

What a Tree Is Worth

By Greg Sykes (greg@grsykes.com)

Within a home, folks cut utility bills in many ways, such as saving water with low-flow faucet aerators or reducing power consumption by insulating the attic or replacing old windows with energy-efficient ones. However, many people overlook an outdoor money-saving resource: trees! Over the years, trees can reward landowners with hundreds to thousands of dollars worth of perks if planted in the right spots. Tree benefits include cooling shade during summer, buffering winds in winter, stabilizing soil, improving air quality, and absorbing carbon dioxide. You can easily calculate the dollars and cents behind a tree's value through i-Tree. After following several simple steps, the output shows how much money any given tree will save or cost you over a specified time.

Begin by measuring the diameters (or circumferences) of all trees on the property. For the purposes here, a "tree" is a woody plant with at least a one-inch diameter at its base and potentially grows to at least 20 feet; flowering dogwoods and redbuds are some of the smallest species. For birches and other multi-trunked trees, take all of the trunks' diameters, square them, sum the squares, calculate the square root of that sum, and use that number for that specimen's diameter. While measuring the diameters, jot down the type of tree and its overall health. If you cannot determine the species, then note generic features, like if it is an evergreen "pine" or "Tree, Unknown" for a deciduous specimen.

Next, go to the i-Tree website, <http://www.itreetools.org/design.php>. Enter the property's address and click "Go!" Once a Google Maps image of the house and yard appears, follow the website's instructions to delineate the building's area. Now, click on Step 2 to add trees. Notice how many of the property's trees are visible (at least somewhat) on this map. Before inserting trees, consider taking a screen capture of the current image because once a tree is added, a green and yellow grid appears across the ground that prevents seeing other trees' locations. Referring to the trees seen in the earlier screen capture might come in handy as each tree's relative location gets entered. In describing the tree, include the species' common name, diameter or circumference, overall health, and sunlight exposure.

After inputting all tree data, clicking the "Model Crown Growth" button shows the trees' projected growth over the next 50 years. To compute the estimated cost savings over the years, click on Step 3's "Estimate Benefits" bar, enter the number of years to cover (2-99), and click the "Calculate >>" button. A new window appears containing data tabs including the current year's benefits and the money saved over the previously selected timespan. The data can be



Crown Growth Modeler

Figure 1. This image from i-Tree displays the trees' expected crown growth. To respect privacy, the depicted building and trees are fictional, located on Royal Lake's spillway. Trees A and B are both white pines, though A offers more cost savings than the one south of the hypothetical structure. Even with the handful of oaks, hickories, and other trees here, the total money saved this year is \$310 and projected to be \$652 in 20 years, accruing nearly \$10,000 of tax-free savings during this time.

broken down into the direct impact each individual tree has on the property and itemize the stormwater retained, electricity and heating fuel saved, air pollutants filtered, and carbon dioxide sequestered. Some items, such as stormwater benefits, remain the same regardless of where the tree is on the property. However, a tree's species and placement relative to the house plays a huge impact on energy savings. For example, Figure 1 shows a screen capture of a hypothetical property. Both trees A and B are identical white pines. However, A saves \$65 for the current year and B comes in at a -\$26 *loss* even though they are the same distance from the house. This difference is because pine A is north of the house and hinders winter winds; pine B affords some summer shade at a savings but that shade costs more by blocking warm sunlight during the winter. An oak or other deciduous tree is a better choice in site B. You might like to use i-Tree when planning future landscaping renovations.

Although i-Tree is a fantastic tool to virtually assess a property's tree value, it does not consider every aspect. For example, no warnings flash if a closely situated sycamore's root system might damage the house's foundation or if a diseased and leaning tree should be removed. Likewise, no red flags pop up if a willow could possibly clog a nearby sewer line with intrusive roots. If the user plans to chop down trees, i-Tree's stormwater feature displays a decreased monetary savings but will not alert you if removing too many water-absorbing roots might cause erosion or basement flooding during future rains. The longevity of certain short-lived tree species can be inaccurately extended beyond its actual life expectancy. i-Tree neither considers a tree's aesthetic value nor services to wildlife—a big bonus from native trees.

Final notes: the better the tree's health, the greater paybacks it will provide. Every few years, have mature trees thinned professionally by a licensed and insured arborist and not the cheapest guy who comes knocking. Thinning branches help trees survive microbursts, derechos, ice storms, and other extreme weather events. To give woodpeckers and other wildlife food and homes, leave dead trees or a tall stump *provided* they do not pose a safety risk and are away from any structures.

For more tree tips and information:

Fairfax County i-Tree Ecosystem Analysis (August 2010):

https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/assets/documents/ffcounty_coreport_1.pdf

Reference City Field Data Collection Protocols:

[www.itreetools.org/streets/resources/USDA FS Reference City Field Data Collection Protocols.pdf](http://www.itreetools.org/streets/resources/USDA_FS_Reference_City_Field_Data_Collection_Protocols.pdf)

Virginia native tree identification and other references:

- www.dof.virginia.gov/identify/trees/index.htm
- Coombes, Allen J. 2002. *Trees*. Dorling Kindersley, Inc., New York, NY. pp. 320.
- Powell, Ellen. 2007. *Common Native Trees of Virginia*. Virginia Department of Forestry, Charlottesville, VA. pp. 120. http://www.dof.virginia.gov/infopubs/Native-Tree-ID-spreads_2016_pub.pdf

Tree benefits: <https://www.ncsu.edu/project/treesofstrength/benefits.htm>

24 Ways to Kill a Tree (includes "How NOT to Kill a Tree"): <http://pubs.ext.vt.edu/430/430-210/430-210.html>

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