



**Testimony of
Heather Whitlow, Director of Planning & Design
Casey Trees
July 31, 2008**

**Before the Zoning Commission for the District of Columbia
Public Hearing on Parking Requirements**

Good evening members of the Commission. My name is Heather Whitlow, Director of Planning & Design for Casey Trees, a nonprofit dedicated to restoring, enhancing, and protecting the tree canopy of the District. Thank you for the opportunity to testify before you today on this important issue.

According to data compiled by the DC Office of the Chief Technology Officer, there are more than 8,100 surface parking lots in the District. Together they occupy 2,100 acres, or 5% of the land area of our city.

While parking is a necessary aspect of the urban environment, surface parking lots generate over 2 billion gallons of polluted stormwater runoff every year, exacerbate the urban heat island phenomenon, contribute to poor air quality, and add little to the fabric of our communities.

Recommendations to eliminate many of the parking minimums and establish parking maximums will help ensure that we do not overbuild surface parking lots, particularly in areas where there has been significant investment in alternate forms of transportation. We applaud the Office of Planning and the Parking Working Group's decision to take this important step.

A necessary and complimentary piece of creating livable and sustainable neighborhoods is changing how surface lots are designed. As we all know, land is at a premium in the District, so we need promote site designs that are functional, attractive, and environmentally sound. To this end, the DC Comprehensive Plan specifically recommends encouraging the use of shade trees and landscaping in surface parking lots.

Currently, zoning regulations require that landscaping with trees and shrubs cover a minimum of five percent (5%) of the total area of the parking lot. The regulations do not specifically require trees, nor do they provide guidance to ensure that any trees planted will survive and thrive. The result is that only 7% of our 2,100 acres of surface parking are shaded by trees.

Trees and greenery are key components of the safe, walkable neighborhoods that we strive to create. Trees shade, add beauty, provide habitat, increase the value of properties and businesses, and clean our water and air. Trees in parking lots serve to mitigate some of the negative effects of the paved surfaces.

In the summer, surface temperatures on unshaded asphalt can reach over 120°F. The hot pavement transfers heat to the air that flows over it, causing air temperatures in and around parking lots to increase by up to 20°F. Trees reduce this effect by providing shade and cooling the air through evapotranspiration. Reducing parking lot surface temperatures has the added benefit of prolonging the life of the pavement, which leads to maintenance savings.

Air quality also suffers as a result of the heat build-up on parking lots. On warm days, gasoline evaporates from cars parked in the sun. The vapors combine with other air pollutants to produce ozone or smog, the pollutant responsible for the 10 Code Orange and 3 Code Red days we've had so far this summer. Not only do trees reduce temperatures, which helps to limit the formation of smog, they also directly remove pollution from the air.

Trees canopy overhanging parking lots slows and captures rainfall, reducing the amount of runoff that contributes to flooding and carries pollutants like oil, sewage, and trash into our rivers. Trees can also be included in areas of vegetation designed specifically to manage stormwater, like the bioretention areas at the Old Convention Center site downtown.

Casey Trees applauds the Office of Planning's efforts to update the parking lot landscape regulations to include a requirement for trees, putting the regulations on par with those of cities like Chicago, Atlanta, Sacramento and Portland. Atlanta requires one tree for every eight parking spaces. Portland requires one large tree for every four parking spaces. And Sacramento requires 30-50% of the lot to be shaded by tree canopy, depending on the lot size. We are committed to working with the Office of Planning and the Zoning Commission to determine a reasonable tree requirement for Washington, DC.

The parking policy recommendations include much-needed provisions to ensure that trees have adequate protection to survive the harsh conditions found in parking lots. These include requiring a minimum size for newly planted trees, and providing a minimum setback from curbs and wheelstops to reduce the chance of damage from vehicles. The recommendations also set a minimum volume of soil required for each tree. This will help trees endure the heat and will yield larger, healthier trees because the ultimate size and longevity of a tree is directly related to the amount of soil available to tree roots.

Again I'd like to stress that Casey Trees is committed to working with the Office of Planning and the Zoning Commission to develop parking regulations that include a reasonable tree requirement and ensure that the trees have adequate space and protection to grow. It will be important to draft tree and landscape requirements that complement one another, and that fit well with the District Department of Environment's new stormwater regulations that are forthcoming. We also recognize that requiring too much landscape could result in an increase in the amount of land necessary to accommodate parking, so a balance must be struck.

I thank you for your time and commitment to improving the zoning regulations.

Growing a Healthier DC: Green Parking Lots



In a healthier D.C., parking areas are green

Tree canopy shades most of the parking surface. Landscaped areas soften the visual impact and harsh environment of hot summer asphalt. Stormwater runoff is captured, cleaned and absorbed onsite using low impact development techniques like rain gardens, permeable pavers and vegetated swales. When not used for parking, these lots serve as community spaces for bike riding, roller blading, neighborhood fairs and farmers markets. Parking lots are an integral piece of the urban landscape, not just uninviting, empty spaces.

Green parking lots

- Reduce temperatures by shading parked cars and pavement
- Provide attractive, onsite stormwater management
- Reduce the formation of smog and greenhouse gases
- Last longer because trees cool the pavement surface
- Create a friendlier, more walkable environment
- Serve other community uses when not needed for parking

The benefits of
green lots will
grow over time.

Parking lots as green environments

Cooler cars, cooler pavement. Temperatures inside cars parked under shade trees can be 45°F cooler than those that are in full sun.¹ Shaded pavement can be 35°F cooler, which increases the life of asphalt and reduces maintenance costs.² Pavement cooled by shade trees reduces the urban heat island effect, making cities more livable and healthy.

Less air pollution. On warm days, gasoline vapors combine with air pollutants to produce ozone or smog, triggering health alerts about 20 days each year in the District. Far less gasoline evaporates from cars parked in the shade of trees. Lower temperatures from shaded parking lots mean less smog and relief for children, the elderly and asthmatics who suffer when ozone levels are high.

Onsite stormwater management. The parking lots in DC generate over 2 billion gallons of runoff each year.³ This runoff contributes to flooding and sends pollutants like oil, sewage and trash into the District's rivers. Tree canopy over parking lots slows and captures rainfall. Bioretention areas planted with trees reduce runoff, trap pollutants and reduce sediments that flow into the District's waterways.





Parking lots occupy 5% of the District's total land area.

The Challenge and Opportunity

Washington, DC has more than 8,100 surface parking lots covering 2,100 acres or 5% of the land.⁴ Most parking lots are unbearably hot in the summer and contribute little to the fabric of neighborhoods.

A number of cities in the US have a 50% shade cover requirement for new parking lots.⁵ By contrast, DC regulations require only 5% landscaping with trees and shrubs. Changing District regulations to require more tree cover in parking lots and creating incentives to retrofit existing parking areas with trees and landscaping will help reduce temperatures, improve air quality and reduce stormwater runoff.

Many land uses within the District, such as schools and churches, have parking areas that are nearly empty except at peak times. Well-landscaped, green parking lots make ideal settings for farmers markets, recreation, community celebrations and other events. In the District, land is at a premium; when each piece of that land is designed to be useful, attractive and environmentally sound, everyone benefits.

Recommendations

- Update parking lot landscape ordinances to require significant shading from trees.
- Minimize impervious surfaces and expand the use of materials like permeable pavers.
- Manage parking lot runoff onsite using techniques like bioretention areas.
- Create incentives to encourage retrofitting of existing parking lots to reduce stormwater runoff and increase shade.
- Plan for ongoing maintenance of parking lot trees, landscaping and low impact development.
- Encourage the design of parking lots to serve multiple uses.

Everyone appreciates a shady place to park.

Green Parking Lots is one in a series of issue briefs from Casey Trees. The *Growing a Healthier DC* series is a product of conversations with a panel of national and local experts convened in cooperation with District agencies, organizations and foundations. The panel examined how green infrastructure could be used to maximize social, economic and ecological benefits in the District of Columbia.

Visit www.caseytrees.org for more information on the topic addressed in this brief or the complete series:

- Green City
- Green Neighborhoods
- Green Streets
- Green Parks and Open Space
- Green Schools
- Green Business Districts
- Green Parking Lots
- Green Residences
- Green Jobs

¹ *Actualizing Microclimate and Air Quality Benefits with Parking Lot Shade Ordinances* by E. Gregory McPherson, James R. Simpson, and Klaus I. Scott, *Wetter und Leben* 4(98), 2001.

² *Effects of Street Tree Shade on Asphalt Concrete Pavement Performance* by E. Gregory McPherson and Jules Muchnick, *Journal of Arboriculture* 31(6), Nov 2005.

³ Calculated by LimnoTech as part of Green Build-out Model analysis, 2007.

⁴ Calculated using data from DC GIS, DC Office of the Chief Technology Officer, 2005.

⁵ *Where Are All the Cool Parking Lots?* Urban Forest Research, Center for Urban Forest Research, Pacific Southwest Research Station, USDA Forest Service, Jan 2002.

