

Minimum Tree Canopy Standards

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**” The tree which moves some to tears of joy is in the eyes of others
only a green thing that stands in the way ”**
- William Blake, 1799, *The Letters*

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Revised June 17, 2013

Preserving The Urban Forest

The urban forest is one of a community’s primary sustainable features according to the organizations such as *American Forests*, *Arbor Day Foundation* and the *Sustainable Urban Forests Coalition*. These organizations and many others point out the benefits that accrue to a community when green infrastructure is maintained. Green infrastructure will continue to work for the benefit of society if community tree policy recognizes the important contributions of trees for cleaning the air, purifying water, moderating climate and adding nature to places where people work, play and live their lives.

Landscape Codes & Trees

All landscape architects know that that community landscape codes set forth standards by which landscape plans are prepared for development projects in zoned communities. Landscape codes contain design components for street tree planting areas, street yards, landscape buffers, parking lot screens, VUA interiors, and parking lot detentions. They also might contain design standards for street walls, habitat preservation areas and in rarer instances minimum canopy requirements. It is the later

that is catching a lot of attention these days by those that write community planning regulations as community after community struggle with ways to preserve the native urban forest canopy. It is important for a community to set tree canopy goals within their codes and regulations because most communities have lost tree cover over the last 30 years due to new urban development.

Tree Preservation

There are several good examples or cutting edge tree ordinances in the *Georgia, South Carolina, North Carolina, Virginia* and *Maryland*. All of these states show leadership in urban forestry and in the development of municipal policy toward trees. The preservation of urban forest canopy is of special interest in this region.

Counties surrounding *Atlanta, Georgia* including Fulton, Dekalb, Gwinnett, Fayette, Forsyth, Henry, Clayton, Rockdale and Cobb all have tree ordinances and landscape codes that are twisted toward preserving trees. Some of the most innovative tree ordinances in the country are being written in this area.

One of the ideas contained in all of these outstanding tree preservation regulations is that there ought to be a minimum tree canopy for every development site. And that this canopy must be preserved or replanted to eventually grow into the minimum canopy requirement. **American Forest**, the nations oldest conservation organization, recommends as minimum canopy coverage for an average tree cover the entire city to be 40% to 25%. For suburban residential zoning districts 35% to 50%, urban multi-family residential zoning districts 18% to 25% and within the C B D and commercial zoning districts 9% to 15% coverage. The first number represents values in the arid west and the latter the wetter east.

Minimum Canopy Standards.

Perhaps the most important concern of a landscape code is to set minimum canopy standards.

These standards can be set for the city as a whole, by zoned land use district or by each building lot that is developed. The minimum canopy standard can be measured in one of four ways. These include actual canopy coverage area, percentage of site ground space devoted to trees, numbers of tree per development site or number of caliper inches per acre.

Forsyth County, Georgia uses a *tree density standard* (TDS) based upon caliper inches of the diameter of a tree as well as a *site density factor* (SDF) which is the number of tree density units per acre. *Baton Rouge, Louisiana* has a standard of seventeen (17) trees per acre and *Charleston, South Carolina* sets a standard of 160 DBH required minimum number of caliper inches per acre.

Fulton County, Georgia calculates tree density for replacement purposes within commercial districts with the use of calculating tables and a simple formula that involves 15, 20, or 30 density units (DFS) per acre. The formula, for instance to calculate the required number of trees, and therefore its ultimate canopy coverage on a 95,832 square foot commercial development site would be calculated as $2.2 \text{ ac} \times 30 = 66$ density units. A conversion table (table 1 or table 2) is used to convert existing tree density (EDF) to trees for both trees remaining on the site and replacement tree density (RDF) that may be necessary. Density Units are based upon DBH so in the case of 66 replacement units this would convert to $66/.50 = 132$, two (2) inch DBH trees. If 33 existing DU's remain on site to be credited toward the required 66 DFS, and you choose to replace them with 4" DBH trees worth .70 units, then $33/.70 = 47$ replacement trees must be planted on the development site. The sum of the EDF and RDF must be greater than or equal to the DFS (density factor for the site). The designer can choose to meet the required standard with 2", 3", 4", or trees of any caliper.

Another way to think about this is how many trees per acre are required in Fulton County on a per acre basis if the development is occurring on land with

no existing canopy coverage. All of the trees must be replacement trees and they must meet the DFS. Working the table backward and using five (5) inch DBH trees in the design the answer is quickly found. The answer equals thirty-three (33) 5" DBH replacement trees per acre. Or, if one chooses to meet the DFS with two (2) inch DBH trees then sixty (60) two (2) inch DBH trees would be planted.

Having canopy standards as part of a landscape ordinance such as these will allow a community to have a quantifiable mitigation program to ensure that when existing trees are removed, they get replanted somewhere in the city. This will allow communities to keep a stable urban forest that meets the needs of everyone for clean air, pure water and meet the "essential nexus standard" coming out of the *Nollan v. California Coastal Commission*, 483 U.S. 825 (1987) in which the Supreme Court ruled that there must be a "legitimate state interest" in any development conditions imposed on private property through public regulations.

Each community should inventory their tree stock periodically to measure canopy coverage and ascertain the composition, health, texture (deciduous vs. evergreen, size, height, and age and caliper inches per acre) and economic value. Minimum canopy standards should be set locally based upon each community's specific mix of resource patterns such as climate, topography, rainfall, soil type, land cover, land use patterns and zoning intensity.

Landscape codes all require the planting of trees. Unfortunately, these trees are planted without having a minimum tree canopy standard. Landscape codes could provide such a standard and then measure it against the landscape plan being submitted for approval. This will allow city landscape administrators to know which trees are being preserved and how trees are being planted to comprise the future urban forest canopy.

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