

3.0 TRANSIT NEEDS ASSESSMENT

Metropolitan Atlanta has become well known nationally as a region with transportation facilities (highways, rail and aviation) that have spawned development at an unprecedented rate. Local residents already are familiar with this trend. Even as the region harvests economic benefits from growth, there are associated consequences such as ever-increasing traffic congestion and serious air quality issues. In response, the Georgia Regional Transportation Authority (GRTA) is seeking solutions that will offer additional travel options designed to meet current and future travel demand while reducing vehicle emissions and helping to improve the region's air quality. Expanded public transportation (transit) service is a potentially important element in GRTA's search for additional regional travel choices.

New or improved transit service may make sense in some counties and corridors as a part of the region's solution to its transportation problems. In this context, *transit needs* refer to potential public transportation "markets" – conditions that indicate new or improved transit service may be a viable option to add to the available travel choices. GRTA's *Transit Needs Assessment* evaluated specific factors that impact travel in general, and transit in particular, such as population and employment density, minority and low-income communities, trip-making trends, traffic congestion, and regional activity centers.

The Transit Needs Assessment was based on existing service levels and coverage as of April 2002. Existing and projected transit needs were explored from a no-build perspective, providing a base with which proposed alternatives and future year scenarios may be compared. The analysis focused upon:

- The level or quality of transit in areas already served;
- Areas with population and employment densities that can support new or improved transit services;
- Areas of environmental justice-based focus and economic disadvantage;
- Corridors identified as congested and/or containing high traffic volumes;
- Regional activity centers; and
- Areas with changing development characteristics.

The Transit Needs Assessment provided a rigorous technical basis for identifying potential new transit projects, expansion of existing service, and other enhancements that could be made to improve the menu of travel choices. After viable improvements were identified, the Transit Sketch Planning Tool, described below, was used to forecast transit ridership and evaluate results under a full range of specific alternative system policies and enhancements.

3.1 DATA COLLECTION

The Transit Needs Assessment relied on information primarily available through the U.S. Census Bureau, Atlanta Regional Commission (ARC), GRTA, Georgia Department of Transportation (GDOT), and local transit providers.

- The U.S. Census Bureau's 1990 demographic databases contained information on population, gender, race, households, income and auto ownership. Comparative year 2000 data for the same categories were also used, with the exception of auto ownership, which was not available at the time of the analysis.
- Year 2000 and 2025 traffic analysis zone (TAZ) level household and employment data were obtained from the Atlanta Regional Commission's Regional Travel Demand Model. Data on locations of Temporary Assistance for Needy Families (TANF) recipient households were obtained from ARC's Job Access Database through the *Atlanta Region Job Access Transportation Plan*. Congested corridors as identified by ARC in the 1999 *Congestion Management Study* were applied in the analysis of transit needs.
- Digital Orthophoto Quarter Quadrangle (DOQQ) files were provided by GRTA. These files are aerial photography imagery maps based on 1999 aerial photographs. The DOQQs were used during the analysis for orientation and referencing purposes.
- Digital Line Graphic Feature (DLG-F) spatial data files were provided by GDOT for mapping the roadway infrastructure.
- Public transportation system information including route descriptions, station locations, service frequencies and schedules, obtained from MARTA and from other local service providers, were applied in the analysis of regional transit needs. The analysis includes transit service operating as of April 2002.
- Transit supportive areas were determined with an approach outlined in the Transit Cooperative Research Program's (TCRP) *Transit Capacity and Quality of*

Service Manual (January 1999), which uses density standards based on households and employment data.

3.2 METHODOLOGY

The Transit Needs Assessment incorporated a number of tools and analyses to determine areas with transit service needs.

The Sketch Planning Tool was developed specifically for the RTAP as a quick response model that can be used to test and evaluate a large number of potential transit projects and services. The tool was designed to be consistent with and complement ARC's Regional Travel Demand Model. TransCAD software was selected for its combined GIS and transportation modeling capabilities, especially its ability to create and manipulate data (such as travel distances, travel times, and origin-destination flows) that are an essential part of transit needs analysis. The Sketch Planning Tool generates maps showing development patterns and transportation system characteristics. It also is capable of calculating selected key performance measures, and can be used to test and evaluate alternative transit strategies. The Sketch Planning Tool was used to:

- Map demographic projections;
- Identify areas with the potential for successful transit service but where service currently does not exist; and
- Identify areas that currently or in the future may be underserved by transit and for which service improvements may be needed.

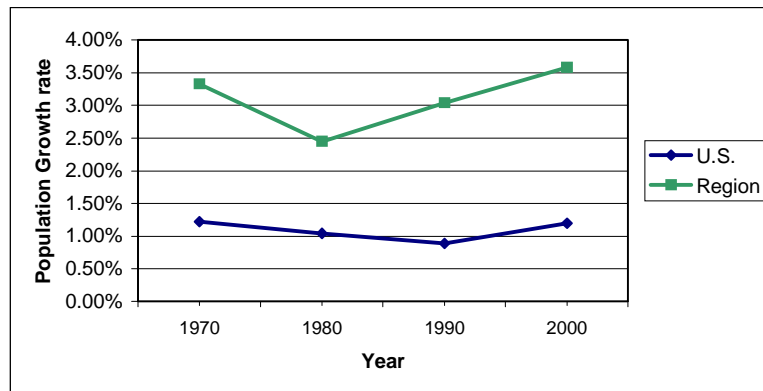
3.3 POPULATION AND EMPLOYMENT TRENDS

The Atlanta region has experienced unprecedented rapid growth since the 1960s. Dramatic increases in both population and

employment have contributed to the region's current highway congestion and the resulting impact on travel trends along certain corridors. In some areas of the region, population and employment growth has been strong enough to support either some level of new transit service or enhancements where service already exists.

Figure 3-1 compares average annual population growth for the nation and the Atlanta region between 1960 and 2000. The graph clearly illustrates the rapid rate of growth experienced locally.

**FIGURE 3-1
AVERAGE ANNUAL POPULATION GROWTH RATE
REGION VS. U.S.**



Source: 1960-1990 population data obtained from the Census 90 Report CPH-2-1.

The Year 2000 data was obtained from the U.S. Census Bureau
(<http://factfinder.census.gov>).

Table 3-1 provides background population and employment data by summarizing the Atlanta region's actual 2000 population and employment by county, and also the forecasts for 2025.

**Table 3-1
POPULATION & EMPLOYMENT
ATLANTA 13-COUNTY NON-ATTAINMENT AREA**

County	Population			Employment		
	2000 ^a	2025 ^b	Incr.	2000 ^c	2025 ^b	Incr.
Cherokee	141,900	216,400	52%	49,400	82,100	66%
Clayton	236,500	260,300	10%	140,500	161,900	15%
Cobb	607,800	712,000	17%	395,800	420,500	6%
Coweta	89,200	98,600	11%	37,200	43,700	17%
DeKalb	665,900	832,000	25%	412,400	431,600	5%
Douglas	92,200	169,300	84%	41,300	62,800	52%
Fayette	91,300	160,100	76%	47,300	53,800	14%
Forsyth	98,400	116,200	18%	44,600	53,400	20%
Fulton	816,000	1,028,000	26%	918,600	968,800	5%
Gwinnett	588,400	720,900	23%	354,900	385,700	9%
Henry	119,300	210,700	77%	43,800	61,700	41%
Paulding	81,700	159,800	96%	21,700	27,700	28%
Rockdale	70,100	129,400	85%	43,200	61,700	43%
Total	3,698,700	4,813,600	30%	2,550,900	2,815,300	10%

^aYear 2000 data from the U.S. Census Bureau (<http://factfinder.census.gov>).

^bYear 2025 population and employment forecasts from ARC.

^cYear 2000 employment data from the www.georgiastats.uga.edu Georgia Statistics System database.

Totals may not add perfectly due to rounding.

Year 2025 population density for the 13-county non-attainment area expressed in terms of persons per acre is mapped in Figure 3-2. It shows the further expansion of high density areas in Clayton, Cobb, DeKalb, north and central Fulton, and Gwinnett counties. Figure 3-2 2025 population densities above 2.0 persons per acre among counties at the periphery of the non-attainment area (e.g., Cherokee, Douglas, Henry and Rockdale).

**Figure 3-2
YEAR 2025 POPULATION DENSITY**

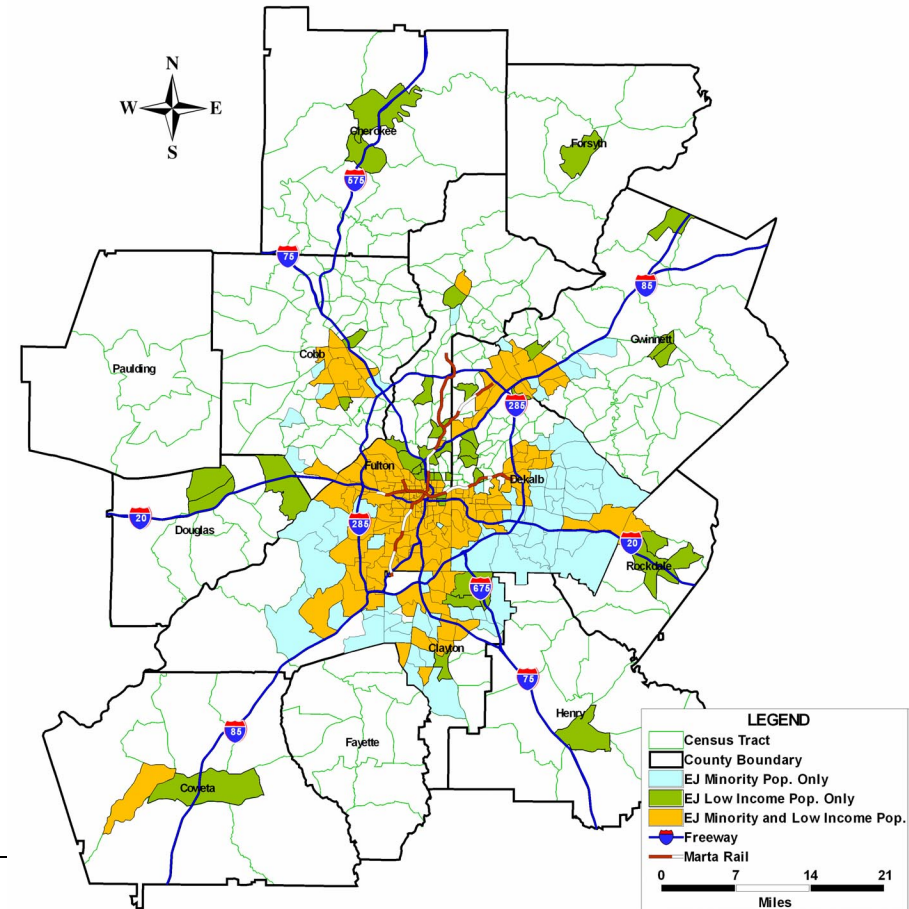
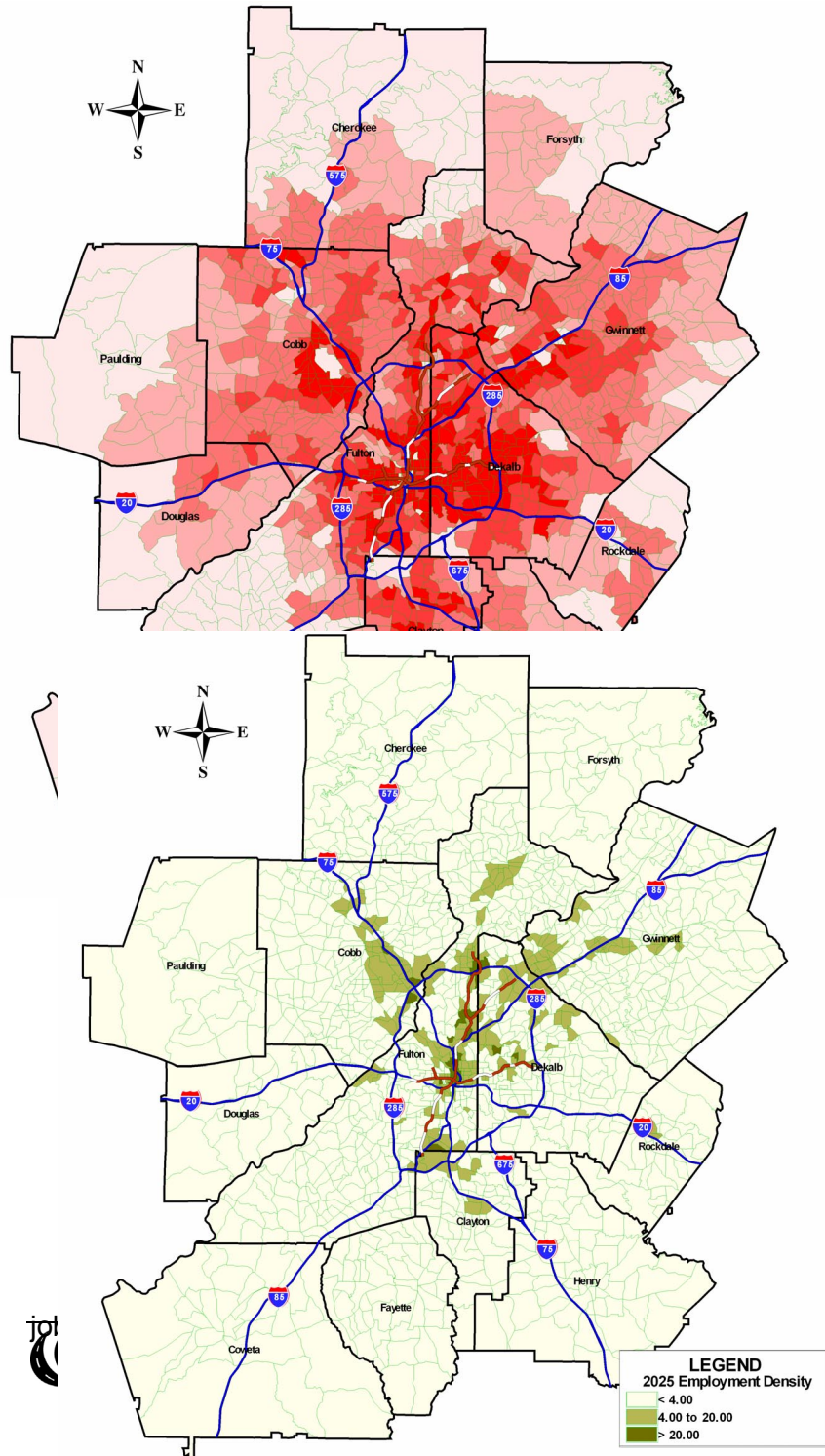
Figure 3-3 shows projected 2025 employment densities for the current 13-county non-attainment area, expressed in terms of

(more than four jobs per acre) are most prominent along the freeways, adjacent to MARTA rail lines, and the urban core, in Clayton, Cobb, DeKalb, central and north Fulton, and Gwinnett counties.

Figure 3-3
YEAR 2025 EMPLOYMENT DENSITY

3.4 ENVIRONMENTAL JUSTICE POPULATIONS

It is important when identifying regional transit needs to go beyond local areas as



of high population and employment densities. It is also important to examine sectors with concentrations of low income and minority populations that may, in fact, be areas of high transit need. Though these areas may not exhibit high population densities, they typically demonstrate the greatest dependence on transit due to low levels of auto ownership. Environmental justice (EJ) is the concept of providing the most disadvantaged citizens with the means to reach employment and essential services, thereby affording them increased opportunities to reach and maintain economic independence.

Figure 3-4 shows that the greatest concentrations of significant EJ minority and low income populations are found in southern Fulton and DeKalb counties, especially along and south of I-20. Other areas are located in Clayton County, along I-85 North reaching into Gwinnett County, and in central Cobb County. Additional pockets are also identified in outlying municipalities (e.g., Newnan in Coweta County, Conyers in Rockdale County and Canton in Cherokee County).

Figure 3-4
2000 EJ MINORITY AND LOW INCOME POPULATION

3.5 AREAS WITH TRANSIT POTENTIAL

Transit propensity is a measure of the relative demand for transit. It can be described as the inclination/likelihood of a population to use transit services and was applied in the analysis to obtain a more complete picture of ridership potential. The Transit Needs Assessment estimated transit propensity in two ways: based on TAZ household and employment densities (referred to as the threshold method), and using an alternative statistical approach.

A more detailed discussion follows for both methods of identifying the transit propensity of an area.

Threshold Method

Because the Atlanta region continues to expand, one means of identifying potential demand for transit is to examine the location and number of TAZs that have developed a sufficient population or employment base to be supportive of fixed route transit services (e.g., local buses like those operated by Cobb Community Transit or Gwinnett County Transit). The threshold method does just this; it focuses on those zones that have attained at least the minimum densities sufficient to support regularly scheduled transit service.

Using the threshold method, transit propensity was estimated with 2000 and 2025 TAZ-level household and employment data generated by ARC's regional travel demand model. The methodology for this approach (derived from the Transit Cooperative Research Program's *Transit Capacity and Quality of Service Manual*, January 1999) involved identifying the portion of each TAZ that has sufficient population and/or employment density to support hourly transit service using thresholds of three household units per acre or four jobs per acre, respectively.

The Transit Needs Assessment defined *transit supportive* areas as those having at least three household units or four jobs per acre. Densities lower than these generally do not represent

enough people or jobs to make local, fixed route transit service viable. Table 3-2 displays the ranges for Low, Medium, and High transit supportive densities.

Table 3-2
TRANSIT SUPPORTIVE DENSITIES

	Household Density (households/acre)	Employment Density (jobs/acre)
Low	0 - 3	0 – 4
Medium	3 - 10	4 – 20
High	More than 10	More than 20

Table 3-3 provides summary information on the number of Atlanta-area TAZs that have Medium and High densities and are, therefore, considered to be transit supportive.

Table 3-3
TRANSIT SUPPORTIVE TAZS
THRESHOLD METHOD

Medium and High Densities		
	2000	2025
Clayton	9	12
Cobb	50	65
DeKalb	64	91
Fulton	174	202
Gwinnett	54	64
Rockdale	0	2
Totals	351	436

Source: RTAP Sketch Planning Tool

Table 3-3 shows a total increase of 85 transit supportive TAZs between 2000 and 2025, mostly in Fulton and DeKalb counties. Overall, slightly more than one-quarter of the region's TAZs are expected to be transit supportive by 2025. In some instances, the growth fills in between current transit supportive areas (such as those surrounding the Peachtree Corners area in Gwinnett County and the urban core); in other locations the

projected growth in transit supportive TAZs follows the radial highway network outward from central Atlanta.

Statistical Method

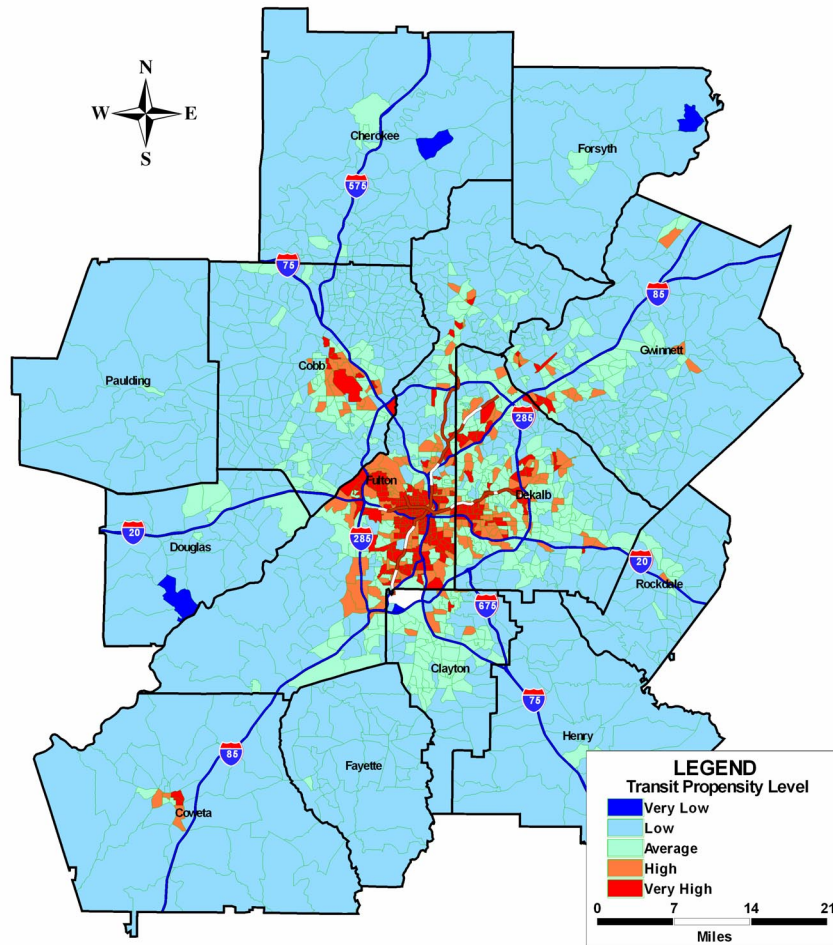
The statistical method expands on population density by factoring race, gender, income, and auto ownership into a weighted index that identifies a level of transit propensity (likelihood of using transit) for each TAZ. With the statistical method, transit propensity was estimated with block group data from the 1990 and 2000 Census. Propensity was quantified with a composite index based on five demographic factors: Population Density (persons/square miles), Race (nonwhite), Gender (female), Income (households with an annual income less than \$15,000), and Automobile Ownership (households without automobiles). The factors were selected and weighted as presented in Transit Cooperative Research Program (TCRP) Report 28 titled, *Transit Markets of the Future, The Challenge for Change*, (1998) and based on the findings of TCRP 27, *Building Transit Ridership* (1997). The statistical method estimates transit propensity for 2000 only.

The resulting composite score for each block group's transit propensity was categorized as *very low*, *low*, *average*, *high* or *very high*, relative to the scores of the other block groups. Figure 3-5 displays transit propensity for 2000 where the greatest likelihood of using transit is found within the urban core surrounding downtown Atlanta and stretching into DeKalb County.

As with the threshold method, the areas of highest propensity outside of the I-285 perimeter are found along the radial highway network, especially I-75 North, concentrated around Marietta and Smyrna, GA 400, I-85 North and US 78 in DeKalb County. Clayton County and south Fulton County also show levels of high to very high transit propensity. Average to high propensity levels have also reached further into Cobb, Gwinnett and DeKalb

counties, with isolated pockets around Newnan in Coweta County and Conyers in Rockdale County.

Figure 3-5
TRANSIT PROPENSITY 2000 – STATISTICAL METHOD



3.6 CONGESTED CORRIDORS

The Atlanta Regional Commission (ARC) recently completed a detailed study to determine the region's most congested facilities through a regular update of the region's Congestion Management System (CMS). In determining the region's most congested facilities, ARC considered several congestion measures including average duration, maximum duration, roadway capacity, functional classification and congested transit links. In addition, the congestion criteria also included measures of goods movement (i.e., trucks), connectivity to activity centers, transit service, environmental justice populations served, and status of programmed improvement projects in the Transportation Improvement Program and/or Regional Transportation Plan.

In 2000, most of the daily travel in the region (10.7 million person-trips) was associated with Cobb, DeKalb, Fulton, Gwinnett and, to a lesser extent, Cherokee and Clayton counties. By 2025, ARC estimates that the number of daily person trips in the region will rise to 14.6 million, a 37 percent increase. The additional daily person trips are primarily associated with counties closer to the urban core although counties at the limits of the non-attainment area are also expected to experience relatively high percentage increases in their person trips (e.g. Cherokee, Coweta, Douglas, Fayette, Forsyth, Paulding, and Rockdale counties).

Together, the region's roadway network and trip-making patterns create corridors with high levels of traffic congestion on a daily basis. The ARC has identified 73 congested highway corridors within the 13-county region. Analysis of congested corridors often offers some indication of potential suitability for transit service.

3.7 REGIONAL ACTIVITY CENTERS

Because the region's activity centers attract significant trips for a variety of purposes, the Transit Needs Assessment addressed connectivity to and between the centers to facilitate more seamless circulation of travel within the region. ARC has identified 29 locations throughout the 13-county region as *regional activity centers* for their high levels of economic activity. The economic activity typically takes the form of commercial, industrial or high density residential, and in some locations two or three activities are combined.

Table 3-5 presents the total year 2025 daily person-trips and those trips which could be made using existing transit services (as of April 2002) for each of the 10 most active regional centers. (It is important to note that Table 3-5 reports potential transit trips, not actual transit trips.)

Table 3-5
TOP 10 REGIONAL ACTIVITY CENTERS
PROJECTED DAILY PERSON-TRIPS – 2025

Activity Center	Total Person-Trips	Potential Transit Trips	Potential Transit as % of Total
City Center (Atlanta)	310,100	145,800	47%
Cumberland/Galleria	271,500	40,000	15%
Hartsfield Airport	226,500	15,800	7%
Midtown Atlanta	195,900	88,300	45%
Perimeter Center	171,400	40,500	24%
Glenridge/Medical Ctr.	159,500	38,300	24%
Lenox/Phipps	150,600	61,000	41%
Peachtree Corners	140,200	0	0%
Gwinnett Place	126,700	0	0%
Buckhead Center	111,800	35,400	32%

Source: ARC's Regional Travel Demand Model (projections rounded to nearest 100)
RTAP Sketch Planning Tool with transit services as of April 2002

Of the region's top 10 regional activity centers, only one (Hartsfield Airport) is located south of I-20. Two (Peachtree Corners and Gwinnett Place) are located in Gwinnett County. Cumberland/Galleria, Perimeter Center and Glenridge/Medical Center are found along the northern I-285 perimeter, while the remainder are located within the urban core.

Four of the activity centers (Cumberland Galleria, Lenox/Phipps, Gwinnett Place and Buckhead Center) are primary destinations for home-based other trips, which reflects their commercial focus. Five of the activity centers (City Center, Hartsfield, Midtown, Glenridge/Medical Center and Peachtree Corners) function more as work-based destinations. Perimeter Center acts equally as a commercial and work-based destination, reflecting the nature of office and commercial development in the area.

Because the Atlanta City Center, Midtown and Lenox/Phipps are well served by the MARTA rail and bus system, the number of potential transit trips to these activity centers is relatively high (47%, 45% and 41%, respectively). Buckhead Center (32%), Perimeter Center (24%) and Glenridge/Medical Center (24%) are also served by the MARTA rail system, however, their potential transit use is lower, in part, because of limited bus transit service in the less dense suburban neighborhoods that generate trips to these activity centers. Cumberland/Galleria, which is served by a modest number of local bus routes operated by Cobb Community Transit, could generate just 15% of its trips by transit. Hartsfield Airport (7%) is served by MARTA's rail system and two local bus routes operated by C-TRAN in Clayton County. Peachtree Corners and Gwinnett Place were not served by transit as of April 2002. Both locations are now served by Gwinnett County Transit's new local route bus system that was implemented in November 2002.

This analysis indicates that all of the regional activity centers, including the Atlanta City Center, have significant potential for new and expanded transit services.

3.8 COMPOSITE TRANSIT NEEDS

The Transit Needs Assessment addressed a variety of factors that identify the need for effective transit service within the 13-county region. While each of the factors was initially analyzed individually, a comprehensive assessment also analyzed the factors collectively and in relation with one another. The identified needs take the form of areas where new service may be feasible immediately, areas where improved service may be warranted, and areas where service may need to be provided in the future.

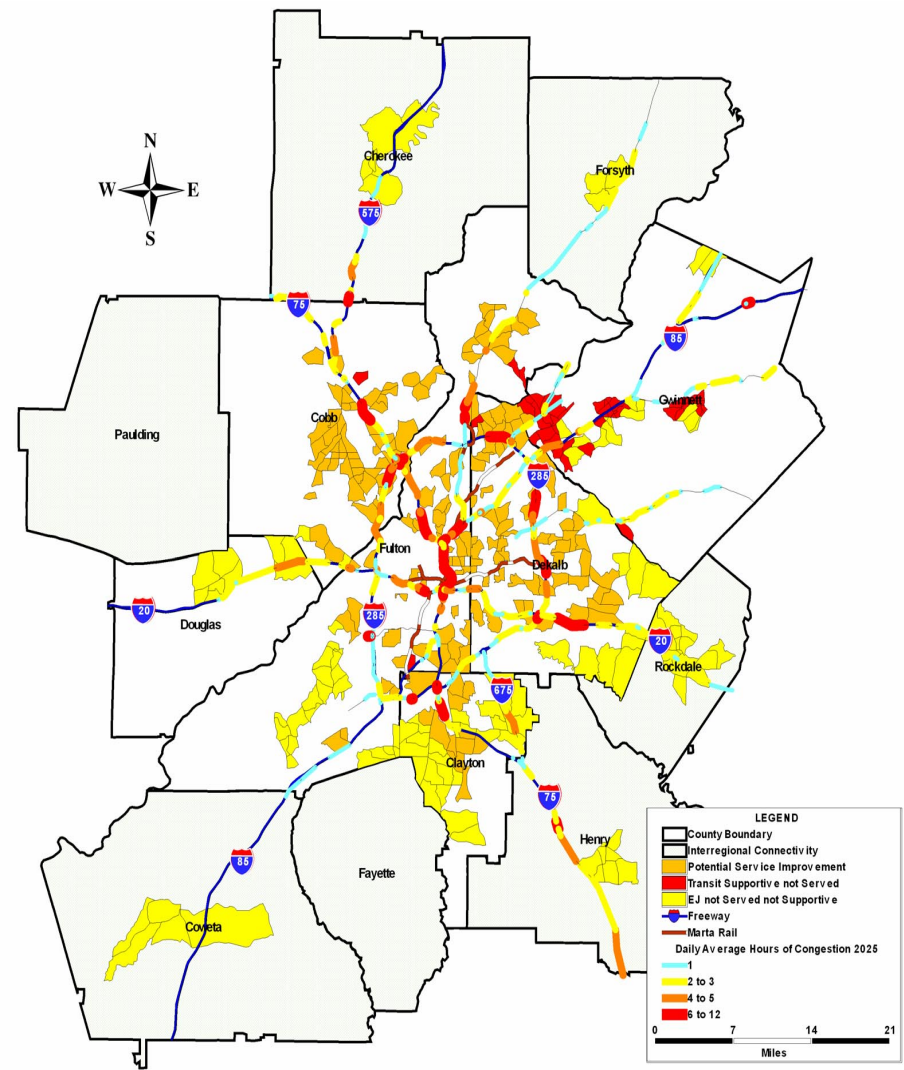
Areas with Transit Service Needs

While a large portion of the region is not served by fixed route transit, the lack of access is most problematic in areas of special transportation need. Figure 3-6 combines the results of previous analyses and illustrates the areas identified as being of transit need, either by way of improved or new service.

In identifying areas of need, the composite analysis addressed the following from a regional perspective:

- Areas where potential transit demand is greater than service frequency;
- Areas that are transit supportive but not served;
- Areas of environmental justice concern; and
- Areas where highway facilities exhibit high levels of congestion or traffic volume.

Figure 3-6
COMPOSITE REGIONAL TRANSIT NEEDS



Areas Where Potential Transit Demand Exceeds Service Provided

Along with scattered areas within the urban core and the I-285 perimeter corridor, additional areas where transit service exists but its frequency may not meet potential demand include:

- Marietta to the I-285 perimeter, including the I-75 North corridor – Cobb County;
- Roswell Road from Marietta to Roswell – Cobb County;
- GA 400 from Alpharetta to Roswell – northern Fulton County;
- Dunwoody to Doraville – Northern DeKalb County;
- Along and between US 78 and I-20 East – Eastern DeKalb County; and
- Area surrounding, and south of, Hartsfield Atlanta International Airport – Fulton and Clayton counties.

In some instances, demand exceeds service provided in the vicinity regional activity centers, such as Cumberland Galleria, Perimeter Center, Buckhead Center, and Hartsfield Airport. Affected “town” activity centers include Marietta, Alpharetta, Roswell and Decatur. While other activity centers may be affected as well, these represent the most active. Because regional and town activity centers attract and generate varied trip purposes, more detailed analysis would be necessary to determine what types of service improvements or expansion may be warranted.

Areas That Are Transit Supportive But Not Served

The most visible areas of the region exhibiting population and/or employment densities that would support some level of fixed route transit service but do not currently have effective service

are located in Gwinnett County, especially in the Peachtree Corners area, along I-85 to Gwinnett Place and in the Lawrenceville area. (Gwinnett County Transit began operating some local routes service in these areas starting in winter 2002-2003.)

Smaller concentrations in this category are found along Holcomb Bridge Road in northern Fulton County and the Canton Road Connector in Cobb County. Isolated pockets of transit support in areas currently without transit service appear sporadically in other locations of the region.

Areas of Environmental Justice Concern

Though concentrations of historically disadvantaged populations may not always coincide with population and employment densities that can support transit, these areas of environmental justice concern must nonetheless be addressed due to their tendency to be the most dependent upon transit services. Areas of EJ concern that are neither effectively served nor fall into the classification of transit supportive appear most often in areas south of I-20. Southern Fulton County and a large portion of Clayton County contain the most significant concentrations, as does eastern DeKalb County. Smaller concentrations appear in Coweta, Douglas, Cherokee, Forsyth, Rockdale and Henry counties, and Gwinnett County along I-85 North.

Congested Corridors

High volume and/or congested corridors that have been identified as potentially benefiting from new or expanded transit service tend to follow the existing freeway corridors:

- I-75/85 (urban core) – Fulton County
- I-75 North – Cobb County;
- GA 400 – Northern Fulton County;
- I-85 North – Gwinnett County;
- US 78 (Stone Mountain Freeway) – DeKalb County;

- I-20 East – DeKalb County;
- I-20 West – Douglas County;
- I-75 South – Clayton County; and
- I-85 South -- Southern Fulton County.

Most of these corridors already have transit service provided to some degree, but the level or frequency of service may not meet potential demand. Transit that would typically be provided along these corridors includes premium or express service that would either connect directly to the Atlanta City Center or other regional activity centers, or provide connections directly with the MARTA rail system. The intent of this type of service would be to reduce the peak hour congestion on the radial network attributed to home-based work traffic drawn from suburban counties. Examples of this type of express bus service are already found in both Gwinnett and Cobb counties.

Areas with Changing Service Characteristics

The level of growth over the past 25 years in the 13-county region has been dramatic, and areas of transit support will continue to

expand outward from existing service areas, according to current and projected development patterns. While the focus on reducing congestion and improving transit continues in the northern tier of the region, growth also is projected in suburban counties east and west of the perimeter. Douglasville in Douglas County and Conyers in Rockdale County are both projected to be two of the most active town centers in terms of person trips in 2025, and both are projected to be potentially transit supportive as well. Transit supportive growth is expected to expand further into Clayton, Cobb and Gwinnett counties, following current development patterns.

Transit service in the Atlanta region is comprised of a high level of service operated by MARTA within Fulton and DeKalb counties and some limited local and express route services operated in Cobb, Gwinnett and Clayton counties. Growth projections and development patterns indicate the need for increased attention to the radial highway network as a means of reducing congestion and improving mobility within the region, in conjunction with the introduction of new and expanded local bus service within selected areas of the suburban counties outside of the perimeter.