

CENTER NEWS BRIEF

Center for Urban Forest Research
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Highlights of Recent Research

Alternative Prescriptions for Firewise Residential Landscapes

The Center recently received a \$500,000 grant from the National Fire Plan to help residents and communities evaluate costs and risks associated with alternative prescriptions for firewise landscapes in the West's urban-wildland interface. A web-based computer program is currently being developed for use by local residents. It will have five components: 1) a Neighborhood GIS-based module showing surrounding buildings, vegetation, streets, and other geographic features, 2) a Parcel component that contains information on parcel boundaries, structures, vegetation, landscape management activities, and fire suppression capabilities of the residents, 3) an On-Site Structural Ignition Model that calculates probability of home ignition under different firewise design and management activities, 4) an Economic Analysis module that translates fuel management costs and the value of non-replaceable property, and 5) a Visualization component to help residents understand how firewise prescriptions influence the visual and spatial qualities of the landscape over time. The Center is partnering with universities and other federal, state, and local agencies to develop, test, and implement this product.

Computerized Decision Support Tool for Urban Watershed Management

In 2000 the Center received \$517,000 from the California Department of Forestry and Fire protection for a three-year project to develop and test a computer-based tool that watershed managers can use to evaluate the cost-effectiveness of best management practices (BMP) aimed at reducing stormwater runoff and landscape irrigation water use, conserving energy, and recycling green waste. Drs. Susan Ustin and Qingfu Xiao of the UC Davis Department of Land, Air and Water Resources are monitoring the effectiveness of BMPs installed at a South Central LA residence, and developing the model's hydrologic component. Center scientists Jim Simpson and Greg McPherson are working with graduate students to model impacts of tree shade on building energy use. Jeff Wallace of EarthView Environmental Computing is programming the user-interface. Andy Lipkis, president of TreePeople, will direct application of the tool by trained watershed managers in a San Fernando Valley demonstration project. The urban watershed-auditing tool will reside on the Web and is designed to be transferable to other regions.

Urban Forest Effects on Energy Use

A study quantified the number and effects of California's existing shade trees on statewide energy consumption and the potential savings from planting new trees in some of the estimated 242 million empty sites. Results show that the estimated 177 million existing trees reduce peak energy demand by 10% and annual electric use by 3%, a savings to retail customers of nearly \$1 billion annually. Planting 50 million more trees in strategic, energy-saving locations would reduce peak demand an additional 9% after 15 years, saving an additional \$1 billion and eliminating the need to build seven more 100-MW power plants.

Cool Parking Lots

Parking lots occupy 20-30% of the land surface in downtown areas and are pollutant “hot spots.” A study in Davis, CA measured the impacts of tree shade on parking lot microclimate, and revealed that the cooler temperatures associated with 50% shading of paved areas can substantially reduce regional hydrocarbons evaporated from fuel lines and tanks of parked cars. Trees reduce asphalt temperatures by as much as 36°F, vehicle cabin temperatures by over 47°F, and fuel tank temperatures by nearly 7°F. The cooler the car, the lower the rate of evaporation. The Center also worked with the cities of Sacramento, Davis, Los Angeles, and San Jose to increase the effectiveness of existing tree shade ordinances. Work included quantifying the monetary value of environmental benefits that are foregone when parking lot landscapes do not provide 50% shade, developing new tree planting and irrigation specifications, and implementing volunteer-based tree inspection programs that promote ordinance compliance. In addition, the Center has continued to assess the benefits and costs of structural soil mixes used underneath paving to decrease the incidence of root-infrastructure conflicts.

For information on these studies and related publications visit our web-site at: <http://cufr.ucdavis.edu>.
Or call/email Jim Geiger at 530-752-6834 / jgeiger@fs.fed.us.

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