

# Room for Trees

## An Assessment of Leesburg's Urban Tree Canopy



### Why is Tree Canopy Important?

While we may not think of trees in cities as a typical "forest," these trees provide valued services to our daily lives. These benefits include: improving water quality, saving energy, lowering city temperatures, reducing air pollution, enhancing property values, providing wildlife habitat, facilitating social and educational opportunities, and providing aesthetic benefits. Scientists now have the ability to qualify and quantify the benefits of UTC. An increase in UTC brings an associated increase in the UTC benefits listed above.

### How Much Tree Canopy Does Leesburg Have?

Every few days 280 miles above the earth the Quickbird satellite passes over Leesburg, Virginia. With its advanced imaging system the satellite is capable of taking pictures with a 2 foot resolution, pictures so detailed that lines on a tennis court can be detected. The advanced imaging system onboard Quickbird detects near infrared (NIR) light, which is ideal for mapping tree and other vegetation. Researchers involved in this project used Quickbird imagery acquired in October of 2007 to map land cover in Leesburg (Figure 1). Using this information it was determined that 27% (2044 acres) of the Town of Leesburg is covered by tree canopy (Figure 3).



Figure 1: Land cover mapped from satellite imagery. The satellite imagery used for this project was acquired by the Quickbird satellite in October 2007 at a resolution of 60 centimeters.

### Key Terms

**UTC:** Urban tree canopy (UTC) is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above.

**Land Cover:** Physical features on the earth mapped from satellite imagery such as trees, grass, water, and impervious surfaces.

**Existing UTC:** The amount of urban tree canopy present when viewed from above using aerial or satellite imagery.

**Possible UTC:** The amount of land that is theoretically available for the establishment of tree canopy. Possible UTC excludes areas covered by tree canopy, roads, buildings, and water. Possible UTC is subdivided into **Vegetated Possible UTC** (grassy and shrubby areas) and **Impervious Possible UTC** (parking lots, driveways, and bare soil). Possible UTC serves as a guide for planning as it would be neither economically feasible or socially desirable to establish tree canopy on all this land.

### How Much Tree Canopy Could Leesburg Have?

By integrating the land cover information with other mapping data from the Loudoun County geographic information systems (GIS) database it was determined it would be theoretical possible to establish tree canopy on 57% (4392 acres) of the town's land (Figure 2). Of this Possible UTC the majority is vegetation, primarily grassy areas. The remaining Possible UTC is impervious or bare soil, consisting of features such as parking lots and driveways. While it would not be feasible to establish tree canopy on all of the land classified as Possible UTC this analysis shows that Leesburg does indeed have room for more trees.

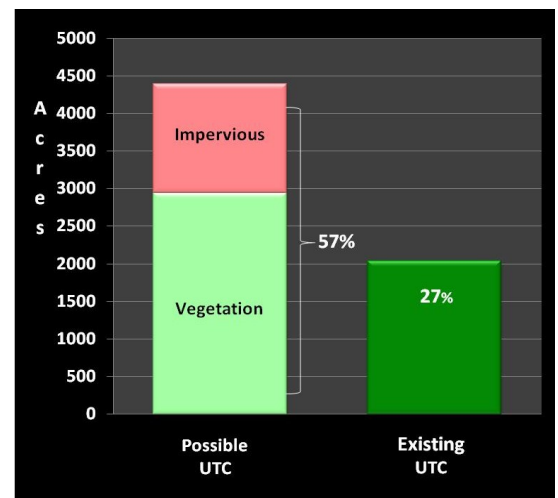


Figure 2: Possible UTC and Existing UTC estimates.

## Property-Based Analysis

The results from the UTC assessment were integrated into the town's geographic information systems (GIS) database. The use of GIS allows decision makers to evaluate each property parcel in the town based on its Existing and Possible UTC (Figure 4).

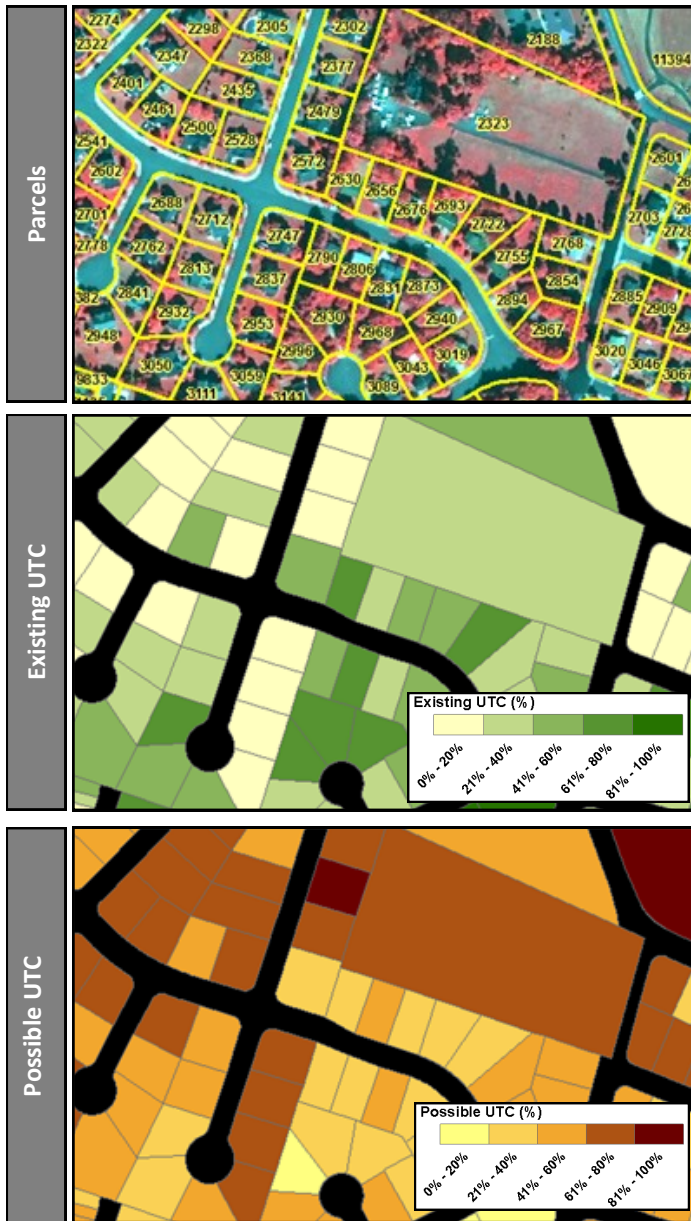


Figure 3: Estimates of Existing UTC and Possible UTC are displayed at the parcel level using the town's GIS database.

## More Information

Jay Banks  
 Urban Forester  
 Town of Leesburg  
 Virginia  
 JBanks@leesburgva.gov  
 703.771.2765



## Who "Owns" the Tree Canopy?

The majority of Leesburg's tree canopy and the majority of the land available to plant new trees is on land zoned for residential use (Figure 4). Leesburg's residents will play a crucial role in preserving Leesburg's current tree canopy and in increasing Leesburg's future tree canopy. Although residential land has the greatest amounts of Existing UTC and Possible UTC, its Leesburg's institutional land (schools, hospitals, etc.) that have the most potential. This study showed that land zoned for institutional has only 12% of its surface covered by tree canopy.

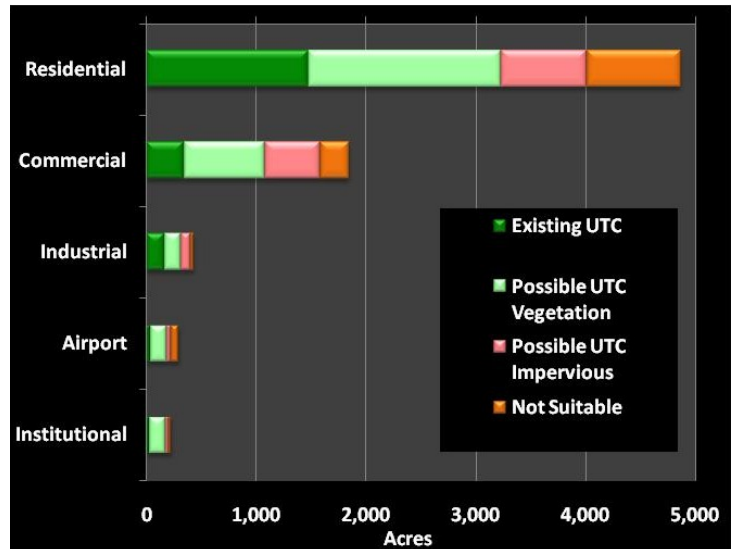


Figure 4: UTC metrics summarized by zoning land use category. It should be noted that although the airport has room for trees it would not be desirable to plant trees due to safety concerns.



Figure 5: The town's tree canopy provides aesthetic, economic, and environmental benefits.