

The Impact of Urban Boundaries on Mass Transit: A Lesson for Atlanta?

Allison Frankel

Ideas for increasing the effectiveness of mass transit are constantly emerging. Are there circumstances favoring transit programs in one city compared to another urban area? Indeed, the factors behind the failure of some transit programs and the success of others are not easily generalized. However, constraints on urban expansion and increased densities observed in areas with these constraints are at least two factors that favor transit. This paper uses four case studies to examine the effectiveness of mass transit in cities or urban areas where expansion is limited by growth boundaries, either politically or geographically imposed. The lessons learned from these examples then will be examined in relation to the Atlanta region, which has no physical constraints on urban expansion as well as lower rates of transit ridership.

Before any further discussion of this issue, however, several definitions are in order. First, this analysis will measure mass transit's success by its effectiveness, using the definition provided by Gordon Fielding:

Effectiveness is the deployment of service to accomplish goals (increasing passenger trips to produce more revenue or to reduce traffic congestion). (Fielding 1987:8)

Mass transit, for the purposes of this study, is defined as any sort of public transportation that

moves people within a city. Although travel networks for pedestrians and bicyclists are important components of an effective transit system, this study only considers rail and bus service.

The concept of a boundary also requires clarification. A geographical boundary is any physical feature that makes the extension of services impossible or economically infeasible. An artificially imposed boundary is a legal barrier drawn to separate areas that may be developed from those where development is discouraged. Artificial boundaries can be in the form of urban growth boundaries, open space programs or other equivalent plans that distinguish land that may be developed from that which is protected from development.

Although Atlanta is the focus of this study, four other urban areas are included for their relevance as examples of cities with geographic boundaries and with legally imposed boundaries. Manhattan and Madison, Wisconsin are cited as cities with geographic constraints. Manhattan is an island with an extremely high population density, where most residents rely on the bus and subway system for all of their day-to-day travel. Madison, on the other hand, is on an isthmus and has a population of slightly more than 200,000. However, its bus system boasts higher ridership than those in many cities two or three times its size.

Two different types of legally imposed boundaries are found in Portland, Oregon and Boulder, Colorado. Portland is the larger of the two cities and has rail and bus routes that cover the Tri-county region. Development in this region is constrained by an urban growth boundary, a state-mandated 'line in the sand' which limits the

Allison Frankel is a master's degree candidate in City and Regional Planning at the University of North Carolina at Chapel Hill.

possible outward expansion of the city, resulting in a high-density area within the boundary (Oregon Department of Land Conservation and Development 1995). Similar results were achieved in Boulder, where the city has used money from a sales tax increase to purchase and protect prairie land surrounding the city. Initiated with ecological preservation in mind, Boulder's open space program limits the expansion of suburbs by precluding development on this publicly-owned property, resulting in a higher density downtown. Boulder's mass transportation system also includes an extensive network of biking and walking trails (Boulder Department of Open Space).

Finally, we examine Atlanta, a city with essentially no boundary to limit expansion. Because of its flat topography and lack of legally imposed boundaries to development, the Atlanta metropolitan area has spread to encompass over 6,000 square miles in 20 counties (U.S. Bureau of the Census 1998). Environmental Protection Agency Clean Air standards have not been met in any of these counties since 1980 because of heavy automobile traffic (Atlanta Regional Commission 1996). Although the Metropolitan Atlanta Rapid Transit Authority (MARTA) serves the area with heavy rail and buses, mass transit in the region is severely under-utilized. As of 1990, MARTA served only slightly more than half the region's population — 1,241,000 out of 2,158,000 people in the region, according to the National Transit Database.

While many factors contribute to MARTA's ineffectiveness, a case can be made that they can all be traced either directly or indirectly to the lack of an urban boundary. As Atlanta has expanded over the past several decades, the rate of increase in developed land area has occurred at many times the rate of population increase (Atlanta Regional Commission). This is a symptom of unmanaged growth as well as one of the causes of ineffective mass transit. The vastness of the region also has caused a declining downtown and the subsequent choice by many business managers to locate outside the city in office parks that closely resemble the suburban subdivisions where they reside. The result has been a dispersed pattern of commuting in which

people live in one suburb and work in another. A mass transit system focused on carrying passengers to and from downtown Atlanta is therefore not an option for most employees to travel between home and work.

Atlanta's average daily commute of 34.1 miles is the longest of any U.S. city (Atlanta Regional Commission). Many Atlanta residents spend over two hours a day on slow moving highways, and the wasted time and frustration associated with this commute has convinced many businesses to locate elsewhere, hurting the city's economy (Sierra Club 1998). An effective mass transportation system could be the answer, but despite MARTA's efforts, this has yet to be accomplished.

Legal and Geographical Boundaries as a Means to Densification

Higher densities tend to result within urban areas when boundaries are in place. Geographic boundaries limit urban expansion because it becomes too expensive to provide services such as sewers, water and electricity to locations beyond the limiting physical feature (Oregon Department of Land Conservation and Development). Similarly, legally imposed boundaries enable local governments to limit expansion through regulatory mechanisms such as a policy not to extend water or sewer services outside a designated growth boundary. In urban areas with constraints, most growth should occur within a limited area, and population density therefore should increase due to a limited supply of land.

Comparing the population densities of cities with and without growth boundaries demonstrates how great an impact these limits can have on managing growth. According to Census data, Boulder has a population density of 3,622 persons per square mile, as compared to 3,071 for Atlanta. This disparity is even more pronounced than these numbers suggest, as the 20-county Atlanta MSA has an overall density of less than 1,000 persons per square mile.

It is straightforward to show that population densities in general are higher in cities where boundaries exist. More challenging to prove, however, is that this is generalizable to larger metropolitan areas, and that the increased density

within these boundaries improves the effectiveness of mass transit.

Mass Transit in Low Density Regions

Mass transit in a region where development is spread out cannot serve as much of the region as a transit system in a more compactly developed urban area. As Anthony Downs states, “(L)ow-density settlements cannot efficiently support mass transit” (Downs 1994:8). Comparisons of the degree of transit coverage indicate that the bounded cities are more extensively served by mass transit than Atlanta (see Table A, page 43). Even when there is public transportation available from the suburbs to the urban center, low-density patterns encourage residents to rely on their cars and discourage mass transit use.

There are also significant planning challenges that negatively impact mass transit in low-density regions. When a region grows more rapidly in land area than in population, the idea of an urban center is frequently lost. While mass transportation can attempt to link outlying areas to the urban core, the core is rarely still the vital city center it may once have been. In Atlanta, for example, fewer than 5 percent of all businesses are located downtown (Atlanta Regional Commission 1995). Therefore, MARTA’s focus on connecting people to downtown Atlanta results in very low rates of ridership. Another problem with low-density regions is that fixed rail systems have difficulty placing their stations. One MARTA planner explains that “many areas traversed by the rail lines are low-density suburbs, with high car ownership” (Stone 1999; Weyandt 1999). Suburbs are not typically planned to include a transportation center where mass transit would be accessible and widely used.

As a result of these problems, cars tend to be the most convenient means of transportation for residents of unbounded, low-density regions such as Atlanta. The prevalence of single use, low-density neighborhoods has left few employment and commercial uses within walking distance of residences. Between 1983 and 1990, low-density patterns of urban expansion resulted in a 29 percent increase nationwide in the average vehicle miles per household (Downs 1994:8).

In evaluating these facts, it is important also

to consider that demographic data indicate that in cities where mass transit is a widely used form of transportation, people of all income and education levels use it. In low-density cities where mass transit has lower levels of ridership, there is a significantly higher proportion of lower income and less educated patrons (Tri-Met Station 1996a). This difference reveals that in low-density areas, mass transit patrons are mainly those who cannot afford to drive—the decision to use mass transportation is purely an economic one. However, in high-density areas, mass transit is more convenient and thus even automobile owners choose public transportation for many trips (Tri-Met Station 1996b).

The Benefits of Mass Transit in High Density Regions

More densely populated cities have much higher rates of transit ridership than do their low-density counterparts:

...if residential and commercial growth is too widely dispersed, it will be harder to develop a mass transit system to best serve that population. However, if development is more controlled and contained in compact areas, mass transit will be more efficient (Mullins 1995:4).

The cities discussed in this study confirm this statement. Atlanta’s commuters use mass transit less frequently than do those in Madison. When a city has only a limited amount of land that can be developed, land becomes more scarce, and therefore more valuable. More intense land uses — such as apartments, townhouses and detached houses on small lots — should result as developers seek to recover the costs associated with rising land values.

With only limited space to develop upon, huge interstates are not the norm. Automobiles lose much of their appeal, as driving becomes less reliable and slower than mass transit. These factors serve as deterrents to using the private automobile as one’s primary mode of transportation. “People actively dislike congestion, presumably because it represents two significant wastes. These are excessive operating costs and

wasted time" (Creighton 1970:8).

The compact urban form one would expect to find in bounded urban areas translates into more opportunities to locate transit stops near a greater number of homes and businesses. However, as buses and rail become a more feasible means of transportation, the areas near transit stations become desirable locations. As private automobile use becomes less convenient, residents will want to live where they have access to mass transit. At the same time, businesses will recognize the distinct advantage of being close to the rail or bus routes as a way to attract employees and customers.

In Portland, for example, the areas around the new Westside extension of light rail were thriving even before construction was completed. The Eastside line opened in September 1986 and "more than \$1.3 billion worth of development has occurred within walking distance of the Eastside MAX line since the decision to build" (Tri-Met Station 1996a). Based on the increased value of property around the previously existing rail line, many investors were anxious to take advantage of the property available near the new Westside transit stations.

Methods of Comparison

The cities included in this study were compared using a method of analysis employed by Cambridge Systematics, Inc., a planning firm that specializes in evaluating mass transit performance. This method involves examining how various mass transit systems compare based on two main factors: rates of ridership and degree of transit coverage.

Comparisons between transit systems are problematic because of variations in the size and population of the cities studied, as well as their policies. An additional complicating factor is the uniqueness of each city's transportation system in terms of both transit operations and the automobile network. An effort was made to normalize the data collected by adjusting the raw numbers for each city's particular size and population. The result is an understandable set of data that can be reasonably compared across seemingly incomparable cities.

Rates of Ridership

To find the rate of ridership, the annual number of passenger trips for 1997 was divided by the total number of residents of each city or region. This number can be interpreted as the annual number of mass transit trips per capita. While it is a useful measure of comparison, it should be noted that the total number of trips per resident tends to be higher in more tourist-oriented cities because tourists who use transit are not subtracted from the total number of trips. Therefore the per-resident ridership for the more popular tourist destinations such as Atlanta and Manhattan are somewhat inflated.

Degree of Mass Transit Coverage

This measure was determined by dividing the total number of route miles by the land area of the city in square miles. The result reflects the general quality of transit service within a region, although not necessarily for specific areas or between specific origins and destinations. Therefore, while these numbers are important as a means of comparison, they do not fully reflect how much of the city is accessible to mass transportation.

Case Studies of the Impact of Geographical Boundaries on Mass Transit

Geographical Urban Boundaries

The benefits attributable to the densification of geographically bounded cities were discussed above. The next step is to demonstrate a correlation between high-density bounded cities and effective mass transit. The following examples aim to illustrate this relationship.

Manhattan

In many ways, Manhattan represents the extreme example of the effects of a geographical growth boundary on transit ridership. Although bridges and tunnels link Manhattan to the city's other four boroughs, Manhattan Island remains the geographical, social and economic center of New York. Not surprisingly, its population density is the highest in the country at 65,428 persons per square mile.

In addition to this high population density,

Manhattan also has one of the most heavily used mass transit systems in the world. Buses and underground subways cover nearly every corner of the island's 23.7 square miles (Metropolitan Transportation Authority 1997). There is an average of 10.6 miles of transit lines for every square mile in Manhattan, by far the highest of the cities in this study (see Table A).

Manhattan's rate of ridership is also strikingly high. According to 1997 data from the New York Metropolitan Transit Authority (MTA), Manhattan provides 474.8 trips per resident annually, far exceeding the other cities considered in this study. This is likely the result not only of the high degree of transit coverage, but also the high cost and relative inconvenience of automobile travel within the city. Manhattan's congestion makes automobile travel more time consuming than mass transit. Also, tolls, gas and parking are significantly more costly in comparison to other areas and therefore serve as deterrents to auto use.

The effectiveness of Manhattan's mass transit is indisputable. If we consider the Fielding definition of effectiveness (the deployment of service to accomplish goals), the objectives of the New York MTA have been achieved.

Madison, Wisconsin

Although Madison has a population of slightly more than 200,000 residents, it boasts a highly effective bus system and is currently considering the inclusion of rapid rail as part of its mass transit program, which would make it the first city with fewer than one million people to have a light rail system (Mullins 1997:1-3). Only 64,787 of Madison's 104,887 commuters drive to work alone, meaning that over 38 percent of its residents carpool or use alternate means of transportation (U.S. Bureau of the Census 1990).

It is Madison's geography that makes it so suitable for mass transit:

Table A. Degree of Transit Coverage

| City or Region | Miles of Mass Transit | Area (square miles) | Degree of Transit Coverage (miles of transit per square mile) |
|----------------|-----------------------|------------------------|--|
| Manhattan | 251.6 | 23.7 | 10.6 |
| Madison | 365.5 | 55 | 6.6 |
| Portland | 758.5 | 363.1 | 2.1 |
| Boulder | 82.5 | 25 | 3.3 |
| Atlanta | 1587 | 6126 | 0.3 |

Table B. Rates of Ridership

| City or Region | Total Annual Trips (1997) | Total Population (1998 estimate) | Average Annual Trips per Resident |
|----------------|------------------------------|-------------------------------------|--------------------------------------|
| Manhattan | 590,000,000 | 1,550,649 | 380.5 |
| Madison | 12,208,755 | 209,306 | 58.3 |
| Portland | 71,389,345 | 1,300,000 | 54.9 |
| Boulder | 3,050,226 | 90,543 | 33.7 |
| Atlanta | 170,380,432 | 3,746,059 | 45.5 |

For Portland, the area and population are that inside the urban growth boundary.

For Madison and Boulder, the area and population are that within the city limits.

For Atlanta, the population and area are that of the metropolitan area.

NOTE: The population of the entire Atlanta MSA is used because it is not clear what areas of the region MARTA should serve in the absence of a defined boundary. Therefore, it is assumed that MARTA should serve the entire Atlanta metropolitan area.

SOURCES: 1997 National Transit Database; U.S. Bureau of the Census; Portland Metro; personal interviews

The same isthmus that makes Madison a geographically unique city may move it toward establishing a rail-based transit system sooner than cities much larger than it – such as Milwaukee (Mullins:1).

According to 1998 Census estimates, Madison's population density is 3,805 persons per square mile, higher than that of many cities its size (U.S. Bureau of the Census 1998).

Madison planners are well aware of the importance of their high-density communities. Bob McDonald of the Dane County Regional Planning Commission stated that "the more dispersed (the population) becomes, the harder it is... for transit to serve it" (Mullins:5). The city's planners have therefore made an effort to restrict the expansion of Madison in favor of higher density, less automobile-dependent neighborhoods. The result is a city with a mass transit system that is not only effective but also well-received, with a ratio of complaints to total riders of 1:10,000.

Non-Geographical Urban Boundaries

While many urban areas lack geographical, or natural, constraints to growth like those of Manhattan and Madison, cities have imposed policies and regulations to restrain growth. Two such examples are Portland's urban growth boundary and the open space program in Boulder.

Portland, Oregon

Urban growth boundaries are defined as lines that:

mark the separation between rural and urban land. They are intended to encompass an adequate supply of buildable land that can be efficiently provided with urban services (such as roads, sewers, water lines and street lights) to accommodate the expected growth during a 20-year period (Metro 1997).

In the early 1970s, a statewide program in Oregon mandated the development of urban growth boundaries, or UGBs, for every city and town, with the intention of preserving Oregon's

natural environment (Dionne, Jr. 1997: 2). Ethan Seltzer, director of the Institute of Portland Metropolitan Studies, explains, however, that urban growth boundaries have done much more than protect rural land from development: they have changed entirely the development patterns of the cities which employ them (Dionne, Jr.:2). In general, these cities have denser development patterns and therefore contain more areas that are conducive to alternative forms of travel such as transit, walking and bicycling. The prevalence of bicycling and walking may help explain Boulder's relatively low per-capita ridership, as the compact development patterns there have reduced the need for motorized travel via automobiles and transit.

While this idea of designating land for development based on expected growth patterns and vacant spaces already within a city has been adopted in different places all over the country, Portland is the largest city to do so. It is therefore useful to examine how Portland's Tri-Met system, which consists of both light rail and buses, has evolved as a result.

Because of the densification that has occurred within the urban growth boundary since its establishment in 1973, "the city's 450,000 residents are served by one of the most extensive mass transit systems in the nation" (News & Observer 1997). The rate of ridership is 54.9 trips per capita, higher than that of Atlanta. The city is also well covered by the Tri-Met system; 758.5 miles of transit serve an area that is 363.1 square miles, indicating a coverage of 2.1 miles of transit lines per square mile of area.

Hal Simmons, Chief of Comprehensive Planning in Boise, Idaho, says that the UGB in Portland:

...has made the region more attractive to major employers, who are drawing workers with higher wages. Portland's land-use policies have brought it a vibrant downtown with shopping and entertainment, trendy boutiques and micro-breweries, and fashionable neighborhoods. That's made the city a desirable place to live (Johncox 1997:2).

For this reason, many cities without natural geographic boundaries have looked to the example set by Portland and the state of Oregon as a model for their own development.

Boulder, Colorado

In the late 1960s, Boulder instituted an open space land acquisition program to protect land from development. Acquisition programs purchase land, typically with public funds, to be owned and maintained by a designated government agency (News & Observer). Open space preservation programs may not be expressly for limiting sprawl, but they can effectively serve as urban growth constraints by removing developable land from the market. Therefore, when open space land is acquired near a city, it functions much like an urban growth boundary, but with even more permanence.

Boulder is about 30 miles northeast of Denver in the foothills of the Rocky Mountains. Although the mountains border Boulder to the west, the rest of the city is surrounded by agricultural and prairie land — areas that may be ripe for development. Boulder took steps to create a buffer zone to protect the region from unbridled growth. Citizens voted in 1967 to increase the city sales tax by one percent in order to raise money to acquire a buffer zone of open space that will remain undeveloped (Boulder Open Space Department:2).

The additional sales tax revenue has paid for more than 30,000 acres to date, providing a boundary of open space that has benefited the city of Boulder in many ways. The acquisitions not only have protected land for agriculture, cultural resources, water resources, wildlife, native plants, and recreation, but they also had a positive effect on the city's urban development patterns (Boulder Open Space Department:5). As in Portland, limitations placed on the city's growth caused Boulder to develop into a relatively high-density city. This density has in turn created an environment conducive to an effective mass transportation system, illustrated by its high degree of coverage (3.3 miles of routes per square mile).

Boulder's transportation system is part of the Denver metropolitan area's Regional Transportation District, or RTD. It serves 83,312 permanent

Boulder residents (1990 Census), in addition to the many university students who live in Boulder for part of the year. It is also important to note that bicycling and walking are also common modes of transportation; these are facilitated by the close proximity of residential and commercial zones that resulted from dense downtown development.

Another benefit of Boulder's high population density is the existence of well-defined centers of commerce. While a single city center is possible in low-density regions, it is more likely that multiple centers will develop to accommodate residents in all parts of the city. Bounded cities, on the other hand, have higher population densities that tend to concentrate retail in one or two central commercial areas. These retail centers make it easier to plan mass transit routes that will take people where they want to go in a timely and cost-effective manner. It is also important to acknowledge the importance of other policies related to parking. Most, if not all, of the parking spaces near Boulder's Pearl Street shopping area and University Hill center have meters that limit parking to two hours and charge 25 cents per half-hour (Dunning 1997). This makes it simpler and often less expensive to use alternate modes of transportation.

Atlanta: City without a Boundary

The above-mentioned urban areas generally have developed differently compared to cities with few growth constraints. Low-density sprawl, heavy reliance on personal automobiles, increased pollution, development of agricultural land, and the destruction of ecologically valuable land tend to characterize cities without boundaries. The result is a low-density pattern of development where relatively few residents live near bus stops or rail stations. Therefore, these unbounded cities are also usually associated with ineffective mass transportation.

Atlanta provides a classic example of low-density sprawl. Because there is no boundary to limit the city's spread of growth spatially, developers essentially are free — provided they have access to the necessary infrastructure — to convert formerly rural land far outside the city into suburban developments. The metropolitan

area now stretches over 3,000 square miles, and this figure includes only the area under the auspices of the Atlanta Regional Commission. This unchecked development has led to a low regional population density and even a negative growth rate in the city of Atlanta itself, indicating that the city has suffered significant declines in population while the region as a whole is growing in both population and land area.

According to Census data, the 132-square-mile area within the city limits lost 7.1 percent of its population between 1980 and 1992 (U.S. Bureau of the Census 1994). Nonetheless, the larger metro area is considered one of the country's fastest growing places in terms of both residential and commercial development. The prevailing low-density development pattern has contributed to the ineffectiveness of MARTA, the rail and bus transportation system that serves the area. However, it is doubtful that its effectiveness can be improved solely by improving the scope of transit service:

Expanding mass transit is not likely to remedy the problem. Buses or fixed rail transit can operate efficiently only if at least one end of most journeys is concentrated in a few points of destination. But when both homes and jobs are widely scattered, concentration no longer prevails, even if there are a few major nodes, such as a downtown. Low-density settlements cannot efficiently support mass transit (Downs:8).

Although it includes 1,587 route miles of bus and rail, MARTA still has a low rate of ridership (Brenda English, MARTA). The reason for this may best be explained by the Atlanta Regional Commission's Rail Transit Impact Study, which states that "many areas traversed by [Atlanta's] rail lines are low-density suburbs, with high car ownership" (Stone and Weyandt). This same study also finds that "the Region's population density is fairly low" (Stone and Weyandt). These factors indicate a tendency toward single-occupant automobile use and low rates of mass transit ridership, which is, in fact, the case.

In a more recent document outlining plans

for the future of the area, the Atlanta Regional Commission reiterates the ills of MARTA:

Many residents enjoy the bus and rail service provided by MARTA (the Metropolitan Atlanta Rapid Transit Authority) when they can use it conveniently for traveling to work or to recreational and cultural events. However, many more find MARTA service inconvenient or inaccessible (Atlanta Regional Commission 1995:11).

This report stresses the notion that MARTA's ineffectiveness is the result of low-density development. More specifically, "as the Region develops denser suburban centers, more and more trips will originate and end outside the urban core" (Atlanta Regional Commission 1995:12). Currently, the MARTA system is focused around transporting riders to and from the downtown area. Very few residents live near the transit stations, however, and fewer than 5 percent of the region's jobs are located in downtown Atlanta. In addition to the region's low density, this is also a likely cause of MARTA's ineffectiveness as a transportation system.

While 70 percent of Portland's mass transit riders have cars but prefer to take mass transportation, almost all MARTA patrons use mass transit because they do not have access to an automobile (Tri-Met Station 1996a).

The sentiment that MARTA is inconvenient is shared by the Atlanta Regional Commission and most Atlanta residents, but both groups would like to see MARTA's effectiveness increased. A Vision 2020 survey reveals that "a large majority favor expanding transit systems (bus, rapid transit, and commuter rail) while only a minority would choose building more roads" (Atlanta Regional Commission 1995:11). The survey also reveals that residents are greatly in favor of expanded bicycle lanes, paths and pedestrian walkways (Atlanta Regional Commission 1995:10).

Conclusion

The problems faced by Atlanta have sparked some talk of the possibility of introducing an

urban growth boundary. According to Christopher B. Leinberger, managing director of the Los Angeles-based real estate consulting firm of Robert Charles Lesser and Company:

Metro Atlanta needs to draw an 'urban growth boundary' as a line in the sand to contain the region's sprawl... That would mean drawing a circle around Atlanta and through the heart of its mushrooming suburbs, similar to lines in Portland, Oregon and Seattle, Washington, as a boundary beyond which dense development would be banned. (Soto 1997:2C)

This boundary would limit expansion over the next 20 years. It would force new development into areas that have already been urbanized, protecting land outside the boundary and increasing the density inside. Many areas of metropolitan Atlanta might then be able to support mass transit. The recognition by officials at MARTA, the Atlanta Regional Commission, and private consultants of the problematic sprawl in Atlanta is a step towards alleviating the situation. The tightening of the Environmental Protection Agency's Clean Air standards will also pressure the city government to act accordingly.

Many officials feel that it is too late for an urban growth boundary in Atlanta because many suburbs far outside the city's center are already established. They argue that while a growth boundary for the Atlanta region might have been an effective tool 10 or 20 years ago, implementing one now would do little to contain sprawl and would be a highly contentious political issue. Instead they favor concepts such as transit-oriented development (TODs), which encourages density in areas adjacent to transit stations and thus promotes mass transit. Plans for high density mixed-use development around transit stations are underway in several Atlanta locations. Officials are hopeful that combining office, retail and residential units with an entertainment complex in close proximity to transit stations will attract a varied clientele for mass transportation.

Although TODs begin to address the problem, these developments alone will not serve to revitalize mass transit in Atlanta. As already

mentioned, mass transit does not function effectively when employment and commercial uses are spatially segregated. Even if TODs became the norm at several transit stations, MARTA would still fail to serve the transportation needs of most Atlantans.

Because no singular policy can solve Atlanta's transportation problems, the best hope for the future may be a mixed approach that incorporates an urban growth boundary in conjunction with other measures, such as TODs, that encourage higher density development near transit stations. **CP**

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