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NEWS RELEASE

USDA Forest Service

FOR IMMEDIATE RELEASE
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Trees Equal Clean Air According to New Research – Arbor Day is perfect time to plant more.

Davis, CA, April 27, 2005 – Millions of people live in areas where air pollution can cause serious health problems. Ground-level ozone and airborne particles are two pollutants that pose the greatest threat to human health. And CO₂, once thought to be the product of perfect combustion, is now considered a pollution concern.

The good news is that trees play a significant role in reducing air pollution. According to Dr. Greg McPherson of the USDA Forest Service, Center for Urban Forest Research “the more trees in our cities the better. Celebrate Arbor Day by planting the right tree in the right place.” The Center’s scientific research has shown that community trees help to reduce pollution by absorbing gaseous pollutants, binding soluble pollutants to their surfaces, intercepting large particulates on bark, and sequestering CO₂ in woody tissue. But there is one huge indirect benefit from trees that is often overlooked. Trees reduce summer air temperatures through transpiration and shading, and reduce winter wind infiltration by deflecting it. This ultimately reduces demand for energy to cool and heat homes. And less energy demand at the power plants means less hydrocarbon emissions and ozone formation.

CO₂ - The Center’s most comprehensive research on pollution was conducted in Sacramento County, California. Researchers looked at Sacramento’s complex of six million trees

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and found that the annual net reduction of CO₂ was about 335,000 tons. Of that total, 262,300 tons are sequestered in trees. But the encouraging piece of this annual reduction is that nearly 25% is prevented by tree shade on homes, buildings and other structures, accounting for 83,300 tons of avoided CO₂ emissions from power plants.

Ozone and Particulates - “We found that these same trees in Sacramento removed approximately 1,606 tons of the air pollutants annually”, said Dr. McPherson. “And, as we expected, they are most effective at removing ozone and particulate matter.”

The big question the Center’s research has answered is the value of the work trees do to reduce air pollution. Their research findings indicate that the reduction of atmospheric CO₂ by the six million trees in Sacramento County has a current annual value of \$3.3 million. That means that each tree’s contribution is worth \$0.55/yr on average. The total value of the annual reduction of ozone and particle pollution is \$28.7 million, or nearly \$5 per tree on average. However, even though trees are highly efficient at reducing air pollution, their contribution to the overall reduction of air pollutants is fairly small, amounting to only about 2% of the total emitted, and nearly 98% of air pollution is not being “treated” by trees.

Dr. McPherson looks at this as “what an opportunity! In fact, the contribution of trees could be substantially increased if we strategically plant a large number of trees and provide long-term stewardship to maximize their health and longevity. This will maximize their benefit potential and provide us with future energy savings and improved air quality. In a study we did two years ago we found that 50 million new trees in California would eliminate the need for 7 new 100-MW power plants – and all of the resultant air pollution.”

Local air quality management districts provide pollution abatement credits to businesses and institutions by permitting the use of controls or processes, provided they are technically feasible and cost effective, based upon guidelines in Best Available Control Technology (BACT) manuals. Typically a BACT analysis is applied to stationary sources, but if applied to large-scale urban tree plantings they can demonstrate a cost effective means to improve air quality. In Sacramento CA,

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the city just met attainment for fine particulates, but is still in non-attainment for ozone and has already lost some federal highway dollars. For several years, the Sacramento Municipal Utility District's (SMUD) has conducted its Shade Tree Program, and will continue planting 500,000 trees over a ten year period. Studies have determined that this effort will result in a net air quality benefit to the community. What this suggests is that applying the BACT analysis to a large tree planting can provide resource managers and other potential investors with one way to assess the implied value of air quality benefits from the new urban forest.

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