

Parking Study

Upstate Forever, Furman University and the City of Greenville conducted a study of off-street parking to help determine the optimal number of parking spaces for different commercial land uses. Using aerial photographs and on-the-ground monitoring of 120 commercial parking lots during both peak and non-peak hours, researchers estimated actual parking usage across the City of Greenville.

Results: Excess Spaces

The parking study found that there is an excess of off-street parking – up to 65% of parking spaces sit empty even during peak hours. Even during the day after Thanksgiving — the busiest shopping day of the year — the lot of one primary shopping center in town was only 56% full, while the other main shopping area’s lot was 87% full.

Free-standing stores, such as big box retailers and grocery stores, had the most excess parking, while attached retail shopping centers had fewer vacant spaces.

Land Use	Peak Parking Occupancy	Excess Parking
Discount/Dept. Store	45%	55%
Financial Institutions	42%	58%
Grocery Stores	35%	65%
Health Clubs	74%	26%
Pharmacies	45%	55%
Shopping Centers	63%	37%
Offices	58%	42%
Medical Facilities (Non-hospital)	52%	48%
Drive-through Restaurants	58%	42%
Other Restaurants	39%	61%

Peak occupancy and excess parking percentages for different categories of commercial land uses in the City of Greenville

Modifying Parking Requirements

Based on the study findings, the City of Greenville adjusted many of their parking requirements. For example, a developer building a medical facility is now required to install only 1.7 parking spaces per 1,000 square feet as opposed to the 5 spaces previously required. This translates into 3.3 fewer parking spaces per 1,000 square feet, or a \$6,000 to \$18,000 cost savings for the developer.

Land Use	Minimum (1 space per)	Maximum (1 space per)
Discount/Dept. Store	650 sq ft	250 sq ft
Financial Institutions	500 sq ft	200 sq ft
Grocery Stores	650 sq ft	250 sq ft
Shopping Centers	650 sq ft	250 sq ft
Offices	600 sq ft	150 sq ft
Medical facilities (Non-hospital)	600 sq ft	150 sq ft
Drive-through Restaurants	150 sq ft	100 sq ft
Other Restaurants	100 sq ft	100 sq ft

Suggested parking space requirements for different land uses, based on the parking capacity study



On a typical shopping day, the parking lot at Haywood Mall is only approximately 25% full

How Do We Fix the Parking Problem?

The first step toward improving water quality is to encourage more appropriately-sized parking lots. Currently, developers have two options under City code:

- 1 Install the minimum required amount of parking spaces, or
- 2 Use Low Impact Development (LID) techniques to manage the stormwater generated by parking spaces above the minimum required

Upstate Forever is working with the City of Greenville on a third alternative:

- 3 Pay a fee in lieu of using LID for any parking spaces above the minimum required

The revenue generated by this innovative funding mechanism will be dedicated to local clean water projects. The City of Greenville will manage and operate the program.



Pervious pavement (top photo) and bioretention areas (bottom) are two of the low-impact development techniques that can manage the stormwater generated by excess parking spaces



Next Steps

Many communities, like the City of Greenville, have an overall excess of parking. Oversized parking lots are costly to developers and taxpayers and extremely harmful to clean air and water.

- Other communities are encouraged to re-examine their parking requirements in light of this study’s findings and consider making changes. Incentivizing smaller lots can reduce development costs, make better use of available land, improve water quality and save money.
- Citizens can contact their city and county council representatives to express their support for improved parking requirements.
- For more information, contact Upstate Forever’s Clean Air and Water Program at (864) 250-0500 or www.upstateforever.org.



The Threat to Clean Water

Parking lots pose a major threat to clean water nationwide. When it rains, stormwater washes off parking lots, collecting an assortment of pollutants (e.g., oils, greases, chemicals, heavy metals, soil, and litter). This polluted runoff is discharged into local waterways at high speeds, causing stream banks to erode and water quality to deteriorate. Runoff from parking lots is especially harmful to rivers and lakes because it is the primary source of polyaromatic hydrocarbons (PAHs), a known human carcinogen found in automobile exhaust, tire particles, gasoline, and parking lot sealcoats.



(Above) Unknown contaminant being washed into storm drain
(Below) Severely eroded stream bank



Groundwater is also impacted by increases in parking lots and other impervious covers. These surfaces prevent rainfall from soaking into the ground, reducing underground water supplies. This can have disastrous consequences, not only for the people who depend on well water, but also for the native fish and other aquatic life in streams and wetlands.

Promoting sensible growth and protecting special places in the Upstate



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Parking Lots: Too Much of a Good Thing?

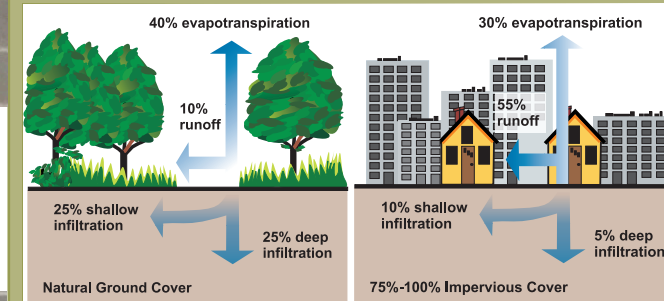
The Issue: Too Much Parking

Parking standards for commercial retailers are typically based on estimates of *peak demand* during the holiday shopping season. Shopping center parking lots are often required to accommodate even more cars than the number that park there during the busiest 19 hours of the year (out of 3,000 total annual shopping hours). As a result, enormous amounts of land are being converted into large parking lots that sit mostly empty for much of the year.

What's Wrong with Parking Lots?

Most parking lots are *impervious*, constructed of paved or hardened surfaces that do not allow water to pass through. The environmental concerns associated with increasing impervious surface cover include:

- Increase in the amount and speed of polluted runoff entering storm drains and local streams.
- Higher risk of severe flooding.
- Reduction of underground water supplies.
- Urban heat island effect (higher nighttime temperatures due to absorption of heat by dark pavement).
- Loss of open space and wildlife habitat.



Relationship between impervious surfaces and stormwater runoff
(Used by permission of US Environmental Protection Agency. Source: Fact Sheet 841-F-03-003, Protecting Water Quality from Urban Runoff)