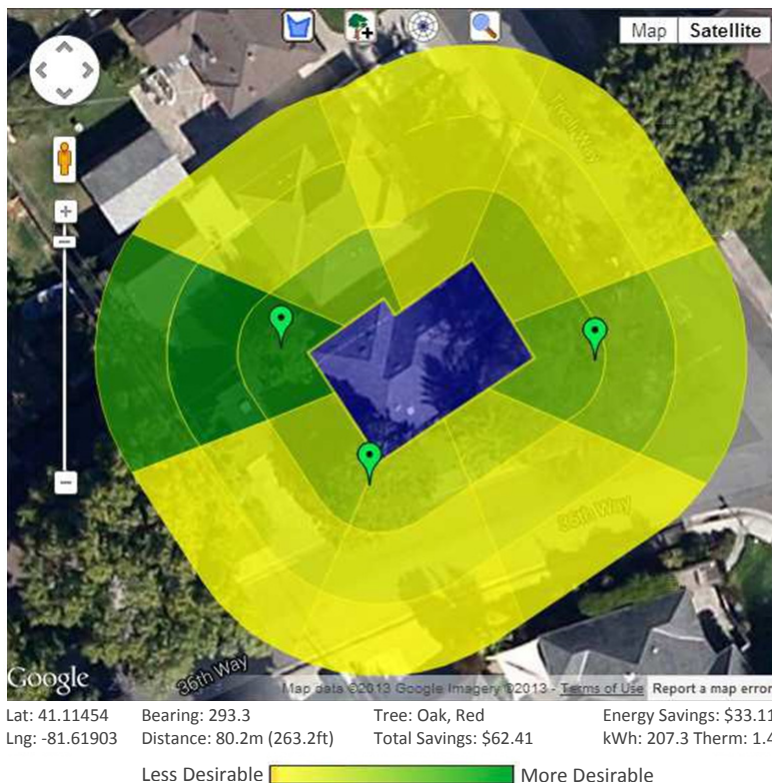# i-Tree Design

What is i-Tree Design?

i-Tree Design is a free, web-based tool that allows anyone to make a simple estimation of the benefits individual trees provide. With inputs of location, species, tree size and condition, users receive an understanding of tree benefits related to greenhouse gas mitigation, air quality improvements and storm water interception. With the additional step of drawing a building footprint — and virtually "planting" a tree around it — tree effects on building energy use can be evaluated.

Benefits are estimated cumulatively, for the current year, as well as a user-specified future year. Multiple trees can be added to compare benefits or to provide a full accounting of a property's trees. This tool is intended as a simple and accessible starting point for understanding individual trees' value to the community or local landowner.

What is needed to use i-Tree Design?

i-Tree Design is a free online tool located at: **www.itreetools.org/design**

Lat: 41.11454	Bearing: 293.3	Tree: Oak, Red	Energy Savings: $33.11
Lng: -81.61903	Distance: 80.2m (263.2ft)	Total Savings: $62.41	kWh: 207.3 Therm: 1.4

Less Desirable ▮▮▮▮▮ More Desirable

i-Tree Design allows users to better understand optimal placement of trees to maximize energy benefits.

How do you use Design?

You can get started with four easy steps:

1. Start by typing in a street address.

2. Draw the outline of a house or any building of interest.

3. Select a tree and place it on the map (repeat for more trees).

4. Estimate current & future tree benefits.

i-Tree Design projects can be a simple assessment of a single tree or more complex assessments of multiple trees, buildings and their interactions
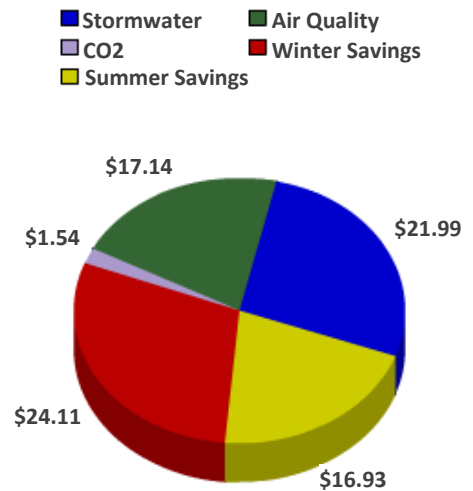
i-Tree Design

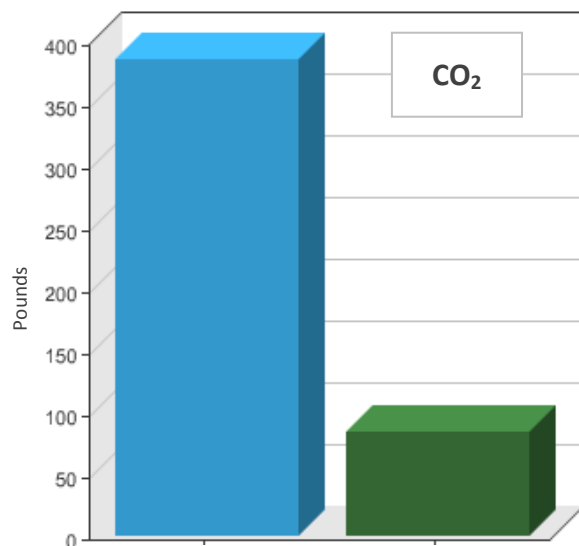## What results does i-Tree Design generate?

- Breakdown of the annual benefits of each tree.
- Projection of tree growth & benefits into the future.
- Gallons of storm water intercepted.
- Analysis of electricity and heating energy use.
- Air quality improvements.
- Carbon sequestered and avoided.
- Combined benefits for all trees on a parcel.

Legend:
- ■ Stormwater
- ■ Air Quality
- ■ CO2
- ■ Winter Savings
- ■ Summer Savings

$17.14
$1.54
$21.99
$24.11
$16.93

What are some potential uses of i-Tree Design?

- Estimate the benefits of the existing trees on a property.
- Estimate the benefits of planting new trees on a property.
- Estimate the benefits lost when a tree is removed.
- Evaluate different species or planting designs.
- Create an i-Tree Design website link to promote trees.

Breakdown of annual tree benefits.

CO_2

400
350
300
250
200
150
100
50
0

Pounds

Annual atmospheric carbon dioxide (CO_2) reduction.

Who is using i-Tree Design?

- Homeowners
- Landscape architects
- Schools
- Tree advocacy organizations
- Nurseries & landscape designers
- Utility companies

Give it a try today!

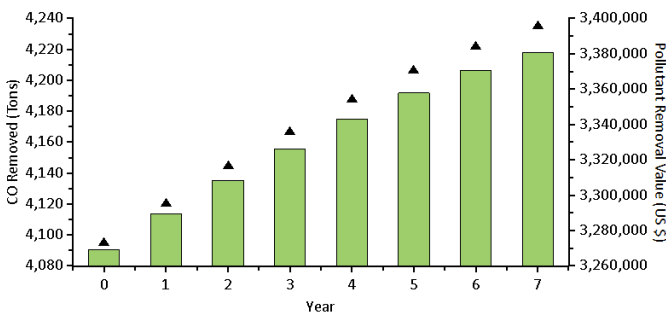**www.itreetools.org/design**

What is i-Tree 2018?

The i-Tree suite of software tools was developed by the USDA Forest Service and their cooperators to help users assess and manage the structure, function, and value of trees and forests regardless of community size or technical capacity. i-Tree supports effective natural resource management by providing information for advocacy, planning, informed decision-making, and standardization for monitoring. It promotes a better understanding of the ecosystem services provided by trees and forests, and helps justify investment in stewardship, operations, and maintenance.

Since i-Tree was introduced in 2006, thousands of communities have been able to determine tree and forest benefits, values, and management needs.

i-Tree provides the tools to help you promote strategic, cost-effective forest management:

- Determine and understand tree and forest benefits, values and management costs.

- Plan and manage to optimize tree and forest environmental services to benefit people.

- Integrate trees and forests in green infrastructure strategies and resilience planning.
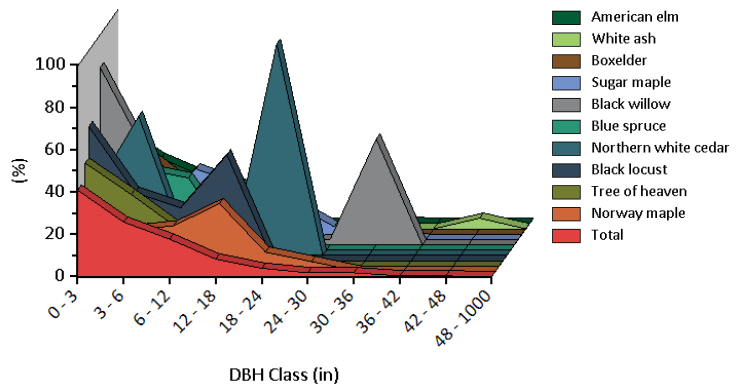
- Identify potential pests, diseases and threats.

Forecasted carbon monoxide (CO) air pollutant removal over 7 years

Based on Scientific Research
The U.S. Forest Service, Davey Tree Expert Company, Arbor Day Foundation, Society of Municipal Arborists, International Society of Arboriculture, Casey Trees and State University of New York, College of Environmental Science and Forestry (SUNY-ESF) have established a cooperative partnership to make i-Tree freely available, supported and continuously refined.

What are the benefits of an i-Tree Analysis?

- Better understanding of tree and forest structure such as canopy cover, species importance rankings, available planting space, species composition and age distribution.

i-Tree Eco Species Distribution by DBH class report

- Assessment of management concerns such as tree health, diversity, infrastructure conflicts and potential impacts of pests.

- Estimate tree and forest ecosystem services and monetary values of annual environmental benefits such as

  ◊ **Air quality improvement and associated public health impacts**
  ◊ **Carbon dioxide reduction**
  ◊ **Storm water control**
  ◊ **Tree-building related energy effects**

- Summary reports that can be used to brief elected officials, managers, advisory groups and others to promote well-informed decision making, and justify future program funding.

Tools for assessing and managing community trees and forests

i-Tree 2018 Online Applications

Landscape is an online spatially distributed model that uses tree cover maps and other data to estimate tree benefits such as carbon sequestration and storage, air pollution reduction and hydrology effects.

Design is an online tool for assessing how tree species, size, and location of existing trees or proposed plantings affect benefits including energy use in nearby structures. Design forecasts and summarizes benefits over time.

Canopy is an online survey tool which produces a statistical estimate of tree cover using Google Maps. Canopy also estimates air pollution reduction, atmospheric carbon reduction and can be used to assess canopy change. *Int'l*

MyTree is an online application which calculates individual tree benefits on a smartphone or tablet.

Species is an online tool to aid tree species selection based on desired environmental services and geographic area.

Database is an online system for international users to submit new location, pollution, precipitation data, and new species for integration into the Eco model. *Int'l*

Planting (new) is an online tool for estimating the long-term environmental benefits of tree planting projects.

Harvest (new) is an online calculator for estimating the carbon stored in harvested wood products, and the changes in this quantity over time.

i-Tree 2018 Desktop Applications

Eco v6 uses field data from complete inventories or sampled plots with local hourly air pollution and meteorological data to quantify forest structure, environmental effects, and values. *Int'l*
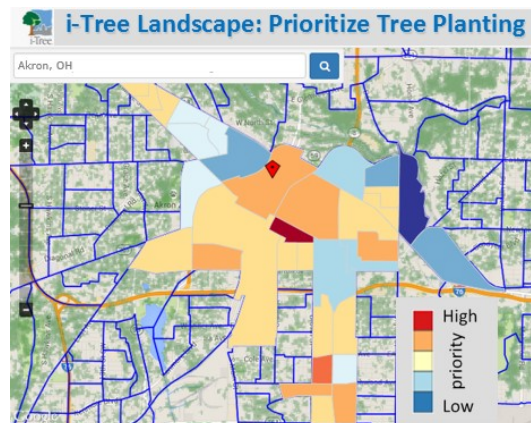
Hydro simulates the effects of changes in tree and impervious cover on hourly stream flow and water quality. Hydro has a user-friendly interface, pre-calculated topographic indexes that eliminate the need for GIS expertise, and applicability for non-watershed areas.

Streets estimates structure and ecosystem services for street trees using a sample or complete inventory option.

Int'l - indicates tools adaptable for international use
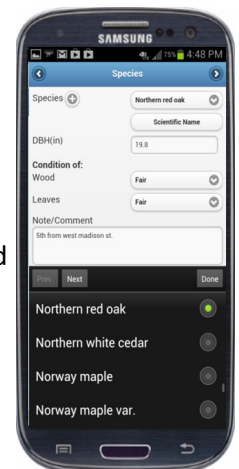
How do I use i-Tree?

- i-Tree online tools can be accessed and used directly on the i-Tree website. Desktop applications require installing software and offer instruction manuals and learning resources to plan and complete a project.

i-Tree Landscape priority planting based on user criteria by census block.

- i-Tree is scalable and data can be collected by foresters, arborists, consultants, volunteers and students, depending on your resources.

- Complete or sample inventory data can be collected using mobile devices or paper tally sheets.

- New or existing inventories can be used to run the software and conduct analyses.

- Online resources and technical assistance are available to help users successfully use i-Tree.

Mobile data collection system for field data collection.

How can I get more information about i-Tree?
- Visit the i-Tree website at www.itreetools.org

- Register online and download the free software

- Contact i-Tree support staff at info@itreetools.org or Join the User's Forum at http://forums.itreetools.org

www.itreetools.org