GREEN PLANTS *OR* POWER PLANTS ?

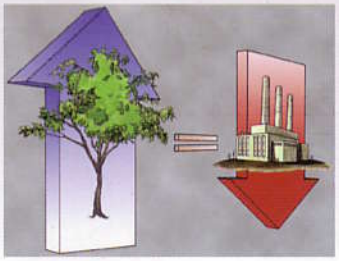
What is the best solution for California?

Build more power plants or plant more trees?

Researchers at the Center for Urban Forest Research in Davis, California found that planting shade trees can reduce the need for power plants. The study shows that 50 million shade trees planted in strategic, energy-saving locations could eliminate the need for seven 100-megawatt (MW) power plants.

Are Trees Really the Answer?

According to the Center Director, Dr. Greg McPherson, "A tree must grow at least 5 to 15 years before it can fully contribute to the energy conservation process. However, if we don't invest in energy-conserving trees now, they will not be available in 15 years when the demand for energy will be even greater."



Planting trees can reduce the need for power plants

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Strategically locating trees to shade west and east walls and windows will save energy dollars and reduce the need for power plants.

Dr. Greg McPherson

Can Shade Trees Solve the Energy Crisis?

California's urban and community forests have approximately 177 million trees that are close enough to homes and other buildings to have an effect on air conditioning costs. Even though they are not all "strategically located", they still reduce annual air conditioning energy use by 6,400 gigawatt hours (GWh)—equivalent to 7.3 100-MW power plants. As a result, California utilities do not have to provide as much electricity and save $500 million annually. Customers save about $1 billion in retail expenses for air conditioning, and peak load demand is reduced by about 10 percent.

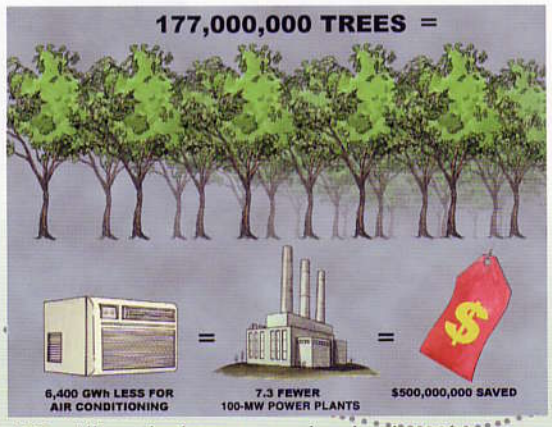
In addition to energy savings, urban trees provide many other benefits—improved air quality, retention of stormwater runoff, and increased property value—that make them an invaluable component of every community's green infrastructure. Dr. McPherson points out that "since up-front costs to establish these trees have already been made, keeping these trees healthy and functional is one of the best investments communities can make."

What Can More Trees Do?

If Californians establish 50 million more trees in strategic locations—two trees on the west and one tree on the east side of residential buildings—in 15 years the annual energy savings from shade will nearly double to 12,500 GWh.

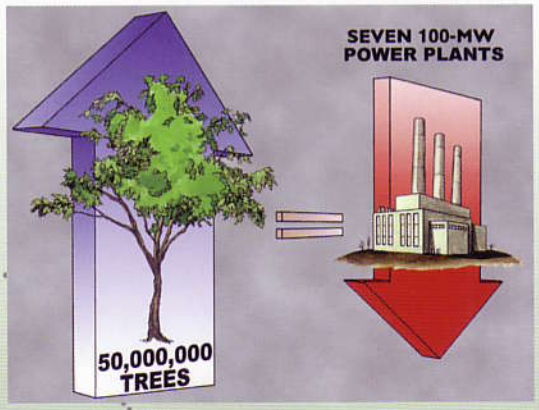
What does this mean?

At least seven 100-MW power plants will not have to be built. This will nearly double (14.3) the number of power plants that are not needed—enough power for 1.4 million homes and 3.5 million people. California utilities will save an additional $462 million annually in wholesale electricity purchases and generation costs. Residents will save $1 billion in annual retail energy costs for air conditioning in addition to the savings from existing trees. Peak-load demand will be reduced another 9 percent, (for a total of 19 percent) thereby decreasing the frequency of rolling blackouts.



177 million shade trees are already planted in energy saving locations:

- Saving $1 billion in retail air conditioning costs
- Reducing peak-load demand by 10 percent
- Producing savings equivalent to 7.3 100-MW power plants



Today, plant 50 million new trees in energy saving locations.

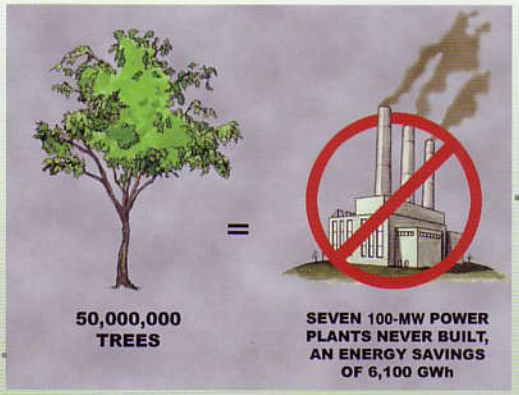
Plant two trees on the west side and one on the east.

It's Not As Simple As Just Planting Trees

Since planting 50 million additional trees would represent only 21 percent of the potential planting sites, it is critical for Californians to select sites with the greatest potential for conserving energy. Energy saving potential from tree planting is greatest in climate regions with the hottest summers and the greatest need to use air conditioners: deserts communities, Central Valley, and inland valleys of Southern California. Contrary to popular belief, the south side of buildings is less critical for trees because of the high sun angle in summer, making it more important as a place where winter sun can infiltrate and warm building interiors.

It's A Long Term Solution

"We'll still need power plants, but we won't need as many," says Dr. McPherson. "Shade tree programs can be a very cost-effective measure for conserving energy, especially peak load demand. Strategically locating trees to shade west and east walls and windows will save energy dollars and reduce the need for power plants. Although shade trees do not curtail peak loads immediately, they do promise reductions that will increase as trees grow larger. Planting trees now for future peak load reduction and improved air quality and climate is a sensible way to lessen the impact that California's growing population will have on limited energy resources and quality of life."



In 15 years, 50 million new shade trees will increase energy-related benefits:

- Save customers an additional $1 billion
- Reduce peak-load demand an additional 9 percent
- Eliminate the need for 7 more power plants

Center for

Urban Forest Research

Science for Creating Better Urban Forests

Research

We conduct research that demonstrates new ways in which community forests add value to your community. We convert results into financial terms to assist you in stimulating more community investment in trees.

New Technology

We create new methods and strategies for managing and caring for community forests to help you optimize the benefits and investment value of your own community forest.

Training

We provide training programs that deliver state-of-the-art information based on our latest research findings. We conduct these programs for community forest practitioners and managers.

Technical Assistance

We provide research expertise to help you solve local problems and build community capacity.

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