

Triple Bottom-Line Benefits of Street Trees in Devens



1. ECONOMIC:

Increased property value: realtor estimates of tree-lined streets vs. comparable non tree-lined streets have shown anywhere between 5-18% increase in home/business value. People prefer tree-lined streets!

Reduced Energy Costs: streets and parking lots can increase local temperatures which can significantly impact energy costs to homeowners and consumers. The shade provided from street trees, can reduce energy bills for a household by as much as 10%.

Return on Investment: for a planting cost of \$250-600, a single street tree returns over \$90,000 of direct benefits (not including aesthetic, social and environmental) in the lifetime of the tree.

Extended pavement life: the shade of street trees reduces daily heating and cooling (expansion/contraction) of asphalt (gray infrastructure) and can extend the life of pavement up to 60% longer. This translates into a significant cost reduction for maintaining street systems.

Energy: Biomass from trees is a potential source of renewable energy for Municipalities.

2. ENVIRONMENTAL:

Grey Infrastructure to Green Infrastructure: The leaves, branches and trunks of street trees (green infrastructure) can capture up to 30% of a typical rainfall event through absorption and evaporation. Tree root systems can absorb up to another 30%, resulting in reduced stormwater runoff and potential flooding. This also results in less man-made drainage infrastructure (catch basins, piping, detention ponds).

Climate Change Mitigation: leaves absorb harmful pollutants like carbon dioxide (CO₂), carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), and particulate matter (PM) such as dirt, dust and soot. Street trees absorb nine times more pollutants than more distant trees, converting those harmful gasses back into oxygen and other useful and natural gasses.

Air Quality: shading provided by trees can reduce local temperatures by up to 15°F, which helps reduce the creation of ground-level ozone – a major contributor to smog & respiratory problems in kids & adults.

Habitat: street trees provide a canopy, root structure and setting for important insect & bacterial life below the surface. Above the surface, they provide biomass, nutrients and habitat for birds & other wildlife.

3. SOCIAL:

Public Safety: street trees help reduce solar glare and define the roadside edge and their canopy cover provides shading and separation from the road that can help protect pedestrians, guide motorists movements and help them better assess their speed. These attributes lead many motorists to exercise greater caution, resulting in reduced speeds (by as much as 15mph) as well as fewer accidents on streets lined with trees.

Public Health: trees reduce UV exposure for pedestrians and have a natural calming effect which can help reduce "road rage", local crime and vandalism, further improving the safety of streets and neighborhoods. Visual access to trees has also been shown to have a rehabilitating impact on our recovery from illness.

Noise Reduction: slower vehicle speeds as a result of street trees can reduce engine and tire noise. Their leafy vegetation can also absorb a great deal of noise in neighborhoods.

Aesthetics: trees provide a general softening of the urban environment and also provide a screen for utility poles, light poles, on-street and off-street parking and other features that create visual pollution. The aesthetics of tree lined streets and green spaces have been shown to have positive psychological benefits including lower rates of stress, blood pressure and mental illness.

Tree Removal/Replacement in Devens:

For all of the above reasons, the Devens Enterprise Commission (DEC) regulates tree removal. Residents/business owners should contact the DEC **prior** to removing trees from their property. For a list of noninvasive street tree species recommendations, visit www.devensec.com/rules-regs/decreqs307.html

MassDevelopment, in conjunction with the DEC, has also conducted a street tree inventory in an effort to better care for and manage street trees within Devens. Annual assessments, trimming and replacement will help ensure street trees continue to thrive within Devens and benefit everyone's triple bottom-line!



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Facts and Figures:

- “There are about 60– to 200-million spaces along our city streets where trees could be planted. This translates to the potential to absorb 33 million more tons of CO² every year, and saving \$4 billion in energy costs.” —*National Wildlife Federation*
- “The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day. Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20–50 percent in energy used for heating.” —*USDA Forest Service*
- “Healthy, mature trees add an average of 10 percent to a property’s value.” —*USDA Forest Service*
- “One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people.” —*U.S. Department of Agriculture*
- “Trees can be a stimulus to economic development, attracting new business and tourism. Commercial retail areas are more attractive to shoppers, apartments rent more quickly, tenants stay longer, and space in a wooded setting is more valuable to sell or rent.” —*The Arbor Day Foundation*
- “In laboratory research, visual exposure to settings with trees has produced significant recovery from stress within five minutes, as indicated by changes in blood pressure and muscle tension.” —*Dr. Roger S. Ulrich Texas A&M University*