

*Pacific Southwest Research Station  
scientists show that...*

## It pays to care for trees

Berkeley, California, is the reference city for the i-Tree Streets program's Northern California Coast climate region. Base data were collected there during the summer of 2003. To learn how to use this information to calculate costs and benefits for any community in the Northern California Coast region (shown in brown on the map), refer to the Northern California Coast Community Tree Guide at [http://www.fs.fed.us/psw/programs/uesd/uep/tree\\_guides.php](http://www.fs.fed.us/psw/programs/uesd/uep/tree_guides.php). To learn more about i-Tree Streets, visit <http://www.itreetools.org>.



### Methods:

- ✦ Benefits and costs were quantified for typical large, medium, and small broadleaf trees and a conifer
- ✦ The analysis assumed that trees were planted in a residential yard, public park, or street side with a 55-percent survival rate over 40 years
- ✦ Tree care costs were based on results from a survey of municipal and commercial arborists
- ✦ Benefits were calculated by using tree growth curves and numerical models that consider regional climate, building characteristics, air-pollutant concentrations, and prices

### Benefits analyzed:

- ✦ Energy savings (electricity and natural gas)
- ✦ Air pollution reduction (carbon dioxide, nitrogen dioxide, sulfur dioxide, ozone, airborne particles, and volatile organic compounds)
- ✦ Runoff reduction (rainfall interception)
- ✦ Property values

### Costs analyzed:

- ✦ Tree purchase and planting
- ✦ Pruning
- ✦ Irrigation
- ✦ Pest and disease prevention and control
- ✦ Removal and disposal
- ✦ Sidewalk repair
- ✦ Leaf litter cleanup
- ✦ Liability, legal aspects, and administration

Project partners included the City of Berkeley Parks, Recreation, and Waterfront Department and the USDA Forest Service State and Private Forestry, Urban and Community Forestry.

### Resources:

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Neely, D., ed. 1998. Valuation of landscape trees, shrubs, and other plants. 7<sup>th</sup> ed. Urbana, IL: International Society of Arboriculture. 50 p.

Sullivan, W.C.; Kuo, F.E. 1996. Do trees strengthen urban communities, reduce domestic violence? *Arborist News*. 5: 33–34.

Wolf, K.L. 1999. Nature and commerce: human ecology in business districts. In Kollin, C., ed. *Building cities of green: proceedings of the 1999 national urban forest conference*. Washington, DC: American Forests: 56–59.



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Forestry and  
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# TREES

## Pay Us Back

In the Northern California Coast Region



United States  
Department of  
Agriculture



Forest  
Service



Pacific Southwest  
Research Station



# \$5,170 The Value of a Tree on the Northern California Coast

A large tree in the Northern California Coast Region will provide \$5,170 in environmental and other benefits over its lifetime. That's nearly a 460-percent return on investment!

*Properly cared for, trees are valuable and growing assets worth four and a half times the investment.*

Trees produce benefits for us when we plant and nurture them in our urban environments. The Urban Ecosystems and Social Dynamics Program at the USDA Forest Service Pacific Southwest Research Station is assessing the ways that trees pay us back and their value to us.



## Healthy trees mean:

### Healthy people

*Each year, 100 large, mature street trees*

- ✦ Remove 8 tons of carbon dioxide (CO<sub>2</sub>)
- ✦ Remove 87 pounds of other air pollutants
- ✦ Catch about 67,300 gallons of rainwater



### Healthy communities

*Tree-filled neighborhoods*

- ✦ Report lower levels of domestic violence
- ✦ Are safer and more sociable
- ✦ Reduce stress of body and mind
- ✦ Decrease need for medication, and speed recovery times



### Homeowner savings

*One well-placed large tree*

- ✦ Provides average savings of \$47 on home air conditioning costs each year

### Better business

*In tree-lined commercial districts, shoppers report*

- ✦ More frequent shopping
- ✦ Longer shopping trips
- ✦ Willingness to pay more for parking
- ✦ Willingness to spend 12 percent more for goods



### Higher property values

*Trees increase the resale value of houses*

- ✦ Each large front yard tree adds 1 percent to the sales price of a house
- ✦ Large specimen trees can add 10 percent to property value



## It pays to care for trees

Landscape trees provide benefits that far exceed the costs of planting and care over their lifetime.

Environmental and aesthetic benefits, such as energy savings, stormwater runoff reduction, cleaner air, and higher property values, are consistently many times greater than tree care costs.

The greatest benefits are energy savings from cooling and higher property values.

*One large public tree, 40 years after planting, averaged:*

Annual benefits .....	\$129
Annual costs .....	\$28
Annual net benefit .....	\$101

*Over 40 years, 100 large public trees total:*

Benefits .....	\$516,800
Costs .....	\$113,400
40-year net benefit .....	\$403,400