

## Urban Forest Values: Economic Benefits of Trees in Cities

Many important decisions in American cities are based on careful cost and benefit analysis of options. Yet the values of trees and plants in our urban centers are often overlooked. Urban forests are a significant and increasingly valuable asset of the urban environment. Scientists have measured the tremendous returns that trees provide for people in cities. A complete assessment of both benefits and costs is challenging. Nonetheless, full understanding of this information is valuable if decision-makers wish to make cost effective policy and budget decisions. Investments in the planting and care of trees represent long term commitments of scarce dollars; improper plantings will increase costs and reduce benefits. Adequate resources for both planning and management of urban green is necessary if cities wish to optimize the values and benefits of the urban forest.

### Environmental and Energy Savings

City-wide, the amount and quality of trees influence both biological and physical urban environments. Plants, if strategically placed and cared for, can become a "living technology," a key part of the urban infrastructure that contributes to more liveable urban places.

**HEATING AND COOLING COSTS** - A 25 foot tree reduces annual heating and cooling costs of a typical residence by 8 to 12%, producing an average \$10 savings per American household. Also, buildings and paving in city centers create a heat-island effect. A mature tree canopy reduces air temperatures by about 5 to 10° F, influencing the internal temperatures of nearby buildings.

**AIR QUALITY AND CLEANSING** - A typical person consumes about 386 lb. of oxygen per year. A healthy tree, say a 32 ft. tall ash tree, can produce about 260 lb. of oxygen annually—two trees supply the oxygen needs of a person each year! Also, cooler air temperatures created by tree canopies reduce smog levels by up to 6%, producing savings in air clean-up campaigns.



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Finally, a mature tree absorbs from 120 to 240 lbs. of the small particles and gases of air pollution. In Sacramento, CA, for instance, this represents a value of \$28.7 million.

**IMPROVED WATER QUALITY** - The canopy of a street tree intercepts rain, possibly reducing the amount of water that will fall on pavement and then must be removed by a stormwater drainage system. In one study, 32 ft. tall street trees intercepted rainfall, reducing stormwater runoff by 327 gallons. Savings are possible since cities can install surface water management systems that handle smaller amounts of runoff.

## Retail and Commercial Environments

Businesses work hard to offer products and services that meet their customers' needs. The presentation or image of shops and business districts is also important. Trees help create a positive environment that attracts and welcomes consumers.

**CONSUMER PATRONAGE** - In a survey of one southern community, 74% of the public preferred to patronize commercial establishments whose structures and parking lots are beautified with trees and other landscaping.

### COMMERCIAL LAND VALUES -

Weyerhaeuser surveyed real estate appraisers and 86% of them agreed that landscaping added to the dollar value of commercial real estate. 92% also agreed that landscaping enhances the sales appeal of commercial real estate.

**BOOSTED OCCUPANCY RATES** - One study looked at 30 variables—architecture and urban design—of potential importance in determining office occupancy rates. Results suggest that landscape amenities have the highest correlation with occupancy rates, higher even than direct access to arterial routes.

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## Residential Property Values

House prices are also influenced by the presence of trees. Developers can maximize profits by retaining existing trees or replanting an urban forest after construction is completed.

**INCREASED HOME SALES PRICES** - Several studies have analyzed the effects of trees on actual sales prices of residential properties. Homes with equivalent features—square footage, number of bathrooms, location—are evaluated. In one area a 6% increase in value was associated with the presence of trees; an increase of 3.5 to 4.5% was reported in another study.

**TREE SIZE AND VALUE** - A team of researchers compared tree size and public valuations of

homes. Tree size did not affect the judgments of price for low price homes, but did affect values of more costly houses. For more expensive homes, small and medium-sized trees enhanced the public's perception of real estate value.

**UNIMPROVED PROPERTY VALUES** - Using a scale model of a land parcel, researchers found that there was a 30% difference in appraised value based on the amount and variation of tree cover. Taking into account the potential value of a house built on the site, the value increase would be close to 5%.

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