

Urban Sprawl and Atlanta's Air Quality Problems

Introduction

Spending time in Atlanta without a car is a frustrating experience. My summer internship at Georgia State University let me experience firsthand the effects of poor design and urban sprawl. Every day on my way to the MARTA station, I would walk across an overpass crossing I-75/85, and each time I would be reminded of the ill effects of traffic congestion. The humid air felt sooty from the pollution and the noise of thousands of cars was enough to interfere with conversation (unless there was a mass of gridlock). What a contrast to the cool air of the subway station and its relatively quiet cars. Better yet, once I got on a train, I was downtown for work in only 15 minutes.

As the Georgia Department of Natural Resources states, Atlanta grew up with the advent of the automobile and the two-car garage, resulting in fewer in-town residents compared with older cities. This means that the city has a large population that is accustomed to living in the suburbs and driving relatively long distances to work.¹ In a vicious cycle, acceptance of long commutes allows sprawl and the increasing sprawl requires more driving. Urban sprawl in Atlanta means heavy reliance on the car, traffic congestion, and air pollution, especially in the hot summer months.

There are clearly many reasons to reign in Atlanta's urban sprawl. The air quality problems create health risks for asthma sufferers and the elderly, as well as damaging the natural environment. In addition, the city's design makes it difficult for inner-city residents to work in the suburbs if they do not have a car. The city is finally beginning to realize the necessity of examining sprawl, if only because of the loss of federal highway dollars for failing to meet the Clean Air Act standards. I see the process of solving the automobile-related problems as an opportunity to create interest in comprehensive plans to address urban sprawl and its effects. Alternatives to single-driver commuting, such as the expansion of public transit, incentives for carpools, and private solutions, can be an important part of Atlanta's growth plans.

¹ Georgia Department of Natural Resources, Environmental Protection Division, Air Quality Branch, "Georgia's State Implementation Plan for the Atlanta Ozone Non-Attainment Area: Executive Summary", pg. v, October 28, 1999.

Sprawling Atlanta

Atlanta is a decentralized city that is heavily reliant on the car. Plentiful job opportunities, a good climate, high wages and relatively low cost suburbs have contributed to a steadily increasing population. But population growth, coupled with the low cost of the suburbs, has created a large and growing commuter population. Development, housing and economic success translate into traffic congestion and air pollution.² There was a 35% increase in vehicle miles driven from 1990.³ The excessive commuting wastes time, money and natural resources.

The Sierra Club ranked Atlanta as the number one sprawl threatened city in the United States. Sprawl makes driving mandatory and trips longer; residents of sprawling communities drive three to four times as much as those in better-planned communities.⁴ Furthermore, sprawl eats up taxpayer dollars for road construction and maintenance.⁵ From 1990 to 1996, the city had a 40% increase in population outside the urban core, but only a 2% increase of population within the city limits. The urban land area expanded 47% from 1990 to 1996; each week, five hundred acres of green space, forest and farmland in the Atlanta metro area are plowed under to build parking lots, shopping malls and housing subdivisions. The group American Rivers named the Chattahoochee River as one of the nation's most endangered rivers, pointing to rampant growth in the suburbs as the cause.⁶

Wasted time is another cost of Atlanta's unchecked growth. Atlantans now travel more miles per day per capita than people in any other metropolitan area in the United States; the average resident drove 33.96 miles a day in 1997. Workers may as well consider themselves subject to a nine-hour day, because the average commute time is 50.8 minutes round-trip.⁷ A half-hour train or bus ride is simply not equivalent-passengers have the ability to constructively fill the commute time by reading, knitting, or my favorite, sleeping. Driving can increase stress levels because of the frustrations of

² *ibid.*, p. iv.

³ *ibid.*

⁴ Sierra Club, 1999

⁵ Sierra Club, "Sprawl Costs Us All: How your taxes fuel suburban sprawl (Abstract)", 2000 (Available at: <http://www.sierraclub.org/sprawl/report00/>)

⁶ Sierra Club, "1998 Sierra Club Sprawl Report: Atlanta", 1998. (Available at <http://www.sierraclub.org/sprawl/sprawl98/atlanta.html>)

⁷ *ibid.*

traffic and road rage. For the nation as a whole, road accidents in the kill over 40,000 people, injure 5 million people, and cost \$90 billion each year.⁸

Atlanta's sprawl is understandable given the city's design (or lack thereof.) Critics argue that the city took the wrong path 30 years ago when it started to deal with the growing population by building roads and homes without adequate long-term thinking; the city only developed a regional planning commission after years of runaway growth in the suburbs.⁹ (Ironically, the city possesses a street layout that can be confusing even for long-time residents, despite the fact that it began to grow when the car ruled supreme.) Now the negative effects of unchecked growth have become major problems for the city to deal with. Air pollution is one such problem.

Air Quality Problems

Cars and trucks are among the biggest sources of smog and carcinogenic air-pollution in the United States.¹⁰ This is true for Atlanta, where weather conditions exacerbate the effects of airborne pollution.

Ground-level ozone is a key example of Atlanta's air pollution problems. Ozone is formed through reactions that involve Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOCs) in the presence of intense sunlight. Atlanta has had severe problems with ground-level ozone in the hot, stagnant weather of the summer months.¹¹ Based on ozone sampling from 1987 to 1989, Atlanta was found to be a serious non-attainment area under the 1990 Clean Air Act Amendments.¹² Because of this non-attainment, the Georgia Department of Natural Resources, Environmental Protection Division, Air Quality Branch created a statewide plan to reduce NOx emissions.

I found the sources of NOx pollution in Georgia and proposed reductions interesting. Based on the findings, on-road mobile sources of NOx are a large contributor in the state, yet there is no proposed reduction in the amount of pollution emitted.

⁸ Hawken, Paul, Amory Lovins and L. Hunter Lovins, Natural Capitalism, Boston: Little, Brown and Company, 1999, pg. 41.

⁹ Associated Press, "Proposed Nashville highway draws sprawl comparisons to Atlanta", CNN.com, September 29, 2000. (Available at <http://www.cnn.com/2000/US/09/29/thenext.atlanta.ap/>)

¹⁰ Sierra Club, "1999 Sierra Club Sprawl Report: Transportation Planning", 1999. (Available at <http://www.sierraclub.org/sprawl/report99/transportation.asp>)

¹¹ Georgia Department of Natural Resources, Environmental Protection Division, Air Quality Branch, 1999

¹² The non-attainment categories are marginal, moderate, serious, severe and extreme.

Category	2007 CAA Base (tons)	Proposed Budget (tons)	Percent Reduction
Electric Utilities	86,455	30,402	65%
Non-utility Point	36,827	29,024	21%
Area Sources	13,212	13,212	0%
On-Road Mobile	90,499	90,499	0%
Non-Road Mobile	26,497	26,497	0%
Total	253,490	189,634	25%

Source: Georgia Department of Natural Resources, Environmental Protection Division, Air Quality Branch, 1999

Although point source emissions are generally easier to regulate and monitor, vehicle emissions make up 35% of the NOx in the state. The report targets voluntary driving reductions and selling cleaner gasoline during the summer, but empirical evidence suggests that it is possible to reduce these emissions through a change in people's behavior.

The 1996 Summer Olympic Games

Following through with the example of ozone, we know that a general reduction in driving is possible and does decrease the measured amounts of ground-level ozone. During the 1996 Summer Olympic Games in Atlanta, the city implemented a traffic management plan for downtown. Residents also modified their commuting patterns and business transactions because of expected traffic problems. Air quality was noticeably better during that time. Compared to days with similar weather before and after the games, actual measured peak ozone concentrations were 25 to 27 ppb lower than forecasted.¹³

The Summer Olympics provide important empirical evidence that a citywide reduction in driving does lead to a reduction in air pollution. Based on this evidence, the Partnership for a Smog-Free Georgia was established in 1997. The Partnership focuses on collective and individual changes in behavior, including driving behavior.¹⁴

Why drive?

While the Summer Olympics showed a change in people's behavior, it was only a short-term change. People resumed their regular habits after the Games were over. This indicates that Atlantans need to have strong incentives to change their driving habits. I

¹³ Georgia Department of Natural Resources, Environmental Protection Division, Air Quality Branch, 1999

¹⁴ *ibid.*

can see several reasons why people might not be inclined to switch from driving: driving is easier, driving is cheaper, there are no alternatives to driving, and/or the alternatives to driving are not valued.

The Metropolitan Atlanta Regional Transit Authority (MARTA) provides subway, light rail and bus transportation to the Atlanta region. Despite a strong public awareness campaign, ridership has tended to be low. This is partially due to the commuting culture and partly to problems of creating a public transit system for a city with such extreme sprawl. Furthermore, many of the jobs in the region are located in the suburbs, which are not necessarily served by public transit. Getting to work could require several transfers, a long wait time, and/or a long ride. So when given the choice, many people prefer to drive.

Improve the System or Change the Paradigm?

It appears that the Transit Authority has finally recognized that it needs to serve the changing transportation needs of the city. For example, many jobs and people have moved to the north suburbs, which lacked transit access. Some jobs were impossible to reach without a car, and if residents worked downtown, they would usually drive. The city has begun to address the access problem with the construction of two new north line rail stops. The Transit Authority has also implemented an “Access to Jobs” program, which included an addition of three bus routes to serve industrial parks. MARTA considers the program a success and expects greater use as the public becomes more aware of the new routes.¹⁵

While these changes are promising, it might be necessary to supplement the system with new types of transportation. One easy improvement to the public transportation system would be to shuttle routes between job sites and train stations. The city could take steps to ensure that large employers were linked to public transportation and give employees incentives to use it. The city could also run shuttle busses from parking lots in the outlying areas. Atlanta’s temperate climate also means that bicycling

¹⁵ MARTA, “Access to Jobs”, Printed October 15, 2000. (Available at <http://www.itsmarta.com/info/access2jobs.htm>)

to work is an option for much of the year. Employees could be encouraged to bike to work with bike racks, on-site showers and marketing of the health benefits.

If residents of the Atlanta area are reliant on having a car, then it is possible that they would be more amenable to using a solution that utilizes the automobile. Melvin Webber makes the point that trips to and from dispersed location (i.e., the suburbs) are served best by automobiles, rather than mass transit.¹⁶ Another factor that was mentioned to me by a former Atlanta resident is that cars give people the flexibility to do errands after work. Luckily, there is an alternative to single car driving that promises to reduce traffic volume, parking space requirements, and decrease driving costs.

Car Sharing

The car-sharing concept is to provide temporary use of cars for people who do not drive every day.¹⁷ For-profit car sharing programs have sprung up in several cities, including Boston, Portland, and Seattle. One such program is ZipCar, which provides “Wheels when you want them.” Members pay an annual fee and then per-use fees that depend on the time and number of miles driven. Gas, maintenance, and insurance for the cars are included in the fees.¹⁸

A positive effect of the ZipCar-type businesses is that it improves access to the use of a car. Families and individuals could save money spent on unnecessary vehicles. This would be especially important to individuals who have regular, but not constant, needs for a car, for example, someone who works Saturdays, when the regular bus or train routes cannot get them to their job site. Lower-income individuals may not be able to afford buying and maintaining a vehicle, but may have increased access to a car under such a system.

The ZipCar concept is targeted to high-density cities, which Atlanta is not. However, the San Francisco CarLink Test Program has an arrangement that could work in a city with greater sprawl. The CarLink pilot program was based around the Bay Area

¹⁶ Melvin Webber, “The Marriage of Transit and Autos: How to Make Transit Popular Again”, January 16, 1998. (Available at <http://faculty.washington.edu/~jbs/itrans/webber.htm>)

¹⁷ Alex Frew McMillan, Staff Writer, “Car sharing’s time comes: A European idea for folks who don’t drive every day catches on in U.S. cities”, [CNNfn.com](http://cnnfn.com), July 19, 2000. (Available at http://cnnfn.cnn.com/2000/0719/home_auto/q_zipcar/)

¹⁸ *ibid.*

Rapid Transit (BART) Dublin-Pleasanton train station. The BART system has some similarity to Atlanta's MARTA railway system. Both train systems serve as a funnel for the suburban populations to travel into the downtown area, meaning that people generally drive to the train stations and leave their cars parked all day.



An electric vehicle from the first CarLink test¹⁹

A CarLink vehicle generally has a home user and business user; the home user commutes between home and the train station in the morning and evening, while the business user takes the car during the day. (The home user generally has the vehicle for the weekend.)²⁰ Onboard electronics monitor customer use, and vehicle location, and transmit this information to a command center. The car-sharing program is also a good way to test the use of alternative energies, such as the natural gas powered vehicles used in the second test of the California CarLink program.²¹ Honda provides the vehicles, maintenance, and insurance coverage for the program, and in return, the company

¹⁹ Picture from <http://www.stncar.com/ba.html>

²⁰ Autoworld.com, "CarLink Program Designed to Research Shared-Use Vehicle Concept", 1999. (Available at <http://www.autoworld.com/news/Honda/CarLink.htm>)

²¹ *ibid.*

receives valuable feedback about the shared-use concept and its alternative energy vehicles from the consumers.²²

Clearly, convenience, marketing and price will be deciding factors in the success of such a car-sharing program. Like a computer network, its value increases as the number of members and available vehicles increases. For the individual, this would mean wide access to shared vehicles and low costs; for the city, it would mean a greater reduction in parking needs, traffic congestion, and air pollution.

Conclusion

Improving public transportation and creating alternatives to single car commuting are valuable ways to decrease air pollution and traffic congestion in the city. It now needs to take the next step and examine the underlying cause of those problems—sprawl. Part of the difficulty in addressing the urban sprawl problem is that it has just recently begun to be linked to the problems of the city. The Georgia Department of Natural Resources report on ozone does indicate that sprawl is a key factor in commuting and the corresponding air pollution, yet it does not make suggestions about land use changes to reign in sprawl. I see the potential for the Department of Natural Resources, Atlanta City Planners, the Department of Transportation, the Regional Transit Authorities, and other parties to work together on a broad based solution to urban sprawl and its problems.

²² News Service, University of California, Davis, “CarLink: Partners and Funding Agencies”, February 2, 1999. (Available at http://www-pubcomm.ucdavis.edu/newsreleases/02.99/news_carlink_partners.html)