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## Tree-Planting Drive Seeks To Bring a New Urban Cool

Lower Energy Costs Touted as Benefit

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SACRAMENTO -- This city believes an answer for global warming is growing on trees.

About 375,000 shade trees have been given away to city residents in the past 16 years, and there are plans to plant at least 4 million more. To receive up to 10 free trees, residents simply call the Sacramento Municipal Utility District, a publicly owned power company.

"A week later, they are here to tell you where the trees should be planted and how to take care of them," said Arlene Willard, a retired welfare case worker who with her husband, John, has planted four SMUD trees in the back yard of their east Sacramento house.

Perhaps the most arresting feature of Sacramento's shade crusade is its rarity, despite federal research showing that carefully planted trees can lower summertime temperatures in cities, significantly reduce air-conditioning bills and trap greenhouse gases responsible for global warming.

Most American cities have shrinking tree canopies in relation to their growth. That's because of inadequate budgets to maintain older trees and a failure to plant shade trees in new residential and commercial developments, according to federal experts, tree-planting organizations and scholars of urban ecology.

A number of major cities have launched sizable tree-planting programs -- including Washington, Baltimore, Minneapolis, Chicago, Denver and Los Angeles. Still, the decline in tree cover has been accelerating since the 1970s, especially on private property and new development, according to American Forests, an environmental group in Washington that uses satellite imagery to document tree cover across the country.

"This is like a creeping cancer," said Deborah Gangloff, the group's executive director. "In the two dozen cities we have studied, we have noticed about a 25 percent decline in tree canopy cover over the past 30 years. This is a dramatic trend that is costing cities billions of dollars."

And the trend continues even as cities heat up. Along with much of California, Sacramento set a record for heat this summer, with 11 straight days above 100 degrees. Federal scientists say that the first six months of this year were the warmest on record in the United States and that the five warmest years over the past century have occurred since 1998. The average nighttime temperature in Los Angeles is seven degrees warmer than it was a century ago.

Many major utility companies are declining to act on the connection between urban trees and energy

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savings, according to Agriculture Undersecretary Mark Rey, who oversees the Forest Service.

"It is one of our new focuses to give them information and incentives to do this," Rey said, adding that the Bush administration is planning a meeting with utilities to convince them of the financial logic of urban trees.

Three shade trees strategically planted around a house can reduce home air-conditioning bills by about 30 percent in hot, dry cities such as Sacramento, and a nationwide shade program similar to the one here could reduce air-conditioning use by at least 10 percent, according to Energy Department research.

Washington is among the cities with the largest reduction in dense tree cover, with a 64 percent decline from 1973 to 1997, according to American Forests. Although there has since been considerable effort and expense to plant more trees in Washington, experts disagree about whether the tree canopy has been stabilized. They do agree that rapid canopy decline continues in Washington's outlying suburbs.

Although Bush administration officials say urban trees are a priority, spending on the federal Urban and Community Forestry Program has declined by about 25 percent in the past four years, from a high of \$36 million annually to a proposed \$27 million in the coming year.

"People have been fighting for crumbs for so long," said Mark Buscaino, who quit this summer after three years as director of the federal urban trees program. He is now executive director of the Casey Trees Endowment Fund, a private tree-planting group in Washington.

Tree-planting in U.S. cities has been championed as a way to beautify and civilize the hard edges of urban life. (Before air conditioning, it was also a primary strategy for keeping cities cool.) But a growing body of scientific research, most of it federally funded, shows that urban trees are also shrewd investments.

Sacramento's shade crusade easily pays for itself, with summertime energy savings about double what SMUD spends on trees each year. As they mature, trees already planted by the utility are expected to save enough electricity to power about 14,000 homes.

By planting 10 million trees and fabricating lighter-colored roofs and pavement, Los Angeles could reverse an urban "heat island" effect -- caused by concrete, asphalt and heat-retaining buildings -- that has been increasing for a hundred years, according to a simulation study by the Department of Energy's Lawrence Berkeley National Laboratory. It found that Los Angeles could lower its peak summertime temperature by five degrees, cut air-conditioning costs by 18 percent and reduce smog by 12 percent.

"In the West, where the air is dry, shade trees are more effective in reducing the urban heat island effect than any other measure," said Hashem Akbari, leader of the federally funded research group that studies warming cities at the laboratory. In more humid cities in the East, he said, shade trees -- which increase humidity -- lower air-conditioning bills and clean the air but do not lower the outside temperature.

By absorbing greenhouse gases, lowering urban temperatures and reducing demand for air conditioning, trees planted in cities are far more valuable in combating global warming than trees in rural areas, federal research has shown. Akbari said a well-placed shade tree in Los Angeles is worth three to five trees planted in a distant forest.

His message is finding an audience. This month, Los Angeles is starting a campaign to plant a million trees,

part of a free-tree program following the Sacramento model. For every dollar it spends on trees, the city expects to realize a \$2.80 return from energy savings, pollution reduction, storm-water management and increased property values, said Paula A. Daniels, a commissioner on the Board of Public Works.

Across much of the United States, though, research confirming the monetary value of trees has not triggered a rush to exploit shade.

Many major private utility companies remain skeptical. In the Washington area, in California and in most of the country, they have steered clear of programs to give shade trees to homeowners, saying it is not clear that it would help the companies' bottom lines.

Critics of big utilities say the companies have a deep institutional bias against urban trees, mostly because they spend vast amounts of money and time repairing tree-damaged power lines.

There are cultural reasons why the research findings have failed to sway the nation's utility managers, transportation engineers and municipal planners, according to Kathleen Wolf, a social science researcher at the University of Washington's College of Forest Resources.

"These people have not yet reconciled how a green living thing interacts with gray infrastructure," said Wolf, whose research is funded by the Forest Service. "There has not yet been a mind shift that says trees are technology. In most American cities and states, we are not having that discussion."

But it is not just engineers and road builders who balk. About one-third of Sacramento utility customers tell SMUD that they do not want to mess with more trees in their yards and will not accept free ones.

"Many people just don't like trees because they are dirty," said Buscaino, the former head of the federal urban forest program. "We have a lifestyle where the last thing on people's mind is trimming their trees."

Iowa is the only state with a long-term record of using state law to push private utilities to plant trees for energy conservation -- and to allow them to recover the cost of the program in electricity rates.

Over the past 15 years, the program has been a spectacular success, according to the private utilities there and Trees Forever, a nonprofit group that helps run the program. In addition to the quantifiable benefits -- half a million trees planted, reduced energy costs and savings on storm-water drainage construction -- utilities say the program has been a public relations bonanza.

"It is difficult to put a value on the community relationships we have built with the trees," said Karmen Wilhelm, a spokeswoman for Alliant Energy, a major utility in Iowa. "It has been wonderful for our reputation."

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