers over the past decade that have given scientific value to trees in the areas of air and water quality, energy, real estate, business, and human health.

For example, 1 million trees in

the Sacramento region will save \$5 million in annual air pollution clean up, conserve \$3.5 million in annual stormwater runoff costs, and achieve \$10 million dollars in annual energy savings. These data were provided by the Sacramento Urban Forest Ecosystem Study conducted in 1998*—[Development, Structure, and Sustainability of Sacramento's Urban Forest](#).

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* This study became the foundation of our “Reference City” research which has produced [Tree Guides](#) for six climate regions, with three more coming this year. To obtain data for your community refer to the [Tree Guide](#) for your climate region.

Growth Rings

Element A—Management of Public Trees

Growth Ring 1

- Maintain public trees on an emergency basis
- Become a Greenprint participant

Growth Ring 2

- Assign a liaison for Greenprint Clearinghouse
- Conduct an urban forest value assessment ¹
- Convene interdepartmental urban forest stakeholder working group
- Develop stage 1 of urban reforestation program components ²

Growth Ring 3

- Develop stage 2 of urban reforestation program components ³
- Adopt an urban forest master plan
- Adopt staff education and certification guidelines

Growth Ring 4

- Form an urban forest department/hire an urban forest coordinator
- Conduct biannual urban forest department evaluations
- Publish a state of the urban forest report on 5-year intervals

Element B—Local Government Policies & Ordinances

Growth Ring 1

- Adopt street and park tree protection ordinance/policy

Growth Ring 2

- Develop stage 1 of comprehensive urban forest ordinance components ⁴
- Adopt street, median, and parking lot planting and design guidelines
- Implement sustainable funding for urban forest activities

Growth Ring 3

- Develop stage 2 of comprehensive urban forest ordinance components ⁵

Growth Ring 4

- Adopt urban forest goals in general plan and community plans ⁶
- Finalize comprehensive set of urban forest ordinances and policies

1 An urban forest value assessment provides a net value of your urban forest, canopy cover percent, and priorities for management direction. The Greenprint Clearinghouse offers this service using a program developed and endorsed by the U.S. Forest Service.

2 Mature tree care program; young tree care program; tree purchasing and planting specifications; 5-year planting plan

3 Tree inventory and database; 20-year planting plan; tree hazard, pest and disease management program

4 Shade cover objectives for various land uses, tree replacement and mitigation policies

5 Healthy tree protection and preservation, ordinance compliance program

6 Urban heat island mitigation policy, green infrastructure principles, smart growth and green planning policies

We also know from [Anderson and Cordell](#) that trees add 1–10% to property values. And [Kathy Wolf](#) found that in commercial districts, trees induce shoppers to spend as much as 12% more for goods and services. Other researchers such as [Sullivan and Kuo](#) found that trees reduce domestic violence, [Parsons](#) discovered that trees reduce stress, and [Ulrich](#) found that if hospital patients can see trees from their window they need less medication and recover faster.

Why Greenprint?

The Sacramento, California six-county region is expected to more than double its population by 2050 from 1.5 million to over 3 million. With this expanding population come new houses, businesses, streets, parking lots, cars, congestion, and air and water pollution. And if past and current trends in policy, practices and consumer choices continue, the region will continue to be dominated by grey instead of green. Thus, shade canopy and all the related benefits will not be

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USDA *Urban Forest Research*
is a publication of the Center for Urban Forest Research, Pacific Southwest Research Station, USDA Forest Service. For more information, contact the Center c/o Department of Plant Sciences, Mail Stop 6, University of California, 1 Shields Ave, Suite 1103, Davis, CA 95616-8587. (530) 752-7636

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Editor: Jim Geiger
Production: Laurie Litman, InfoWright

available to new neighborhoods and communities.

To ensure the region goes green in its future, and to capitalize on the benefits of a well designed and planned urban forest, the Sacramento Tree Foundation has launched **Greenprint**. Early on the Tree Foundation recognized that it couldn't fix Sacramento's problems by working just in Sacramento County. Impacts such as poor air and water quality are a regional problem that must be solved on a regional level.

The Tree Foundation's initial strategy was to design a program that would put the scientific benefits of urban forests—like optimizing tree canopy to improve human health—into the policies, management, and general plan of every local government in the region. One of the main goals of Greenprint is to double the region's tree canopy cover by 2045. The end result will be a region that has a 35% average shade canopy in urban areas and enjoys tree benefits in excess of \$100 million per year.

The key to Greenprint

Making scientific data relevant and persuasive is the key. It is a powerful tool that provides irrefutable evidence to local elected officials and provides them with a **relative advantage**—a reason to invest in the urban forest. Without the relative advantage it wouldn't make sense for them to invest.

In the case of the Sacramento Greenprint, urban forest research data were made relevant to elected officials in the six-county region by producing educational material on the importance of trees to the future health of their communities. The advantage each official experienced may have been different, but centered on improved air and water quality,

reduced energy bills, increased real estate values, better business, or improved human health. This new evidence has persuaded the 28 elected officials to unite in support of Greenprint.

One piece of new evidence is all that may be needed to “tip the scale” in favor of trees.

Growth Rings (continued)

Element C—Community Partnerships

Growth Ring 1

- Sponsor community and neighborhood tree plantings
- Recognize volunteer contributions

Growth Ring 2

- Conduct media events for tree projects and Greenprint milestones
- Create partnerships to develop: local preferred tree list, landscape and planting guidelines, and outreach to form NeighborWoods ⁷ groups
- Gain recognition as a Tree City USA ⁸

Growth Ring 3

- Form a Citizen Advisory Tree Committee
- Grow partnerships to develop: structured support for NeighborWoods leaders, groups and projects; residential tree care guide; businesses guide to trees
- Develop and implement private partnership tree planting and grant program
- Earn a Tree City USA growth award ⁹
- Create partnerships with school districts for tree planting

Growth Ring 4

- Through partnerships: support NeighborWoods groups to develop neighborhood-level urban forest master plans, and host recognition events for community tree heroes and champions
- Gain recognition as a Sterling Tree City USA ¹⁰

⁷ NeighborWoods is an established Sacramento Tree Foundation program, and modeled nation-wide by the Alliance for Community Trees and Home Depot.

⁸ Tree City USA is a National Arbor Day Foundation program that requires an awardee to have a tree board or department, a tree care ordinance, a community forestry program with \$2 per capita annual budget, and an Arbor Day observance.

⁹ A Tree City Growth Award is given by the National Arbor Day Foundation to recognize Tree City USA participants for completing activities to strengthen local tree care programs.

¹⁰ Sterling Tree City USA is awarded to Tree City USA participants who earn a Tree City Growth Award for ten consecutive years.

Research working for you

Understanding the basic principles of **Everett Rogers'** diffusion of innovation and relative advantage, the Sacramento Tree Foundation combined the research of our Center, and other prominent researchers, with their vision for

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canopy cover in the Sacramento region to create a strategy for improved quality of life.

They started in 2000 with a State of the Trees Report that laid out a bold vision: to capitalize on the remarkable benefits of trees to create the best urban forest for the Sacramento region. Their report was based on the findings from our 1998 study of the Sacramento urban forest. As a result, in 2001 elected officials representing twenty municipalities in the six-county region took an exciting leap towards regional collaboration by signing an Urban Forest Compact. To date, 28 communities are participating. The Compact proposed a shared vision and identified goals to optimize the benefits of the region's urban forest.

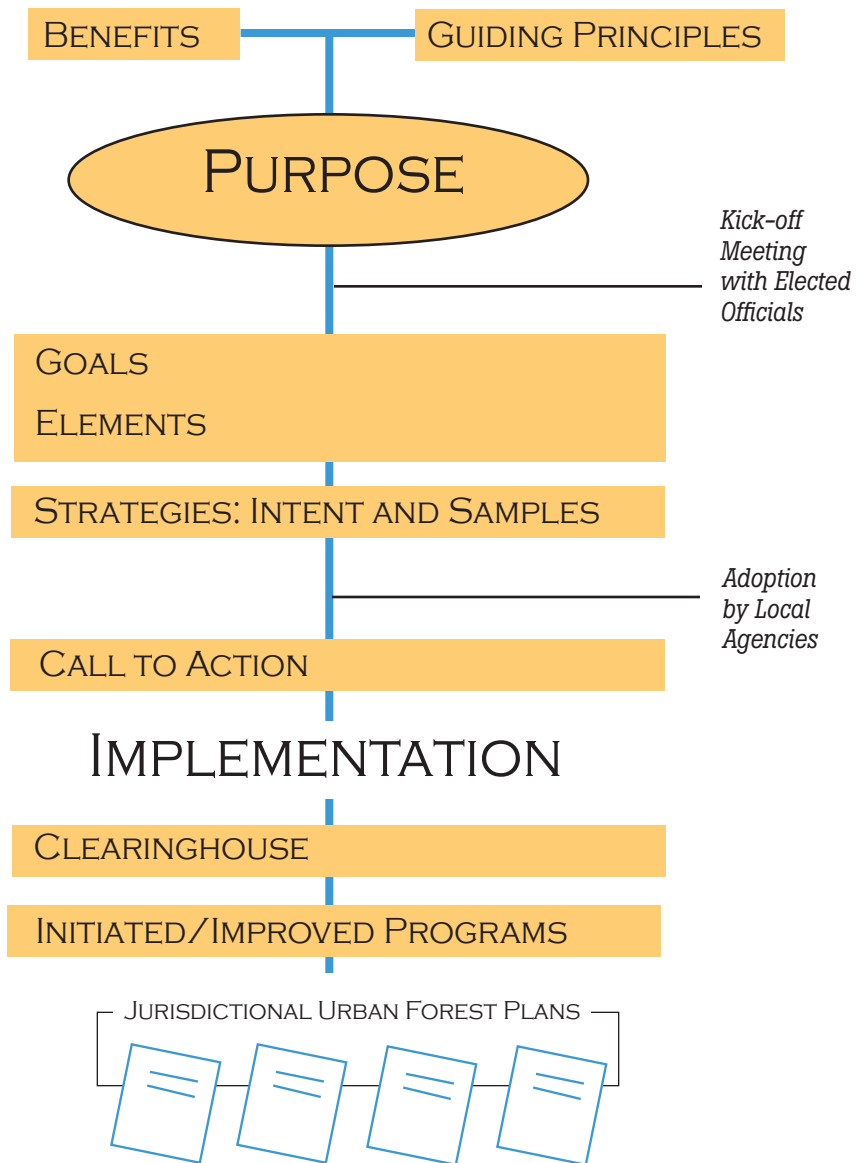
Setting research into action

On the heels of the signing of the Compact a video and brochure were produced, both titled [What is the Value of a Tree](#), and a three-year educational campaign was launched. In very specific detail, the benefits of trees and their financial value to the region were described. Other [educational materials](#) described the significant economic and health benefits that trees provide, and detailed the supporting studies conducted by leading scientists.

At the beginning of 2005, residents and stakeholders were invited to participate in a public involvement campaign to contribute their thoughts and ideas in reviewing the first draft of the [Greenprint document](#). Over 50 presentations were made to elected bodies, civic groups, professional organizations, service clubs and general community meetings.

Hundreds of citizen participants from the region's 28 cities and

SACRAMENTO REGIONAL GREENPRINT



Kick-off Meeting with Elected Officials

Adoption by Local Agencies

Greenprint started with establishing a set of Guiding Principles.

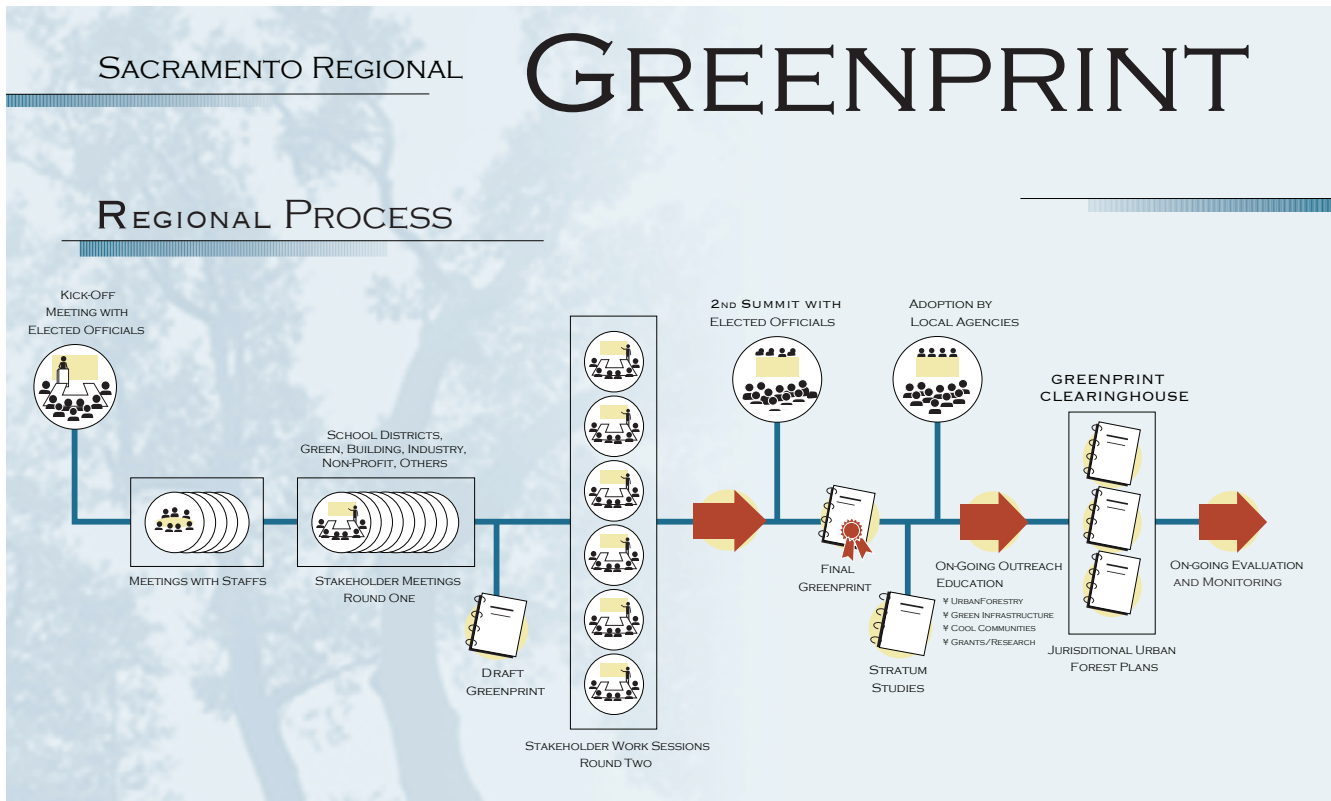
counties helped craft the best approaches to greening their communities. The Greenprint represents the thinking and vision of the Tree Foundation board and staff, members of the scientific community, urban foresters and arborists, civic and elected leaders and concerned citizens from throughout the region.

How does Greenprint work?

Guiding Principles

It started with establishing a set of Guiding Principles (See [Greenprint document](#) for more details):

- We recognize the importance of tree canopies and their contributions to clean air and water, stormwater run off



The regional planning process starts with a commitment to improving your region.

- reduction, energy conservation, improved public health, and increased property values;
- We support the protection of native trees, woodlands and riparian areas as key features to sustain our ecosystems and promote our natural heritage;
- We support the importance of citizen awareness and community involvement as major contributors to healthier urban forests, and in building neighborhood unity, community pride and civic trust.
- We support the value of public-private partnerships with business and nonprofit organizations in order to mobilize resources, widen funding sources and increase the understanding of the importance of trees.
- We support the development of urban forest best management practices, policies and

ordinances, and the adoption of urban forest master plans for each of our communities.

- We support coordinated tree planting plans to double the tree canopy in our region.
- We support the importance of nurseries and other green industries in providing highest quality tree stock and state of the art tree and urban forest services.
- We support a regional Greenprint steering committee of elected officials.
- We support a Greenprint Clearinghouse to provide high-quality technical information, education and funding resources to communities so they can expand, protect and steward their community trees and urban forest.

Goals

- To optimize the benefits of trees throughout our region.

- To create sustainable urban forests.
- To build community-wide appreciation for our urban forests.

Program Elements

The elements that were developed as integral pieces of the program will be key to the success of Greenprint.

- Management of Public Trees
- Policies and Ordinances
- Community Partnerships

But a lot of hard work is ahead for many communities to make the vision of Greenprint a reality. Each city will have to “grow” from where it is today to the unique place they each identify as sustainable.

“Growth Rings”

The program elements are divided into a series of four growth rings—a step-by-step approach or

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stages of development. Each community tree program starts where they are today and progresses to a fully sustainable urban forest program.

The growth rings represent increasing levels of commitment and benchmarks for progress. There is built-in flexibility for each city and county to determine their particular pathway to achieve progress in each of the growth rings.

Reaching growth ring 4 in all three elements is the ultimate goal and will take several years to a couple of decades to achieve, depending on local priorities, resources and commitments.

A helping hand—the Greenprint clearinghouse

Very few cities can boast of a high-quality community forestry program. Most programs are just starting or are struggling and need help. For most communities, being a part of Greenprint is something they may not be able to do on their own and may need additional help.

One innovation that is critically important to the overall success of programs in the Sacramento region is the Greenprint Clearinghouse.

Sign up for Urban Forest Research

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To sign up for *Urban Forest Research*, please visit our website at <http://cufr.ucdavis.edu/newsletter.asp>

Send comments or suggestions to Jim Geiger, Center for Urban Forest Research, Pacific Southwest Research Station, USDA Forest Service, c/o Department of Plant Sciences, Mail Stop 6, University of California, 1 Shields Avenue, Suite 1103, Davis, CA 95616-8780 or contact jgeiger@fs.fed.us.

Lessons Already Learned from Working with Local Government

Local government operates near the limit of its capacity. Any given day, elected and staff leaders are confronted with dozens of issues, most of which clearly need improvement. Urgent things get dealt with, but all the other issues, the issues that are only important rather than urgent, mark time until they become urgent, **OR** a convenient step of progress is found. Any next step can't cost much, but more importantly, it can't take up management time for leaders. If a problem or a new opportunity is just dumped in their laps, chances are, very little will happen.

The Greenprint was designed to give leaders a simple way to make progress. True, the value of trees needs to be demonstrated, but what is more difficult for them is knowing what to do about it. That's why the Greenprint is designed around lots of very small steps that do not cost much to implement in time and dollars. The Greenprint document will help them identify which step they are on and what it will take to make the next step.

For local governments, trees and canopy cover will never be urgent (unless we manage to get them as mandatory SIP measures). If this all works like we've planned, we can make vast progress over time by stringing together lots of small improvements for each community.

Rob Kerth, Sacramento Tree Foundation

Through the Clearinghouse, the Sacramento Tree Foundation will work with all cities and counties in the six-county region to encourage and assist in the implementation of the Greenprint in five major areas:

1. **Information Resource Center.** Collect and distribute new and existing urban forest research and information.
2. **Regional Working Groups.** Convene regional working groups to develop new policy models and urban forest initiatives.
3. **Community Involvement.** Sponsor community events and assist in the establishment of new non-profit urban forest organizations.
4. **Urban Forest Achievement Recognition.** Record-keep successes and acknowledge growth ring advancements and regional achievements.

5. **Fundraising.**

Provide information and opportunities to fund new tree programs.

Until the Clearinghouse is fully developed, communities can obtain information and resources from the [Greenprint Toolkit](#).

On your mark! Get set!

The call to action is critical, but the real work begins in each community. Education of the general public, government, businesses and organizations is vital to building a strong support base for implementing the programs and partnerships in any Greenprint.

Stewarding millions of trees to maturity is a massive undertaking, far beyond the reach of any one city or county. By joining together, new investors and resources can be attracted, building the mutual support necessary to achieve the Greenprint.

Jim Geiger

Special thanks to Ray Tretheway, Rob Kerth and Connie Gallippi of the Sacramento Tree Foundation for their help in preparing this issue.