Reclaiming Trees

The failure to adequately protect and care for public trees is resulting in a staggering loss of urban forests.

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In the last few years, a 300-year-old historic live oak in San Antonio, Texas, was cut down on a hill that was leveled for a Lowe's Home Improvement Warehouse, and 200 acres in another part of town were clear cut by another developer for a mixed-use project.

Indiscriminate tree cutting can often mean higher energy consumption for nearby residents and businesses, an increased threat of flooding during storms, and worsened air pollution. Tree removal sometimes can actually lessen a developer's profits, because trees mean higher property values.

Some municipal governments also clear cut trees with little thought about the future. This past September, 83 large trees in Tracy, California, were chopped down for a new civic center that will be constructed on the site. Then there are the utility companies. Centerpoint Energy in Houston, for example, has stated its plan to cut down 57 of 81 live oaks on one block of Newcastle Drive reflecting its policy of removing anything in its transmission corridors that might grow over ten feet in height. Centerpoint Energy's policy is the rule, not the exception, in the United States.
Nowadays, urban trees—particularly the large mature ones that have survived the rapid development of the last few decades—face a new threat: infill redevelopment. Such redevelopment may involve the expansion of an existing house, or the demolition of a smaller home and construction of a larger residence on the same lot. Or it can mean the demolition of a smaller commercial structure and the construction of a much bigger building on its lot.

“Heritage trees on smaller lots are subject to an increasing threat of removal by the new real estate building trends,” says Dave Dockter, a city of Palo Alto, California, planning arborist. “Trees are ill-protected by obsolete ordinances that didn’t envision this [infill] development trend.”

As real estate development continues across the country, and as many jurisdictions fail to adequately protect and care for public trees, the scale of loss of the nation’s urban forests—the trees along streets, in parks, on business campuses, at civic buildings and schools, and in the yards of private residences—is staggering. A recent study conducted by the nonprofit Washington, D.C.-based American Forests conservation organization of 448 urban areas in the United States found that the number of America’s urban trees declined by 21 percent over the last ten years. Denver has only a 25 percent tree canopy, while both Boston and Washington, D.C., have a 22 percent tree cover. Milwaukee has an 18 percent tree cover, with San Diego having only 13 percent. American Forests recommends a 40 percent average tree canopy for urban areas: 15 percent in commercial districts, 25 percent in urban residential neighborhoods, and 60 percent in suburban areas.

Meeting the American Forests organization’s recommendation, however, is a daunting task. If the United States wants to increase its total tree cover by just 10 percent, for instance, it will have to plant and maintain 1.7 billion new trees.

According to the American Forests study of urban areas, if the United States had maintained the tree canopy that existed in the early 1990s, it would have saved $234 billion over the last decade just from avoiding the environmental and health costs discussed above.

Urban forests are threatened by disease, neglect, vandalism—and development. But the ordinances and landscape codes that are supposed to protect trees often do not. Many jurisdictions frequently grant variances to tree ordinances and landscape codes to developers and companies, allowing them to cut down mature trees, almost continuously. This past September, for example, a grove of mature pine trees was demolished in Hartford, Connecticut, to make way for a small restaurant/retail complex. Some jurisdictions “protect” greenfield sites by requiring new developments to keep 10 percent of the existing trees—everything else faces the bulldozer and chainsaw.

Also, many municipalities are easily swayed by developers. In Shelby, Michigan, for instance, a contractor complained about the city’s requirement that all the trees on his project sites be invento-
Why should developers and municipalities care about the rapid disappearance of America’s tree canopy?

**Increased Property Values.** According to the USDA Forest Service, a 2004 study done by the University of Pennsylvania’s Wharton School, and several other studies, large trees can increase commercial and residential property values by up to 10 percent. Those are profits and tax revenues that developers and cities are literally throwing away every time they cut down trees. The single most common feature of any metropolitan area’s most desirable residential and commercial districts is trees.

**Increased Profits.** Trees also make money. Studies by the University of Washington’s Center for Urban Horticulture show, for example, that in tree-lined retail areas, people shop longer and more often, and spend around 12 percent more for goods than in treeless districts.

**Reduced Energy Consumption.** According to the U.S. Department of Energy, carefully positioned trees can cut a household’s energy consumption for heating and cooling by up to 25 percent annually. A well-planned landscape can reduce a household’s air-conditioning costs alone by up to 50 percent a year. Trees planted in and around parking lots in business parks and retail centers can minimize heat islands (the buildup of solar heat gain in dark surfaces, like asphalt), which lowers a building’s air-conditioning requirements and energy usage. A 2003 study by the USDA Forest Service’s Center for Urban Forest Research found that adding 50 million new trees in strategic locations across California would eliminate the need for seven new 100-megawatt power plants.

**Stormwater Management.** According to American Forests, the USDA Forest Service, and others, 100 mature trees capture approximately 250,000 gallons of rainwater a year by intercepting it on their leaves, branches, and trunks, where it is absorbed, evaporates, or slowly soaks into the ground, reducing stormwater runoff. Having enough well-placed trees can obviate the need to build new stormwater facilities. According to American Forests, the Atlanta metropolitan area’s tree canopy was cut from 48 percent in 1974 to 26 percent in 1996, generating a 33 percent increase in stormwater runoff. Atlanta would have to spend $1.18 billion to construct stormwater retention facilities to handle that increase in stormwater runoff.

**Reduced Air Pollution.** One hundred trees sequester five tons of carbon dioxide (reducing greenhouse gases) and remove approximately 1,000 pounds of ground-level ozone, particulates, and toxic chemicals like sulfur dioxide and formaldehyde from the air annually. New York City’s public and residential trees, for example, remove approximately 1,821 metric tons of air pollution each year.

**Improved Human Health.** Trees improve human health in many ways, starting with reducing air pollution levels, which contribute to respiratory illnesses and even cancer. Further, views of trees have been shown to lessen stress levels and depression. Hospital studies conducted in Pennsylvania, Texas, and elsewhere have found that surgical patients who had views of trees from their windows recovered 10 percent faster and required less pain medication than patients who looked out at brick walls.

more powerful because they deal with zoning and private properties,” he notes.

Strengthened municipal and county landscape codes must require street trees to be planted every 30 feet along public rights-of-way. Private parties should donate to a tree maintenance endowment fund to supplement often-inadequate municipal efforts, much as donors have supported better maintenance for big city public parks across the nation.

Fines for violating tree ordinances can also support tree maintenance activities. This past September, Montgomery County, Maryland, ordered Washington Redskins owner Daniel M. Snyder to pay $37,000 for violating the county’s forest conservation law by clear cutting 130 mature trees on his private Potomac Riverfront estate without county permission. In addition, Snyder must post a $45,000 bond to guarantee that he will replant the land that he deforested.

Third, the community needs to be educated about the value and multiple benefits of trees and an overall urban forest. Businesses, for example, need to know that views to trees improve employee satisfaction and productivity, and parents, educators, and school districts need to know that views to schoolyard trees and other greenery calm children and help them be more productive in school, according to studies conducted by the University of Michigan and others.

Fourth, municipalities need to collaborate with—and actively support the efforts of—community-based urban forest groups like TreePeople in Los Angeles, Greening Milwaukee, and Trees for Houston. The nonprofit Greening Milwaukee, for instance, has implemented several different projects, including its Adopt-a-Tree Initiative (which gives free trees to homeowners) and its Greening Milwaukee Schools Program to expand the city’s limited tree canopy and ensure proper tree care and maintenance.

Fifth, jurisdictions responsible for urban trees need to look beyond individual trees. “The problem is that very few cities focus on their tree canopy,” says Cheryl Kollin, director of American Forests’ Urban Forest Center. “They don’t include a tree canopy percentage requirement in their codes, ordinances, and city plans. They focus on cutting down trees and replacing them, not the overall tree cover.” Municipalities need to implement coordinated, strategic mu-
municipal tree plantings, such as tree buffers between industrial and residential and commercial areas, which focus not on individual trees, but on the cumulative impact of a cohesive tree canopy.

The city of Roanoke, Virginia, incorporated a ground-breaking urban forestry plan into its comprehensive plan in 2003. “We have a ten-year goal of going from our 32 percent coverage in 2002 to a 40 percent tree canopy,” says Dan Henry, urban forester for the city of Roanoke. “In mid-2005, the city revised its zoning regulations—which affect private as well as public properties—to include the tree canopy goals.”

Sixth, a city and its ecosystem do not exist in a vacuum. They are directly affected by neighboring towns. Thus, urban forestry needs to be taken to the regional level to maximize its benefits.

In northern California, the Sacramento Tree Foundation has created a program called “Greenprint” that includes municipal and county guidelines and benchmarks for shade coverage, public tree management, policies and ordinances, community involvement, and tree planting and maintenance. The potential benefits are numerous, starting with development. If the various jurisdictions in the Sacramento area have similar tree preservation, replacement, and planting policies, developers will know what is expected of them, and the governing jurisdictions will not have to argue their requirements with every new proposed project. With a goal of doubling the region’s tree canopy by 2040, Greenprint is expected to receive formal approval from the region’s cities and counties by the end of the year.

Seventh, trees should be incorporated into Clean Air Act municipal, regional, and state implementation plans for nonattainment areas. They are less expensive than most manmade solutions, they bring many benefits beyond cleaner air, and they go a long way toward helping cities and counties meet attainment requirements.

Eighth, municipal, county, and regional urban forest watersheds plans should be devised to address stormwater management, water conservation/drought management, and municipal sewage treatment systems. TreePeople, a nonprofit environmental organization serving the Los Angeles area, has created the Transagency Resources for Environmental and Economic Sustainability (TREES) project, which, in partnership with local city and county public works agencies, uses trees and technologies that mimic the “sponge and filter” function of trees to capture rainwater, recharge the aquifer, and reduce the amount of pollution reaching local rivers and the Pacific Ocean.

Ninth, the proactive (not reactive) and systematic (not haphazard) planning and implementation of urban forestry are needed, both of which require getting city and county agencies to work together and pool their funding and other resources, and getting state and federal agencies to integrate their work. TreePeople, for example, was asked by Los Angeles County’s management division (formerly Los Angeles flood control management) to partner with them on a six-year, $200 million retrofit of an urban neighborhood into an urban forest watershed. The Sun Valley Watershed is using funds from the separate flood control, sanitation, sewer, water quality, and
on August 14, 2003, the largest blackout in American history—affecting 50 million people in eight states and Canada—was triggered when a high-voltage line shorted out on some trees in Ohio. Ever since, utility companies across the United States have been acting as if trees were their mortal enemies.

It does not matter that a joint U.S.-Canadian task force placed the blame for the 2003 blackout primarily on the massive problems of FirstEnergy Corporation, the Akron, Ohio-based utility company whose aged computers, sloppy operating procedures, lack of emergency planning, and delayed vegetation pruning along its power lines were some of the primary underlying factors accounting for the spread of the blackout.

It also does not matter that the Princeton, New Jersey-based North American Electric Reliability Council (NERC), which sets voluntary reliability standards for utility companies, issued its own report citing FirstEnergy's below-standard operations and exposing the problems of circuit breakers in lines across the United States and Canada that overreacted to—rather than prevented—the massive, multistate cascade.

Instead, trees are considered the villains in the incident, at least according to the utility companies. Thus, in 2004, FirstEnergy spent $108 million cutting down thousands of 15- to 20-foot-tall trees in Ohio, Pennsylvania, and New Jersey. This year, it will spend the same amount on the same task, and it will do so again next year, for a total of over $300 million devoted solely to clear cutting trees. In contrast, FirstEnergy spent just $10 million installing a new computer system in its control center.

Other utility companies across the United States have implemented their own “take no [tree] prisoners” assaults. In Bakersfield, California, for instance, contractors for Pacific Gas and Electric Company hacked the tops off dozens of elm trees, poplars, California peppers, and eucalyptus trees on White Lane in June 2004, damaging most of them so badly they had to be replaced. This past June, Xcel Energy—which serves ten western and midwestern states—clear cut more than 1,000 trees on private property in the Black Forest in El Paso County to give its larger power lines more elbow room.

Few utility companies cut down more trees than CenterPoint Energy in Houston, Texas, which has a “zero tolerance” policy for any vegetation that has the potential to grow over ten feet in height (i.e., trees

Trees are generally blamed for power outages, at least according to the utility companies, and their tops often are hacked or cut down. CenterPoint Energy in Houston plans to cut down 57 of the 81 mature live oaks in the 5300 block of Newcastle Drive (bottom left) and has already destroyed a line of almost two dozen 15- to 20-foot-tall blooming crape myrtles in the Westpark Transmission corridor near a 40-foot-tall transmission line (below).

other departments, because those agencies recognize that they will be getting more than $200 million back in savings from the project.

Finally—and perhaps most important—jurisdictions responsible for public trees must protect and care for them to help them reach maturity and continue to do their jobs for years to come. To fully provide all the aforementioned benefits, a tree needs to be at least ten years old. Currently, most newly planted street trees do not live for more than seven years.

Municipalities should require a minimum five-foot tree lawn (also called a parkway) between the curb and sidewalk in public rights-of-way, so that trees have adequate area to grow and retain rainwater. These jurisdictions should also encourage property owners to irrigate the tree lawns (and the street trees) and to perform annual fertilization. Lastly, these jurisdictions should inaugurate “adopto-a-street tree corridor” programs, much like the familiar adopt-a-highway efforts, to provide proper maintenance and fertilization of the street trees.

Municipalities short on funds must enlist the help of their citizens by training them in proper tree care and making them responsible for the maintenance of trees in front of and adjacent to their residential properties. Businesses must be required to provide
that offer the most benefits to their communities) within its fee-owned transmission line corridors. The reality, however, is that CenterPoint is clear cutting everything in sight.

In late July, CenterPoint destroyed a line of almost two dozen 15- to 20-foot-tall blooming crapemyrtles in the Westpark transmission corridor near a 40-foot transmission line. Crape myrtles generally grow 20 feet tall in the South, occasionally reaching 30 feet in height. Thus, even at full maturity, those crape myrtles would still have been ten to 20 feet below the transmission line. CenterPoint has also announced its plans to cut down 57 of the 81 mature live oaks in the 5300 block of Newcastle Drive.

Massive clear cutting of trees has a significant impact on communities. Not only do they lose a beautiful, life-affirming amenity, but they also must contend with more air pollution, increased health problems, greater stormwater runoff and flooding, heat island proliferation, and the concomitant rise in air-conditioning use, lower property values, and an eroded quality of life.

Trees and utility companies can live in harmony, but it requires communication, cooperation, training, and careful planning. Cities, counties, and utility companies must undertake the following strategies to ensure a strong tree canopy and reliable energy service.

First, municipal and county ordinances should be enacted and enforced, specifying what trees can and cannot be planted near transmission lines, and how close they can be planted.

Second, annual training and certification in high-quality tree care and pruning for utility company and tree company workers should be required. Much of the damage being done in the name of pruning is attributable to poorly trained or downright ignorant contractors hired by utility companies.

Third, regional policies and rules should be created that spell out what trees can and cannot be cut down. Remediation measures also should be devised that include replacement of the lost tree canopy in other locations so that the community suffers no net loss in its tree coverage.

Fourth, communities and utility companies must work together to plan locations for new transmission lines that avoid areas of mature trees.

Fifth, utility companies should stop using early 20th-century technology—namely, overhead aerial power lines to distribute electricity—to support 21st-century technologies like computers and the transfer of business information. Moving power lines underground, while expensive, would put an end to the constant threat of storms to reliable energy provision and preserve continuous business operations.

The majority of utility companies (and homeowners) continue to turn to tree topping—the extensive removal and amputation of large upper branches in mature trees—in the mistaken belief that topping is less expensive than regular high-quality pruning. That it will keep the tree from growing taller, that it will reduce storm damage, and that it is actually good for trees. But nothing could be further from the truth.

Topping is an expensive practice that mutilates a tree, leaving large open wounds that make it vulnerable to insects, disease, and decay, typically leading to its early death. The loss of foliage starves the tree, weakening its roots and rendering it structurally unstable and more susceptible to being blown down in a high wind. The fast-growing young twigs springing out of the open wounds are more susceptible to breakage and storm damage, which can cause property damage, requiring more attention on the part of tree workers than if the tree had not been topped.

But there is a proven alternative to topping: natural pruning, which trains trees to grow around utility wires and allows them to keep more of their natural form, promoting their health, appearance, and longevity. According to the Nebraska City, Nebraska-based National Arbor Day Foundation, three pruning techniques can address a wide variety of situations involving trees and utility lines:

- Through or V-pruning—A V-shaped "throughway" is cut out through the tree limbs, preserving the overall shape of the tree while accommodating utility wires.
- Side pruning—When a tree is close to a utility line, part of that side of the tree is cut away, leaving the majority of the tree canopy while protecting the utility wires.
- Under pruning—The removal of the lower branches of large trees, so that the utility wires pass beneath the tree canopy, while maintaining a balanced, natural tree appearance.

Skeptics, of course, will say that these recommendations are all very nice, but not realistic in today's current climate of utility company tree massacres. But they would be wrong.

The National Arbor Day Foundation has created the "Tree Line U.S.A." designation for utility companies that implement high-quality tree care programs, provide workers with annual high-quality tree care practices training, and offer a public education and tree planting program. In 2004, 114 utility companies earned the Tree Line U.S.A. designation, proving that trees and reliable utility service can coexist successfully.

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