



Atlanta lacks the dramatic geographical features of many of the world's major cities—a harbor, a river or lake, a view of distant, snow-capped mountains. What it has in abundance, as becomes clear on any flight into the teeming chaos of Hartsfield-Jackson airport south of town, are trees—magnolia, pecan, sweetgum, elm, oak, poplar, beech, and dozens of other species. The trees form a dense canopy over parts of the city and have earned Atlanta the nickname “the city in a forest.”

Trees define Atlanta. The main thoroughfare is called Peachtree Street. The Dogwood Festival has been running for 80 years and draws more than 200,000 people to Piedmont Park every April. The tree canopy itself covers almost half of the 133 square miles that constitute Atlanta proper, according to a 2014 assessment by the Atlanta Tree Conservation Commission and Georgia Tech, making it the most heavily forested city in the country.

Older parts of Atlanta were spared the rampant timbering that cleared much of Georgia in the late 1800s. Some trees even survived the blaze that consumed the city in 1864—a tulip poplar known as “Grandfather” has stood in Brookhaven, north of downtown, since before the Revolutionary War.

Atlanta has stringent ordinances aimed at protecting its trees. The city charges up to \$1,000 to cut down a single one as small as six inches in diameter. The law regulates tree removal on private property, which reflects the reality that more than three-quarters of the city's tree canopy exists in residential areas outside of the city core, while parks and public green-space occupy only 6 percent of city land.

Yet Atlanta's trees are far from safe, despite the ordinances and the city's commitment to staying green. That troubling news threatens to compound a problem Atlanta's residents know all too well: The heat.

In March 2016, Atlanta hit 29° C (84° F), a record for the month. Within the next 50 or 60 years, Atlantans could see as many as 50 days each year with temperature exceeding 35° C (95° F). The problem is not just changes in climate, but also changes in where people want to live, with the fastest growth in the south and west. According to a recent study, by the middle of the century, four to six times as many Americans will endure 35-degree days than at the end of the last century. Researchers found that people living in Atlanta, along with those in Charlotte, Dallas, Houston, Oklahoma City, Phoenix, Tampa, and San Antonio, are most at risk of enduring many more 35-degree days by 2050.

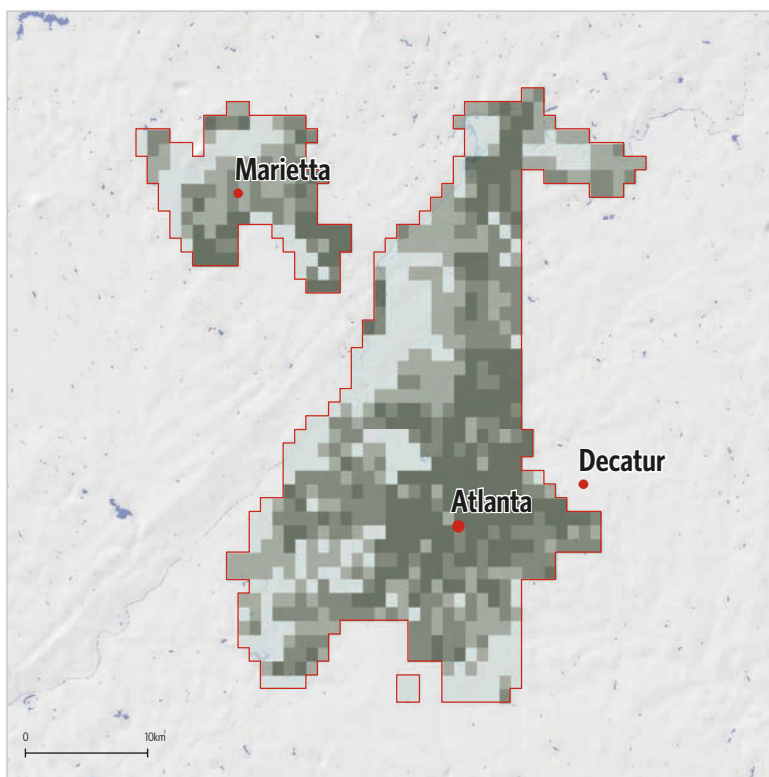
Atlanta's tree canopy can help mitigate some of the problem, but only if it remains more or less intact. The biggest current threat to Atlanta's trees, ironically, comes in response to the previous threat. For decades, greater Atlanta has been a prime example of the pitfalls of suburban and exurban sprawl. Metro Atlanta's urbanized land base grew 72 percent between 1982 and 1997, while its population grew 58 percent. More than 600,000 acres were converted to urban uses in Atlanta between 1982 and 1997—200,000 more than Los Angeles, even though L.A. grew by nearly three times as many residents. The trend has continued: Between 2001 and 2006, one metro county, Gwinnett County, alone lost more than 3,000 forest acres per year, and canopy cover dropped from 52 percent of the county in 1991 to 37 percent by 2005.

Population projections suggest that sprawl may be slowing, but growth is not. According to the Urban Institute, Atlanta's population could grow by as much as 59 percent by 2030, bringing its total population to more than

7.5 million. Other projections suggest the population could top 10 million by 2060—only Phoenix, Arizona, and Riverside, California, are projected to grow faster. And growth within Atlanta’s urban core poses a threat to the city’s trees. Population growth within the city and a surge in denser development represents a welcome shift from car-centric sprawl, but those trends are paired with infill development that puts older, canopy trees at risk.

Fortunately, groups like Trees Atlanta, a nationally recognized NGO, and others are working to find ways to balance development with the need to preserve the city’s trees. As the results of this study show, Atlanta neighborhoods could benefit from reduced temperatures from street tree planting. While at a city-level the ROI of tree planting is relatively low, compared with other cities globally, there are neighborhoods with relatively high ROI in tree planting in high-density neighborhoods that run north-south, roughly following the Interstate 85 corridor. An increased annual investment of \$3.1 million might give more than 80,000 people a 1.5° C (2.7° F) reduction in temperature.

## Results from the Atlanta study



Map 14. Neighborhood-level ROI for Atlanta (temperature reduction).

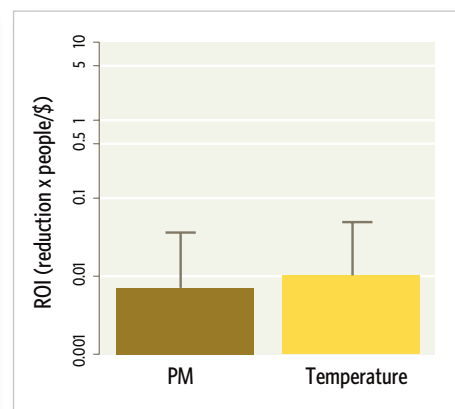


Figure 19. ROI for tree planting for Atlanta.



| Investment      | Annual Cost (\$) | > 1 ug/m <sup>2</sup> PM <sub>2.5</sub> | 1.5 deg C |
|-----------------|------------------|---|-----------|
| 10% of sites    | 3,140,000        | 29,300                                  | 81,200    |
| 20% of sites    | 5,200,000        | 39,500                                  | 113,000   |
| Full Investment | 17,800,000       | 64,200                                  | 187,000   |

Table 7. Temperature and PM reduction benefits under three investment scenarios for Atlanta.