

# Street Trees

## A LIVABILITY FACT SHEET

“The best time to plant a tree was 20 years ago. The second best time is now,” says a wise Chinese proverb. In a neighborhood setting, street trees provide shade, safety, greenery, storm mitigation, energy savings, fresh air and a haven for songbirds and squirrels. Trees visually screen concrete and utility poles and quiet street noise.<sup>1</sup>

The U.S. Forest Service estimates that the presence of street trees increases adjacent home values by an average of \$13,000.<sup>2</sup> That premium boosts a city’s tax base and can help cover the operating costs of street tree maintenance.

The National Main Street Center reports that a good tree canopy can increase retail sales by 12 cents on the dollar in large cities and 9 cents on the dollar in small ones.<sup>3</sup>

Trees are also good for our health. Vehicle exhaust increases ozone and causes asthma and other medical problems. Trees convert these harmful gasses into oxygen. In fact, a single urban street tree converts enough carbon monoxide and carbon dioxide into oxygen to meet the oxygen needs of two people for a full year.<sup>4</sup>

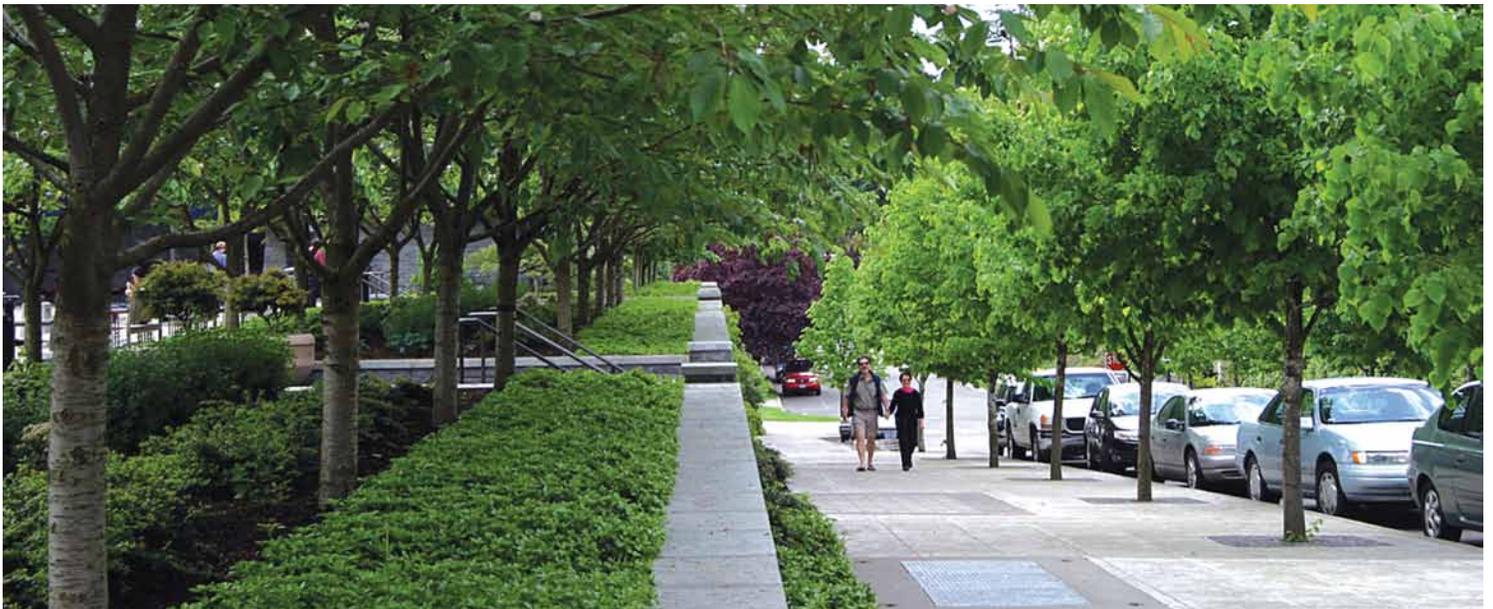
Trees planted in roadway divider strips or tree wells physically separate vehicles from pedestrians and help drivers distinguish the boundary between the street and adjacent areas where people walk. In addition, a well-developed tree canopy can reduce traffic speeds by 5 to 15 mph, which improves safety for all road users.<sup>5</sup>

Street trees reduce storm water runoff and flooding. (Here’s an interesting fact: Trees absorb 30 percent of the precipitation through their leaves and another 30 percent through their roots.)<sup>6</sup>

Pavement can cause temperatures to rise 3 to 7 degrees, which increases energy costs and the presence of harmful ozone and other gases. Tree shade can lower energy bills by up to 35 percent.<sup>7</sup>

Studies conducted in California found that tree shade can improve the lifespan of street surfaces by up to 60 percent. Since daily temperature fluctuations between heating and cooling are reduced, the damaging expansion and contraction of asphalt and concrete decline as well.<sup>8</sup>

**“The best time to plant a tree is 20 years ago. The second best time is now.”**



Trees were planted as part of a downtown revitalization project in suburban Lake Oswego, Ore., that included sidewalks, new lighting, art installations, a pedestrian plaza, water fountain and traffic circle.

# Myth-Busting!

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## ■ “Street trees are dangerous.”

Studies document that motorists respond to vertical walls of greenery by driving more slowly, which makes pedestrians and motorists safer.<sup>9</sup> Street safety comparisons show a reduction of run-off-the-road crashes and overall crash severity when stretches of a road with street trees are compared with similar segments that have no trees.

Trees also buffer pedestrians from moving vehicles. One Texas study found a 46 percent decrease in crash rates across urban arterial and highway sites after landscape improvements were installed.<sup>10</sup> The presence of trees in a suburban landscape reduced the cruising speed of drivers by an average of 3 mph.<sup>11</sup>

## ■ “Planting a tree anywhere produces the same health benefits.”

U.S. Forest Service research suggests that urban trees may be 10 times as effective as forest trees for lowering carbon dioxide. Urban pollutants such as ozone, chlorine, fluorine, peroxyacetylnitrate and sulphur dioxide are all absorbed by trees.<sup>12</sup>

## ■ “Trees are expensive.”

For a planting and three-year maintenance cost of \$250 to \$600, a single street tree returns more than \$90,000 of direct benefits, not even including the aesthetic, social and natural benefits provided during the tree’s lifetime.

A well-planted and cared-for tree can thrive for 60 years or more.<sup>13</sup> The real estate premium from street trees boosts a city’s tax base and can cover the operating costs of street tree maintenance.

For instance, New York City’s 2006 tree census found that its 592,130 street trees provided an estimated \$122 million in benefits annually. A goal of the city’s 2007 PlaNYC initiative is to plant another 220,000 street trees by 2017.<sup>14</sup>

Washington, D.C., estimates the benefit of its street trees at \$10.7 million annually.<sup>15</sup> A University of California at Davis study found that 20 percent shade on a street improves pavement conditions by 11 percent, which provides a 60 percent resurfacing savings over 30 years.<sup>16</sup>

When streets have no shade, the sun’s heat breaks down the paving binder and produces more heating and shrinking, which wears out the pavement. Shade increases pavement life by up to 60 percent, far offsetting the cost of tree maintenance<sup>17</sup> and the occasional cost of repairing damage caused by tree root growth.

## ■ “Trees are the cause of damage by storms.”

Proper selection, spacing and trimming of trees, along with well-planned utilities, will reduce the impact of major storms. A line of mature trees can provide protection from fragile or isolated trees that fall.<sup>18</sup>

## ■ “Trees create a mess.”

Trees can be selected that produce minimal autumn leaf droppings and other annoyances. (However, municipal policies should include procedures for efficient leaf removal.) Some species of trees attract songbirds, which can be a pleasant addition to an area.

Although rare, some trees can attract such large congregations of birds that they become an annoyance. Thoughtful tree selection and management can limit specific bird populations or keep large groupings away.<sup>19</sup>

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1. Burden, D. Walkable Communities, Inc., Glatting Jackson. (2006) *Urban Street Trees: 22 Benefits, Specific Applications*. [http://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](http://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)
  2. Donovan, G.H., Butry, D.T. (2009) “Trees in the city: Valuing street trees in Portland, Oregon”. *Landscape and Urban Planning*. (2010) Vol. 94, pp 77–83 [http://www.fs.fed.us/pnw/research/gcra/pdfs/pnw\\_2010\\_donovan001.pdf](http://www.fs.fed.us/pnw/research/gcra/pdfs/pnw_2010_donovan001.pdf)
  3. Wolf, K. L. University of Washington. (August 2009) *Trees Mean Business: City Trees and the Retail Streetscape*. [http://www.naturewithin.info/CityBiz/MainStreetNews\\_Aug09\\_Trees.pdf](http://www.naturewithin.info/CityBiz/MainStreetNews_Aug09_Trees.pdf)
  4. American Forests. “Tree Facts”. Retrieved March 4, 2014, <https://www.americanforests.org/discover-forests/tree-facts/>
  5. Burden, D. Walkable Communities, Inc., Glatting Jackson. (2006) *Urban Street Trees: 22 Benefits, Specific Applications*. [http://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](http://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)
  6. Ibid
  7. Dumbaugh, Eric (2005) “Safe streets, livable streets.” *Journal of the American Planning Association*, Vol. 71, No. 3, pp 283–300
  8. Burden, D. Walkable Communities, Inc., Glatting Jackson. (2006) *Urban Street Trees: 22 Benefits, Specific Applications*. [http://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](http://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)
  9. University of Washington, College of Forest Resources. *Urban Forest Values: Economic Benefits of Trees in Cities*. Rep. Center for Human Horticulture, 1998. Web: <http://www.naturewithin.info/Policy/EconBens-FS3.pdf>
  10. Mok, J., Landphair, H., Naderi, J.R. (2006) “Landscape Improvement Impacts on Roadside Safety in Texas.” *Landscape and Urban Planning*, Vol. 78, No. 3, pp 263-274. [http://www.naturewithin.info/Roadside/RdsdSftyTexas\\_L&UP.pdf](http://www.naturewithin.info/Roadside/RdsdSftyTexas_L&UP.pdf)
  11. Naderi, J. R., et al. (2008) “The Street Effect and Driver Safety.” *ITE Journal on the Web*. [http://www.walkable.org/assets/downloads/StreetTreeEffectandDriverSafety\\_ITEf08\\_.pdf](http://www.walkable.org/assets/downloads/StreetTreeEffectandDriverSafety_ITEf08_.pdf)
  12. U.S. Forest Service. “Values of Urban Trees.” Retrieved June 5, 2014: <http://www.na.fs.fed.us/spfo/pubs/uf/techguide/values.htm>
  13. Burden, D. Walkable Communities, Inc., Glatting Jackson. (2006) *Urban Street Trees: 22 Benefits, Specific Applications*. [http://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](http://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)

# How To Get It Right



A mature tree canopy provides shade and elegance to this residential street in Fargo, N.D.



Tree wells, such as this one in Valencia Town Center, Calif., add greenery to urban and Main Street settings.

## When advocating and planning for street trees, try the following:

### ■ Engage the public and build support

Due to the many misperceptions about street trees, it's important to involve the public at the earliest possible point of discussions to minimize anxiety about the unknowns and give citizens ownership of the goals.

Print this fact sheet, talk to neighbors, build community support and then meet with decision makers, news media, experts and others to discuss the benefits of street trees.

### ■ Choose the right trees

There are street tree varieties for all climate zones, from semi-arid and arid conditions to mountain communities above 9,000 feet. The proper selection and planting of trees in boxes reduces sidewalk repair costs and potential damage to utilities in urban neighborhoods.

### ■ Place trees correctly

When properly positioned and maintained, a backdrop of street trees can draw a motorist's eye to traffic signals and signs. However, the trees must be carefully positioned to allow adequate sight lines at intersections and driveways.

Street trees should be placed 15 to 30 feet apart, or as far apart as 50 feet apart in urban locations. Trees should be spaced to allow for illumination from street lights and so not to interfere with above- or below-ground utility lines.

### ■ Maintain trees properly

Tree maintenance is an added cost but one that's more than offset by the positive impact trees have on a community's tax base.

It's important to properly maintain trees, including repairing occasional sidewalk damage from growing tree roots. It's also important to keep the majority of leaves cleared from the street since fallen leaves can clog drains. In some climates piles of leaves that are left unattended over time can produce airborne spores that cause problems for allergy sufferers.

### ■ Plant in tree wells if sidewalk space is limited

If there's insufficient space for trees alongside a sidewalk, use a tree well instead. Depending on the amount of parking needed, desired visual pattern and tree density, wells can be placed 40 to 60 feet apart, which allows two to four parking spaces in between. The wells must be wide enough to prevent vehicles from backing into trees.

14. New York City Department of Parks and Recreation. "Trees Count! Street Tree Census". Retrieved March 4, 2014 <http://www.nycgovparks.org/trees/tree-census/2005-2006>

15. Alliance for Community Trees. (August 2011) *Benefits of Trees and Urban Forests: A Research List*. [http://www.actrees.org/files/Research/benefits\\_of\\_trees.pdf](http://www.actrees.org/files/Research/benefits_of_trees.pdf)

16. McPherson, E.G. and Simpson, J.R. (2001) Davis, CA: USDA Forest Service, Pacific Southwest Research Station, Center for Urban Forest Research. Effects of California's urban forests on energy use and potential savings from large-scale tree planting

17. McPherson, G., Muchnick, J. (2005) "Effects of Street Tree Shade on Asphalt and Concrete Pavement Performance." *Journal of Arboriculture*, Vol. 31, No. 6, pp 303-310. [http://www.fs.fed.us/psw/publications/mcpherson/psw\\_2005\\_mcpherson001\\_joa\\_1105.pdf](http://www.fs.fed.us/psw/publications/mcpherson/psw_2005_mcpherson001_joa_1105.pdf)

18. Burden, D., Walkable Communities, Inc., Glatting Jackson. (2006) *Urban Street Trees: 22 Benefits, Specific Applications*. [http://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](http://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)

# Success Stories

## ■ Shreveport, Louisiana: NeighborWoods

Despite Shreveport's location in a wooded part of the state, many community members were unaware of the benefits and value of a good tree canopy. Due to sustained tornado and ice storm damage in the years 2010 to 2013, and severe droughts during the summers of 1999 to 2005, many neighborhoods were practically devoid of trees.

Help came from the nonprofit organization Shreveport Green and their work with NeighborWoods, a national program dedicated to reforesting city greenspaces. Beginning in 2006 student-led volunteers planted more than 20,000 trees in Shreveport, with a particular focus on three at-risk neighborhoods that had moderate to severe crime rates and a lack of community cohesion.

By increasing the canopy cover, Shreveport Green offered residents a cooler and more attractive environment, which encouraged them to mingle outside and positively interact with their neighbors. The effort produced a cost benefit to Shreveport of \$7.28 for every dollar spent.

## ■ Charlotte, North Carolina: Stately Trees

In 1985 Charlotte planned major renovations of downtown thoroughfares, including 10 blocks of Tryon Street and two blocks of Trade Street.

Since the city wanted large, stately trees in the downtown, it installed a suspended precast concrete pavement system supported by earthen trench sidewalks and topped with non-permeable pavers. A total of 170 willow oak trees were planted and by 2009 they had grown to an average height of 44 feet, resulting in a 10 percent reduction in peak storm flows to the storm water system. Once famous for cotton mills and gold mines, Charlotte is now known for its a spectacular tree canopy.

## WHY IT MATTERS

### THE VALUE OF Urban Forests

urban forest = the trees, plants and natural resources within a town or city

**12-1/2 trees** can intercept an Olympic-sized swimming pool worth of stormwater annually.

**Trees in urban forests** support 60,000 California jobs annually.

**177 million trees** shading homes and buildings reduce air conditioning energy use by 6.4 billion kilowatt hours. (It takes 73 100-megawatt power plants to produce that much energy.)

Homes, goods and services sell for 12 percent more in **communities with trees** than in those without trees.

Source: California ReLEAF ([californiareleaf.org/whytrees](http://californiareleaf.org/whytrees))

## RESOURCES

1. **Safe Streets, Livable Streets.** Eric Dumbaugh. Journal of the American Planning Association, Vol. 71, No. 3, Summer 2005
2. **22 Benefits of Urban Street Trees.** Dan Burden. [http://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](http://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)
3. **Benefits of Trees and Urban Forests: A Research List.** Alliance for Community Trees. (August 2011) [http://www.actrees.org/files/Research/benefits\\_of\\_trees.pdf](http://www.actrees.org/files/Research/benefits_of_trees.pdf)
4. **Talking Trees.** (November 2006) Local Governments for Sustainability. [http://www.milliontreesnyc.org/downloads/pdf/talking\\_trees\\_urban\\_forestry\\_toolkit.pdf](http://www.milliontreesnyc.org/downloads/pdf/talking_trees_urban_forestry_toolkit.pdf)
5. **Stormwater to Street Trees.** U.S. Environmental Protection Agency Office of Wetlands, Oceans and Watersheds Nonpoint Source Control Branch. (September 2013) Washington, D.C. EPA 841-B-13-001
6. **Street Trees and Intersection Safety.** Institute of Urban & Regional Development, University of California, Berkeley (2006) <http://www.uctc.net/papers/768.pdf>



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