Trees Help Conserve Energy

Photo by David W. Marshall, UF-IFAS Leon County Extension: Using trees to shade the house is an easy, inexpensive way to reduce the home energy bill.

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If your power bill is sky-high during the summer, you can make many renovations, some high-tech and some low-tech, to reduce your energy bill. When you consider these improvements, make sure you don't forget one of the easiest and cheapest ways to reduce your energy bill, planting trees.

In north Florida, almost twenty-five percent of annual residential energy costs are for cooling the home. During these hot, hundred-degree-plus heat index days, I notice how much cooler I feel when I get under the shade of a tree. The idea here is to get parts of your home under tree shade and your power bill should be reduced accordingly.

House walls are the most practical to shade because new tree plantings take many years to cast an effective shadow on the roof. Heat transmitted through the roof is best reduced by using attic insulation, radiant barriers, and ventilation. Tree limbs over the roof can present both a nuisance (litter clogging rain gutters) and risk of damage or injury should heavy limbs fall off in a storm. Tree branches already shading a roof without undue risk can be kept.

The correct placement of trees shading the home involves consideration of mature tree height, the form or shape of the tree, and the angle of the sun's rays in summer and winter. The angle of the sun changes throughout the year. A wall of your house facing due south receives little direct sun on June 21, because the sun is directly overhead. But by August, the sun is low enough in the sky during the day to increase heat loads

considerably on south walls. This is why the sun can shine into a south facing window in the winter, but not the summer.

So using trees for shade works best when you get the warm sun heating your house in the winter but not in the summer. To get the greatest shade benefit from a tree, target shading walls on western, eastern and southern exposures, in that order, during the warm months. Windows provide the most direct entry for heat into the home. Glass windows and doors can account for between thirty to sixty percent of a building's total heat gain in the summer. Consequently, special attention may need to be given to walls containing the most windows.

The benefits of a new shade tree should be felt within five years, if you use proper planting and watering techniques. For proper planting techniques, visit http://hort.ifas.ufl.edu/woody/planting.shtml For very small trees you can plant as close as seven to twenty feet from a wall. Lot size and mature tree height directly influence this distance. The closer a tree is to the house, the longer its shading effects last during the day. The shadow of a tree planted ten feet from the home moves across the shaded surface four times more slowly than a tree planted twenty feet away. Trees planted to cool your home should be deciduous (lose their leaves in winter) so that you get more winter sun to help heat your home.

Good choices of medium sized trees that could be planted about twenty-five feet from the house would be tree sparkleberry *(Vaccinium arboreum)* eastern hophornbeam (*Ostrya virginiana*) or American hornbeam (*Carpinus caroliniana*). Whatever you plant, make sure it won't get too close to the house. If you are energetic, you can simultaneously plant a tree close to the house and also one farther away. When the close tree gets too large, cut it down and by that time the farther tree will hopefully be shading your house.

Evergreen trees should be used if winter windbreak effects are desired. These trees should be planted on the north and northwestern exposures of the home. This is the prevailing direction of blustery, winter winds in most of Florida. The less cold wind hitting your house, the less heat your heating system will have to produce.

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