# Fact Sheet #2: Save Dollars With Shade

Just Plant Trees

Imagine a solution to rising energy bills as simple as planting a tree. We've all grown up with trees, climbed in them, and probably even planted a few. But how many of us know that they significantly contribute to cooling our homes, businesses, and communities?

General Tree Planting Recommendations:

❦ Plant shade trees on the west and northwest sides of homes (west and south-west sides in northern climates) to provide the greatest energy benefit. Plant deciduous trees on the east side of homes to provide the next greatest energy benefit.

❦ Avoid planting trees in front of south windows.

❦ Locate trees so, when mature, they will not shade solar collectors.

❦ Plant evergreen trees as windbreaks. Check with your state urban forester or local tree professional for site-specific information.

❦ Use shade trees to make paved driveways and patios cooler and more comfortable.

❦ Shade your air conditioner to reduce its energy use, but do not plant vegetation so close that it will obstruct air flow around the unit.

❦ Plant appropriate trees near overhead power lines, and do not plant directly above underground water and sewer lines.

❦ Be sure to pick the right tree and right location. Check with your local tree professional for advice on selecting appropriate species and properly locating, planting, and maintaining them.
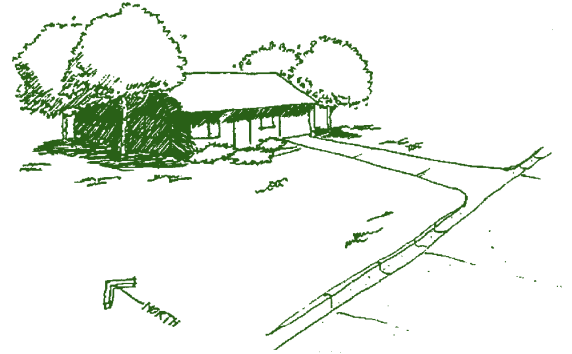
Locate trees to shade west and east windows and walls.

More than half of a building's heat gain in summer/winter comes from sunlight shining through windows.
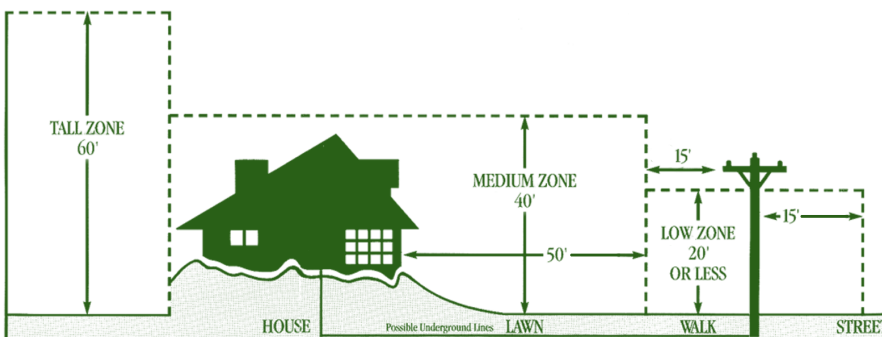
Different trees have different planting locations.

Trees Conserve Energy By:

❦ Shading, which reduces the amount of radiant energy absorbed and stored by built surfaces.

❦ Evapotranspiration, which converts liquid water in leaves to vapor, thereby cooling the air.

❦ Reducing the velocity of wind, which slows the infiltration of outside air into inside spaces.

References: Save Dollars With Shade

For more information on the benefit/cost of the urban forest, refer to the following publications, written by Center researchers and associates:

McPherson, E. Gregory; Simpson, James R. 1995. *Shade trees as a demand side resource.* Home Energy 12: 11–17.

McPherson, E. Gregory. 1996. *Urban forest landscapes, how greenery saves greenbacks.* In: Wagner, C., ed. Annual Meeting Proceedings, American Society of Landscape Architects. Washington, DC.: 27–29.

McPherson, E. Gregory; Simpson, James R.; Peper, P.J.; Xiao, Q.; Pettinger, D.R.; Hodel, D.R. 2001. *Tree guidelines for Inland Empire communities.* Local Government Commission: Sacramento, CA.; 92 p.

McPherson, E. Gregory; Simpson, James R.; Peper, P.J.; Xiao, Q. 1999. *Benefit-cost analysis of Modesto's municipal urban forest.* Journal of Arboriculture 25(5): 235–248.

McPherson, E. Gregory. 1993. *Evaluating the cost effectiveness of shade trees for demand side management.* The Electricity Journal 6(9): 57–65.

Scott, Klaus; Simpson, James R.; McPherson, E. Gregory. 1999. *Effects of tree cover on parking lot microclimate and vehicle emissions.* Journal Arboriculture 25: 129–141.

Simpson, James R. 1998. *Urban forest impacts on regional cooling and heating energy use: Sacramento County case study.* Journal Arboriculture 24: 201–214.

Simpson, James R.; McPherson, E. Gregory 1998. *Simulation of tree shade impacts on residential energy use for space conditioning in Sacramento.* Atmospheric Environment: Urban Atmospheres 32: 69–74.

Simpson, James R.; McPherson, E. Gregory. 1996. *Potential of tree shade for reducing residential energy use in California.* Journal Arboriculture 22: 10–18.

McPherson, E. Gregory; Simpson, James R. 1995. *Technical potential for shade tree planting in Sacramento County.* Davis, CA: Western Center for Urban Forest Research; 79 p.

McPherson, E. Gregory; Simpson, James R. 1999. *Carbon dioxide reduction through urban forestry: Guidelines for professional and volunteer tree planters.* Gen. Tech. Rep. PSW-GTR-171. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 237 p.

Checklist for designing a tree planting program

Your whole community needs energy-conserving trees. If you would like to organize a community-wide tree planting program, use this checklist.

❑ Envision your communities future with trees
❑ Create a tree advocacy group
❑ Develop a tree planting plan
❑ Set goals and priorities
❑ Recruit, mobilize and recognize volunteers
❑ Provide timely, hands-on training and technical assistance
❑ Develop list of recommended trees
❑ Obtain high quality nursery stock
❑ Commit to long term care and maintenance
❑ Educate the public
❑ Continually evaluate your progress

Visit our website at
http://cufr.ucdavis.edu