



## Energy Savings as Lovely as a Tree

By Tom Lienhard, PE, CEM

Trees have been used to save energy and increase comfort for centuries. With the advent of mechanical cooling and heating with natural gas, electricity and heat pumps, we often design and build our homes without thinking about the impact trees and landscaping can have in helping us save energy. And, these savings can occur year-round.

According to the National Renewable Energy Laboratory, a well-designed landscape will:

- Cut your summer and winter energy costs dramatically
- Protect your home from winter wind and summer sun
- Reduce consumption of water, pesticides and fuel for landscaping and lawn maintenance
- Help control noise and air pollution

Strategically placed trees can be as effective as other energy saving home improvements, such as insulation and the installation of weather-tight windows and doors. Trees save energy through cooling in the hotter months, and they provide a wind break during winter. This results in using less energy for cooling and heating.

Strategically placed *shade trees* - a minimum of three large trees around your home - can reduce your air conditioning costs up to 30 percent. Shade trees offer the best benefit when you:

- Plant *deciduous* trees, which shed their leaves during the winter. These trees provide shade and block heat during hotter months. By dropping their leaves in the fall, they admit sunlight in the colder months.
- Place these trees on the south and west sides of buildings.
- Shade all hard surfaces, such as driveways, patios and sidewalks, to minimize landscape heat load.

Use *evergreens*, which retain their leaves/needles yearlong, in a planned pattern. They will serve as *windbreaks*, saving from 10 to 50 percent in energy used for heating. Evergreens offer the best benefits when you:

- Place them to intercept and slow winter winds, usually on the north side of your home.



- Do *not* plant them on the south or west side of your home because they will block warming sunlight during the winter. These trees also provide some shading benefits during summer.

Also, shading your air conditioning unit can increase its efficiency by up to 10 percent, but make sure to allow for adequate air flow. Trees, shrubs and groundcover can also be planted around parking places and paved areas to cool the air before it reaches your home's windows and walls.

Trees do a lot more than help you lower your energy costs and provide birds with a nice place to perch. Tree-canopied neighborhoods keep average air temperatures dramatically cooler in the summer, which allows fewer air pollutants to form. This creates a cleaner, more comfortable place for people to live.

Below are a few facts from the US Department of Agriculture to keep in mind when looking at the non-energy benefit of trees. One hundred healthy mature trees will:

- Remove 53 tons of CO per year
- Remove 430 pounds of other pollutants per year
- Catch 139,000 gallons of rainwater per year

Check with your local conservation district or arborist on programs for tree planting. Local nurseries and greenhouses can provide information on the best trees to plant in your area, and check with your local utility on planting appropriate trees near power lines. Additional information is available at the National Renewable Energy Laboratory web site at [www.nrel.gov/docs/legosti/old/16632.pdf](http://www.nrel.gov/docs/legosti/old/16632.pdf).

### **Equipment Rebates and Incentives**

Some electric and natural gas utilities offer rebates and incentives for customers making energy efficiency upgrades to their home or business. It could pay to find out what your energy provider offers.

### **Tax Credits**

Also, find out how the stimulus package has affected Federal Tax Credits for Energy Efficiency at [www.energystar.gov](http://www.energystar.gov).

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