

The value of a tree

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"Money doesn't grow on trees."

When you hear that old expression, an image may flash in your head of a magical tree where currency actually blooms from its branches. But the fleeting image fades and you accept the reality that money does not grow on trees.

Right?

Wrong!

Trees do have value. The tricky part is figuring how to express that value in more than in dollars and cents our well being, serenity and wealth do come with trees.

More than just a pretty plants the measure a tree's worth other than its aesthetic value. Trees provide solace, serenity, renewal, timber, food, and habitat for wildlife. They also replenish the environment with oxygen and filter pollution. All of these are values to which it is possible to attach, as our culture ordains, a monetary figure, that may of us would dismiss. For landscape trees, however, value largely results from the aesthetic improvements they bring to mind, sprit and property. The need to define these values, relegates us to insurance claims, tax deductions, legal claims, real-estate assessment, annual environmental impact benefit, among other things.

Let's take a look at the appraisal process as it begins by determining the four variables that make up the formulas for each method of monetary assessment. A first step is to determine the appropriate method of assessment. The following discussion describes the basic steps of appraisal. However, the process actually is much more detailed. Whenever a tree's value is material to legal or financial claims, you should rely on an expert.

Factors in assessment the four major factors involved in properly assessing the value of a plant are size, species, condition and location. A thorough understanding of each is imperative.

1. Size. The first step in an appraisal is to measure the tree, usually its height or its trunk diameter. You should measure the trunk diameter at 4.5 feet from ground level (DBH), depending on the overall height of the tree. You might also need to measure branch spread and bark thickness.

For an example purposes let's use the Oak at the corner of South & South Harrison Streets has a DBH is 45"

2. Species. The species of tree alters appraisals in a variety of ways. Simply put, some species are subjectively more desirable than others, and, therefore, more valuable. Some take a long time to reach the desired form or size, so an old specimen may be particularly valuable.

- This oak is an old specimen.

3. Condition. Evaluate the tree's structural integrity and overall health. Examine all aspects of the tree, including the roots, trunk, scaffold branches, twigs and foliage, and check for general health and vigor as well as specific problems.

- The condition of this tree is excellent in:

- Structural integrity and overall health
- Trunk, scaffold branches, twigs and foliage
- General health and vigor

- Specific problems:

- The compactness of root system and location's confinement

4. Location. Assess the tree's site, placement and functional and aesthetic contributions to a property. Consider the overall quality of the general area-the buildings, hardscape and plantings. Note how the tree contributes to the site's function and aesthetics. Determine how effectively the placement of the plant provides those benefits.

- This tree is particularly valuable given its history and contribution to the site's function and aesthetics.

Methods of assessment after completing these four steps. There are various methods to do this. Real-estate and insurance appraisers, accountants and landscapers might use different calculation methods; one is not inherently better. Appraisers sometimes (use) more than one method to ensure accuracy.

* The replacement-cost method estimates the cost of replacing a tree at the same location with one of the same species, condition and, if possible, size.

* The trunk formula is used to estimate the value of a tree that is too large to replace with nursery or field stock, or when the trunk is the only remaining part of the tree.

* Somewhat similar to the replacement-cost method, the cost of repair and cost of cure methods are used to appraise monetary loss when trees are damaged or destroyed. For certain types of trees, other methods exist.

* Annual environmental impact method where we look at the Trees act as mini-reservoirs, controlling runoff at the source.

Trees reduce runoff by:

- Intercepting and holding rain on leaves, branches and bark
- Increasing infiltration and storage of rainwater through the tree's root system
- Reducing soil erosion by slowing rainfall before it strikes the soil

Property Value:

- Trees in front of single family homes have a greater property value benefit than those in front of multi-family homes, parks or commercial properties.
- Real estate agents have long known that trees can increase the "curb appeal" of properties thereby increasing sale prices.
- Research has verified this by showing that home buyers are willing to pay more for properties with ample versus few or no trees.

Energy Conservation: Trees modify climate and conserve building energy use in three principal ways

- Shading reduces the amount of heat absorbed and stored by buildings.
- Evapotranspiration converts liquid water to water vapor and cools the air by using solar energy that would otherwise result in heating of the air.
- Tree canopies slow down winds thereby reducing the amount of heat lost from a home, especially where conductivity is high (e.g., glass windows)

Air quality benefits are:

- Absorbing pollutants like ozone, nitrogen dioxide and sulfur dioxide through leaves
- Intercepting particulate matter like dust, ash and smoke
- Releasing oxygen through photosynthesis
- Lowering air temperatures which reduces the production of ozone
- Reducing energy use and subsequent pollutant emissions from power plants

Reduce atmospheric carbon CO₂

- Trees sequester ("lock up") CO₂ in their roots, trunks, stems and leaves while they grow, and in wood products after they are harvested.
- Trees near buildings can reduce heating and air conditioning demands, thereby reducing emissions associated with power production.

If we look at our oak tree example we see that:

- Replacement-cost method and trunk formula this tree is simply too large to replace.
- The cost of cure method would be dependent on the damage to be cured.
- Annual environmental impact method would seem a good starting place

Using annual environmental impact method we see the annual value of this tree is \$250.

- **Storm Water:** This tree will intercept 16,401 gallons of storm water runoff this year; with a value of \$162.00 this year
- **Property Value:** Studies have estimated that trees may account for up to 15 percent of the value of a residential property. This tree increased the property value by \$59.00 this year
- **Energy Conservation:** This tree will conserve 386 Kilowatt / hours of electricity for cooling and reduce consumption of oil or natural gas by 9 therm(s); with a value of \$46.00 in electricity and oil or natural gas by \$8.00 this year.
- **Air quality benefits:** We now know that the urban forest can mitigate the health effects of pollution, with a benefit value of \$18.00 annually

- **CO2 reduction:** This year tree will reduce atmospheric carbon by 327 pounds this year, with a \$2.00 value.

This article outlines just the basic steps of appraisal and is based upon work presented by Eric Emad who works with the International Society of Arboriculture and i-Tree's street tree assessment tool called STRATUM. Many variables affect how a tree is initially inspected and measured and how its characteristics translate into value. When an expert opinion is necessary, such as in an insurance or legal claim, you should employ a professional tree appraiser. Experience is critical to properly valuing a tree in a manner that will stand up legally.