

DEPARTMENT OF PUBLIC WORKS  
BUREAU OF STREET SERVICES  
REPORT NO. # 1

Date : May 18, 2009  
City-wide

Honorable Board of Public Works  
of the City of Los Angeles

Commissioners:

**REQUEST THE BOARD CONTINUE THE 2:1 STREET TREE REPLACEMENT RATIO  
POLICY AS MITIGATION FOR STREET TREE REMOVAL**

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**RECOMMENDATION:**

That the Board continues the current street tree replacement mitigation policy of 2:1 with twenty-four inch box size nursery stock.

**RECITAL:**

The City of Los Angeles' street tree population is currently comprised of approximately 700,000 trees. Arguably, this is the largest municipal street tree population in the nation and one of the most diverse with over 900 tree species identified.

The Bureau's mission is to preserve and maintain the Urban Forest; therefore a special emphasis is placed on replacing trees that have died or failed so the street tree population does not decrease.

Initiatives such as the Mayor's Million Trees LA program and others in addition to the current 2:1 street tree replacement ratio policy for street tree removal have ensured that the overall population of the tree infrastructure is not reduced, but instead increased.

Trees in the public right-of-way (ROW) differ substantially from trees in parks, private property, and open space environments. Street trees are subjected to a myriad of stressors and agents such as grow space limited by concrete, asphalt, buildings, and the multitude of infrastructure elements that are found in the ROW. In addition, they are exposed to the stresses of intense reflective heat, lack of proper moisture, compacted soils, heavy particulate matter, and poor air quality. However, possibly the greatest stress that street trees suffer is from the intentional and unintentional impact of growing in proximity to intensive human activity. In a way, this is a testament to the adaptability of these amazing organisms that they are able to survive, and in many cases thrive, in this alien environment.

Street trees perform and provide a myriad of ecosystem services. These include but are not limited to rainfall retention, storm-water runoff reduction, particulate matter interception,

increase property value, reduce roadbed service wear, and reduce energy consumption due to the reduction of ambient air temperature. Street trees have also been associated with a variety of additional psychosocial benefits which result in reduced crime and hospital stay lengths, higher occupancy and increased foot traffic in commercial areas and the generation of higher receipts for business. Well maintained tree lined communities provide a sense of place which often produce higher property values and reduced turnover in residential areas. Due to the valuable services street trees provide, it is imperative the City have policies that allow for street tree sustainability.

The street tree component of the urban forest is unique and their sustainable management is confronted by many obstacles not faced by trees contained in forests, parks, open spaces, and private property. Street trees exist in continuous parkways with widths averaging approximately five feet and in tree well cut-outs the vast majority of which are four feet by four feet contained in a "monolithic" sidewalk. A monolithic sidewalk encloses the entire ROW from the inside curb edge to the adjacent private property boundary. These "planting" areas designed for trees are located in a public ROW that averages eight to ten feet in total. These restrictions effect both existing street trees and newly planted street trees.

Existing trees conflict with their environment by sometimes creating offgrade streets, curbs, and gutters, blocking building fronts and signage, and obstructing traffic control devices, street lights, and sewer lines. New tree plantings must be designed with the particularly small spaces in which they are planted as a paramount factor.

Nevertheless, the importance of street trees cannot be stressed enough and the City of Los Angeles officially recognized this fact when in the early 1990's the City included street trees as an infrastructure element. The City, and particularly this Board, has developed and adopted policies that recognize and promote the preservation, retention, and expansion of this valuable resource.

Due to their unique environment and stresses to which they are exposed, street trees generally do not have the longevity of trees planted in a more natural and spacious environment. The Bureau anecdotally estimates the average City of Los Angeles street tree lifespan is forty years. Street tree sustainability is achieved by factors including but not limited to diversified species and age groupings, comprehensive street tree preservation and retention, pruning and watering maintenance programs, recycling programs, and continued street tree replacement and new planting.

The City's street tree population was inventoried in the early 1990's. From this inventory, it was determined that approximately 100,000 vacant or potential street tree planting site

exist. As previously mentioned, the Mayor's MTLA program is beginning to substantially reduce the number of vacant or potential planting sites. Additionally, new development also contributes to reducing the number of vacant or potential tree site. Therefore, replacing failed or dying street trees is an ongoing and critical component of sustaining the street tree population.

Street trees that have failed or died are generally replanted 1:1 with 15 gallon size tree stock that ranges in size from three-quarter inch to one and one-half inch in diameter and six to eight feet in height. These trees are replanted by UFD forces when the adjacent property owner agrees to the planting and watering of the new tree during its establishment period, on average two to three years. The City cannot compel a property owner to accept this responsibility and therefore does not replant if the property owner refuses.

Street trees that have been removed with a permit for any reason require a replacement on a 2:1 ratio with twenty-four inch box size, one and one-half inch diameter, stock. The number of trees that may be planted at a given location is based on spacing of thirty feet between tree and specified distances from other infrastructure elements. Tree removal mitigation replants that cannot be planted at the tree removal site are delivered to the UFD's small tree nursery for planting at other locations. There are several reasons why fifteen gallon and twenty-four inch box tree stock is utilized for street tree replacement rather than in-kind or larger tree replacement.

Arboriculture research indicates that smaller size tree stock establishes new roots in the native soil much quicker than larger stock. Typically, a given tree stock size will catch the next size stock planted at the same time within a few years. For example, a three-quarter inch tree will be the same size as a one and one-half inch tree planted at the same time within approximately three years. These traits stem from the fact that the longer trees remain in a container environment, the more disposed they become to developing malformed roots and are slow to develop new healthy roots in the native soil. Roots have adjusted to growing in an enclosed environment and continue to remain that way.

Larger tree stock requires much more excavation and site preparation then do smaller tree stock. For instance, utilizing best management practice, a three inch diameter tree in a thirty-six inch box container requires the digging of a six foot by six foot opening. An excavation of this size would require removal of large areas of sidewalk and portions of the curb, gutter, and street for many potential tree locations as well as a substantial increase in human and mechanical resources. The planting of any tree stock larger than thirty-six box size is nearly impossible without extensive ROW reconfiguration and for that reason not practical.

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Large tree stock is also extremely expensive to purchase and to have planted. Fifteen gallon trees may be purchased for approximately \$45-50 and be manipulated and planted by one person. Depending on soil type, a person experienced in tree planting can have the complete tree planting operation completed within 90 minutes with a total cost in the \$75-100 range. Twenty-four inch box trees may be purchased for approximately \$100 and typically require a two person crew to plant. The tree planting operation for two persons takes 45-60 minutes with a total cost of \$200 or more. Any larger trees require mechanical assistance and quickly escalate in cost into thousands of dollars.

Mitigation tree replacements must have available locations. As previously discussed, there are many spacing limitations and infrastructure conflicts that limit the number and location of tree replacements. This limits the number of tree plantings that can occur on the tree removal site. Even given the current 2:1 policy, the Bureau has a difficult time finding other planting locations for the remaining trees that cannot be planted on-site due to the need to obtain property owner permission and responsible watering parties. Increasing the number of tree replacements on an inch-for-inch basis would greatly increase the tree stock the City would then need to store in its nursery. This operation would grow in size and would require more space and resources the City does not have.

It has been suggested that street tree removal mitigation trees could be planted in City parks. Conversations with Department of Recreation and Parks (DRP) indicate that the DRP is confronted with many of the same issues the Bureau faces. That is, trees need adequate space and care that is often not available.

A healthy urban forest requires a mixture of different tree species and ages. A sustainable urban forest contains a mixture of the following approximates: 10-15% newly planted trees, 35-40% young trees, 35-40% mature trees, and 10-15% senescent trees. Therefore replacing large trees and particularly those trees that are entering the end of their lifespan, with trees of the same size and age does not contribute to the creation of a sustainable urban forest.

Lastly, many tree removal permits are obtained by residents in connection with the repair of infrastructure damaged by street trees and by developers complying with development conditions, for instance street widening, that subsequently require street tree removal. City policy does require street tree replacement but is not intended to fiscally punish permittees for performing a function that many opine is the City's responsibility. Increasing the mitigation tree replacement number, size, or both would place a much larger cost burden on the permittee.

The City always requires tree removal permittees to plant as many trees on the site of the

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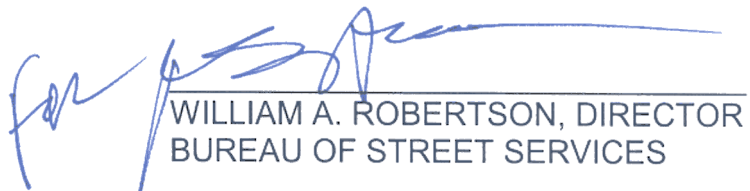
tree removals as the site can sustain within the 2:1 replacement policy. It is very unusual for additional tree planting space to exist on a site after the 2:1 replacement policy has been fulfilled. It is so rare that to require those permittees with these conditions to replace with more than the 2:1 requirement would be capricious and unfair.

Replacement of street tree removals is constrained by uniqueness of the public ROW environment, costs of replacement tree stock, impact on the public ROW, number of available tree locations, availability of a responsible maintenance agent, cost to the tree removal permittee, and urban forest sustainability issues. As with all policy, there are negatives and positives but the Bureau opines that for the most part the current street tree 2:1 replacement policy with twenty-four inch box size stock accomplishes its intent.

Therefore, the Bureau recommends the Board continue the street tree 2:1 replacement mitigation for street tree removal permits issued by this Board.

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Respectfully submitted,



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