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Planting Trees Saves Cash, Research Confirms

Emily Sohn, Discovery News

Jan. 22, 2009 -- Plant a tree: Save 25 bucks. Researchers in California have found that planting trees in strategic locations around your house can lower your summertime electricity bill by that much or more.

The concept is common sense: Extra shade reduces the need for air conditioning. But this is the first study to use actual utility bills to nail down the details of where trees should be placed to help people chip away at their environmental footprints -- and their budgets.

"Nobody says we're going to cure global warming just with urban trees," said lead researcher Geoffrey Donovan, an economist at the Portland Forestry Sciences Lab in Oregon. "But they're one of the nicer ways of doing it."

For the new study, Donovan and colleague Dave Butry, an economist at the National Institute of Standards and Technology, looked at 460 single-family homes in one neighborhood of Sacramento, Calif.

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Using Google Earth, the researchers looked down on each house from above. They measured the diameter of all tree crowns in three zones: 20, 40, and 60 feet away from the building, and in four directions: north, south, east and west.

Based on the distances of the trees from the buildings and the sizes of their crowns, they calculated where shadows would be cast at various times throughout the day.

The electric company provided copies of each home's electric bill, while the county gave data about factors that might affect electricity use, including house size, lot size, and whether the house had a pool. A computer model then controlled for these variables to see whether trees had an effect on [summertime energy use](#) above and beyond those factors.

The study, in press at the journal *Energy and Buildings*, found that people used about 5 percent less electricity (about \$25 less) during the summer when they had trees within 40 feet of their home's south side or within 60 feet of its west side.

Late in the day, when temperatures are highest and people are more likely to turn on the A/C, trees cast longer shadows, which explains the bigger buffer zone on the house's west side.

These findings gave real-world support for the results of previous, more theoretical work.

Unexpectedly, when trees sat on a house's north side, electric bills went up. The result might be a statistical anomaly, Donovan said. But he speculated that blocked breezes or the need for more lighting could also explain the finding.

Over a 100-year period, the scientists calculated, [planting a London pine tree](#) on the west side of a Sacramento home could reduce the house's net carbon use by 30 percent -- half through sequestering by the tree and half through reduced electricity use. Financial savings will increase, Donovan added, as utility companies start charging more for electricity at peak times of day.

It's probably worth planting trees around your home, agreed Jim Simpson, a meteorologist at the [Center for Urban Forest Research](#) in Davis, Calif., despite the costs of buying trees and taking care of them. But the specifics of which trees to plant and where to plant them will likely differ in places that are colder, wetter, or otherwise different from the steaming valleys of California.

"In the Sacramento area, air conditioning is a fairly big thing, and we have mild winters," Simpson told Discovery News. "It would be a good idea to do this sort of study in other climate zones where heating is a bigger deal."

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