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Trees may play role in reducing Houston's smog

Research debates the value of plants in helping fight air pollution

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Houstonians have faced the prospect of changing speed limits, restrictions on the hours they can mow the lawn and carpools, all for the sake of reducing air pollution.

New research, however, suggests that one of the solutions to Houston's smog problem may be found in many suburban backyards — trees.

With the state facing a May 2007 deadline to submit new strategies to further reduce ground-level ozone, some officials and advocacy groups are hoping the latest study finally will lead to tree planting or tree protection being on the list.

"All of those issues that were being debated ... to clean up our air, whether you were going to be allowed to use a barbecue ... are serious life- style changes," said Peter Smith, urban forestry partnership coordinator for the Texas Forest Service, which secured a \$525,000 federal grant to perform the research, along with the U.S. Department of Agriculture.

"We looked at trees, and said, 'Hey, wait a minute. They are really being overlooked here,' " Smith said. "Nobody had spent the time in Houston to quantify what is out there now."

The report, released in September, details how many trees the eight-county Houston region has (663 million) and how much they are worth (\$205 billion). It also documents, for the first time, the role of trees in ridding the city of pollution.

By analyzing statistics on trees in 332 plots during 2001 and 2002, researchers were able to calculate that Houston's trees remove 60,575 tons of pollution per year, the majority of which is ground-level ozone, the main ingredient in smog. That's the equivalent of shutting down 44 refineries the size of Exxon Mobil in Baytown every year, and corresponds to \$300 million in annual savings.

"If you didn't have trees, you would have to have greater controls at the source," said David Nowak, the study's principal investigator, who works at the USDA's Northeastern Research Station in Syracuse, N.Y.

The benefits of trees in fighting pollution long have been recognized, and environmental groups have argued for years in favor of including tree planting or protection in smog-

cleanup plans. It wasn't until last fall that the U.S. Environmental Protection Agency, which must approve smog plans, said trees could be among the solutions.

To date, cities such as Austin and Roanoke, Va., and some counties in South Carolina have placed voluntary measures in their smog plans that call for planting more trees. No municipality, however, has required mandatory tree planting or protection to bring an area into compliance with federal health standards for ozone.

The Texas Commission on Environmental Quality, which is in charge of drafting the plan to reduce Houston's smog, said it was too early to say what would be included.

Kathy Lord, executive director of Trees for Houston, said she thinks the research will provide the impetus needed to get tree planting in the plan.

"We feel the report substantiates the information that ... green groups have been aware of," Lord said.

But it is far from a done deal since it remains unclear how much trees can help.

Unlike strategies that reduce the pollutants that form ozone, trees remove ozone itself.

The problem is, while trees remove pollution, they also generate it. Trees release volatile organic compounds, some of which combine in sunlight with nitrogen oxides to form ground-level ozone.

According to the 1996 state pollution inventory, trees — along with lightning strikes and other so-called biogenic sources of pollution — accounted for 67 percent of the volatile organic compounds released in the Houston area. By comparison, the region's industry accounted for 10 percent of those types of pollutants.

Whether the loblolly pines and Chinese tallows will remove more pollution than they create in Houston also has yet to be determined by science, which uses computer models to simulate conditions to predict and provide evidence to the EPA that a chosen strategy will work.

Without that proof, the state is taking a chance since it could face the loss of millions of dollars in federal highway money if it doesn't work.

An analysis performed recently at the University of Houston concluded, albeit with uncertainty, that trees reduce ozone by cooling down the city. Another study conducted in smog-plagued Atlanta showed that trees make ozone worse.

"The challenge of modeling the effect of trees on air quality in the Houston region is a big challenge," said David Hitchcock, a researcher at the Houston Advanced Research Center, who participated in the project.

One snag is that the models assume the number of trees in the Houston region will remain unchanged, a faulty assumption considering that, according to the report, the region lost 17 percent of its forest cover between 1992 and 2000.

It also is unclear how trees could be included in a plan that must be enforceable. Though tree planting may be an easier policy to implement than limits on cutting down trees, older trees remove more pollution than younger ones.

Despite the uncertainties, Hitchcock is confident that trees will be among the strategies to reduce ozone.

"While the jury may be out, it doesn't mean that there won't be inclusion of these methods," Hitchcock said.

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