

New tree guide demonstrates cost-effectiveness of community trees

THE CENTER FOR URBAN Forest Research recently unveiled its newest Tree Guide at the Oregon Community Tree's Urban Forestry Summit 2002, in Wilsonville, Oregon on March 8, 2002. This latest Tree Guide is titled *Western Washington and Oregon Community Tree Guide: Benefits, Costs and Strategic Planting*. The guide was designed for the "rainy northwest" climate region and is the fourth in a series of Tree Guides for the Western United States.

Results for Western Washington and Oregon are reported for a typical large, medium and small tree - red oak, Norway maple and purple plum respectively, both public and private. Data from these typical species were collected in Longview, WA and analyzed by computer models to determine the magnitude of benefits throughout the region:

- kWh and BTUs of energy saved through direct shading or wind reduction.
- tons of CO₂ sequestered.
- tons of air pollutants removed by dry deposition or through avoided emissions at power plants.
- gallons of water intercepted.
- property value increase.

The value of each benefit was calculated using:

- regional market value for electricity and gas.
- social costs for CO₂ based on loss of arable land associated with increased global warming.
- regional cost of control for air pollutants.
- treatment and control costs for stormwater.
- effect of trees on sales price of residential properties.

Results reveal a significant benefit for each of the three typical species, returning as much as \$3.12 per year for every dollar spent for a 20 year old red oak, planted on public property. For example:

Partners in the development of the Western Washington and Oregon Community Tree Guide were Cooperative Extension, Oregon State University, and the Department of Land, Air and Water Resources, University

Estimated annual benefits for a small, medium and large-sized public tree 20 years after planting.

Small Tree - 28 ft tall, 25 ft spread, 1891 ft² leaf surface area

- Total benefits - \$18.12
- Total costs - \$12.90
- Net benefits - \$5.22

Medium Tree - 38 ft tall, 31 ft spread, 4770 ft² leaf surface area

- Total benefits - \$37.24
- Total costs - \$13.94
- Net benefits - \$23.30

Large Tree - 46 ft tall, 41 ft spread, 6911 ft² leaf surface area

- Total benefits - \$68.92
- Total costs - \$22.10
- Net benefits - \$46.82

Annual costs include: planting, pruning, removal/disposal, infrastructure, irrigation, cleanup, liability/legal, and administration.

The largest single benefit for all trees was the property value increase from \$9.38 per year for the small tree to over \$37 for the large tree. Stormwater interception was the next largest benefit with larger trees intercepting nearly 450 gallons of water per year.

Future guides are planned for the "cold and snowy" climate region and the San Francisco Bay Area in 2003, and the western portion of the "Midwest" climate region in 2004. Other Western climate regions are currently under negotiation. The Inland Empire, South Coast, and San Joaquin Valley climate regions of California have already been completed.

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